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Original Articles.

NOTES ON MULTIPLE PRIMARY TUMORS.¹

BY PAUL G. WOOLLEY, B.S., M.D. (J. H. U.),

Late Fellow in Pathology, McGill University.

It will not be misstating the ordinary conception regarding malignant growths to remark that (1) when the individual is the victim of cancer or sarcoma, only one form of active neoplasm is present, though there may be numerous metastases in various regions, but all these of one origin and derived from the single primary growth; and (2) that the primary growth is single, originating from one single focus. I do not mean to say that in our experience there are not cases in which these postulates are found wanting, but what I do mean is that our working plan or mental type of the process of malignancy does conform to these postulates, and to such an extent that in attempting to formulate ideas as to the nature of cancerous processes, we are continually influenced by them, and our theory of malignancy influenced accordingly.

Regarding the cancer as originating from a single focus, we are apt to see a parallelism between the malignant process and that seen in the infectious granulomata, when, also, there is in general one point of primary infection from which the morbid condition develops, and we find a difficulty in forming a clear idea of the process as essentially a tissue dyscrasia. For, were this so, why should there not be multiple primary foci of new growth throughout the tissue, or organ, or system?

It will be of service, I think, to call attention to the fact that this common conception of a primary focus of growth is far from having an absolutely demonstrated foundation; that when we are, apparently, dealing with a single primary focus, we often have, as Peterson² has shown, in his reconstruction models, multiple foci; that there are not infrequent cases in which it would seem as probable, or more probable, that what we are dealing with is not extension through a tissue or organ, or system, but the independent development of new growths, of like histological characters, malignant as well as benign, at separated points—and this presumably under the influence of a common affection at the different points—and that there are very many cases on record in which there has been the simultaneous presence and growth of neoplasms of very different orders.

I cannot but regard a study of these conditions as throwing light upon the mode of origin of tumors in general.

My attention has been directed to this subject by the study of a case that I have reported in another connection,³ which seems to me to afford an interesting example of what Walter⁴ has called a "system affection" by neoplasms. It is since reading the literature upon the subject of multiple growths that the significance of what I there observed has been impressed upon me, more especially as supporting or being in harmony with Adami's conceptions of the nature of tumor processes.

¹From the J. H. R. Molson Laboratory of Pathology, McGill University, Montreal, Canada.

²Beltr. z. klin. Chir., xxvii.

³To appear in the Journal of Experimental Medicine.

⁴Arch. f. klin. Chir., 1896, lili.

Briefly, the history of my case was as follows:

A man, forty-one years old, was admitted to the Royal Victoria Hospital under Dr. Stewart, with definite symptoms pointing to the existence of cerebral tumors. At autopsy the condition was found to be one of primary growths, of the adenocarcinomatous type, in both adrenals, with secondary growths in the neighboring retroperitoneal glands, right lung and brain. The differences in the structures of primary and the metastatic growths I cannot here detail, nor can I go into the meaning of these differences—these things I have discussed at length in the description of the case. All I need say now is that extension at a distance was clearly through the venous system; that the secondary growths in lymph glands, lung and brain, were of a much more malignant type than the primary growths, and that in the two adrenals the separate nodules of growth, some five in number, were of identical appearance, those in the right being larger and perhaps older.

There could be no question as to the places or origin of the primary growths, nor as to the steps in the development of these. All the nodules in the adrenals were in connection with, and showed structural relationship to, the zona fascicularis, and, what is more,—here as in a very similar case reported by Jores⁵ (and in which there was likewise a remarkable difference between the primary and secondary growths),—*the transition from normal gland cells of the zona fascicularis to tumor cells was a most noticeable microscopic feature.* This transition of the cells in the immediate neighborhood of the evidences of new growth was equally well seen in both adrenals.

Compared with the wide difference in the appearances of the secondary growths in other tissues, the various nodules in the adrenals were histologically identical; the nodules in either organ were separated by areas of normal gland substance, and even if it be urged that these multiple nodules in the one organ are explained by metastases, the same cannot satisfactorily explain the appearance of growths in the other. The appearance of the nodules in the two glands, together with the facts just mentioned, namely, that the nodules were undergoing enlargement by malignant metamorphosis of the parenchyma cells in their immediate neighborhood, are most naturally and logically explained by assuming that here we have a case of symmetrical and independent primary growths.

It is needless to say that there has been a controversy as to this mode of extension of malignant growths by metamorphosis of neighboring cells of like origin; held by some, this theory has been vigorously denied by others. I can only say that the appearances shown in preparations are capable of no other interpretation. In the individual columns of the fasciculated zone, bordering upon the nodules of new growth, isolated cells of the series could be detected with nuclei rich in chromatin, and resembling in character those of the tumor cells, while others retained all the characters of the normal cells. Here I had to deal with a distinctly early stage of the malignant process. Death was caused by the development of sundry growths in a "vital" organ, and had occurred while the secondary

⁵Deutsch. med. Woch., 1894.

growths were still of small size, and when none of the primary foci had attained a greater diameter than that of a small walnut, much of the cortical tissue still remaining.

The more I have thought over this case, the more it has seemed to me that here was a condition due to a biological change in the affected cells; that such modification in the properties is to be regarded as the primary factor. Leaving it open for the present, whether the active proliferation is initiated by one or another factor, this would seem evident; that for the factor to be effective the cells must be in a special state, so that whatever acts upon one organ may affect similarly its pair.

Biological change is not a new factor, by any means to consider in the discussion of the origin of tumors. Ribbert, Lubarsch, Hauser, Adami and other pathologists, speak of it as an important factor, and surely it is not illogical to suppose that a condition which affects one organ in a certain way should affect another similar organ, in the same subject, in a similar way.

On such grounds as these it is easy to explain why the parenchyma of an organ is affected more readily than its stroma, or vice versa. Wells remarks that "it is a marked exception for both stroma and the epithelium to become malignant at the same time, although the reason for this is not clear."⁶ It seems to me that the difference in function and structure of the two tissues explains this condition of affairs, for it would not be expected that two such different kinds of tissue should be affected in an analogous way at the same time, except under exceptional circumstances. As in the case above, while the whole organ has the same origin (that is, from mesoderm), it is the parenchyma—the most highly and recently differentiated part, the physiologically functional part—which has undergone the primary change. And this is also what we would expect under general conditions, that is, that the more recently differentiated cells are the ones that undergo change most readily,—are the most unstable. "One great principle which we see constantly in evidence is that those structures and properties which are of oldest acquirement are those which are last to be lost; it is the most recent acquirement which tends to be the earliest to disappear."⁷ On such a supposition it might be expected that at one time a certain physiological change might determine the production of a carcinoma, at another of a sarcoma, or at still another to both carcinoma and sarcoma. So, in following the line of thought that has been laid down in Adami's papers, we can suggest theoretically the causes of the origin, not only of single primary new growths but also of multiple ones, either of one or of several types.

Such a hypothesis suggests the explanation of "system affection" more readily, perhaps, than localized changes in simple organs, but by taking into consideration local differences of environment, such as circulation, nutrition and other conditions, the application can be broadened, and the explanation of the occurrence of change in one of a pair of similar organs can be readily comprehended; why, for instance, the right adrenal seems to be more frequently affected than the left, and other cases.

In cases in which there are multiple tumors of the alimentary tract, we have a more tangible cause to offer in explanation of the primary causes. Here the inciting influence is irritation, and the changes, while they may occur at any place along the tract, are more prone to be at the points where the irritation may be supposed to be greatest,—at the orifices and at parts where stasis is apt to occur. In organs like the ovary, adrenals, kidneys and pancreas (when calculi can be excluded), and liver and other organs, such a definite factor is not at hand, and we have to adopt theories of a more indirect irritant as a factor, if we can exclude embryonic "rests" and overgrowth of connective tissue. But even in these cases when we can explain the origin of hyperplasia we have still to account for the continued growth and for the peculiar malignant manifestations. For, whether we have an embryonic misplacement or a few cells removed from their normal environment, or a papillary hypertrophy or any other form of hyperplasia, there is still the change from these to malignant growths, which implies a more fundamental change than can be explained except upon a general biological basis.

The trend of pathologists is towards some such general view as that suggested in the later theories of physiological change. Hauser⁸ speaks of "carcinomatous disposition," and Ribbert,⁹ Hauser,¹⁰ Adami¹¹ and others, embody the idea of a general biological change¹² as the cause of new growths in their remarks and in their theories. Adami¹³ states the position as follows: "While heredity surely plays an important part in determining the structure of the cell, we are forced to see that, underlying and determining heredity, the eventual structure—as again the specific functions of a cell—are determined by the sum of the forces acting upon that cell; structure and function are adaptations to environment. It is not only the nutritive material absorbed by the cell that determines the characters thereof, but its position relative to other cells in the economy. Disturb the environment of the cells, remove certain forces acting upon it so that the cell energy previously devoted to counteracting the effects of those forces may now be diverted and employed in other directions, and this unemployed energy may be utilized for growth."

Nor are multiple primary growths by any means rare. If, as I think we must, we accept the careful observations of Petersen, made by building up enlarged models of different growths from serial sections of the same, then many apparently single primary growths originate, not from one, but from several centers, and are to be regarded as truly multiple.

MULTIPLE PRIMARY BENIGN GROWTHS.

It is among benign tumors that we meet with some of the most striking examples of multiple growths. The abundant cases of multiple fibromata, fibromyomata, lipomata, enchondromata and other varieties of benign growths, illustrate this class, and the cases are so numerous and so well recognized that it is needless to attempt to collect

⁸ Lehr. d. All. Path., 1901.

⁹ Virchow's Archiv., cxxxviii.

¹⁰ Montreal Med. Journ., 1896.

¹¹ Yale Med. Journ., 1901, p. 13.

¹² Deutsch. Arch. f. klin. Med., lv.

¹³ Tüllmann's Zeitschr. f. Arch. f. klin. Chir., I.

⁶ Journ. of Path. and Bact., 1901, p. 357.

⁷ Adami: Loc. cit., 1902.

those recorded. The very benign nature of these growths negatives the possibility of metastatic origin. The fact that in the majority of cases we obtain multiple examples of just the one form of tumor, indicates that we are dealing with a peculiar idiosyncrasy or susceptibility on the part of one tissue to become the seat of aberrant cell growths; that, in short, we are dealing with a systemic condition. All the arguments adduced in favor of regarding the development of cancer in the other of a pair of organs as due to metastasis is that in the majority of cases the growths are not simultaneous. As in my case, the indications are that the new growth began in one at an earlier period than in the other. But now in the case of these multiple benign growths,—in which there is no question of metastasis,—we observe the same occurrence. There may at first be but one or two fibromata noticeable, and only gradually do we note the development of others in other regions. The greater rapidity of development of malignant growths and the relatively early death of those affected, tends to make more marked the difference in size between the first and subsequent primary growths, and so almost naturally leads to the assumption of the metastatic theory. But equally permissible is the view that where two or more cancerous foci present themselves in paired organs, in one widely spread tissue or in different parts of a system, these may all be primary in nature. I do not say or wish to indicate that this is true in all cases. At first reading, such a statement may seem heterodox, but a little consideration will show that there is at least as much to be urged in favor of such a view as of the time-honored conception of metastasis.

That many of these multiple benign growths are possibly to be regarded as examples of tumors derived from cell-rests is not a contradiction to what has been stated above. Cell-rests, as such, do not necessarily become the seats of tumor growths. At most, the aberrant and functionless condition of these cell-rests may render them peculiarly liable to undergo proliferation, so that tissue disturbances, inadequate to stimulate normal and functional cells to excessive proliferation, may more easily tell upon the cell-rests.

MULTIPLE PRIMARY MALIGNANT GROWTHS.

An interesting example of multiple primary growths, on the border line between the benign and malignant forms, is to be seen in the multiple myelomata—good examples of which Wright,¹⁴ MacCallum¹⁵ and others have reported.

It is, indeed, to be admitted that there is no hard and fast line to be drawn between the benign and malignant growths, and this being the case we should expect, as indeed we find, that examples of multiple primary malignant growths are far from common. I certainly must confess to some surprise at finding how many cases are upon record.

The subject has already been treated, more particularly by Walter, Nehr Korn,¹⁶ Wells¹⁷ and Warthin,¹⁸ but these observers have, in the main, been content to collect and record cases without

dwelling upon, or deducing the conclusions which may be legitimately deduced from, a study of the same. It will therefore, I think, serve a good purpose to bring together the cases that I have been able to collect in what has been, truly, not a complete review of the literature.

MULTIPLE PRIMARY CANCEROUS GROWTHS (CARCINOMATA).

(1) *Affecting the same tissue.*

(a) Identical (histologically) growths:

Mandry:¹⁹ Epitheliomata of both thighs, at the sites of old ulcers.

Volkmann (cited by Walter and Mandry): Epitheliomata of both thighs, at the sites of old ulcers.

Steinhauser:²⁰ Epitheliomata of right ala nasi, root of nose, forehead, cheek, upper lip, eyebrow, etc. (at sites of lupus ulcers). Steinhauser gives several such cases.

Bayla:²¹ Cancer of right cheek and temple at sites of old lupus ulcers.

Lubarsch:²² Carcinomata of ileum (two cases).

Notthaft:²³ Carcinomata of ileum.

(b) Growths of different types:

Nehr Korn: Squamous epithelioma of left temple; epithelioma over left orbit; epithelioma (without keratinization and with giant cells) behind left ear.

Nehr Korn: Squamous epithelioma of temple; "Matrix" cancer of temple (cells flat, polygonal and cylindrical).

Nehr Korn: Epithelioma (keratinization) of external ala; duct cancer of upper lip.

V. Bergmann (quoted by Mendelssohn): Cancer of face; epithelioma of neck.

Mandry: Cancer of right ear; epithelioma of left ear.

(2) *Affecting both of a pair of organs* (not necessarily of the same histological type).

Royal Victoria Hospital, Autopsy 16, 1897: Bilateral malignant papilliferous cystomata of ovaries.

Royal Victoria Hospital, Autopsy 33, 1897: Similar to the previous case.

Mandry: Carcinoma simplex of right breast; alveolar carcinoma of left breast.

Woolley: Mesotheliomata in both adrenals (the description of the case is given above).

(3) *Affecting different regions of the same system* (not necessarily of the same type in different areas).

(a) Alimentary canal:

Hauser: Carcino-adenomatosus simplex of rectum; medullary cancer of stomach.

Bacher: Cancers of colon and stomach.

(b) Genital system:

Eckhard:²⁴ Adenocarcinoma of fundus uteri; malignant cystic adenoma of cervix.

Hofbauer:²⁵ Squamous epithelioma of cervix; villous cancer of both tubes.

(c) Cutaneous system (included under the first division).

(4) *Affecting different systems with different forms of new growth.*

Frankel:²⁶ Cancer of left breast, with metastases in thyroid and liver; cancer of colon with metastases in lung, brain and thyroid.

Nehr Korn: Villous cancer of bladder (removed and recurred); epithelioma of anus.

Cordes:²⁷ Malignant adenoma of fundus uteri; epithelioma of foot.

¹⁹ Beitr. zur klin. Chir., v.

²⁰ Diss., 1894.

²¹ Beitr. zur klin. Chir., 1888.

²² Virchow's Archiv., cxi.

²³ Deutsch. Arch. f. klin. Med., liv.

²⁴ Arch. f. Gynäk., lv.

²⁵ Ibid.

²⁶ Munch. med. Woch., 1901.

²⁷ Virchow's Archiv., cxlv.

¹⁴ Johns Hopkins Hospital Report, ix.

¹⁵ Journ. of Exper. Med., 1901, iv.

¹⁶ Münch. med. Woch., 1901.

¹⁷ Journ. of Path. and Bact., 1901.

¹⁸ Archives of Pediatrics, 1901.

V. Winiwarter: Cancer of both breasts, with metastases in axilla, liver and retroperitoneal glands; cancer of jejunum with no metastases.

Beck:²⁸ Epithelioma of "die Porto," with metastases in broad ligament; cancer of splenic flexure of colon with metastases in great omentum which showed columnar-celled growth with colloid degeneration.

Kuster (quoted by Walter): Cancer of right breast; epithelioma at right nasal angle.

Hauser: Epithelioma of right ear; cancer of pylorus.

Now let us discuss these cases briefly in the light of the introductory remarks, and with reference to the postulates of Billroth, which are as follows: (1) Each carcinoma must be shown to have a different histologic structure; (2) the origin of each of the two types must be shown to be in a different type of epithelium; (3) the primary cancer must be shown to have produced its own metastases.

I think it is not necessary that such growth should have a different structure in order that such should be considered primary. Such a statement is almost unnecessary. An epithelioma of the face and a cancer of the uterus may have nothing in common, except the common subject, and neither may have produced metastases. There are many such cases, and in them the only practical value of the first and last postulates is that they form a good basis for careful work. The second postulate is the valuable one practically, although in many cases it too is unnecessary or useless. There is no reason why two cancers may not originate in different parts of a common tissue; nay, we may say logically that there is some reason why the same tissue should produce more than one primary malignant growth as it may produce multiple benign ones. The great question is that of metastases. If it has occurred, all well and good; but if it has not, if it can be absolutely ruled out, then we have to consider the question of multiple primary growths. It is not necessary for a malignant cancer to metastasize; many of these growths do not, although it may be hard to prove this in all cases. Besides, we have the cases in which transition from normal cells to abnormal malignant ones, in which no metastases have occurred and where all the growths are in the early stages. The steps have been shown completed, and the descriptions leave no room for doubt that in a common tissue multiple malignant tumors can arise independently. In the accounts of tumors of the gastro-intestinal tract there are many examples of this gradual transition of the normal cells to the types of tumor cells and the inauguration of new growths. A case in point is that of Hauser²⁹, in which there was a cancer of the rectum with polypi of the rectum, large intestine and small intestine, most numerous in the duodenum. Apropos of this case Hauser remarks "on the almost complete passiveness of the connective tissue of the mucous layers," and also announces his conviction that "*diese Wucherungen besitzen nur in Folge der Beschaffenheit ihres Epithel eine erhöhte Disposition zu krebstiger Entartung.*" Notthafft records a similar instance of transition of the cells of growth from benign to malignant.

One group of cases is perhaps of greatest inter-

est, — those of multiple primary growths of "systems," more indirectly influenced at least by irritation changes. As an example of these cases there is that from Schatz' clinic, in which an adenocystoma of the ovary was removed from a patient, who made a good convalescence but who came back to the clinic a year later with a scirrhus tumor in a breast, and an adenocarcinoma of the uterus. This, it seems to me, speaks for a grave physiological change affecting a certain "system," and a "system" in which there is normally a marked change in the later years of life. The rule would be atrophy, and there must be some physiological reason why this natural course did not progress — why the opposite change occurred.

In the case of skin growths the question is not a simple one, for the first appearing lesion may be the origin of others through implantation; but it is noteworthy that in reference to such cases Bucher³⁰ remarks that "*durch das betreffende nocens bewirkt Hautanomalie die Bedingungen zur Entwicklungen des Krebses,*" as though normal epidermis could not furnish the conditions either for primary growths or for secondary ones. And Walter, too, mentions that an already present cancer may serve to predispose to other growths of a similar character by their mere presence and influence on the processes of the body.

Finally, it will appear from the cases quoted that there is a proneness for multiple growths to affect one tissue or one "system," which, as I have tried to show, is no more than might be expected. In many of these cases there is a tendency to proliferative changes which at once suggests not merely a local change, but a very general physiological one. For instance, in one case of Walter's there was found an adenocystoma of the ovary, cancer of the breast and cancer of the uterus. This is a good example of "system affection," and the cause of the general epithelial changes is most readily found in a physiological change. Another case is one in which there was a papillary cancer of one ovary and a papillary cystadenoma of the other — a very instructive case considering the lack of a definite line of division between malignant and benign tumors. And apropos of such cases, Walter says: "*Sieht man nur das Wesen der Krebsbildung in einer Störung der Gleichgewichts zwischen functioneller und vegetativer Zellthätigkeit (Beneke, Woodhead), so könnte man theoretische die Formel aufstellen das einer Krebsbildung in beiden Brustdrüsen dann eintreten kann wenn ziemlich gleichmässig die functioneller Fähigkeit der Zellen erlischt und damit vegetativer Spannkraft frei werden*" (page 15). And the same applies to tumors of the ovaries, adrenals and other organs.

MULTIPLE PRIMARY SARCOMATA.

(1) True sarcomata of connective tissue.

Ruyter:³¹ Hemorrhagic sarcomata of both adrenals and liver.

Martin:³² Sarcomata of cervix uteri, ovaries, tubes, skin, stomach, spleen, kidneys, liver, lungs and adrenals, with purpura hemorrhagica.

Schonenberger:³³ Multiple small round-celled

²⁸ Prag. klin. Woch., 1883.

²⁹ Deutsche. Arch. f. klin. Med., lv.

³⁰ Quoted from Walter.

³¹ Langenbeck's Archiv., xl.

³² Journ. of Med. Research, 1901, vi.

³³ Virchow's Archiv., clxv.

sarcomata with osteomalacia and multiple fractures.

(2) *Transitional lepidomata (mesotheliomata).*

Sarcomata of the genito-urinary tract, of which types are the tumors reported by Jores and by me, and which are referred to in the early part of this paper.

(3) *Mixed types of sarcomata.*

Royal Victoria Hospital, Autopsy 42, 1897: Angiosarcoma of brain; endothelioma of pleura; endothelioma of Glisson's capsule.

MULTIPLE MALIGNANT GROWTHS OF MORE THAN ONE TYPE.

Schiller:³⁴ Sarcoma of the epiglottis; epithelioma of the tongue; sarcoma of right cervical glands; epithelioma in left cervical glands.

Nehrkorn: Cancer of breast; sarcoma of vagina. Czerny:³⁵ Cancer of one breast; angiosarcoma of the other breast.

Blackburn:³⁶ Endothelioma of dura; glandular cancer of stomach; round-celled sarcoma of testis.

Walter: Cancer of pancreas; angiosarcoma of liver.

MULTIPLE GROWTHS, IN PART MALIGNANT, IN PART BENIGN.

(1) *Cases in which the malignancy is a further step in development from the benign growths.*

Walter: Papillary cancer of one ovary; papillary cystadenoma of the other ovary. (?)

Lubarsch:³⁷ Polypi of large and small intestines, some showing a typical epithelial growth, with small-celled infiltration and solid epithelial bands.

Hauser:³⁸ Cancer of sigmoid; polypi of large intestine. In this the smallest nodules showed outspoken glandular hypertrophy and characteristic epithelial growth, with inflammatory changes in the connective tissue.

Hauser:³⁹ Cancer of rectum; polypi of rectum, large intestine, colon and small intestine.

(2) *Cases in which malignant growths occur with benign ones, no developmental relation existing between the two.*

Nehrkorn: Scirrhus cancer of the breast; adenocarcinoma of the uterus; chronic interstitial mastitis; myoma of the uterus.

Hansemann:⁴⁰ Cancer of the stomach; glioma-cerebri.

Lubarsch: Polypi of stomach; cystic adenomata of stomach; cancer of stomach (occurring in a polypus); bilateral ovarian tumors; metastases from stomach growth.

Walter: Adenocystoma of ovary; scirrhus of breast; adenocarcinoma of uterus.

Walter: Angiosarcoma of stomach; sarcoma of gall bladder; aberrant adrenal tumor; lipoma of kidney; enchondroma of right pleura.

Niebergall:⁴¹ Carcinoma of uterus; sarcoma of uterus; submucous myoma; polypus of uterus.

These last groups of cases suggest more than any others the systemic relationship of tumors and tissues, and also emphasize, as nothing else can, the logic of Adami's theory. Especially in

the cases of carcinomata, the inactivity of the connective tissue is evident from the lack of mention in some cases and from the mention in others; for instance, in Hauser's case. The noticeable features in the early stages of cancer formation from normal cells, is the increased size of the cells, the increased amount of chromatin in the nuclei, and the increased reproductive activity. That this represents a step backward, genetically speaking, I have no doubt; it does not mean the acquisition of new functions, but the regaining of old ones, preceded and accompanied by the loss of the more recently developed ones—the loss of special physiological functions with retention and accentuation of vegetative ones. Causes of such changes must be general, physiological, constitutional causes, and what could be more reasonable than to expect that, if, under changed physiological conditions, we find a tumor growing in a certain tissue, we may expect to find others developing in other parts of the same tissue.

In all this discussion I do not want it understood that I wish to belittle the conception of metastasis—at most I simply wish to limit it. No one doubts that metastasis occurs; the paths of metastasis can be followed, sometimes without a microscope. When tumors grow into channels in which blood or lymph flow, a few cells may be carried away, or the growth may occur along these channels as in the direction of least resistance. But when metastasis has not occurred then we are to look at the case from the purely physiological side to find the reason for the multiple growths. Finally, I doubt not that metastasis may occur, and yet, other like tumors, arise independently of this factor.

I believe that there is such a thing as a general "neoplastic-tissue disposition," as one author expresses it, that tumors are the result of some constitutional change. But what is the cause of the disposition? Is it vital or is it a direct result of some extraneous agency? We speak of a "cancer age." Do the changes of age predispose to atrophy in some persons, to hypertrophy in others? We think that the normal tendency is to atrophy. Some investigators believe that infection is at the bottom of the thing—not so much, perhaps, as the result of the immediate presence of the organisms as of their secretions. Esmarch expresses the possibility that syphilis, the great cause of connective tissue changes, may be the mediate cause of sarcoma. This is certainly a more logical way of looking at the infectious origin of tumors. Toxins or secretions of whatever kind, if circulating widely in the body, might well be the cause of changes that would favor an increase in vegetative functions just as they may, if concentrated, cause an opposite effect; and, whatever the origin, therefore, of the tumor proper, however it is started, what makes the tumor is the assumption by the primary cells of that tumor of the habit of growth in place of the habit of work, and according to the extent of this replacement so do we get the various grades of tumor formation from the most benign to the most malignant," which may be paraphrased as follows: "In the benign tumors the specific acquired function of the cells is overbalanced by the embryonic one; in the malignant tumors it is lost."

³⁴ Berlin. klin. Woch., 1898.

³⁵ Quoted by Nehrkorn.

³⁶ Quoted by Beutles.

³⁷ Virchow's Archiv., xli.

³⁸ Ueber den Cylinderepithelkrebs des Magens und Dickdarms.

³⁹ Deutsch. Arch. f. klin. Med., lv.

⁴⁰ Die mikroskopische Diagnostik, Berlin, 1897.

⁴¹ Arch. f. Gynäk., l.

It may be said that the facts of greatest importance are those which embrace the primary causes of tumor formation. In the ultimate explanation of tumors this may be so; but these facts are legion, whereas, in the practical sense as the basis of prophylaxis and treatment, we may have one great generalization from which to work. From the basis of this generalization we may say that the prophylactic and therapeutic measures against new growth will be those which tend to a normal physiological life, which, to be sure, is the natural treatment of all diseases, but also, as in the treatment of other diseases, we must have recourse to active measures, too; surgical means are not to be neglected. The methods of serumtherapy are beginning to throw light into the murky atmosphere of this province, and the work of the Ehrlich school is most suggestive in this connection.

There is no reason to suppose that body cells cannot be influenced at least as easily as the cells of lower organisms and as easily as the bacteria. "The statement which has been made of bacteria seems to apply equally well to other cells. The more intense the alteration, the longer it is before there is a sign of return to normal."⁴² The change can be accomplished, however, and this is a very significant point to be noted in the treatment of such cellular disorders as the tumors. Bacteria lose their normal characters when their normal environment is disturbed; body cells do the same. In gaining normal characters, the reverse is true—at least for the bacteria.

In conclusion, I would beg observers to watch for cases of multiple primary growths, and record with them careful studies of the general conditions, as well as of the special ones surrounding the patients. Such records in cases of tumors in paired organs, such as the breasts, adrenals, ovaries, etc., would be of the greatest interest and value, in determining whether metastasis or biological change is the more obvious factor in the production of such cases.

I must express my deepest gratitude to Dr. Adami for his sympathy and graciousness and readiness to assist me in my work. The value of his example, the clearness of his teaching, and the charm of his personality have been, and always will be, inspiring to me.

PERCENTAGE MODIFICATION OF MILK IN INFANT FEEDING.

BY MAYNARD LADD, M.D., BOSTON,

Assistant in Diseases of Children, Harvard University; Assistant Physician to the Children's Hospital; Assistant Physician to the West End Nursery and Infants' Hospital.

Many methods and formulae for the modification of cow's milk to meet the requirements of infant feeding have been devised, in the effort to develop a system, for use at home, which is simple, practical and approximately accurate. All such methods have many points in common, and none can lay claim to strict originality. The writer fully appreciates that the method advocated in this paper is based upon previously established principles, but believes it will be found useful to those who are called upon to feed artificially a considerable number of infants.

The essential principle underlying the American system of infant feeding, now generally accepted by pediatricists, is that it is not an intolerance for cow's milk as such which causes so much disturbance in infants, but the inability of the individual child to digest certain ingredients of milk. In other words, there is a variable ability on the part of the infant to digest the fats, sugar and proteids of cow's milk, producing what may be spoken of as fat indigestion, sugar indigestion and proteid indigestion. Any one or all of these three elements may be responsible for the gastro-enteric symptoms in an individual child, even when the purity of the milk, which is of the first importance, is assured. The proportion of fats, sugar and proteids tolerated by the one infant may cause serious disturbance in the case of another infant of the same age, either because of the idiosyncrasy of the patient, or because of some pathological condition from which it is suffering. Obviously, an ideal system of substitute feeding must provide means by which, starting with as perfect a milk supply as is possible, the physician may provide percentages of fats, sugar and proteids in any desired combinations within reasonable limits of error. In this respect the milk laboratories furnish, in experienced hands, a very satisfactory method, and by all means the best which has yet been established, assuming that women's milk of good quality cannot be obtained. It is desirable, however, where laboratories cannot be utilized, to apply its principles as closely as possible to home modification. It is of especial importance that students graduating from our medical schools should be instructed in some method by which they may fully understand the principles of percentage feeding and apply them to the infants they will inevitably be obliged to feed artificially in practice. It is in the effort to present these principles in a simple and practical form, in order that intelligent percentage feeding may be more generally adopted, that this paper is written.

The fact that some infants will thrive on methods entirely at variance with scientific ideas does not in any way disprove the theories nor discredit the practice of the advocates of scientific percentage feeding. Infants differ as greatly, if not more, than adults in their peculiarities of digestion. One infant may be fed on condensed milk and bovine from the day of its birth until it is eighteen months old, as was seen in a case which came under the writer's observation this summer, and still showed an apparently perfect state of physical development and nutrition. Another infant, however, in the same family perhaps, will, on the same food, develop all grades of nutritional disturbance, from slight intestinal indigestion to the grave lesions of atrophy, scorbutus or rachitis. With those infants who thrive on any diet, the physician, as a rule, has little to do. He is brought face to face with those who, for a varying number of weeks or months, have been tried on the whole series of prepared foods, or on simple mixtures of milk and water, or on inappropriate modifications of creams. If any one questions such a condition of affairs, he need only follow for a few weeks the varying fortunes of an infants' clinic at some large hospital to be convinced of the accuracy of these statements, if his own experience in private practice has not already

⁴² Adami, *Montreal Medical Journal*. Theories of Inheritance. 1901.

given evidence of it. The futility of these cheap and ready methods of feeding, in these cases at least, has already been demonstrated, and the successful management of them must, in the great majority of cases, depend upon the intelligent adaptation to the individual infant of fresh cow's milk obtained from the best possible sources.

An objection which has frequently been raised to percentage feeding is that the breast-fed infant receives a milk which undoubtedly may vary greatly from feeding to feeding both in quantity and quality, and that the effort to give a modified milk with definite percentage combinations and definite amounts is contrary to nature and unnecessary. The facts on which the objection is based do not, however, justify the conclusion drawn. The normal mammary gland, with its delicate mechanism by which, by the aid of the nursing infant, it adapts itself to the individual, is a very different apparatus from the nursing bottle. We may know much of the varying qualities of single specimens of milk withdrawn from the breast, but the percentages as determined by analysis may be, and undoubtedly are, in many cases, decidedly altered by the time the milk is lodged in the infant's stomach at the end of the nursing period, owing to the great variations in the quality of milk during the nursing period and also to the varying quantity which the infant receives. We find, therefore, that in artificial feeding the average analysis of breast milk is but little aid to us in the adaptation of a modified cow's milk to the individual infant. Each case is a problem in itself, and its appropriate food cannot be accurately predetermined on general principles. A full understanding of these principles enables us to make a beginning with the least possible danger to the child, but it is only by close observation of the effects produced and the adaptations of the food to meet the indications which arise, which enables us to produce the best results.

If then we assume that it is desirable to feed an infant according to percentage combinations, some system must be employed by which the physician may calculate these combinations quickly and easily.

The only objection to the use of formulæ is the time required to figure out the combinations and the difficulty with which some minds grapple with anything involving even moderately complicated mathematics. It will often be found when the figuring is completed that the desired combination is impossible with the strength of cream used. We may, for instance, calculate for a prescription calling for 4% fat, 6% sugar, and 0.60% proteids. If we figure on the basis of using a 10% cream, we find the combination impossible, for the lowest proteid that can be obtained from a 10% cream with 4% fat in the mixture is 1.34%. We next try a 12% cream and find the lowest proteid possible is 1.08%. Again we calculate with a 16% cream, and find the lowest proteid is 0.80%. Finally we try a 20% cream, and find at last that it will yield both the fat and proteid percentage desired. All this obviously involves a great waste of time. It is desirable to have a system by which it will be evident at a glance what are the combinations possible with a cream of given strength.

The following table may be given to illustrate the

limitations in the percentage of proteids dependent upon the use of creams of different strength:

| | | | |
|----------------------|--------------------|-------------|------|
| 10% Cream gives with | | | |
| Fat | 1% lowest possible | proteids of | 0.38 |
| " | 2% " | " " | 0.67 |
| " | 3% " | " " | 1.00 |
| " | 4% " | " " | 1.34 |
| 12% Cream gives with | | | |
| Fat | 1% lowest possible | proteids of | 0.27 |
| " | 2% " | " " | 0.54 |
| " | 3% " | " " | 0.82 |
| " | 4% " | " " | 1.08 |
| 16% Cream gives with | | | |
| Fat | 1% lowest possible | proteids of | 0.20 |
| " | 2% " | " " | 0.40 |
| " | 3% " | " " | 0.60 |
| " | 4% " | " " | 0.80 |
| 20% Cream gives with | | | |
| Fat | 1% lowest possible | proteids of | 0.15 |
| " | 2% " | " " | 0.31 |
| " | 3% " | " " | 0.46 |
| " | 4% " | " " | 0.62 |

It is obvious from the above table that in simple dilutions of creams we are limited in our proteid percentages. To obtain low proteids with high percentages of fat in a mixture, concentrated creams must be used. To obtain high proteid percentages simple dilutions of cream will not suffice, but whole milk or fat-free milk must be added to supplement the deficiency of proteids resulting from the dilution of the cream.

The use of whey as a diluent in place of water, first advocated by Monti, has of late come into prominence and has been given a sufficient trial to warrant the opinion that its use in cases of very difficult digestion, where only low percentages of caseinogen are tolerated, is often of great value. It allows the physician to give a higher total proteid than would otherwise be possible. It is one of several resources which the physician should be prepared to use when satisfactory results are not obtained by the usual methods. These whey-cream mixtures can now be obtained at any of the milk laboratories, and has in the present scheme been made practicable in home modification.

As any system relating to the modification of milk must take into consideration the composition of the ingredients used, some standard analysis must be adopted. Any formulæ or table such as given below presupposes the acceptance of such a standard. Owing to the great variation in the quality of milk, exception may be taken to any standard suggested. The analyses which are given below are on the basis that the milk used contains 4% of fat, 4.50% of sugar and 3.50% of proteids. These figures are based on the analyses of Adriance and others, and are accepted by Rotch and Holt as a fair average.

The composition of the different materials used in the modification of milk is therefore assumed to be approximately as follows:

| | Fat, % | Sugar, % | Proteids, % |
|---------------|--------|----------|-------------|
| Fat-free milk | Trace | 4.60 | 3.60 |
| Whey | Trace | 4.79 | 1.00 |
| Whole Milk | 4.00 | 4.50 | 3.50 |
| 8% Cream | 8.00 | 4.40 | 3.40 |
| 10% Cream | 10.00 | 4.30 | 3.35 |
| 12% Cream | 12.00 | 4.20 | 3.30 |
| 16% Cream | 16.00 | 4.05 | 3.20 |
| 20% Cream | 20.00 | 3.90 | 3.10 |

the water, and the total whey proteid percentage calculated by taking one fifth of proteids obtained from the cream and from the fat-free milk and adding to it the percentage obtained from the whey. For instance, in the example given above under "Whey Cream Mixtures," the total proteids percentage obtained from the cream is 0.60, one fifth of which (0.12%) is whey proteids and four fifths (0.48%) caseinogen; the whey added 0.70% of whey proteids, so that the proteid percentage in the final mixture consists of

Whey proteids.....0.12 + 0.70, or 0.82
Caseinogen 0.48

The percentages of lime water in the table are all estimated at 5%, requiring one ounce of lime water to each twenty ounces of the mixture. Higher percentages of alkalinity can be easily obtained; for instance, for a 10% alkalinity use two ounces of lime water and one ounce less of boiled water; for 15% alkalinity use three ounces of lime water and two ounces less of boiled water.

Cereal solutions can be added in place of the boiled water in any combination without altering the percentage of fats and proteids, and the percentage of starch thus added may be accurately determined if the strength of the cereal solution is known.

For instance, if fourteen ounces of a 1% solution of barley water is added in place of the boiled water to a twenty-ounce mixture, the percentage of starch in the mixture is:

$$\frac{14 \times 1}{20} = 0.70\% \text{ starch.}$$

The table giving the rules for feeding is self-explanatory. It is taken from Rotch's "Pediatrics," 1901. As a matter of convenience to the physician, this table and one giving the formulæ on which the average healthy baby may be started are more for the benefit of the medical student than for the experienced practitioner, for each individual infant is a study by itself and varies greatly in its gastric capacity and in the strength of the food it can digest. It is not the purpose of this paper, however, to discuss the therapeutics of infant feeding, but merely to present a plan by which the working materials may be obtained.

An example may illustrate the facility with which a milk modification may be calculated by means of the above table.

It is desired to give a baby of seven months six feedings of six and one-half ounces in the course of twenty-four hours, the prescription calling for,—

| | | |
|------------|--------|---------------------------------|
| Fat | 4.00 % | (to be obtained with 10% cream) |
| Sugar | 7.00 % | |
| Proteids | 2.00 % | |
| Alkalinity | 5.00 % | |

that is, 39 ounces of Formula 26 is required; the calculation is made as a matter of convenience for 40 ounces. The process is as follows:

| | | |
|------------------|----------|-------------|
| Of 10% cream use | (8 × 2) | 16 ounces. |
| Of fat-free milk | (3½ × 2) | 7 ounces. |
| Of lime water | (1 × 2) | 2 ounces. |
| Of boiled water | (7½ × 2) | 15 ounces. |
| Of dry lactose | (2½ × 2) | ½ measures. |

The mother is then instructed where to buy the 10% cream and fat-free milk, or how to get both

by setting the milk as described above. She is told to add the dry sugar to a portion of the water and then to add sufficient water to make fifteen ounces. The resulting mixture is then divided into six tubes, each containing six and one-half ounces, and these are heated or not as the physician requires.

It may be desirable to prescribe a different percentage of sugar in the above mixtures than given in the table, for instance, in the above example, 6 instead of 7%. This is easily calculated by referring to the last column of the table, which gives the percentage of sugar contributed by the cream and fat-free milk, which is seen to be about 2.50%; the desired amount is 6%, therefore dry sugar must be added to the extent of 3.50%, which, by referring to the table marked "Whey Cream Mixtures," is seen to require 1¾ measures for a 20-ounce mixture or 3½ measures for a 40-ounce mixture.

There is a very slight error in the calculation of the sugar percentage which arises from the assumption (made for the sake of simplifying the card) that the percentage of sugar in a mixture of cream and fat-free milk is the same as that in whole milk.

The calculations are based on the use of fat-free milk instead of whole milk for a double reason,—first, as it simplifies the system greatly, inasmuch as the fat percentage of the whole milk can be discarded, and, secondly, because of economy in the preparation of the modification. Milk is now delivered in quart or pint jars. The cream must be removed as described above. If whole milk were added to obtain the higher proteid percentages, an extra pint or quart of milk must be bought in addition to that required for obtaining the cream, and this involves an unnecessary expenditure, for the fat-free milk is all that is required and is easily obtained. The writer much prefers the use of the siphon, with a clamp and a piece of rubber tubing at the lower end to the various dippers devised for removing the cream from the top.

FOOT-AND-MOUTH DISEASE.

BY LANGDON FROTHINGHAM, M.D.V.,

Austin Teaching Fellow in Bacteriology, Harvard Medical School.

FOOT-AND-MOUTH disease or epizootic aphtha is an acute, infectious, exanthematous disease, peculiar to cloven-footed animals, both wild and domestic. Although cattle, sheep and swine are more readily attacked, scarcely an outbreak occurs that the disease is not met with in other animals, such as horses, dogs, cats, occasionally poultry and sometimes man. It is the most contagious disease known among animals, and is transmitted from beast to beast as surely and as mysteriously as smallpox is conveyed from person to person. Unlike smallpox, however, foot-and-mouth disease is not so much dreaded on account of its mortality, which is very low, as it is because of the immense financial losses involved. This is better understood when it is realized that to successfully combat the disease the very strictest quarantine measures must be enforced. It is not sufficient to quarantine the sick animals alone, all their products must also be quarantined, from milk to manure. The greatest care must be taken that persons attending or even visiting sick animals do

not spread the disease. Add to this that private and public sales of animals must be prohibited, and all transportation of the same forbidden, and it is easy to realize that an outbreak may readily cost a dairyman his profits for an entire year or more, and that tradesmen, marketmen and transportation companies all join to swell the total financial loss, which may reach far into the millions.

HISTORY.

Epizootic aphtha has been known for several centuries, possibly for 2,000 years. Its home seems to have been Western Asia and Eastern Europe. But as civilization advanced and means of communication between nations became easier, the disease soon spread over Western Europe, where it has remained ever since, costing Germany, for instance, many millions of marks, annually. It reached England in some unknown way in 1839, and remained there with occasional interruptions till 1894. From 1885 till 1892 there was no foot-and-mouth disease in England, probably due to the fact that the importation of animals from infected countries was prohibited in 1884. Yet in spite of this it appeared again from Denmark in 1892, when isolation of deceased animals and strict quarantine again irradiated it in 1894. Since then I am told that there has been another slight outbreak, but I have seen no official record of it.

Foot-and-mouth disease reached this country through Canada in 1870, being brought there by two short-horn cows, imported from Liverpool. It soon appeared in some localities of New York State and in parts of New England, but seems not to have assumed a very virulent form, at least, it soon disappeared. In 1884 it was again brought to this country by some cattle imported from England to Portland, Me., and taken at once to the United States quarantine station. Some cattle passing over the same road shortly afterwards became infected, and the disease spread to a few herds in the neighborhood. It was soon suppressed, however, and since then we have had no foot-and-mouth disease in the United States until the present outbreak. How it entered is still unknown, possibly by means of infected fodder.

SYMPTOMS.

Cattle.—Generally from two to five days after exposure, sometimes as early as twenty-four hours and yet occasionally not for ten days, the animal shows dullness, lack of appetite, perhaps rumination is more or less disturbed and there is increased salivation. At this time the temperature may reach 107° F., and the mucous membrane of the mouth is seen to be somewhat reddened. In a few days, sometimes in only twenty-four hours, vesicles appear. These may be seen upon the muzzle, but they usually occur inside the lips and cheeks, upon the tongue, gums, or, in fact, in any part of the mouth. They vary in size from a pin's head to one-half inch or more in diameter. They are filled with a clear though sometimes slightly cloudy amber colored fluid, which lies immediately beneath the epithelium, the latter being simply elevated from the underlying tissue by the pressure of the fluid. This lymph contains the virus of the disease, and until the vesi-

cles burst the saliva is non-infectious. After rupture of the vesicles the epithelium soon strips off, leaving larger or smaller raw areas, erosions or shallow ulcers. The mouth is now exceedingly sensitive, it is very painful for the animal to eat, salivation becomes profuse and a peculiar smacking sound may be made with the lips. If complications do not arise, recovery rapidly takes place and is complete in from two to three weeks. The epithelium grows again, leaving no cicatrix, though sometimes a shallow depression remains.

When the feet are also involved the animal shows great uneasiness, constantly moving the legs and often kicking. The vesicles appear between the bifurcations of the hoof and at the coronet where the hair and the hoof meet, and also sometimes higher up on the leg. The feet may become so painful that pastured animals cannot walk about in quest of food, and housed animals prefer the recumbent position.

Not infrequently vesicles appear upon the teats and udder, and from here spread along the belly. This is more often observed in milch cows, the infection easily occurring through the hands of the milker. The milk from such animals is highly infectious. After rupture of the vesicles, shallow and painful-looking ulcers remain which quickly heal.

Other symptoms may be present, such as gastrointestinal disturbances, and occasionally bronchopneumonia from inhalation of saliva, particles of food, or shed epithelium.

The postmortem findings may vary through a wide range. There may be inflammation of the stomach and intestines with, perhaps, vesicles or shallow ulcers. Similar lesions may be found in the larynx, pharynx, trachea and bronchi, and perhaps aspiration pneumonia is present. There may be infarcts in the heart muscles and parenchymatous changes in the liver, kidneys and spleen.

Symptoms in other animals.—The lesions in sheep, goats and pigs are practically the same as those described above, though vesicles are more apt to occur upon the feet. Large vesicles are sometimes seen upon the snouts of pigs. In birds the eruptions appear in the mouth and upon the feet, legs and comb.

Man.—The disease has often been observed in man, especially where exposure has been great; for example, persons caring for sick animals, inmates of a cloister constantly drinking infected milk, in children feeding upon raw milk from diseased cows, etc. In 1834 Hertwig and two friends experimented upon themselves by drinking milk from a cow affected with foot-and-mouth disease. On the second day rather severe constitutional symptoms appeared, with fever, headache, nausea and ptialism, and soon thereafter eruptions in the mouth and upon the cheeks. Hertwig seems to have suffered more acutely than his companions, but the experiment was eminently successful. In 1890 a student in the Berlin Veterinary School appeared one day with vesicles upon his face and in his mouth. Investigation showed that his father had foot-and-mouth disease at his farm. Being prohibited from sending his dairy product to the market, he had generously sent his son a quantity of fine, fresh butter, which the youth, if we may

judge from the results, had thoroughly appreciated. Instances have been recorded in man where the vesicles were not confined to the mouth and face or to the fingers, as is more especially the case with milkers, but have extended over the neck, chest and arms. Vesicles of foot-and-mouth disease on cattle have been mistaken for cowpox, and the lymph used for vaccination, with unfortunate results. The disease is seldom fatal in man, except in the case of children, though Hulin reports a mortality of 23 out of 1,000 inhabitants of a small village.

TREATMENT.

The mortality in foot-and-mouth disease is so low, only 1 to 5 %, except in very young animals, where it reaches 50 to 80%, complete recovery generally taking place in from two to three weeks, that no treatment is necessary other than good care and prevention of complications. These are often very severe through secondary infection of the lesions after rupture of the vesicles. Borax and alum washes are used in the mouth, clean, dry bedding and antiseptic washes and dressings for the feet.

ETIOLOGY.

Although the cause of foot-and-mouth disease is assumed to be a bacterium, and in spite of the fact that the cause has been ascribed by a number of writers to some special organism, the true nature of the contagion still remains unknown. Many bacteriologists have sought to solve the problem, and some of the best-known and best-equipped investigators have constantly been at work on the subject for years. Such, for example, is Löffler, who has for the past few years been the head of a commission in Prussia especially established for the study of this disease. Another such commission was founded in Saxony, with Hecker in charge. Though these men have failed as yet to find the cause of foot-and-mouth disease, they have brought to light many interesting facts which must materially lessen the still difficult problem for other investigators.

In the first place experiments cannot be made upon our usual laboratory animals, such as guinea pigs and rabbits, since they react most uncertainly to inoculation with this disease. The virus exists, perhaps uncontaminated, in the lymph within the vesicles and before the vesicles appear in the blood. It is easily destroyed by heat, a temperature of 80° C. sufficing (Pasteurization therefore renders the milk harmless). It is not, however, easily killed by cold. Hecker has preserved the virulence in artificially infected straw for nearly two months. In closely packed manure he claims that the virus is destroyed by the heat there generated, and by the presence of other bacteria, in a week. He believes that he has demonstrated that the infectious material is not carried by moist or dry air. He has succeeded in inoculating animals in many different ways; for example, by injecting the virus into the stomach, intestines, rectum, mammae, trachea, by placing it upon mucous membrane of the nose, mouth and eyelids. He failed, however, to produce the disease by rubbing the virus upon the healthy skin, or by tying infected cotton pads on the clefts of the feet.

Flies, two hours after eating infected material, did not cause the disease when ingested by cattle; on the contrary, after laying them directly in the virus they did. The contaminated feathers of pigeons twelve hours after picking up food among infected chaff were fed to cows — and the disease was thus produced; hence Hecker concludes that birds may carry infection, and in this manner the sudden appearance of the disease at localities remote from infected regions may be explained.

The virus passes through the finest porcelain filters, so fine that they hold back the smallest known bacterium. Thus, by filtration of the lymph, it is assumed that a perfectly pure virus can be obtained; yet microscopic examination of the filtrate reveals nothing, and all known methods of cultivation with such virus have yielded no positive results. Hecker has inoculated collodium capsules filled with various media with the virus and then placed them in the bodies of susceptible animals. In some instances, the medium became slightly turbid after five days, but nothing was visible microscopically save minute refractive bodies, similar, says Hecker, to those described by Nocard as the cause of contagious pleuropneumonia of cattle. With the contents of such a capsule he *once* succeeded in infecting an animal. He wisely concludes that such changes in the medium were not necessarily induced by the presence of the cause of foot-and-mouth-disease.

IMMUNITY.

One of the chief objects of these commissions in Germany was to discover, if possible, an immunizing serum, a problem beset on all sides with astonishing difficulties. At the very outset we are met by the fact that the natural disease leaves an immunity of most uncertain duration. This may last at longest for a year, but generally for only a few months or even weeks. It has been repeatedly observed that a cow may have the natural disease two or even three times in the course of a single year. Another difficulty is that, laboratory animals not being available, other means must be found for testing the virulence of the virus, which it was found readily decreased by passing four or five times through adults; it also loses its strength if kept for any length of time in the ice chest. Notwithstanding these and many other barriers, Löffler has persisted untiringly. He found that the strength of the virus increased if passed through a hog. He therefore at first artificially maintained a maximum virus by inoculating from cow to pig, and pig to cow, in rotation. Later he found that it could be kept permanently at a high standard of virulence by passing from farrow to farrow. Yet even in these animals it occasionally becomes weakened and at other times so intensified that $\frac{1}{100}$ to $\frac{1}{1000}$ cubic centimeter kills the animals before vesicles have appeared. But these vesicles are of the greatest importance, for the lymph within contains the strongest virus, and the strongest is what is most desired. Moreover, up to 100 cubic centimeters of this lymph must be used before an immunizing serum is obtained, and not much lymph can be drawn from a single vesicle.

If a small quantity of this serum is added to virulent lymph, and this mixture injected into the blood of a cow, no disease results; but the animal

is not immune, for if brought in contact with diseased animals it also becomes diseased. Loeffler finds that it takes 240 cubic centimeters of the best serum to protect a 600-kilogram cow against the natural disease. Even this is not always successful, and when it is, immunity only lasts for fourteen days and is not lengthened by larger doses. Such immunity is no equivalent for the cost of making so much serum, especially as at the end of fourteen days the animal must be protected again in order to carry it beyond the probability of infection with the natural disease. This method has therefore been declared impracticable for cattle, and other means of protection are being sought, a number of which have been tested on more than 3,000 cows. But, as yet, Loeffler feels that nothing can be recommended.

With *sheep* and *swine* better results have been obtained. Only 5 to 20 cubic centimeters of serum (according to size of animal) is necessary to grant them an immunity which lasts three to four weeks. In practice this method has succeeded in several instances in limiting the disease to a few animals only of a herd; for these animals, therefore, it may be a useful agent to employ until some better method is discovered.

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CHLORIDE OF ETHYL AS A GENERAL ANESTHETIC.

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

CHLORIDE of ethyl (C_2H_5Cl) is a colorless liquid, with quite a strong aromatic odor and a sweetish taste resembling that of chloroform. Its density is 0.874 at $+5^\circ C.$ (Thénard), and 0.920 at $0^\circ C.$ (Pierce). The density of its vapor is 2.219. It boils at $10^\circ C.$, and consequently evaporates very rapidly at the ordinary atmospheric temperature, and must be preserved in hermetically sealed receptacles. It is extremely combustible, and burns with a flame bordered by green, and produces hydrochloric acid.

It is formed in several manners: Firstly, by the action of hydrochloric acid on alcohol ($C_2H_5OH + HCl = C_2H_5Cl + H_2O$). Secondly, by the action of perchloride of phosphorus on alcohol ($C_2H_5OH + PCl_3Cl_2 = HCl + PCl_3OC_2H_5Cl$). Thirdly, from the action of a large number of chlorides on alcohol, and under these circumstances the chloride of ethyl is always mixed with the oxide of ethyl. Fourthly, by the action of chlorine on the iodide of ethyl, in which case there is simply a displacement of the iodine by the chlorine. Fifthly, by the action of hydrochloric acid on the acetate of ethyl, acetic acid becoming free. And, sixthly, by the action of chlorine on the hydrate of ethyl.

Chlorine has no action on chloride of ethyl in

darkness, and in diffused light only acts on it very slowly. If the operation is begun in the sunlight and continued in diffused light and ended again in sunlight, the following series of products are obtained, namely: Chlorinated chloride of ethyl ($C_2H_4Cl_2$), bichlorinated chloride of ethyl ($C_2H_3Cl_3$), trichlorinated chloride of ethyl ($C_2H_2Cl_4$), quadrichlorinated chloride of ethyl (C_2HCl_5) and, finally, perchlorinated chloride of ethyl (C_2Cl_6) results.

These chlorine derivatives of the chloride of ethyl have been proposed as anesthetics, and in 1848 Nunnely tried the chlorinated chloride of ethyl as a general anesthetic. It was again employed by Langebeck, in 1870, and about ten years later it was used by Newman, Hodges and Reichert. These authorities mentioned the rapidity with which narcosis was obtained, the almost immediate return to consciousness, and the less disagreeable effects than those noticed after the use of chloroform. They also remarked that the circulation was far less depressed. Out of a total of 1,867 cases, Newman had only one death from syncope, and autopsy showed a dilated heart with fatty degeneration. Reichert believes that this anesthetic has a direct depressing action on the heart, which is still manifest after section of the pneumogastric nerve.

The isomers of chlorinated chloride of ethyl, the chloride of ethylene, the chloride of ethylidene have been employed by Koehler, Soulier and Brian. Two cases of death from these agents have been reported.

After experimental work on animals, Dubois and Panas demonstrated the bad effects of chlorinated chloride of ethyl on the cornea. Several hours after the animal had regained consciousness, an opacity of the cornea was found, occurring after the elimination of the anesthetic, and was due to a serous infiltration of the parenchyma of Descemet's membrane. The edema of the cornea, they say, is due to the destruction of this membrane, which alone protects the cornea against invasion from the vitreous humor. This opacity finally disappears, the process beginning at the periphery towards the center, and is often accompanied by hyperæmia of the conjunctiva and photophobia. It has been thought advisable to mention these experiments in order to show the difference existing between chlorinated chloride of ethyl and chloride of ethyl, because during the elimination of the latter product there is complete absence of any disturbance of the eye.

Wood and Cerna came to the following results in their experiments with chloride of ethyl on the rabbit: An increase in the respiratory movements and a decrease in the arterial pressure during narcosis, with an immediate return to the normal state as soon as the anesthetic was stopped. In the first place, the pulsations diminish in frequency and then become increased until the end of the experiment.

Ruegg of Basle found that there was a dilatation of the blood vessels in the dog when the animal was submitted to the inhalation of diluted vapors of the chloride of ethyl, but when they were given in a concentrated form the heart beats became more frequent and the blood vessels contracted.

The experiments of Koenig were carried on with dogs, rabbits and monkeys. The rapidity with which narcosis is obtained depends on the amount of dilution of chloride of ethyl with air. A mixture of one part of the anesthetic and ten parts of air produces narcosis in from six to seven minutes; in equal parts narcosis is complete in a few seconds and lasts for several minutes without renewing the anesthetic. In rabbits the phenomena of motor excitability during anesthesia were more pronounced than in other animals. Rhythmical convulsions, marked movements of deglutition, nystagmus, exophthalmia and frequently abundant salivation were observed. The respiration was also accelerated. In dogs there was a slight decrease in the arterial pressure, and in one experiment there was a decrease and irregularity in the heart beats which increased or diminished with the amount of dilution or concentration of the anesthetic; but all these symptoms disappeared after the pneumogastrics were cut.

When chloride of ethyl was used without dilution with air, the arterial pressure became lowered in a regular fashion quite rapidly and becoming more and more accentuated until respiration and heart beats ceased altogether.

In the monkey the narcosis was very calm, and a depression of arterial tension was noted, due to excitation of the pneumogastric of central origin, since it disappeared after the vagus had been cut. After section the arterial pressure increased and remained normal until the end of the experiment. Koenig also noted that the pneumogastric nerves did not respond to irritation when the narcosis was complete, and no matter how many times the anesthetic was given in short intervals to the same animal the return of consciousness and reflex action were always rapid.

Koenig's experiments on the arterial depression are quite in accord with the results published by Malherbe and Roubinovich, which were observed in man by means of Potain's sphygmomanometer. In the twenty-four cases observed by these writers, arterial depression occurred in twenty-two, and, generally speaking, the number of pulse beats followed quite exactly the modifications in the degree of arterial tension, diminishing during sleep and increasing and finally attaining the normal number when consciousness had returned. In all their cases they noticed intermitting in the beats. Occasionally the urine, which was normal before the administration of the anesthetic, contained traces of albumen and bile pigments when the patient regained consciousness, which would indicate that the liver and renal cells participate in the ephemeral intoxication produced by the chloride of ethyl in a few cases; but these symptoms disappeared in a few days.

Up to within the last few years chloride of ethyl has been more especially known as a local anesthetic, and has been employed in dental and minor surgery. On account of its extreme volatility it produces an intense cold and a superficial freezing of the tissues, quite sufficient for momentarily abolishing the sensibility. In 1895 a dentist of Gothenburg, by name Carlson, unwittingly obtained a general narcosis in a patient on whom he had frozen the gum with the chloride of ethyl.

The following year, Thiesing of Nidlesheim published the results of five general anesthetics with this drug. The narcotic effects of this product were studied scientifically for the first time by Ludwig and Lotheissen in von Hacker's clinic at the University of Innsbruck in 1897 and 1898. The patients anesthetized by Ludwig varied in age from two to sixty-four years. This authority believes that muscular resolution is never complete when this agent is used, but, on the other hand, he never had any accident. The pulse and respiration were increased in the beginning on account of a psychical action and then their frequency returned to the normal standard.

Wiesmer, a surgeon in the Austrian army, has come to the same results in four hundred cases. Muscular resolution is, according to him, never complete, but he found it quiet sufficient for the reduction of old dislocations and to bring a fractured patella into apposition. Von Hacker has employed this drug without any bad result in patients afflicted with fatty degeneration of the heart, various respiratory affections, and in those weakened by abundant hemorrhages. The operations lasted from four to fifty minutes, and in the twenty-two cases the patients varied in age from seventeen to seventy-six years. Koenig of Berne, to whose experiments published in 1900 I have already referred, also records forty general narcoses, thirty-one of which were continued by ether. Among other surgeons who have resorted to the use of this excellent anesthetic may be mentioned Ware, Hoelsted, Stockun, Tchernig, Hafner, Severeano, Verneuil, Casdie, Seitz, Speier and Jacobs. Pollosson of Lyons has employed this drug as a general anesthetic in adult patients, and has lauded its advantages, and Nové-Josserand has employed it currently in children either alone or as a mixed anesthesia, continuing the narcosis with ether. It has been largely used by Rolland and Clerc of Bordeaux, by Derocque of Rouen, and, in Chaput's opinion, chloride of ethyl will take the place of chloroform or ether in all minor operative work.

Malherbe has published the results of one hundred and seventy narcoses with chloride of ethyl. There were one hundred and forty anesthetics with this drug alone for various minor operations on the upper respiratory tract, such as the removal of adenoids and tonsils, the removal of cysts, antrotomy, etc. Nearly all these anesthetics were accomplished in Rose's position, the ages of the patients varying from two months to forty years. There were thirty mixed anesthetics, that is to say, chloride of ethyl followed by chloroform, both in children and adults, for various operations, such as abdominal operations, resections of bones, etc.

In giving chloride of ethyl Malherbe employed a compress, and the conclusions that he arrives at are as follows:

- (1) Small quantities of chloride of ethyl, from two to four grams, are sufficient for producing a narcosis lasting four minutes, and can be renewed indefinitely.
- (2) Rapidity of the anesthesia (from twenty-five to forty seconds).
- (3) Practically no congestion of the face or conjunctiva; never any cyanosis.
- (4) The period of excitement is reduced to a few

defensive movements, and these only in neurotic or alcoholic patients.

(5) Contraction in the beginning rarely exists and immediately disappears; no trismus, no salivation. Occasionally emission of urine.

(6) The age of the patient is indifferent, and no disturbing symptom occurs.

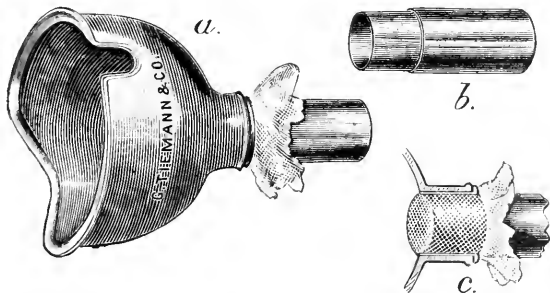
(7) Vomiting after administration of chloride of ethyl alone does not occur; vomiting occurring after a mixed anesthesia is not frequent, and if present rapidly subsides.

(8) Rapid return to consciousness.

Malherbe insists on the simplicity of the method he employs, and on the absolute safety and rapidity of the narcosis. From personal experience with this agent I can agree with the above conclusions in most respects. Reboul is very enthusiastic over anesthesia by chloride of ethyl, which he has employed in nearly two hundred cases, and Guinard uses it currently preparatory to the administration of chloroform, and this mixed anesthesia is also employed by quite a number of other Parisian surgeons.

The advantages of narcosis with this product in obstetrics have been placed in evidence by Lepage and Le Lourier. Ten cubic centimeters of the product are poured upon a compress folded in the form of a cone and covered with oiled silk, and this produces a narcosis of from three to four minutes, which is quite sufficient for the application of the forceps in the pelvic excavation, perineal sutures, or for an examination of narrow pelves. If during the operation a longer anesthesia is desired, chloroform may be substituted for the chloride of ethyl.

There are two methods of giving chloride of ethyl, one by means of a compress saturated with the product, and the other with a mask manufactured expressly for this purpose. The French manufacturers of the chloride of ethyl, or as it is known in the market, "Kelene," have introduced an appliance which, although useful, is very expensive. The face piece can be blown up to any desired dimensions, and so fit any sized person. On top the cone is furnished with two valves, one through which air saturated with the anesthetic arrives during inspiration, the other giving exit to expired air. At each expiration the latter valve rises up, and is an excellent index as to the regularity of breathing.



We have used, however, a cone devised by Dr. M. W. Ware and manufactured by Tiemann & Co. of New York, which is very low in price and has given us in every instance most satisfactory results. It is an oval rubber cone, on the top of which is a hole about the diameter of a twenty-five-cent piece. Into this hole fits a metallic tube about two inches in length, through which the chloride of ethyl is

sprayed directly into the cone, three layers of gauze having been placed over the end of the tube which is inserted into the mask to prevent the anesthetic from coming into direct contact with the patient's skin. The cut here given shows the simplicity of the instrument better than words can express it.

There is one recommendation that we would make, namely, that it is not an indifferent matter to employ for general anesthesia any kind of product found on the market intended for local anesthesia. The products known under the name of "Kelene" and "Antidolorin" are very pure, and the manufacturers now put them up in graduated tubes, especially for general anesthetic purposes. The first named is a French make, while the second is an American product which is quite equal to the other. A third make, known by the name of "Anodynone," I have recently tried and find most satisfactory.

The mask is first placed on the patient's face and examined to see if it hermetically closes in around the nose, mouth and chin of the patient. The patient is then allowed to breathe naturally for an instant, and when the respiration has become regular and quiet the chloride of ethyl is sprayed down the tube of the apparatus. The patient is then asked to take a few long, deep inspirations, and in about thirty to forty seconds complete insensibility is obtained.

If, on the other hand, a compress is preferred, it is better to make it in the following way on account of the extreme volatility of the drug. Two thicknesses of gauze are folded over a thin layer of absorbent cotton, and over this on one side a piece of oiled silk is stitched on. Then the form of a cone is given to it and the chloride of ethyl is poured on to it in sufficient quantity. The cone is then hermetically applied over the nose and chin, while the hands are placed on the sides in order to prevent the entrance of air from underneath. The patient is then requested to breathe deeply, and in about fifteen inspirations anesthesia is obtained. It would seem from personal experience that the administration with the compress would be longer and much more difficult than with a rubber mask, and that more time would be consumed in getting the patient under the influence of the drug.

The doses of chloride of ethyl which have been employed to obtain general anesthesia vary from two to five cubic centimeters. These small doses we have not employed, and from the records of the cases given at the end of this paper, it will be found that ten cubic centimeters is the usual amount required. This, as is seen, is a much larger dose than that usually given by other surgeons, but if we give enough chloride of ethyl the narcosis is very much more rapidly obtained and its duration will be considerably longer. In one case, that of a young lady of twenty-five, 38 cc. were given before narcosis could be obtained, but the patient did not struggle and finally became unconscious. It will also be noted that the larger number of our cases has been major operations, and that consequently the anesthesia has been continued with ether. It is evident that chloride of ethyl can never completely replace either ether or chloroform, but nevertheless its advantages in the beginning of

the narcosis are so great that its use will without doubt become general when it is better known.

Although our personal experience with this anesthetic is as yet comparatively small, I think that it may be said, without concluding in a definite manner, that chloride of ethyl may be given to subjects of any age, principally at the two extremes of life, at a time when the organism does not as yet present, or, on the other hand, has lost that vitality which is requisite to support the shock of an anesthetic, be it either chloroform or ether. In examinations requiring a general anesthetic, there is nothing that can compare with it, and for short operations, such as arthrotomy, the opening of an abscess, deep cauterizations, curettement of the uterus, the reduction of certain dislocations and fractures, etc., it is ideal. General surgery is not alone to profit by the innocuity of chloride of ethyl, and throat specialists will find it of great value.

On account of the facility with which it is given, and its harmlessness, an experienced anesthetist is not required, and it may be given by any careful physician. These are the principal advantages which this anesthetic presents for operations of short duration, not lasting over four or five minutes. When used as a preliminary to the administration of ether, it avoids the period of excitement which is so disagreeable, and on account of its pleasant odor and non-stifling effect the most nervous patient will take it with ease. Besides this, the amount of ether used afterwards may be safely put at one-third or one-half less than would have been required had the anesthesia been entirely with ether. The transition from one anesthetic to the other is quite insensible. There is no doubt in my mind but that operative shock has been greatly diminished in the major operations I have done when chloride ethyl has been used as a preliminary anesthetic, and that nausea has been absent in almost all of them when consciousness has returned.

Such are the principal indications for the use of chloride of ethyl, and as to the contraindications, it may be said that up to the time of writing none have been given. The method is as yet too young for us to affirm that such will always be the case, and for the time we must wait for a greater experience to give sanction to the statements that we advance at this time. We have never seen any cyanosis, and the return to consciousness takes place with regularity and quiet.

The following list gives the nature of the operation, the age and the condition of some of the patients to whom this anesthetic has been given from July 10 to Oct. 10, 1902. My thanks are particularly due to Dr. Eugene E. Everett, who has administered the anesthetic in the greater number of the cases reported below.

CASE I. Male, thirty-two years old. Suppurating gonorrheal arthritis of the left knee. Arthrotomy. Dose employed, 17 cc. Complete narcosis in 35 seconds, lasting seven minutes. Return to consciousness quiet and rapid.

CASE II. Female, thirty-seven years old. Anal fistula. Incision and cauterization. Dose employed, 14 cc. Narcosis complete in 30 seconds, lasting six minutes. Rapid return to consciousness. No nausea.

CASE III. Female, twenty-five years old. Metritis *post abortum*. Curettement. Dose employed, 15 cc. Complete narcosis in 45 seconds. Duration of narcosis

seven minutes. Return to consciousness rapid. No nausea.

CASE IV. Male, fifty years of age. Dislocation of the shoulder. Reduction. Mitral insufficiency. Dose employed, 15 cc. Duration of narcosis five minutes. Consciousness rapidly regained. No nausea.

CASE V. Female, thirty-seven years old. Bilateral sclero-cystic ovaries, endometritis. Curettement, posterior colpotomy, and resection of ovaries. Dose employed 8 cc., anesthesia continued with ether. Duration of operation 35 minutes. Amount of ether given, 45 cc. No nausea following return of consciousness.

CASE VI. Female, thirteen years old. Removal of both tonsils and adenoids. Dose employed, 6 cc. Anesthesia obtained in 75 seconds. Struggling of short duration. Narcosis continued with ether, the total amount being 25 cc. Return to consciousness immediate. No nausea.

In this case the amount of chloride of ethyl given was not quite sufficient to obtain perfect unconsciousness.

CASE VII. Female, twenty-six years old. Double suppurating salpingitis. Very septic. Abdominal extirpation. Amount of ethyl chloride used, 12 cc. Narcosis continued with ether. Duration of operation, one hour. No nausea.

CASE VIII. Male, thirty-two years old. Gangrene of testicle, due to torsion of spermatic cord. Orchidectomy. Amount of ethyl chloride used, 10 cc. Narcosis continued with ether. No nausea.

CASE IX. Female, thirty years old. Movable kidney. Nephropexy. Amount of ethyl chloride, 12 cc. Narcosis continued with ether. No nausea.

CASE X. Female, twenty-eight years old. Exophthalmic goitre. Strumectomy of right lobe. Chloride of ethyl, 13 cc. Narcosis continued with ether. No nausea.

CASE XI. Female, forty-eight years of age. Carcinoma of the breast. Amputation. Although the patient was very fat, weighing about 275 pounds, 15 cc. of ethyl chloride were sufficient to produce complete narcosis in 45 seconds. Narcosis continued with ether.

CASE XII. Female, twenty-eight years old. Tuberculosis of the bladder. Suprapubic cystotomy. Amount of ethyl chloride employed, 15 cc. Narcosis continued with ether. No nausea.

CASE XIII. Male, twenty-seven years old. Varicocele. Resection of the veins and scrotum. Amount of ethyl chloride, 10 cc. Complete narcosis in 40 seconds. Continued with ether. No nausea.

CASE XIV. Male, thirty-two years old. Stricture of the urethra. Internal urethrotomy. About 10 cc. of ethyl chloride produced complete relaxation in one minute. Ether. No nausea.

CASE XV. Male, thirty-five years old. Stricture of the urethra. Internal urethrotomy. Ethyl chloride, 10 cc. Relaxation complete in 65 seconds. No resistance. Ether. No nausea.

CASE XVI. Female, twenty-seven years old. Ovarian cyst and pyosalpinx. Laparotomy. Ethyl chloride, 12 cc. Incomplete relaxation in 65 seconds. No resistance. Ether. No nausea.

CASE XVII. Male, fifty-five years old. Epispadias. Plastic operation. Ethyl chloride 10 cc. Complete relaxation in 58 seconds. No resistance. Ether. No nausea.

CASE XVIII. Female, twenty-one years old. Appendectomy. Ethyl chloride, 11 cc. Complete relaxation in 62 seconds. No resistance. Ether. Very little nausea.

CASE XIX. Female, fifty years old. Malignant tumor of the ovary. Laparotomy. Ethyl chloride, 10 cc. Complete relaxation in 62 seconds. No resistance. Ether. Very little nausea.

CASE XX. Male, sixty years old. Carcinoma ventriculi. Exploratory incision. Ethyl chloride, 13 cc. Complete relaxation in 64 seconds. No resistance. Ether. No nausea.

CASE XXI. Female, forty years old. Hemorrhagic metritis. Vaginal hysterectomy. Ethyl chloride, 15 cc. Complete relaxation in 68 seconds. No resistance. Ether. No nausea.

CASE XXII. Male, twenty-one years old. Appendicular abscess. Laparotomy. Ethyl chloride, 12 cc.

Complete relaxation in 30 seconds. No resistance. Ether. No nausea.

CASE XXIII. Female, thirty-two years old. Bilateral laceration of the cervix, retroverted uterus, sclerocystic ovary, prolapsed. Laparotomy. Ethyl chloride, 12 cc. Incomplete relaxation in 75 seconds. No resistance. Ether. No nausea.

CASE XXIV. Female, seven years old. Tonsils and adenoids. Ethyl chloride, 5 cc. Complete narcosis in 15 seconds. Ether. No nausea.

CASE XXV. Female, thirty-five years old. Curettage. Ethyl chloride, 8 cc. Incomplete relaxation in 58 seconds. No resistance. Ether. No nausea.

CASE XXVI. Female, thirty-five years old. Pregnancy, complicated by fibroid tumors. Conservative Cesarean section and myomectomy. Ethyl chloride, 10 cc. Complete relaxation in 65 seconds. No resistance. Ether. No nausea.

CASE XXVII. Female, fifty-four years old. Excision of axillary glands. Ethyl chloride, 10 cc. Complete relaxation in 65 seconds without resistance. Ether. No nausea.

CASE XXVIII. Female, thirty-five years old. Suppurating mastitis. Excision of abscess. Ethyl chloride, 12 cc. Complete relaxation accompanied by some resistance in 75 seconds. Ether. No nausea.

CASE XXIX. Female, forty-five years old. Adenoma of thyroid gland. Strumectomy of right lobe. Ethyl chloride, 10 cc. Complete relaxation without resistance in 75 seconds. Ether. Slight nausea.

CASE XXX. Female, forty-three years old. Floating body in knee joint. Arthrotomy. Ethyl chloride, 15 cc. Complete relaxation without resistance in 70 seconds. Ether. Very little nausea.

CASE XXXI. Male, five years old. Unconsolidated fracture of the humerus. Bone suture. Ethyl chloride, 8 cc. Narcosis complete in 55 seconds, without resistance. Ether. No nausea.

CASE XXXII. Male, two years old. Phymosis. Circumcision. Ethyl chloride, 6 cc. Complete relaxation without resistance in 60 seconds. Ether. Immediate return to consciousness without nausea.

CASE XXXIII. Female, thirty-two years old. Appendectomy. Ethyl chloride, 12 cc. Complete relaxation without resistance in 70 seconds. Ether. Very little nausea.

CASE XXXIV. Female, twenty-eight years old. Septic miscarriage. Curettage. Ethyl chloride, 9 cc. Complete relaxation without resistance in 65 seconds. Ether. No nausea.

CASE XXXV. Female, twenty-six years old. Double pus tubes and vulvo-vaginal abscess. Excision of vulvo-vaginal glands, and laparotomy. Chloride of ethyl, 15 cc. Complete relaxation without resistance in 70 seconds. Ether. Slight nausea.

CASE XXXVI. Female, twenty-four years old. Curettage. Ethyl chloride, 20 cc. Incomplete relaxation with slight resistance in 90 seconds. Ether. No nausea.

CASE XXXVII. Female, forty years old. Laparotomy. Ethyl chloride, 20 cc. Incomplete relaxation with considerable resistance in 90 seconds. Ether. No nausea.

CASE XXXVIII. Male, thirty years old. Appendectomy. Ethyl chloride, 15 cc. Complete relaxation without resistance in two minutes. Ether. No nausea.

CASE XXXIX. Female, thirty-three years old. Cystoscopy. Ethyl chloride, 20 cc. Complete relaxation with slight resistance in two minutes. Ether. No nausea.

CASE XL. Female, thirty-five years old. Laparotomy. Ethyl chloride, 15 cc. Complete relaxation without resistance in 90 seconds. Ether. No nausea.

CASE XLI. Female, fifty years old. Excision of carcinomatous lymphatics. Ethyl chloride, 12 cc. Nervous crying without resistance, narcosis in 70 seconds. Ether. Very little nausea.

CASE XLII. Female, twenty-eight years old. Double ingrowing toe nail. Ethyl chloride, 20 cc. Complete relaxation without resistance in two minutes. Ether. No nausea. This patient had been operated on twice before, ether having been used at each operation, which was followed by nausea, lasting twenty-four hours each time.

CASE XLIII. Male, two years old. Phymosis. Circumcision. Ethyl chloride, 9 cc. Complete relaxation with crying and resistance in 90 seconds. Ether. No nausea.

CASE XLIV. Female, thirty years old. Laparotomy. Ethyl chloride, 13 cc. Complete relaxation without resistance in 70 seconds. Ether. No nausea.

Up to Dec. 30, 1902, I have had ethyl chloride administered preliminary to ether in 153 cases without the slightest accident, and in each case with much comfort for both patient and operator.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D.

SURGICAL INTERVENTION IN CASES OF MEDICAL NEPHRITIS. (A. POUSSON.)

POUSSON¹ reviews the above subject exhaustively and adds certain personal experiences of his own to the cases already published in the literature.

Surgical intervention in cases of nephritis is considered with reference to two distinct classes of disease, — first, acute toxic infections, and, second, the subacute or chronic form of nephritis or true Bright's disease. Of the former, Pousson has had four cases. In two of them nephrotomy, and in two nephrectomy was performed; three of the patients recovered and one died. In one case the infection appeared in the course of an attack of grip. Two cases were colon bacillus infections, and one was a fresh infection of an old pyelo-nephritis.

Nephrotomy is given preference as the operation to be performed in the cases of acute infection, such as those just referred to.

Pousson's experience of surgical intervention in cases of Bright's disease is limited to six cases, in which eight operations were performed. Two of these patients died, nephrotomy was performed in all the cases, in one it was repeated on one side after having been at first done on the other. Nephrectomy was performed subsequent to nephrotomy in one case. The cases are exhaustively detailed and careful examinations of the urines are included in the articles. In four of the cases of diffuse chronic nephritis, there was marked amelioration of the symptoms, in one of them to all appearance a cure. The writer summarizes the results hitherto published, and discusses the subject from various points of view. Pousson reviews the cases hitherto published, beginning with those of the pioneer of the treatment, Edebohls of New York, who reported in the New York Medical Record, Dec. 21, 1901, eighteen cases in which surgical operation upon the kidneys, which were the seat of chronic interstitial nephritis, resulted favorably upon that condition. In all but the last two of these nephropexy was performed on one or both kidneys. In these the capsule of the kidney was excised.

Edebohls calls attention to the fact that Bright's disease may be unilateral. He gives the technique of decapsulation, and the results of the operations performed by him. In all the nephropexies

¹ Annales des Maladies des Organes Genito-Uriinaires. Nos. 5, 6 and 7. May, June and July, 1902.

there was extensive stripping off of the capsule.

Edebohl also explains what he believes to be the *rationale* of the benefit or cure resulting from these operations.

SEGREGATION OF THE URINE IN THE BLADDER. A NEW INSTRUMENT FOR THE PURPOSE OF COLLECTING IN THE BLADDER THE URINE OF EACH KIDNEY, INDEPENDENTLY. (DR. F. CATHELIN.²)

This instrument is a catheter of No. 25 (French scale), enclosing a flattened tube, along which slides a stylet, graduated at its proximal end and having at its vesical end a fine steel spring which is capable of folding flat so as to be readily passed through the median tube, and which when pushed beyond the extremity of the beak of the instrument, which lies within the bladder, expands to an elliptical form. Within the ellipse is a thin membrane of rubber, which serves to divide the bladder, from its floor upward, into two chambers, and which does not allow the urine which stands on one side of it to mingle with that which is on the other. There are also two lateral tubes within the shaft of the instrument, through each of which small catheters may be passed, which issue one on either side of the membrane which separates the urines coming from the two kidneys, and thus allows the tapping of the two reservoirs, into which they enter separately. At the outer end of the instrument these catheters are conducted into little flasks which collect the urines coming from the two chambers of the bladder, made by the membrane already described. The outer part of the shaft is arranged to be supported by a rest which does away with the necessity of holding it, which has been one of the defects of other forms of instruments devised for this purpose.

SEPARATION OF THE URINE FROM THE TWO KIDNEYS.

Luis,³ in the fifth session of the French Society of the Genito-Urinary Surgery, recalls the three instruments already in use for the segregation of urine; namely, those of Neumann, Harris and Downes, and presents a fourth instrument of his own invention. It has no rectal portion like the Harris instrument already described in a previous article. It is shaped like a lithotrite, and has a caliber of about twenty-one, French scale. It is made up of two catheters bound together by a metal diaphragm, which is covered with rubber. The rubber can be raised into a partition or bridge between the two catheters. The instrument can be easily manipulated and is readily sterilized.

CONCERNING THE ELIMINATION BY THE KIDNEYS OF BACTERIA INJECTED INTO THE ARTERIAL BLOOD CURRENT. (P. ASCH.)

Asch⁴ injected into the aorta, in the neighborhood of the renal artery, cultures of pyocyanus and pyogenes aureus, and subsequently examined the urine from the bladders of these animals. He found: First, that within from twelve to twenty-four hours after the injection, these bacteria appeared in the urine, and that albumen was always, and blood sometimes, associated with their appearance, sec-

ond, that the bacteria were still demonstrable in the urine after they had ceased to exist in the blood; third, that severe lesions took place in the kidneys, differing according to the kind of bacteria injected.

He concludes that the *normal* kidneys do not eliminate these bacteria, and that if they are found in the urine, their presence indicates disease of some part of the urinary system.

REMOVAL OF THE BLADDER AND PROSTATE FOR CARCINOMA. (MALCOLM L. HARRIS.)

Harris⁵ reports the case of a patient fifty-three years old, upon whom he operated Oct. 5, 1901, for the above condition, by a longitudinal suprapubic incision, and freeing the bladder from the peritoneum on either side, by blunt dissection as far as the urethra, dividing it transversely at this point, turning it upward, dissecting it from the rectum, and dividing it across near the summit. A portion of the top of the bladder, about six centimeters in diameter, was retained. Small slits were made in this portion, through which the ends of the ureters were drawn and sutured with fine catgut. This remaining portion of the bladder was then stitched by its edges to the inner border of the outer wound, except at the lower part. The cavity of the pelvis was packed with gauze. Subsequently the suprapubic wound was drawn together and united over the attached portion of the bladder referred to, and a catheter was passed through the urethra, and all the urine was drawn by this means, it being retained permanently.

Six weeks later he contracted pneumonia, from which he died. The patient had previous to this been up and about.

BILATERAL CYSTIC KIDNEY.

Osler⁶ reports two cases of this rarely diagnosed condition and speaks of these characteristic symptoms:

- (1) Presence of bilateral tumors in the flanks.
- (2) The changes in the heart and circulation are those of interstitial nephritis.
- (3) The urine is that of interstitial nephritis.
- (4) Hematuria.

AN AID TO THE DISCOVERY OF TUBERCLE BACILLI IN THE URINE. (BRYSON.)

The writer⁷ calls attention to the fact that "the bladder may be utilized as a collecting reservoir for entrapping and holding large numbers of tubercle bacilli when in the course of a tuberculous disease these micro-organisms enter the urine stream." He presents a series of observations in which he shows that while the tidal urine, that is, the urine which is voided naturally, may contain very few bacilli, the residual urine drawn by catheter from the same case at the same time may contain large numbers. The article is carefully presented and is illustrated by a number of micro-photographs of residual urines containing large numbers of bacilli.

TUBERCULOSIS OF THE PROSTATE.

Crandon⁸ reports a case in which a primary focus of tuberculosis was found at autopsy in one lobe of

² Annales des Maladies des Organes Genito Urinaires. No. 7, July, 1902.

³ Annales des Maladies des Organes Genito-Urinaires, 1901, p. 1377.

⁴ Centralblatt, f. d. Krankheiten d. Harn und Sexual Organe. Bd. xiii, H. 5 u. 6.

⁵ Annals of Surgery. October, 1902, vol. XXXVI, No. 4, p. 509.

⁶ Am. Med., March 22, 1902, p. 463.

⁷ Journ. of Cu. and Gen.-Urin. Dis., September, 1902.

⁸ Boston Med. and Surg. Journ., July 3, 1902.

the prostate. All other portions of the genito-urinary tract, and, in fact, all other portions of the body, were free from tuberculous invasion. The case is therefore one of a very few, if not the only recorded case in which tuberculosis was present in the prostate and was found nowhere else in the body.

NEW OPERATIVE METHODS FOR THE REMOVAL OF THE PROSTATE GLAND. (WISHARD.)

The writer⁹ has devised an instrument through which a cautery can be applied to the prostate. The instrument consists of a straight tube forty-two millimeters in circumference and six and one-half inches long, with an oblique opening at its distal end. The tube carries an incandescent lamp which is exposed through a small window at the distal end. On the opposite side of the tube is a groove for the insertion of the cautery. The tube is inserted through a perineal opening made for the purpose, and a variety of cautery knives can be used through it with air distention of the bladder. Wishard claims the great advantage which air distention and direct inspection of the parts to be operated upon gives. He reports four cases.

E. Wylls Andrews¹⁰ describes an operation by which the prostate is approached from below the pubic arch through an incision eight to ten centimeters in length, extending from the symphysis parallel to the right or the left ramus of the pubic bone, with the corresponding spermatic cord drawn well forward. His conclusions are:

(1) The narrowness of the male pelvic outlet becomes surgically important with the overgrown prostate.

(2) Overgrowth of the prostate does not cause obstruction unless there is also outside pressure.

(3) This may come from the ligaments and muscles without the organ actually pressing upon the ischia, or from bony pressure.

(4) Relieving the prostate from the fixed state behind the pubis allows it to expand and cures the obstruction.

(5) This can be done best by anterior incision, and should be accompanied by a cutting of the prostatic ring and removing a segment extraurethraly.

(6) Incidentally the change of position, lowering the bladder outlet, does away with the retroprostatic pouch and greatly assists natural drainage.

(7) The separation of the prostatic and urethral ligaments from the pubis and the weakening of the urogenital diaphragm is not to be avoided, but sought.

A NEW ELECTRIC CENTRIFUGE.

J. L. Boehm¹¹ describes a new centrifuge which is adapted either to a direct and alternating, or a storage-battery current, and is operated by simply inserting a plug into an incandescent lamp holder or socket.

A NEW SILVER SALT. ARGYROL¹² AND SWINEBURNE.¹³

Both describe their experiences with this new irrigating solution. Both state that it has marked

⁹ *Journal of Cutaneous and Genito-Urinary Diseases*, for June, 1902.

¹⁰ *Journ. Am. Med. Assn.*, Oct. 18, 1902.

¹¹ *St. Louis Med. Rev.*, Sept. 27, 1902.

¹² *Christian Med. Rec.*, Sept. 27, 1902.

¹³ *Med. Rec.*, Oct. 11, 1902.

germicidal powers, that it is not in the least irritating, and that it can be used as frequently and in as strong solution as is desired or necessary, without discomfort. Five per cent solutions can be used with practical impunity.

A NEW METHOD OF FINDING THE URETHRA IN EXTERNAL URETHROTOMY. (C. L. GIBSON.)

The writer¹⁴ in experimenting on the cadaver has found that traction on the prostate downward and backward will render the deep urethra taut and easily recognizable, and will give a ready entrance into it in cases of stricture where no guide can be introduced. He accomplishes this traction by transfixing the prostate laterally from the rectum by means of a sharp hook. The traction is made by an assistant pulling on this hook, and then the perineal incision it made down to the taut and easily felt urethra.

STRICTURE OF THE URETER.

Kelly¹⁵ describes and classifies such strictures, speaks briefly of their symptoms and their diagnosis aided by palpation, inspection and catheterization, and reports several cases illustrating the treatment of such conditions by dilatation, by catheterization and lavage, by freeing the ureter from adhesions, by extirpation of the whole diseased tract in a case of tuberculosis, by transplantation, and, finally, by division of the stricture itself.

"STAMMERING" BLADDER.

Fenwick¹⁶ insists that this term should be applied only to those cases where urination cannot be accomplished at will, although all the organs for the proper performance of the act are apparently normal. He says that the true cause is not spasm of the sphincter, but is spasm of the compressor urethrae muscle, a section of which, with or without opening the urethra, will cure the difficulty. He described cases of "false stammering" as those due to a reflex irritation and lack of co-ordination of the expelling muscles.

Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

PROCEEDINGS OF THE THIRTIETH ANNUAL MEETING, HELD IN NEW ORLEANS, LA., DEC. 8, 9, 10, 11 AND 12, 1902.

The association convened in Tulane Hall under the presidency of Dr. HENRY D. HOLTON of Brattleboro, Vt.

The opening

ADDRESS OF WELCOME

was delivered by REV. MAX HELLER of New Orleans.

After the transaction of routine business, the address of papers and reports was begun.

REPORT OF COMMITTEE ON DISPOSAL OF REFUSE MATERIALS.

This was read by Dr. W. C. WOODWARD of Washington, D. C., a member of the committee. The

¹⁴ *Transactions of the New York Academy of Medicine, Section of Genito-Urinary Surgery; Journal of Cutaneous and Genito-Urinary Diseases* for 1902, p. 564.

¹⁵ *Journ. Am. Med. Assn.*, Aug. 16, 1902.

¹⁶ *Brit. Med. Journ.*, Feb. 1, 1902, p. 261.

report stated that the present condition of the art of disposal of city refuse had not advanced materially in the last year. Many of the largest cities in America had more or less successful reduction plants, for the extraction of the grease. The latest, and in some parts of the country still the most common, method of disposal, namely, that of feeding kitchen garbage to swine, was now earnestly advocated by a prominent health officer, although most ardently opposed by most sanitarians for many years. It was advocated because, under many conditions, it was not unhealthful if properly conducted, and it was more economical in smaller communities than any other method. The Berlin proposition of converting kitchen garbage into compost had not yet been sufficiently tried. The results with this method in this country did not seem promising, except where the soil was quite barren and the cost of labor very low.

REPORT OF THE COMMITTEE ON ANIMAL DISEASES AND ANIMAL FOOD.

IN the absence of the chairman of this committee, the report was read by a member of the committee, DR. M. P. RAVENAL of Philadelphia. Reference was made to researches with regard to the communicability of human tuberculosis to animals. The experimental work of Ravenal, Mohler, De Jong, Delapine, Orth, Stenstrom, Fibiger and Jansen, Max Wolff, Nocard, Arloing, Behring and a number of other investigators, was referred to at length, and these investigations were sufficiently numerous and harmonious in the results to establish the following conclusions:

(1) The bacillus tuberculosis found in human tuberculosis differed greatly in its pathogenic powers as obtained from different cases.

(2) Two types of tubercle bacilli might be obtained from man, namely, one which was somewhat difficult to cultivate, which grew slowly, and the bacilli of which are short, stubby and free from beading, — the so-called bovine type; and the second, which was quite easily cultivated, grew rapidly, was longer, thinner and inclined to show beading and curved forms, — the so-called human type.

(3) Virulent cultures might be obtained from both of these types, which, when inoculated, according to the methods used by Koch, and upon the species of animals specified by him, produced progressive and fatal tuberculosis.

(4) The contention that human tuberculosis could not be transmitted to asses, sheep, goats and especially to cattle, had been completely disproved.

(5) Koch's failure to produce tuberculosis in the animals named with bacilli from human sources was probably due to the use of bacilli of low pathogenic powers.

The report then discussed at length investigations as to the transmission of bovine tuberculosis to man, mentioning the experimental work recently done in this line. The results of these investigations showed:

(1) While the bacilli of human tuberculosis were found of feeble virulence for cattle, there was a considerable proportion of cases in which these bacilli were virulent for cattle as well as other animals.

(2) Bacilli of both the bovine and human type had been obtained from cases of human tuberculosis.

(3) Bovine bacilli introduced into the human tissues by accidental inoculation, if left, multiplied and produced disease at the point of inoculation, and even recovered after a considerable time with their vitality and virulence unimpaired.

(4) Various statistical studies indicated that a considerable proportion of cases of human tuberculosis, and particularly with children, originated from the ingestion of the bacilli with contaminated food.

It appeared to the committee, therefore, that the conclusions of Koch, announced at the British Congress of Tuberculosis, to the effect that bovine and human tuberculosis were different; that human tuberculosis could not be conveyed to cattle, and that man was insusceptible to bovine tuberculosis were disproved, and should no longer have weight with sanitarians. The evidence adduced indicated that greater care should be exercised to prevent infection with bovine tuberculosis, and particularly to guard children from tuberculous milk.

SANITARY MEASURES PROPOSED TO THE MEXICAN RAILWAY COMPANIES.

DR. EDUARDO LICEAGA, president of the Superior Board of Health of Mexico, read a paper on this subject. The measures urged were:

(1) To increase the number of cuspidors, and furnish them with disinfecting solutions capable of destroying the tubercle bacilli.

(2) Place in conspicuous places placards containing the following: Please spit exclusively in the spittoons, as otherwise the germs of infectious diseases, especially those of tuberculosis, will be carried into the air.

(3) Until the padding of the cars was changed for other and more convenient drapery, a wise plan would be to disinfect the car every time it was unoccupied with a solution of formaldehyd, which would not alter the condition of the cloth nor its color.

(4) Disinfect all sheets and pillow cases before sending them to the laundry.

(5) Also disinfect the tapestries and couches.

(6) Keep the car as clean as possible, and especially the closets and urinals.

The railroad companies in Mexico considered the above suggestions practical, and promised to enforce them.

COOPERATION ESSENTIAL TO PROGRESS IN VITAL STATISTICS.

DR. CRESSY L. WILBUR of Michigan presented a paper on this subject, in which he said we were at the beginning of a new era when, for the first time in the history of the country, there was an opportunity for continued systematic coöperation between the permanently organized departments of the national government and the various state and municipal systems of registration, to the end that accurate and uniform statistics of mortality might be obtained for the United States and made available for the use of all public health offices.

VITAL STATISTICS: A PLEA FOR ACTUARIAL ADMINISTRATION AND CONTROL OF THE GREAT RESOURCES OF PREVENTIVE MEDICINE.

The author of this paper, DR. JOHN S. FULTON of Baltimore said the federal census being now

maintained as a permanent part of the national government, should (1) be at the approach of another census year better than ever prepared to rapidly and accurately count the people, making notes of all the data needed for statistical purposes; (2) it should make such *ad interim* studies of the births and deaths occurring in non-registration areas as would serve for the better correction of the enumerators' returns for the census year; (3) it should commit all vital returns to the hands of a trained medical statistician who understands the moods and tenses of vital mathematics.

Local registration should cover: (a) Records of deaths made at the time and place of their occurrence, by the most competent persons acquainted with the facts, including a medical certification of the cause of death, the making and filling of such a record being, in every instance, an indispensable preliminary to the disposal of the dead body. (b) Records of birth, secured by the payment of fees, by every appeal to private interest and public necessity, including, if possible, conditioning of certain privileges of citizenship upon recorded evidence of attained age. (c) Records of marriage and divorce, with all such items of information as had statistical importance. (d) Records of sickness, including all cases of those infectious diseases which fell within the provisions of the notification laws, all cases of sickness which came under study in the public health laboratories, all sickness which was relieved at public cost, and all sickness falling under the observation of inspectors of schools, tenements and factories.

The data of vital statistics should be systematically utilized, not only for the broader purposes which had grown into common use, but for the minuter inquiries to which such records in large numbers and of great variety were adapted.

DR. LOUIS E. RUIZ of Mexico presented a paper in which he spoke of the period in which every contagious disease could be transmitted and, also, of the period in which every sick person was dangerous to healthy persons near him.

DR. JOSÉ P. GAYON of Mexico read a paper in which he spoke of the transmission of pathogenic fungi by flies and mosquitoes.

DR. JESUS E. MONJARRAS of Mexico discussed the principal causes of infectious diseases and the chief means of guarding against them.

At the evening session of the first day, addresses of welcome were delivered by his Honor Mayor Paul Capdevielle on behalf of the city, and by Hon. Jared Y. Sanders, Speaker of the House of Representatives, on behalf of the state. These addresses were responded to by President Holton.

PRESIDENTIAL ADDRESS.

DR. HENRY D. HOLTON, the president, reviewed the status of sanitation in the United States, saying the most wonderful progress had been made along all sanitary lines. Much of it was the result of the work of members of the association.

In speaking of yellow fever, he said we should recognize the great courage of such devotees of science as Drs. James Carroll and Jesse W. Lazear. The practical results of work done in regard to yellow fever had been evidenced this past summer, in that not a case of this disease had originated in the

island of Cuba for the past fourteen months, and the quarantine period had been shorter by three months.

He referred feelingly to the deaths of Drs. Walter Reed, Robert C. Kedzie, Albert L. Gihon, Thomas J. Turner, John P. Kimball, Francis W. Lewis, George E. Tyler and Wyatt Johnston.

Speaking of sanatoria for tuberculosis, he said that when education had advanced a step further, and the public came to appreciate that sanatoria for the tuberculous opened, to such as had unfortunately become infected, the most promising avenue of escape from certain death, and at the same time was an additional safeguard against the spread of the disease, then would the public demand that justice be done the impecunious sufferers, in the establishment, by the state, of institutions where, in the earliest stage of the infection, they might be placed and thus given all possible aid to recovery and the enjoyment of social and productive citizenship.

In alluding to smallpox, he said the modified virulence and the reduced power of infection had been seized upon by anti-vaccinationists and the ignorant as an argument against vaccination.

The association had been striving for many years for the establishment of a public health service, and the medical profession was to be congratulated that, at last, their efforts had been crowned with success. While all that was desired had not been granted, yet a substantial and, in many ways, a satisfactory organization had been effected. He congratulated Dr. Wyman on the enlarged opportunities presented to him to develop upon a scientific basis a service of varied functions which shall equal in original research and demonstration any similar service in the world.

REPORT OF COMMITTEE ON PUBLIC HEALTH LEGISLATION.

This was presented by the chairman, DR. U. O. B. WINGATE of Milwaukee, Wis. Representatives from various state boards of health and state quarantine officials met in Washington with the supervising surgeon-general of the Marine Hospital Service, and the matter was carefully considered, and finally a compromise was effected, changing the name of the Marine Hospital Service to that of the Public Health and Marine Hospital Service. A copy of the law was submitted with the report. The law provides for an annual conference of the health authorities of all the states and territories and the District of Columbia, and that it shall be the duty of the surgeon-general of the service to call a conference upon application of not less than five states or territorial boards of health, quarantine authorities, or state health officers. It was hoped that this measure provided a foundation upon which might be built up a national health service, such as the intelligence of the people and the age in which we were living demanded.

EXPERIMENTS IN DISINFECTION WITH FORMALDEHYD GAS.

DR. M. P. RAVENAL of Philadelphia read an exhaustive paper on this subject, in which he detailed his experimental work with this gas. He drew the following conclusions:

(1) "Formaldehyd is justly entitled to the high position which has been given to it as a disinfectant.

(2) "Special apparatus, while useful and convenient, is not absolutely necessary for the successful application of the gas.

(3) "The germicidal power of formaldehyd gas is dependent on certain factors which, as yet, are imperfectly understood. Other things being equal, moisture and temperature are the most important of these factors.

(4) "In practice every operation should be controlled by cultural experiment, and no room which has been exposed to infection should be considered as disinfected unless control cultures, exposed in various parts of said room, are shown to have been destroyed."

REPORT OF COMMITTEE ON DISINFECTION AND DISINFECTANTS.

In the absence of the chairman, this report was presented by HIBBERT W. HILL of Boston.

A careful examination of articles published both in America and in Europe had failed to reveal the discovery of any new disinfectant or process of disinfection of great practical value to public health officers during the last year.

As to gaseous or room disinfection, formaldehyd still held the first place in efficiency. There had been a return to a certain extent to the use of sulphurous acid, owing to its stronger action upon insect pests, but all the new experiments showed clearly that it was a far weaker disinfectant than formaldehyd, and could not be depended upon except in a few limited cases. Gaseous disinfection, as the great panacea for preventing the spread of contagion, had been considerably discredited by recent experiments, but the committee were strongly of the opinion that when properly carried out it was an important and effective aid in public health work, and would continue to be, and that formaldehyd was by far the best agent to use in carrying it out. In using formaldehyd two things should be provided for: First, a sufficiency of water in the air of the space to be disinfected; and, second, a very rapid disengagement of the gas. Most forms of apparatus failed in one or the other of those points. The work of Robinson and Hill, members of this committee, clearly showed that not only did efficiency depend upon them, but, by properly observing them, much time and material could be saved. The disinfection of the future must be simple, short and sharp.

REPORT OF THE COMMITTEE ON NATIONAL LEPER HOMES.

In this report, the chairman, DR. HENRY M. BRACKEN of St. Paul, Minn., said among other things, that after carefully studying facts it would appear that provision for the care of lepers in Canada was an inheritance rather than a product of legislation; that the care of lepers in Mexico began with the invasion of Cortes, and that the methods of caring for them had been but little, if at all, improved upon in that country since his time; that provision for the care of lepers in Cuba was made at an early date by a Jesuit with philanthropic tendencies. Of all the countries em-

braced in the association, the United States was the only one that had made no provision for its lepers. The commission appointed by the Marine Hospital Service recommended one or preferably two national leprosaria for the care of these unfortunates in the United States. It recommended the selection of sites covering broad areas in healthful localities, where the lepers could have unlimited out-of-door exercise and occupation. It recommended that these homes should be made attractive and comfortable, so that the unfortunate victims of this disease, instead of hiding their condition, might make it known and request admission to these public institutions.

With present knowledge of leprosy, and the methods employed in care of lepers, the committee advised that the resolution of last year be reaffirmed. This resolution, in substance, favored the establishment of national leprosaria, which might serve not only as a refuge for lepers, but also as a home and hospital, making their lives tolerable as far as possible, furnishing employment to those who were able to work, and giving skilled medical care to all cases, with the intent of possibly curing some, and making the road to death less wearisome and painful than it now was to others.

DANGERS TO THE PUBLIC HEALTH FROM ILLUMINATING AND FUEL GAS.

This report was read by the chairman of the committee, DR. SAMUEL H. DURGIN of Boston. In pursuing an inquiry into the danger to health by illuminating gas, it had been the purpose of the committee to consider not only the question of its poisonous effect as observed from the ordinary clinical standpoint, and of the frequency with which the people were exposed to the effects of their agent, but also to show, from carefully conducted experiments upon human subjects, just what physiological changes were produced by long and short exposures to small amounts of the gas, and to what extent the observed changes were continued or permanent. It was shown by investigations that the common condition of gas pipes and fixtures was very poor, the moderate small leaks very numerous, and that a moderate increase of pressure in the fixtures above the normal gas pressure produced leakage in eighty-nine per cent of all the houses examined. It was also shown that the number of fatalities from illuminating gas was not only large, but was increasing from year to year. In order to ascertain to what extent the medical profession in Boston had recognized cases of acute and chronic poisoning by illuminating gas, he sent out letters to twenty-two hundred physicians, asking for their personal experience in such cases. He received replies from 460 physicians; 246 of them reported no experience; the other 214 reported 1,025 cases of acute poisoning; 374 of these resulted fatally; 288 were found dead, and 86 lived from one hour to twelve months; 623 made complete recovery in periods varying from a few hours to three years; 28 made partial recovery, while under observation of from three weeks to twenty-one months.

The symptoms reported in the chronic cases were practically the same as those reported in the acute cases.

(Continued.)

AMERICAN ASSOCIATION FOR THE STUDY OF INEBRIETY.

THE THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE STUDY OF INEBRIETY was recently held in Boston at the Washingtonian Home, under the presidency of Dr. L. D. MASON. Resolutions were adopted condemning the indiscriminate use of medicine for the alcohol and opium habits, and suggesting that institutions be licensed and inspected which are to care for inebriates, or victims of narcomania.

DR. L. D. MASON of Brooklyn read a paper on PATENT OR PROPRIETARY MEDICINES AS THE CAUSE OF EITHER THE ALCOHOL OR OPIUM HABIT OR OTHER FORM OF DRUG HABITUATION, AND SOME SUGGESTIONS AS TO HOW THE EVIL MAY BE REMEDIATED AND THE PUBLIC PROTECTED. It was urged that a general campaign of education be insisted upon, and that an increasingly careful study be made of the underlying causes which lead up to the conditions under consideration.

DR. H. D. RODEBRAUGH read a paper on the VALUE OF SURGERY IN CERTAIN CASES OF INEBRIETY. He urged the necessity of considering the physical side of the patient, and spoke of the good effects of simple surgical operations.

DR. EDWARD COWLES read a paper on LEGISLATION FOR THE CONTROL OF INEBRIETY. He drew attention to the English law on the subject, and spoke of the somewhat different conditions existing in the United States, where a probation system, longer confinement, establishing industrial colonies and similar ideas have influenced legislation. He urged that the probation system be made more useful, and that a better understanding be established between magistrates, probation officers and hospital authorities.

DR. S. B. ELLIOTT spoke on the subject of RESTRAINT AND MORAL MEASURES IN THE TREATMENT OF INEBRIETY. Dr. Elliott suggested the desirability of separating incurable from curable patients, and he insisted upon the medical rather than the criminal aspect of the subject.

DR. AGNES SPARKS read a paper on PLANS OF TREATMENT FOR WOMEN INEBRIATES.

THE HYDROPATHIC TREATMENT OF INEBRIETY was the subject of a paper by Dr. C. A. SHEPHARD. Dr. Shephard insisted upon the very great value, for obvious reasons, of cleanliness for the preservation of general health.

DR. J. H. KELLOGG spoke on DIET IN THE TREATMENT OF INEBRIETY.

DR. J. W. MATTISON, in dealing with the subject of NARCOTIC ABUSES AND THE PUBLIC WEAL, spoke strongly against the wide sale of nostrums containing narcotic drugs. He urged the adoption of restrictive laws such as are in force in Germany.

DR. T. D. CROTHERS read a paper on INEBRIETY IN ANCIENT EGYPT AND CHALDEA, in which he showed the similarity between the situation regarding alcohol at that time and at the present day.

Other papers and remarks followed.

The following officers were elected: President, Lewis D. Mason, Brooklyn; first vice-president, Charles H. Shephard, Brooklyn; corresponding secretary and treasurer, T. D. Crothers, Hartford; recording secretary, J. J. Wagner, Greenwich.

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LORD LISTER AND MODERN SURGERY.

THE recent "Lister Jubilee Number" of the *British Medical Journal* (Dec. 13, 1902) celebrates the fiftieth anniversary of Lister's entrance into the medical profession (Dec. 9, 1852). This number is an interesting *Festschrift* in his honor, made up by contributions from Professor von Bergmann, M. Lucas-Championnière, Professor Durante, Professor von Mikulicz, Professor Bloch, Sir Hector Cameron, Professors Chiene and Watson Cheyne and others.

These gentlemen, with their interesting and valuable articles, unite in bearing testimony to the great debt which the medical and surgical professions, and through them the whole world, owe to Lister, the acknowledged founder of modern surgery.

From the time of the publication of his article "On a New Method of Treating Compound Fracture, Abscesses, etc., with Observations on the Conditions of Suppuration" (*Lancet*, March, 1867), the course of modern surgery has advanced with rapid strides to its present state of perfection. Whatever may have been his own inspiration, to Lister belongs the credit of creating a method of surgical technique, the far-reaching and beneficent effects of which he could hardly have imagined. His work and personality have been the source of inspiration which has led directly to the wonderful results of modern surgery.

America was not slow in adopting and carrying out the principles of wound treatment published in Lister's early contributions. We saw in the beginning great improvement in our results, even when the essence of antiseptic surgery was the use of carbolic acid in the protection of wounds from gross contamination, and in what we should now call crude preparations of hands, instruments and field.

The chief thing was the protection of the wound after it had been made, by means of irrigation with carbolic acid, and by dressings permeated with the same chemical solution. Although these methods, crude as they now seem, produced a marked improvement in immediate and in remote results, there were, nevertheless, many and inexplicable failures. The suppuration of clean wounds was not uncommon. Erysipelas, pyemia and other infections, occasionally occurred. Breast amputations had a mortality of 6 or 8%, and other severe and well-established operations a like proportion. There were numerous instances of carbolic acid poisoning; some of them fatal. These disasters were frequent enough as late as 1876 to make many surgeons skeptical as to the value of the whole method. Others carried out the antiseptic principles after a fashion, but perfunctorily,—compelled to adopt the method perhaps by the force of surgical opinion. Such operators met with frequent failures. The early recognition of the importance of cleanliness, and the adoption of thorough mechanical measures for insuring that cleanliness, without, however, a realization of its scientific value, made antiseptic methods still more successful and attractive. The fact is, that in Lister's early suggestions there lay concealed the essence of modern surgery,—the prevention of wound infections by micro-organisms. In his early work lay the conception that the disasters of wound contamination were owing to minute living bodies, and that primary healing would take place in all wounded tissues from which these bodies could be effectually excluded. The truth of this conception, so crudely acted upon in the beginning, so brilliantly established in the end, has led directly to the present high position of surgery as a science.

Lister's original method of protecting wounds by destroying every poisonous thing that might come in contact with them, whatever that thing might be, tended toward the demonstration of the germ theory of infections. To Pasteur Lister felt himself indebted for the suggestion that the means of putrefaction were transmitted to wounds through contact with air, itself laden with contaminating material. The early methods of protecting wounds from this contamination show how much the air was supposed to have to do with infections. Compound fractures differed in their healing from simple fractures only through putrefaction changes induced by contact with the air. Lister's first endeavor, in compound fractures, was to substitute artificially a covering to take the place of skin, which covering should be itself capable of destroying, or at least of neutralizing, the bad effect of poison-laden air. Hence the use of carbolic lotions, "protective" carbolic gauze, and the like. To make an antiseptic en-

vironment by destroying all air-borne poisons about the wound, a spray of carbolic acid was made mechanically to envelop, by a wide margin, the field of operation, both during the operation itself and during all subsequent dressings. These details of technique, although efficacious in destroying easily accessible and easily destructible micro-organisms, and therefore productive in the main of primary union in the wounds, were, as bacteriology has abundantly demonstrated, directed chiefly against the least of the sources of infection, sources, indeed, which are now practically neglected. They pointed in the right way, however, and, as their direct result, the right path was eventually established. The suggestion of poisonous contact, made by Lister, whatever the nature and source of the poison, was the germinating idea which has produced such marvelous fruit in the development of surgery. The rapid progress of bacteriology soon gave Listerism a scientific foundation, upon which it has been possible to raise surgery to the height of an applied science.

We have been able to observe closely the evolution of modern surgery from about the time when Lister himself visited Boston (1875). A case of excision of the knee, treated by constant irrigation with a solution of carbolic acid, seemed especially to interest him. The operation had been performed with every antiseptic detail then known, in spite of which, however, there was extensive infection of the wound and abundant discharge of pus. The wound, externally and internally, was being constantly irrigated by means of wicks through which ran a continuous stream of carbolic solution. We can vividly recall our disappointment at the wound infection, as well as its apparently inexplicable origin. The infection, as we now know, was owing to the imperfect methods of sterilization, by which hands, instruments, sponges and field were prepared, as demonstrated since then time and again in the bacteriological laboratory. Once infected, the wound in this case went through its long process of suppuration little influenced by the method of constant irrigation.

Lister's visit to Boston did much to stimulate enthusiasm for the application of his methods, and yet, here as elsewhere, these methods were undertaken by many with doubt and with hesitation. Careful observers, carrying out eagerly and faithfully the details of Lister's method were delighted to find, in spite of occasional failures, marked improvement in immediate and remote results. At the end of a few years it was recognized by all that the outlook in operative surgery was indeed a bright one.

Instead of the tedious visits of the surgeon, who, turning down the poultices, inspected every

wound, and, bistoury in hand, sought, too often successfully, for pus, the visit became a stroll through wards with clinical charts. The improvement was indeed astonishing; and yet here and there a wound infection would occur, which, while confounding the surgeon, stimulated him to renewed efforts at wound protection. We remember the painstaking investigations after every failure in Listerism. These investigations, often demonstrating satisfactorily errors in technique, still more often produced only negative testimony. From one precaution to another surgeons groped blindly, abandoning one as useless or dangerous, and adopting another as remedying, theoretically at least, some previous defect. The most radical departure from the original methods, in this country certainly, was in the abandonment of the spray and in the substitution of corrosive sublimate for carbolic acid. We can recall the great frequency of black urine and other signs of carbolic acid poisoning; but with the substitution of other chemicals came other disadvantages in the form of local and systemic irritations.

Bacteriology, as an exact science, developed, partly at least, under the stimulation of surgical needs, gave to the deductions of Lister a basis which has made operative surgery what it is to-day. It was only when surgeons began to see, under their own eyes, germ colonies growing upon suitable media — and that in spite of such methods of preparation and disinfection as many in the beginning called absurd — that the present scientific method of operative procedure came into existence. Not until bacteriology had shown the necessity of prolonged sterilization with heat, whenever possible, and with chemicals whenever heat was impracticable, did operative surgery go through its first and real purification by fire.

The marked success attending external operations — upon the breast, the extremities — led to bolder and more frequent operations upon the abdominal viscera. Ovariectomy, originally the only abdominal operation, excepting, perhaps, strangulated hernia, becomes, in the hands of experienced operators, a procedure of slight mortality. From extirpation of ovarian tumors, the success of antiseptic surgery led rapidly to extirpations of the kidney, the spleen, gastric and intestinal tumors, and then back to conservative operations, by which benign neoplasms are removed from the ovary or uterus as freely as from the breast. The splendid progress of abdominal surgery alone excites wonder even among those of us who have been engaged in it from the beginning of antiseptic methods. From abdominal it was but a step to thoracic, cranial and spinal surgery.

In thus briefly reviewing the extraordinary achieve-

ments of modern surgery, we are again brought to consider the inspiration from which they had their direct origin. From the days of sole reliance upon the destructive antiseptics of carbolic acid and ordinary cleanliness to the present days of scientific aseptic detail and environment, we have watched with consuming interest the remarkable progress of surgery; and we, who have been through it all, give to Lister the credit of founding modern surgical science. We have lived to see his methods elevated and refined; his deductions reduced to a science, and his results brought, as it seems to us, as near perfection as they ever can be. That he, the founder, — the "master," as his followers love to call him, — should have lived to see the wonderful harvest, the whole medical and surgical world now hastens to congratulate him.

THE RELATIVE IMMUNIZING VALUE OF HUMAN AND BOVINE VACCINE VIRUS.

WITHIN the past half century a very decided change has taken place in the methods of procuring vaccine lymph, a change which has been introduced very largely in consequence of the possible occurrence of the inoculation of other diseases which are communicable from man to man by means of inoculation. Notwithstanding the fact that such transference of other diseases was an occurrence of the rarest kind, the popular demand for a change was sufficient to bring about the gradual introduction of lymph from the calf or heifer.

Another reason for the change existed in the rapid increase of the population of large cities, whereby during sudden outbreaks of smallpox much greater quantities of vaccine material were demanded than could possibly be obtained from the arms of infants. The method of procuring vaccine from the heifer was practised at Naples as early as 1810 by Galbiati and continued by his pupil Negri, and was introduced into France by Lanoix, who went to Naples to study the method in 1864. It was employed to a limited degree in the United States during the Civil War for the production of vaccine material for the army¹ and still more generally by Dr. H. A. Martin in 1871. The question has recently arisen whether the bovine lymph produces an immunity from smallpox which is as thorough and lasting as that which was formerly produced by the Jennerian method of vaccination from the arms of healthy infants.

At the meeting of the American Public Health Association last year, a committee was appointed to report upon the comparative value of these two methods of producing vaccine, with reference to the immunizing power of the product obtained. This

¹ See report of Surgeon Milhau, in *Medical and Surgical History of the War of the Rebellion*, vol. iii.

committee reported at the meeting at New Orleans, a digest of the report being presented in another column.

While the report contains some very good suggestions as to the causes of abnormal results of vaccination during the recent unusual prevalence of smallpox in this country, no very definite conclusions appear to have been reached as to the relative value of these two kinds of vaccine lymph. Undoubtedly this defect is due to the absence of information or of observations on a large scale upon this subject. If it were possible to compare the results obtained in two thoroughly vaccinated nations, one vaccinated with humanized, and the other with bovine lymph, an answer to the question might be expected, but such nations do not exist.

Germany is the only large nation wholly vaccinated with bovine vaccine lymph at the present day, although some neighboring countries are manifesting a disposition to adopt German methods.

In England the practice of employing humanized lymph for the greater portion of the vaccinations prevailed until a comparatively recent period. Moreover, the English population is not thoroughly vaccinated, in consequence of the general neglect of re-vaccination.

It is, however, true in regard to Germany that as the population became more and more thoroughly vaccinated after the enactment of the compulsory law of 1874, smallpox has gradually disappeared, almost the only cases which have occurred being those of unvaccinated immigrants, or those of a few who had in some way escaped vaccination.

In this connection the following figures are suggestive as showing the rapid displacement of humanized lymph in Germany in the public vaccinations:—

PERCENTAGE OF VACCINATIONS WITH BOVINE LYMPH IN GERMANY, 1879-1898.²

| <i>Years.</i> | <i>Per cent of vaccinations with bovine lymph.</i> | <i>Years.</i> | <i>Per cent of vaccinations with bovine lymph.</i> |
|---------------|--|---------------|--|
| 1879 | 2.6 | 1889 | 89.0 |
| 1880 | 3.3 | 1890 | 93.0 |
| 1881 | 4.0 | 1891 | 96.8 |
| 1882 | 7.1 | 1892 | 98.5 |
| 1883 | 11.2 | 1893 | 98.9 |
| 1884 | 19.1 | 1894 | 98.9 |
| 1885 | 33.1 | 1895 | 99.85 |
| 1886 | 54.2 | 1896 | 99.88 |
| 1887 | 68.4 | 1897 | 99.95 |
| 1888 | 77.4 | 1898 | 99.96 |

It appears from the foregoing figures that during the last four years nearly all the vaccinations in Germany have been made with bovine lymph. These vaccinations have averaged more than two and a half millions in number yearly since 1890, and the

positive success of this national system of vaccination is too well assured to admit of doubt.

Another peculiarity of the German system is that of public control of the entire production of vaccine lymph. The Imperial Board of Health assumes a general control over the whole system, the number of separate vaccine plants being at present twenty-two in as many separate cities. Each one furnishing the requisite vaccine material for the population, not only of the city in which it is located but also for the entire neighboring district, so that the product of these twenty-two establishments suffices for the entire population of the empire.

The example thus furnished by Germany has undoubtedly had a favorable effect upon contiguous countries, especially Austria and Italy, in which the conditions as to vaccination have considerably improved in recent years.

THE LORENZ OPERATIVE PROCEDURES.

DR. LORENZ has come and gone, has brought enthusiasm and stimulation to orthopedics and to the Children's Hospital in Boston, and has carried away, we hope, a pleasant memory of Boston's hospitality. The general program of his visit was given in the last issue of the JOURNAL.

The Lorenz method of procedure in reducing congenital dislocation of the hip is not new or untried in Boston. We have before referred to it in the editorial columns of the JOURNAL of Oct. 23. The recent visit, however, has brought out many new and important points in fixation and after-treatment. The steps of the operation are as follows:

(1) With the patient lying on the back, the leg and thigh of the affected limb are flexed each to 90°, the thigh is worked up and down in a line perpendicular to the table. This breaks up adhesions round the head of the femur in its unnatural position. During this and the subsequent steps the pelvis is held firmly by the assistant.

(2) With leg and thigh extended, the whole limb is abducted in a plane parallel to the table and worked back and forth to tear the inferior adhesions of the joint capsule and to some degree to stretch the adductor muscles.

(3) With leg flexed and thigh about 45° from the table, the thigh is repeatedly abducted with great force, each excursion bringing the thigh outwards nearer the table, stretching and tearing the adductor group, while at the same time vigorous blows and kneading of the adductor muscles near their origins on the ischium and symphysis serve further to tear their fibers.

(4) With leg extended, the whole limb is forcibly

²From the annual reports of the Imperial Board of Health relating to vaccination, 1879-1898.

and repeatedly flexed on the trunk, the foot approximates the face — this to break up and stretch adhesions and fibers in the posterior pelvi-femoral group.

(5) With the patient lying on the unaffected side, the thigh is forcibly hyperextended to stretch anterior adhesions and muscles.

(6) With the patient again on the back, the leg and thigh are flexed and the thigh is strongly rotated again and again.

(7) With a wedge-shaped block under the great trochanter as a fulcrum, the flexed thigh is abducted with great force, this serving to break the last adductive fibers and to thoroughly release the head of the bone.

(8) Acute flexion and outward rotation of the thigh should cause reduction of the dislocation with a distinct sound as the bone slips into place.

(9) With the bone held in place strong abduction now shows the adductor group to be again shortened, and they must be stretched still farther till they no longer have resiliency enough to tend to throw the head of the femur out of the acetabulum.

(10) With the bone still in place any contractures of the hamstrings which may now have appeared should be stretched.

(11) Wadding and bandage are applied in such a manner that the head of the femur is held tight against the acetabulum by turns round the knee and opposite side of the pelvis, and the thigh in extreme abduction (90°) and to extreme hyperextension. Over this a thigh plaster-of-Paris bandage is applied. As Dr. Lorenz puts it, a child with both hips thus put up "looks like a jumping-jack after you pull the string."

The plaster is kept on six or seven months. The child is encouraged, after a few days, to walk and jump about on both legs, a high shoe making up for lack of relative length on the affected side. The constant impact of femur against acetabulum obtained by the jar of walking is an important factor towards final success.

Dr. Lorenz feels that a good functional, as well as anatomical, result is only likely in cases between three and seven years. The oldest case he has treated is twenty-three years. Where he fails to reduce the hip, the muscle-stretching followed by long fixation of the thigh in the manner already described, gives a fair functional result. In one case here in Boston, that of a boy nine and a half years of age, he was unable to get the head into the acetabulum.

LECTURES ON THE PHYSICIAN'S RELATION TO THE COMMUNITY.

WE have already called attention to the fact that the students of the Harvard Medical School have, on

their own initiative, arranged for a series of evening lectures to be given by prominent men, not necessarily physicians, on the general topic of the relation of the physician to the community. This action is noteworthy from several points of view. It shows, in the first place, a growing interest among students of medicine in the broader aspects of their professional work and in the responsibilities which it is sure to entail. Such a movement on the part of medical students, popularly supposed already to be overburdened with lectures, could hardly have occurred ten years ago. To those who have watched the development of the last few years, however, it comes as no great surprise. The students are certainly becoming more and more independent in thought, and are standing more in judgment upon the work which they are called upon to do and upon the teachers who direct it. The results have been in every way salutary both as regards teachers and students.

The desire of a large body of students to provide certain lectures for themselves furthermore points toward a definite need, which they are feeling is not supplied them in the regular course. They want, broadly speaking, to learn from men of experience of their future social and ethical relations to the communities in which they may happen to be placed. This is evidence that they receive no such instruction in their ordinary undergraduate work, which, we believe, is the fact. This leads us to speak of a distinct lack in medical education, and that is, the direction of students in their relation to patients and others whom they must later come in contact with in their professional work. No attempt is made to teach the ethics of medicine except by precept and example, a good but not a sufficient method. Students of medicine certainly need instruction in this subject, a fact which the Harvard students have appreciated and have taken measures to accomplish by the establishment of these evening lectureships.

MEDICAL NOTES.

FRENCH CANADIAN FAMILIES.—A Quebec shoe dealer actually received this order from a French Canadian; its form of expression is quaint and it illustrates the prolific French Canadian families.

Dear Mister, you will put some shoe on my little families like this, and send by Sam Jameson, the Carrier:

"One man, Jean St. Jean (me) 42 years." "One woman, Sophie St. Jean (she) 41 years." "Hermesdes & Lenore, 19 years; Honore, 18 years; Celina, 17 years; Narcisse, Octavia & Phyllis, 16 years; Olive, 14 years; Philippa, 13 years; Alexandre, 12 years; Rosina, 11 years; Bruno, 10 years; Pierre, 9 years; Eugene, we loss him —; Edouard & Glisa, 7 years; Adrien, 6 years; Camille, 5 years; Zael, 4 years; Joseph, 3 years; Moise, 2 years; Muriel, 1 year; Hilaire, *he go barefoot*: How much."

NOVELIST'S MEDICINE.—A recent author introduces the distinguished German physician, who is consulted by one of the leading characters in the book, as the author of "*Kasichte Ausartung der Uebernieren.*" From the description of the death scene from this weird disease, it seems something like angina pectoris.

NEW BUILDING FOR RUSH MEDICAL COLLEGE.—Senn Hall, the building recently added to the equipment of Rush Medical College, Chicago, largely through a bequest of Dr. Nicholas Senn, has recently been dedicated. Sir William Hingston, professor of clinical surgery in Laval University, Montreal, delivered the dedicatory address. Senn Hall was erected at a cost of \$130,000.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Dec. 31, 1902, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 40, measles 9, typhoid fever 19, smallpox 16.

HOSPITAL FOR TUBERCULOSIS AT NEW HAVEN, CONN.—It is proposed to build a small hospital for the treatment of tuberculosis, on high ground near New Haven.

REPORT OF MASSACHUSETTS HOSPITAL FOR EPILEPTICS.—In the annual report of the Massachusetts Hospital for Epileptics at Monson, the trustees ask for a group of farm buildings which will relieve congestion in the institution buildings proper, at an estimated cost of \$50,000. There were, on Sept. 30, 377 patients in the institution, against 270 a year ago. The per capita weekly cost of maintenance was \$4.31.

BEQUESTS TO HOSPITALS.—By the will of the late Mrs. Mary Longfellow Greenleaf of Cambridge, Mass., the following bequests among many others are made: St. Luke's Home for Convalescents, Roxbury, \$5,000; kindergarten of the Perkins Institute for the Blind, \$5,000; Cambridge Hospital, for a free bed, \$5,000; Maine General Hospital for a "Rev. Samuel Longfellow free bed," \$5,000; Cambridge Home for Aged People, \$5,000; Old Ladies' Home, Portland, \$2,000; Female Orphan Asylum, Portland, \$2,000.

By the will of Lucy Richmond Reed the following institutions are beneficiaries: Five thousand dollars each to the Convalescents' Home of the Children's Hospital at Wellesley; the Willard Hospital for Dipsomaniacs at Bedford; the Channing Home for Consumptive Women on McLean Street, and the Sharon Sanatorium.

ARRESTS FOR SPITTING.—Through the agency of the Board of Health a number of persons have recently been arrested in Boston for spitting in street cars and railroad stations.

BEQUEST TO DARTMOUTH MEDICAL COLLEGE.—By the will of Dr. Edward K. Baxter, late of Sharon, Vt., \$5,000 is left to the Dartmouth Medical College, of Hanover, N. H., with the request that the income be used in the endowment of a free bed in the new Mary Hitchcock Hospital.

BOSTON MORTALITY STATISTICS.—The number of deaths reported to the Board of Health for the week ending Dec. 27 was 189, as against 176 the corresponding week last year, showing an increase of 13 deaths, and making the death-rate for the week 16.81. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 35 cases, 3 deaths; scarlatina, 28 cases, 3 deaths; typhoid fever, 18 cases, 5 deaths; measles, 8 cases, no deaths; tuberculosis, 8 cases, 15 deaths; smallpox, 13 cases, 6 deaths. The deaths from pneumonia were 31, whooping cough 2, heart disease 19, bronchitis 7, marasmus 1. There were 14 deaths from violent causes. The number of children who died under one year was 27; under five years 46; persons more than sixty years 42; deaths in public institutions 60.

NEW YORK.

THE CORONER.—At a meeting of the Medico-Legal Society held Dec. 17 a resolution was adopted favoring the abolition of the office of coroner, and a committee, of which Dr. Stephen Smith is chairman, was appointed to bring the matter to the attention of the legislature. It is understood that the committee is of the opinion that the medical duties now performed by the coroners should be assigned to the Health Department, and their legal duties to the civil magistrates.

A CONTINGENT DONATION.—At a dinner given to the medical staff of the Methodist Episcopal (Seney) Hospital in Brooklyn, on Dec. 15, in celebration of the fifteenth anniversary of the institution, William Halls, Jr., vice-president of the board of managers, made the announcement that he would contribute \$125,000 for the completion of the hospital buildings, on condition that other subscriptions to the amount of \$500,000 shall be secured by June 1, 1903. Such subscriptions, he said, should be payable in a reasonable time after that date, and, after the payment of certain debts and providing for a possible deficiency of \$15,000 for three years, should be devoted to increasing the endowment fund (now \$425,000) to at least \$850,000.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 20, 1902.

| CITIES. | Population Estimated, 1902. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|-------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid fever. | Scarlet fever. |
| New York . . . | 3,665,352 | 1,237 | 357 | 11.80 | 13.90 | 3.55 | 1.45 | .88 |
| Chicago . . . | 1,852,828 | 628 | 173 | 24.35 | 16.23 | 2.39 | 5.57 | .80 |
| Philadelphia . . | 1,349,624 | 535 | 149 | 17.94 | 14.22 | 2.43 | 2.61 | .19 |
| St. Louis . . . | 603,717 | — | — | — | — | — | — | — |
| Baltimore . . . | 525,330 | 211 | 50 | 18.48 | 19.43 | 1.90 | .47 | — |
| Cleveland . . . | 411,826 | — | — | — | — | — | — | — |
| Buffalo . . . | 375,742 | — | — | — | — | — | — | — |
| Pittsburg . . . | 341,401 | 138 | 39 | 21.00 | 24.46 | — | 5.07 | .72 |
| Cincinnati . . . | 332,032 | — | — | — | — | — | — | — |
| Milwaukee . . . | 304,975 | — | — | — | — | — | — | — |
| Washington . . | 289,537 | — | — | — | — | — | — | — |
| Providence . . . | 185,870 | 70 | 21 | 22.84 | 25.70 | 4.28 | 2.85 | — |
| Boston . . . | 588,730 | 229 | 66 | 19.21 | 20.52 | 1.30 | .44 | — |
| Worcester . . . | 127,337 | 35 | 16 | 17.14 | 11.43 | — | 2.85 | — |
| Fall River . . . | 111,872 | 57 | 32 | 17.29 | 36.83 | 3.51 | — | 3.51 |
| Lowell . . . | 99,574 | 35 | 12 | 8.57 | 34.28 | — | — | — |
| Cambridge . . . | 96,334 | 34 | 13 | 14.70 | 29.41 | — | 5.88 | — |
| Lynn . . . | 71,144 | 21 | 9 | 23.81 | — | 14.29 | — | — |
| Lawrence . . . | 67,275 | 30 | 11 | 20.00 | 20.00 | — | — | — |
| Springfield . . | 66,854 | — | — | — | — | — | — | — |
| Somerville . . . | 65,882 | 24 | 4 | 41.66 | 13.33 | 6.67 | 3.33 | 3.33 |
| New Bedford . . | 65,574 | 36 | 16 | 25.00 | 33.33 | 2.78 | 2.78 | 8.33 |
| Holyoke . . . | 48,065 | 7 | 3 | 14.30 | 28.60 | — | — | — |
| Brookton . . . | 43,208 | 18 | 2 | 11.11 | — | — | 5.55 | — |
| Haverhill . . . | 40,392 | 17 | 4 | — | 56.93 | — | — | — |
| Salem . . . | 36,567 | 20 | 4 | 15.00 | 10.00 | — | 10.00 | — |
| Newton . . . | 36,336 | 4 | 1 | — | 50.00 | — | — | — |
| Malden . . . | 35,390 | 10 | 5 | 10.00 | 40.00 | 10.00 | — | — |
| Chelsea . . . | 35,264 | 11 | 5 | 18.18 | 9.09 | — | — | — |
| Fitchburg . . . | 33,848 | 14 | 5 | 21.42 | 14.28 | — | — | — |
| Taunton . . . | 32,759 | 12 | 3 | 25.00 | 25.00 | — | 8.33 | — |
| Everett . . . | 27,114 | 8 | 2 | 37.50 | — | — | 8.33 | — |
| North Adams . . | 26,583 | 9 | 3 | — | 22.22 | — | — | — |
| Gloucester . . . | 26,121 | 10 | 2 | 40.00 | — | 20.00 | — | — |
| Quincy . . . | 25,307 | 14 | 3 | 21.42 | — | 7.14 | — | — |
| Waltham . . . | 24,612 | 8 | 2 | 12.50 | — | — | — | — |
| Pittsfield . . . | 22,311 | 9 | 1 | — | — | — | — | — |
| Brookline . . . | 21,679 | — | — | — | — | — | — | — |
| Chicopee . . . | 20,390 | 5 | 2 | — | — | — | — | — |
| Medford . . . | 20,014 | 6 | — | 16.67 | — | — | — | — |
| Northampton . . | 19,460 | 4 | 0 | — | — | — | — | — |
| Beverly . . . | 14,814 | 3 | — | — | 33.33 | — | — | — |
| Clinton . . . | 14,645 | 3 | — | — | 33.33 | — | — | — |
| Newburyport . . | 14,478 | 7 | 0 | 14.30 | — | — | — | — |
| Woburn . . . | 14,285 | — | — | — | — | — | — | — |
| Leominster . . . | 13,953 | — | — | — | — | — | — | — |
| Hyde Park . . . | 13,858 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 3 | 2 | 66.67 | — | 33.33 | — | — |
| Melrose . . . | 13,384 | 4 | 1 | 25.00 | — | — | — | — |
| Westfield . . . | 13,038 | 2 | — | — | — | — | — | — |
| Attleboro . . . | 12,846 | — | — | — | — | — | — | — |
| Adams . . . | 12,813 | — | — | — | — | — | — | — |
| Milford . . . | 12,516 | — | — | — | — | — | — | — |
| Framingham . . . | 12,109 | 2 | — | — | 50.00 | — | — | — |
| Peabody . . . | 11,957 | — | — | — | — | — | — | — |
| Revere . . . | 11,894 | 5 | 1 | 60.00 | 20.00 | — | — | — |
| Gardner . . . | 11,544 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,337 | 0 | 0 | — | — | — | — | — |
| Southbridge . . . | 10,838 | 8 | 2 | 37.50 | — | 12.50 | — | — |
| Watertown . . . | 10,600 | 0 | — | — | — | — | — | — |
| Plymouth . . . | 10,336 | — | — | — | — | — | — | — |

Deaths reported, 3,543; under five years of age, 1,020; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 614, acute lung diseases 587, consumption 244, scarlet fever 24, whooping cough 23, cerebrospinal meningitis 7, smallpox 18, erysipelas 7, measles 18, typhoid fever 88, diarrheal diseases 83, diphtheria and croup 96.


From whooping cough, New York 6, Chicago 5, Philadelphia 5, Baltimore 1, Pittsburg 1, Boston 4, Taunton 1. From measles, New York 7, Chicago 1, Baltimore 5, Pittsburg 2, Fall River, Lawrence and Salem 1 each. From erysipelas, New York 4, Chicago, Philadelphia and Boston, 1 each. From smallpox Pittsburg 10, Boston 6, Everett and Revere 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 14,862,880, for the week ending Dec. 6, the death-rate was 17.2. Deaths reported 4,902; acute diseases of the respiratory organs (London) 370, whooping cough 91, diphtheria 82, measles 200, smallpox 9, scarlet fever 66.

The death-rate ranged from 6.6 in Coventry, to 25.5 in Liverpool; London 17.1, West Ham 19.3, Brighton 12.6, Portsmouth 12.0, Southampton 14.0, Plymouth 13.7, Bristol 21.7, Birmingham 18.2, Leicester 10.1, Nottingham 19.1, Bolton 18.0, Manchester 18.5, Salford 19.3, Bradford 13.1, Leeds 16.3, Hull 23.2, New Castle-on-Tyne 22.9, Cardiff 18.8, Rhondda 12.3, Sheffield 15.6, Hanley 16.7.

METEOROLOGICAL RECORD

For the week ending Dec. 20, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar-ometer. | | Ther-mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | | |
|---|-------------|--|---------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|----|-----|
| | Daily mean. | | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | | |
| S. . 14 | 30.48 | | 16 | 23 | 10 | 90 | 68 | 79 | N | W | 17 | 11 | N. | C. | T. |
| M. 15 | 30.70 | | 22 | 30 | 14 | 62 | 94 | 78 | N | W | 10 | 4 | O. | O. | O. |
| T. 16 | 30.17 | | 42 | 54 | 29 | 95 | 97 | 96 | S | E | 14 | 25 | R. | R. | .35 |
| W. 17 | 29.78 | | 42 | 48 | 35 | 79 | 63 | 71 | W | W | 15 | 14 | O. | O. | .44 |
| T. 18 | 29.70 | | 35 | 40 | 30 | 84 | 77 | 80 | S | W | 17 | 23 | C. | C. | O. |
| F. 19 | 29.89 | | 38 | 46 | 29 | 70 | 69 | 70 | S | W | 18 | 13 | O. | C. | O. |
| S. . 20 | 30.37 | | 34 | 40 | 29 | 60 | 64 | 62 | N | W | 14 | 5 | C. | C. | O. |
|  | 30.16 | | 40 | 25 | | 77 | | | | | | | | | .89 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall.

Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY
FOR THE WEEK ENDING DEC. 27, 1902.

D. N. BERTOLETTE, medical inspector. Ordered to duty as fleet surgeon of the Pacific Station.

E. H. GREEN, medical inspector. Detached from duty as fleet surgeon, Pacific Station, and ordered to the "Wisconsin."

OFFICIAL LIST OF THE CHANGES OF STATION AND
DUTIES OF COMMISSIONED AND NON-COMMISSIONED
OFFICERS OF THE PUBLIC HEALTH
AND MARINE HOSPITAL SERVICE FOR THE
SEVEN DAYS ENDING DEC. 25, 1902.

PARKER, H. B., assistant surgeon. Granted leave of absence for fourteen days from Dec. 22. Dec. 20, 1902.

WHITE, M. J., assistant surgeon. Granted leave of absence for fourteen days from Dec. 23. Dec. 19, 1902.

LLOYD, B. J., assistant surgeon. Relieved from duty at San Francisco Quarantine and directed to report to Surgeon A. H. Glennan, San Francisco, Cal., for duty. Dec. 23, 1902.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for five days from Dec. 28. Dec. 23, 1902.

GOLDSBOROUGH, D. W., acting assistant surgeon. Leave of absence for three weeks granted Acting Assistant Surgeon Goldsborough by Department letter of Nov. 22, 1902, amended so that said leave shall be for twelve days only. Dec. 22, 1902.

LEONHARDT, S. C., acting assistant surgeon. Granted leave of absence for one month from Jan. 1. Dec. 17, 1902.

RECENT DEATHS.

DR. FREDERICK L. BRADY, thirty years of age, died in St. Luke's Hospital, New York, from typhoid fever, on Dec. 24. He was a graduate of the medical department of Columbia University, and during the Spanish-American War was a member of Troop B, of Roosevelt's Rough Riders.

HENRY N. JONES, M.D., died at Kingston, Mass., last week. He was born in Epping, N. H., Oct. 15, 1815, and studied medicine at Dartmouth Medical College. He began to practise medicine in 1840 in Canaan, N. H., and removed to Kingston in 1849, where he continued to practise until the current year. He was a member of the Massachusetts Medical Society and of the Plymouth District Medical Society.

SOCIETY NOTICE.

AMERICAN ASSOCIATION FOR ADVANCEMENT OF SCIENCE.—The American Association for the Advancement of Science held its fifty-second annual meeting in Washington, D. C., beginning Dec. 20.

BOOKS AND PAMPHLETS RECEIVED.

Progressive Medicine, a Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Vol. IV. December, 1902. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1902.

Twentieth Century Practice, an International Encyclopedia of Modern Medical Science. By Leading Authorities of Europe and America. Edited by Thomas L. Stedman, M.D. In twenty-one volumes. Vol. XXI, Supplement. Illustrated. New York: William Wood & Co. 1903.

Original Articles.

THE MALIGNANCY OF JOINT TUBERCULOSIS.
ILLUSTRATED BY A SERIES OF FORTY-SEVEN CASES.¹

BY CHARLES F. PAINTER, M.D., BOSTON.

I HAVE chosen this title because I believe that a so-called healed tuberculous bone lesion is a constant menace to its possessor. This conclusion has been reached from a consideration of the following facts:

(a) In our metropolitan communities large numbers of children have been treated during the past thirty years at the children's hospitals.

(b) Our textbooks would lead to the belief that a large proportion get well with certain more or less crippling deformities.

(c) We are coming to recognize errors in the diagnosis of the character of some joint lesions formerly regarded as tuberculous which removes from this category a considerable number of the best results, already doubtless classified among the cured cases. These patients, coming from a station in life that naturally patronize public dispensaries, do not present themselves in the proportion they should among the patrons of clinics for other diseases. They are not much in evidence in the street, in the schools or other public places. They cannot conceal their deformities, as a rule, and a fair inference is that they must either become incapacitated from association with their fellows or else succumb to some other or their old disease.

Obviously, then, we are not to look for these cases in general clinics in numbers sufficiently large from which to draw conclusions.

During the past seven or eight years at the orthopedic clinic of the Carney Hospital a considerable number of adults with tuberculous joint diseases have presented themselves (about 139 cases of Pott's disease, 180 of hip and a lesser number in the smaller joints). By far the greater proportion of these were patients with disease, active from the outset, referred from other clinics where there were no facilities for treatment, or age debarred them from further attendance. A much smaller proportion were primary in adult life and came directly for their first treatment. A very considerable number came to begin treatment a second time, after a greater or lesser interval of health.

It is to this type of the disease that I have ascribed the term malignant. The pathologist recognizes among tumors a variety that manifest a tendency to recurrence after removal, either in the local scar or by metastasis, or both. There are other reasons for the classification of tumors, depending on their morphology, but in a broad, general way the division founded on the above-mentioned phenomenon has gained general acceptance. The pathologist also recognizes certain inflammatory tumors and classifies them under the head of infective granulomata, and in this classification tuberculosis is placed. The recent strife which has been going on over the infective character of

carcinoma is hardly passed and is by no means settled.

I will not attempt to justify this title, then, on pathological, but chiefly on clinical, grounds.

MALIGNANCY OF BONE TUBERCULOSIS.

| No. | Sex | Age | Disease | Onset | Duration | Treatment | Abscess | Excision |
|-----|-----|-----|--------------|---------------------------|-------------|----------------------|-----------|---------------|
| 1 | M | 41 | Pott's | 1 1/2 yrs. | Trill 12 | Braces | No | 21 yrs later |
| 2 | M | 30 | Hip (R) | 12 yrs. | | do | Yes | 3 yrs " |
| 3 | M | 27 | T.A. (L) | 17 yrs. | 5 yrs. | Plaster Splint | Yes | 5 yrs " |
| 4 | M | 33 | Hip (L) | 2 yrs. | 5 yrs. | Splint Crutches | Yes | 21 yrs " |
| 5 | M | 27 | T.A. | 19 yrs. | 1 1/2 yrs. | Plaster | Yes | 6 1/2 yrs " |
| 6 | F | 50 | Pott's | 19 yrs. | 15 yrs. | Braces | Yes | 6 yrs " |
| 7 | F | 54 | T.A. (L) | 3 1/2 yrs. | 2 yrs. | None | Yes | 17 yrs " |
| 8 | M | 25 | Pott's | 5 yrs. | | Desultory | Yes | 10 yrs |
| 9 | F | 41 | Hip (D) | 5 yrs. | | Splints-death | Yes | 3 yr interval |
| 10 | F | 26 | Hip | 23 yrs. | | None | Yes | 15 yrs later |
| 11 | M | 18 | Pott's | 2 yrs. | 6 yrs. | Brd. Braces. | No | 10 yrs " |
| 12 | M | 18 | Pott's | Early years. | | None | No | 11 yrs " |
| 13 | M | 22 | Hip (D) | 17 yrs | 6 mos. | Crutches | No | 4 1/2 yrs " |
| 14 | M | 21 | Hip (D) | 2 1/2 yrs | | Child Hosp. | Yes | 12 yrs " |
| 15 | M | 19 | Hip (D) | 1 1/2 yrs. | | Apparatus | Yes | 10 yrs " |
| 16 | F | 25 | T.A. | 8 yrs. | 5 yrs. | Apparatus | No | 9 yrs " |
| 17 | M | 26 | Hip | 3 yrs. | 3 yrs. | — | Yes | 18 yrs " |
| 18 | M | 39 | Hip | Fistula | 5 yrs. ago | — | No | 12 yrs " |
| 19 | M | 17 | Pott's | 15 mos. | 13 1/2 yrs. | Ch. Hosp. | Yes | 3 yrs " |
| 20 | M | 47 | Caries ankle | Infancy | 13 yrs | — | Yes | 30 yrs " |
| 21 | M | 23 | Pott's | 4 yrs. | 6 yrs. | Apparatus | Yes | 9 yrs " |
| 22 | M | 27 | Pott's | 22 yrs | | Apparatus | Yes | 4 yrs " |
| 23 | F | 26 | Hip | 13 yrs | 13 yrs | None | Yes | 13 yrs " |
| 24 | M | 22 | Hip | 4 yrs | 10 yrs | None | Yes | 8 yrs " |
| 25 | M | 20 | Pott's Hip | 7 yrs | | Apparatus | No | 9 yrs " |
| 26 | M | 40 | Hip | 15 yrs | | No apparatus | No | 28 yrs " |
| 27 | F | 19 | Hip | Several yrs ago | | do | Yes | Several years |
| 28 | F | 28 | Pott's | 3 yrs | | Apparatus early | No | 24 yrs later |
| 29 | M | 21 | Caries ilium | Small boy | | No apparatus | Yes | 19 yrs " |
| 30 | F | 16 | Pott's | Infancy | | do | Yes | 12 years " |
| 31 | M | 16 | Pott's | 6 yrs | | Apparatus | | 8 years " |
| 32 | M | 41 | Hip | 11 yrs | | Crutches only | Yes | 25 yrs " |
| 33 | F | 35 | T.A. | 9 yrs | | Apparatus | Yes | 20 yrs " |
| 34 | F | 28 | Pott's | 5 yrs | | No apparatus | Yes | 14 yrs " |
| 35 | M | 35 | Hip | 5 yrs | | None adequate | Yes | 20 yrs " |
| 36 | M | 28 | T.A. | 11 yrs | | do | Yes | 10 yrs " |
| 37 | F | 22 | Hip | Small child | | Apparatus | Yes | 17 yrs " |
| 38 | F | 22 | Hip | 10 yrs | | do | Yes | 7 yrs " |
| 39 | F | 21 | Hip | Hip 14 yrs Ankle 8 yrs | | No apparatus | Yes | |
| 40 | M | 24 | T.A. | "As a child | | Plaster | Yes | 4 yrs " |
| 41 | M | 16 | T.A. (R) | 7 yrs | 6 mos | Not stated | No | 8 1/2 yrs " |
| 42 | F | 17 | T.A. | 7 yrs | | Child. Hosp. | Yes | 9 1/2 yrs " |
| 43 | M | 31 | Pott's | 7 yrs | | Child. Hosp. (6 yrs) | Yes | 24 yrs " |
| 44 | F | 25 | T.A. | 17 yrs | | Not Stated | No | 7 yrs " |
| 45 | F | 20 | Shoulder (B) | Hip at 3 yrs | | Apparatus | Yes (hip) | 17 yrs " |
| 46 | M | 27 | Pott's | 6 mos. | | Apparatus (18) | Yes | 9 yrs " |
| 47 | F | 48 | Pott's | 18 yrs | | Braces & Jackets | No | 22 yrs " |

* Sir in Tuberculosis of the wrist.

¹ Cases reported before the American Orthopedic Association in June, 1902.

Paper read before the Clinical Meeting of Boston Medical Library, Nov. 17, 1902.

Barker and Croft, writing in the *British Medical Journal*, have already drawn attention to this tend-

ency to late recurrence in bone tuberculosis. Our orthopedic textbooks have compiled numerous collections of statistics regarding the prognosis in the various joint lesions. One of the conclusions drawn from these is that once convalescence is well established in childhood (and by convalescence is meant abscesses healed, spasm disappeared, general health restored and apparatus discarded) the patient is cured, and that though some deformity may remain, causing more or less discomfort, the particular bone lesion for which treatment was undergone is practically well. The percentage of recovery during the first decade is said to be 65%, with an increasing ratio of bad results for the succeeding decades. The period of time covered by the observations upon which these percentages were based in no cases exceeded eight years, and in one series of 39 cases only eight were over four years. In my series of 47 cases the average interval which elapsed between the end of the treatment of the initial diseases and its recrudescence was $12\frac{1}{2}$ years, that is, $4\frac{1}{2}$ years in excess of the maximum period at which statistics were obtained in the textbooks. It would appear, then, that had the statistics upon which these prognoses were made been procured after a longer interval the percentage of recovery would need to be modified, or else we are dealing with a more severe type of disease in this community. This last possibility is partly offset by the fact that into these percentages enter some of the cases treated here at our own Children's Hospital, many of which figure in both statistics.

It has been the commonly accepted belief that the danger from tuberculous bone disease lay chiefly in the liability of its extension to the viscera, that is, its metastasis, and in a certain proportion of the cases this is true. This feeling has not found expression in our ideas of treatment, for if it had, radical removal of the focus would have been tried earlier. In this series of cases, 38 of the recurrences were at the seat of the old disease alone; 5 were both local and elsewhere, whereas only 4 were purely metastatic. These four metastases were either pulmonary, in the genito-urinary tract, or elsewhere in the osseous system.

Traumatism has been directly associated with the relapse in about 25% of the cases. I have been a little disappointed in looking up the statistics not to find it more frequent, for my preconceived clinical impressions were that it would be more constantly associated. I had felt that this would be true because of the way in which repair takes place in bone tuberculosis. The process is analogous to that in the lung; namely, organization of the granulation tissue thrown out about the point of infection. Thus the bacilli become encapsulated, but, owing to their tenacity of life, they remain pathogenic for indefinite periods, and all that is needed to permit them to resume their activities is some violence causing a rupture of this protective wall of granulation, or a lowering of the resistance of the tissues to such a degree that the bacilli can break through. It matters little which cause operates to bring this about; the result is the same.

Two recent operations upon old tuberculous knees have emphasized this method of repair. In one case an excision was done for deformity, and

in the other, the joint was opened for acute symptoms in a relapsing case. In the first, the disease had been in the internal condyle, and, on opening the joint, there were no signs of the old disease except for a thin shell of bone over a cavity in the internal condyle, which was lined with well-organized granulation tissue, and contained about one-half ounce of fluid, which was quite clear, except for a few old flocculi. A similar condition prevailed in the second case, except that here there were two cavities, one in the tibia, and one in the femur. In the last case, which had been quiescent for five years, and the patient had used the joint freely at her work as a mill hand, the disease had become quite active, and the synovial membrane about the old encapsulation was freshly infected, having all the appearances of being a new process.

In these cases it was perfectly obvious that direct violence from the outside or even from the use of the limb, stiff as it was, would be very liable to disrupt the sac enclosing the old focus. In fact, the conditions which surround an adult who has a stiff hip or knee, or an ankylosed spine, the result of tuberculous disease, must be very favorable indeed if the wear and tear of life and the trauma of ordinary use, leaving out of consideration the unusual and accidental traumata to which we are all liable, does not stir up the old process, even after many years of latency. The existence of deformity immensely aggravates the liability to recrudescence, as the strain at the site of the old disease is very much greater under such circumstances. A slight trauma can exert great force when communicated to a diseased joint through a limb ankylosed in a bad position, and I feel confident that it is in this manner that most of the relapses are caused.

To revert to the textbooks, we find them in practical accord as to the difference in the prognosis among children and adults. Fewer and fewer cases recover, the later in life the disease manifests itself. This is due to two principal causes, I believe. In the first place, the existence of deformities, which is the rule, and among which we may include ankylosis and shortening (for they operate in the same way), not only puts the diseased joint to a disadvantage but injures the general health of the individual as well. In the second place, adult tissues have not the resistive or reparative power that the same tissues have in the growing period of life. They will not withstand from without or within what they would in earlier years, neither will they as firmly wall off a process that becomes active from any cause.

As the cases have been observed at the clinic, however, the ones in which the disease ran its acute course in childhood and relapsed in adult life did less well, as a rule, than those coming for treatment for the first time early in adult life. Such patients, however, should not be compared with those forming the subject of this paper, for we have not the necessary data on the primary adult cases who have apparently recovered upon which to base the comparison.

Treatment. — The treatment of tuberculous joint disease is undergoing considerable modification.

The tendency is toward more and more complete fixation in childhood, in recognition of the fact that

deformities can thus be prevented more readily and healing of the local process can be more firmly established, the accomplishment of either of which means less likelihood of relapse.

Operations in adults are undertaken earlier and more radically because it is found that excision gives greater immunity from extension of the disease locally or systemically, even though the ensuing functional result may be less satisfactory than ankylosis in a good position might be.

Such facts as this table shows should lead us, it seems to me, to regard joint tuberculosis in childhood in a more serious light than we have been in the habit of doing. Conservatism has given such apparently good results, during the average period that cases are under observation, that we have been content to rest our treatment upon fixation in some form, with surgical interference as a last resort. Now that there is a wider knowledge of the symptomatology of joint disease among the profession, diagnoses are made much earlier than formerly.

More refined methods are now in our possession for examining joints and determining the character of their lesions, so that we can not only determine with certainty that we are dealing with tuberculosis but where in the joint the lesion is situated; I refer, of course, to the use of tuberculin and the x-ray. In view of these facts I think we are justified in exploring articulations that we otherwise should leave alone, in order to eradicate, if possible, a disease which, if left to heal under prolonged treatment, is a source of constant danger to the individual. This, however, is a field to be approached not rashly, but with conservative radicalism, and I feel confident that with proper care in selection good results will follow.

The cases which heal and relapse should be treated much more energetically than is customary. This is desirable because their tendency is to do badly and because the onset of the recrudescence represents a time when the process is active in the smallest possible area of the joint, the bulk of the active disease being walled off from the rest of the joint and therefore much more amenable to operative removal even than at the very outset of the disease. Exploratory incisions and careful dissections in these cases will oftentimes effectively get rid of disease with much less mutilation than an excision. The climatic treatment for joint tuberculosis as well as for the pulmonary form is being more and more used. It is not necessary to go to the pulmonary resorts to secure this. It can be obtained at home by removing the patient into the open air. This has been carried out in tents, with most gratifying results in the hands of McKenzie and Galloway in Toronto. In the treatment of septic conditions, the value of this sort of treatment has been long recognized. The bad results in tuberculosis of any form are due to superimposed septic infections, virtually a septicemia, and therefore we have all the more reason for urging the open-air treatment, which gives such good results in septic cases.

CONCLUSIONS.

(1) Tuberculous disease tends to recur after apparent cure in a considerable proportion of cases.

(2) This recurrence is most commonly a local one. Metastases are not common.

(3) Trauma, direct or indirect, is frequently associated with the recurrence. Indirect trauma is probably the exciting cause of the recurrences, especially where partial ankylosis or deformity exists.

(4) Patients who have suffered from bone and joint tuberculosis should be cautioned that they are not well when symptoms have ceased and that reasonable care must be exercised to avoid recrudescences.

(5) Deformity and shortening should be corrected as far and as accurately as possible to lessen the chance of recrudescence.

(6) Mechanical treatment, especially fixation, should be used in the acute conditions in childhood. Exploratory interference, where discretion is used, with a view to removal of isolated foci, is *advisable* in many cases in children, and is to be *urged* in the majority of the recrudescences, if seen early. Recognition of the fact that patients with hip disease, Pott's disease and tumor albus have tuberculosis just as much as if they had phthisis, and should be treated accordingly, must be insisted upon.

The following table presents in perhaps a more graphic manner the observations upon which this paper is based. Its principal facts are epitomized as follows:

STATISTICS.

Total cases, 47.

Twenty-nine males, eighteen females.

Thirty cases treated with apparatus.

| | |
|-------------------------------|----|
| Pott's disease | 16 |
| Hip disease | 17 |
| Tumor albus | 10 |
| Ilium | 1 |
| Ankle | 2 |
| Shoulder | 1 |
| Abscess occurred in 33 cases. | |

Average age at time of exacerbation, twenty-eight years.

Average duration of quiescence in forty-five of these cases, twelve and one-half years.

THE IMPORTANCE OF INCREASED HOSPITAL ACCOMMODATIONS FOR THE TREATMENT OF MEASLES.

BY JOHN H. MCCOLLOM, M.D., BOSTON,

Resident Physician of the Department for Contagious Diseases, Boston City Hospital.

THE idea is quite prevalent in the community that measles is a comparatively mild disease, and that treatment in hospital is not necessary. It is the object of this paper to show that while this opinion may be true to a certain extent, it is not true in the majority of cases where adults are attacked with this disease. It is not to be supposed that an epidemic of measles can be limited to such an extent as is possible with some of the other infectious diseases, but it is certainly true that many lives may be saved and much suffering prevented by having sufficient hospital facilities for the treatment of all applicants ill with this disease. Measles is the most infectious of all diseases, and it is infectious to a certain extent from the time that a patient commences to cough. This infectious stage may exist for a week or ten days before there is any eruption, or before it is possible to make a diagnosis. Koplik's sign is of the greatest assistance in making an early diagnosis, and it sometimes can be seen, if a careful examination is made of the mu-

cous membrane of the mouth, four or five days before there is any coryza or before the appearance of the eruption. It has been claimed that this symptom is not always present in measles, and it also has been stated that this sign is present in other diseases than measles. In regard to the first statement personal experience has demonstrated that this sign is always present in measles, and that the statement made by certain observers that they have failed to find this appearance proves that careful examination was not made or that this condition was not recognized. In regard to the second statement that Koplik's sign is present when the patient does not have measles, my experience has shown that an aphthous condition of the mouth is very frequently mistaken for Koplik's.

The importance of the early recognition of the disease and the prompt isolation of patients cannot be overestimated, for only in this way can the prevalence of the disease be diminished. This is particularly important in hospitals and other institutions where people are brought into intimate relationship.

In a city of the size of Boston, there is a very large contingent of young men and young women living in boarding houses and lodging houses who, if they are taken ill with measles, require careful hospital attention. Many patients ill with this disease are refused admission at the South Department of the Boston City Hospital for lack of room. There is no doubt that much suffering is caused thereby and also some deaths. It must be borne in mind that the South Department is the only hospital that admits this class of patients. It is also worthy of notice that if there are patients ill with measles in the Boston City Hospital proper, in the Massachusetts General Hospital, in the Children's Hospital, in the Carney Hospital, and in the other smaller hospitals of the city, as well as in the various eleemosynary institutions, the South Department must provide for them. It is a well-recognized fact that 2,000 cubic feet of space should be given to each patient ill with an infectious disease. It is more important with measles to have this amount of air space than with many of the other infectious diseases. During the past few years, in the section at the South Department devoted to measles, the air space has been diminished, owing to the crowding of the patients, to 800 cubic feet. The section devoted to measles is separated from the other wards by open air corridors seven feet wide, which gives a fair amount of isolation; but this is not sufficient to prevent the possible danger of cross infection. The safety of patients ill with scarlet fever, as well as those ill with measles, imperatively demands a separate pavilion for the treatment of the latter disease.

The complication of diphtheria and measles is extremely common, and patients ill with these diseases require separate accommodations. When the condition of the mucous membrane in measles is taken into account, one can readily understand why diphtheria so frequently supervenes in an attack of measles. In the Boston Medical and Surgical Journal of July 25, 1901, there is a paper entitled, "Diphtheria as a Complication of Measles,"¹ by

David N. Blakely, M.D., of Boston, and Fred G. Burrows, M.D., of San Francisco, formerly assistant resident physicians at the South Department, which gives a very good idea of the severity of this condition. In one of the tables the following figures appear, based on the admissions to the ward for cases of mixed infection:

| | | Deaths. | Death-rate. |
|-------------------------------------|-----|---------|-------------|
| Total number of cases of diphtheria | | | |
| with measles..... | 157 | 54 | 34% |
| Number of laryngeal cases..... | 82 | 36 | 44% |
| Number of intubations..... | 47 | 26 | 55% |
| Number laryngeal not intubed..... | 35 | 10 | 29% |

Certainly these patients required hospital treatment, and the majority of them would have died without it.

Inflammation of the middle ear is a very frequent sequela of measles, the percentage being nearly twice as great as that in scarlet fever. This condition, if the process extends to the mastoid cells, requires prompt surgical interference, which can better be done in a hospital than at a private house. Certainly these patients require hospital treatment, and it is also evident that they must be isolated.

It has been claimed that measles only attacks children, but this is not true to the same extent as in scarlet fever. As illustrating this point, the following figures have been taken from the report of the surgeon-general of the United States navy. In 1898 there were 58 cases of measles in the navy, with an average strength of 15,229; in 1899, with an average strength of 23,038, there were 135 cases of measles; in 1900, with an average strength of 20,113, there were 37 cases; in 1901, with an average strength of 22,977, there were 160 cases. Scarlet fever in the navy for the same years was as follows: In 1898, there were 21 cases; 1899, 38 cases; 1900, 29 cases, and in 1901, there were no cases of scarlet fever.

In the report of the surgeon-general of the United States army, it is stated that in 1898 there were 7,389 cases of measles, giving an admission rate of 49.98 per thousand of strength; in 1899, there were 2,755 cases of measles, with an admission rate of 26.10 per thousand of strength; in 1900, there were 622 cases of measles, with an admission rate of 4.51 per thousand of strength. The greater prevalence of measles in the army, as compared with the navy, may be explained by the fact that as the men in the navy are on board ship much of the time, the possibility of infection is very much less than where men are on duty in barracks and camps.

A study of mortuary statistics proves that deaths from measles are an important factor in increasing the death-rate in cities. Chart A shows the ratio of mortality of scarlet fever per 10,000 of the living, in Boston, New York (old city), Philadelphia, Brooklyn, Chicago, St. Louis, from 1897 to 1901 inclusive, compared with that of measles in the same cities for the corresponding time. It will be seen from this chart that in 1897, 2.51 out of every 10,000 of the living in Boston died from scarlet fever and that during that year only a comparatively small proportion in Boston died from measles. In 1900 in Philadelphia three people out of every 10,000 died from measles, and only 1.25 died from scarlet fever. In Brooklyn in 1900 the ratio per 10,000 of deaths from measles was 2.65, while that from scarlet

¹ Boston Medical and Surgical Journal, vol. cxlv, No. 4, pp. 89-92, July 25, 1901.

fever for the same time was only 1.11 per 10,000. Without giving a detailed account of the ratio of

1.74, 1.29, .88, .78, 1.28, while those from measles for the corresponding years were 4.31, 6.82, 4.75, 4.21, 4.30, or, in other words, nearly three times, and, in some years, four times as many people died from measles in London as died from scarlet fever. It is unnecessary to take up each city in detail, the chart is sufficient proof of the severity of measles in the five foreign cities taken for comparison with Boston. Why there should be such a low mortality rate in Boston it is impossible to explain. It is evident, however, from a careful study of mortality statistics of Boston that many deaths are caused by measles and its complications each year, which fact shows the need of greater hospital accommodations.

The following conclusions are justified:

- (1) Measles is not necessarily a mild disease.
- (2) There are a great number of individuals living in boarding houses and lodging houses who require hospital treatment, if ill with measles.
- (3) Present accommodations are insufficient.
- (4) In order to properly protect scarlet fever patients and measles patients from cross infection, a separate pavilion is imperatively demanded for the treatment of those ill with the latter disease.

AN EXPERIMENTAL AND PRACTICAL DEMONSTRATION OF THE VALUE OF DOWNES' ELECTRO-THERMIC ANGIOTRIIBE.

BY JOHN W. KEEFE, M.D., PROVIDENCE,

Attending Surgeon to the Rhode Island and St. Joseph's Hospitals.

THE use of compression and heat to prevent hemorrhage as employed in the modern electro-thermic angiotriibe of Downes would, at first sight, lead one to think we had retrogressed even unto the early days of Ambroise Paré. Yet the finished instrument of to-day upon which Downes has spent so much time and thought bids fair to supersede the ligature, to the improper sterilization of which so many deaths may be traced.

The following experimental work on resection of the intestine, with the aid of the electro-thermic angiotriibe, was carried out on dogs, with a view of finding an aseptic method for operating upon the intestine and stomach.

CASE I. Dog, weight thirty pounds. Resection of intestine. Downes' electro-thermic angiotriibe. Murphy button. Death.

Operation Nov. 21, 1902. Ether anesthesia. The abdomen was opened, the ileum drawn through the wound, and the electro-thermic angiotriibe used to clamp the intestine, and a current of sixty amperes allowed to pass through the instrument for fifty-five seconds. This process was repeated four inches distant on the intestine and also on the mesentery, supplying the portion of gut to be excised.

The clamp left a desiccated strip of tissue three eighths of an inch wide along the mesentery and at two places across the intestine. A four-inch strip of gut was excised by cutting through the center of the clamped area. A lateral anastomosis was then made with a Murphy button. The clamped ends of the gut, occluded by the desiccated strip of tissue, were purposely not interfered with, as I wished to learn how soon they would slough, should this take place. I found free fluid in the peritoneal cavity, showing the dog already had peritonitis. Death thirty-eight hours after operation.

Autopsy by Dr. Fulton, pathologist to the Rhode Island Hospital. Both ends of the clamped gut had sloughed, allowing extravasation of feces. No leakage about Murphy button. General peritonitis. About four

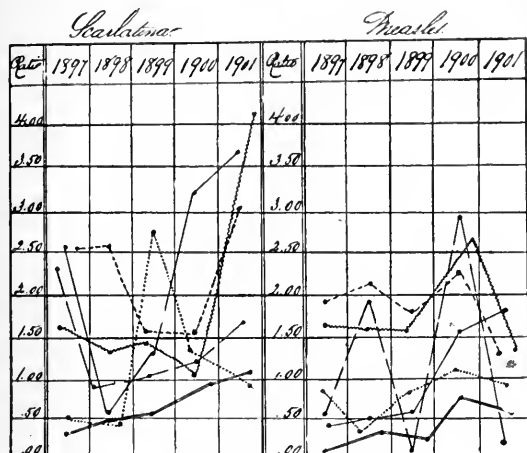


CHART A.

Boston = ————— New York = - - - - - Philadelphia =
Brooklyn = ~~~~~ Chicago = - . - . - St. Louis = - - - - -

deaths from scarlet fever and measles in each of these cities from 1897 to 1901, inclusive, it is sufficient to simply glance at Chart A to see that measles is a much more fatal disease than is generally believed. Even the most prejudiced observer, from a study of this chart, should be convinced that patients ill with measles require hospital treatment.

In the foreign cities the ratio of deaths from measles per 10,000 of the living is very much greater than that of Boston. Chart B shows the ratio of mortality of scarlet fever and of measles per 10,000 of the living in London, Liverpool, Glasgow, Vienna

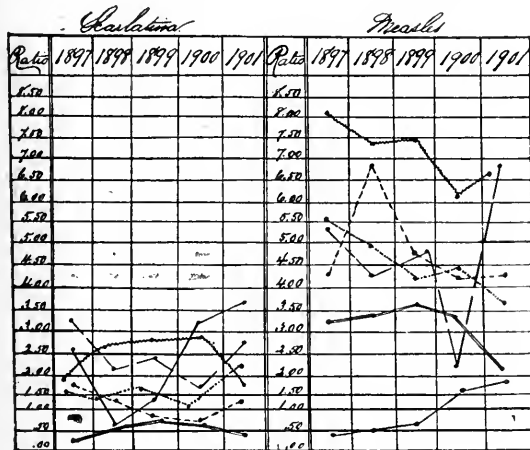


CHART B.

Boston = ————— London = - - - - - Liverpool =
Glasgow = ~~~~~ Vienna = - . - . - Paris = - - - - -

and Paris as compared with Boston. A study of this chart shows that in all the foreign cities represented, with the exception of Liverpool, the ratio of deaths from measles per 10,000 of the living was very much greater than that from scarlet fever. For instance, in Glasgow the ratio of deaths from scarlet fever in 1897 was 1.84, while that from measles was 8.03. In London the ratios of deaths from scarlet fever in 1897, 1898, 1899, 1900 and 1901 were, respectively,

feet from site of operation in the ileum was found an inflammatory mass the size of a quarter, in the center of which was a perforation of the gut; thus accounting for the free fluid I found at operation.

This taught me that the electro-thermic angiotribe had caused sloughing of the clamped portions of intestine in at least thirty-eight hours.

CASE II. Dog, weight ten pounds. Resection of intestine. Electro-thermic angiotribe. End-to-end anastomosis. Recovery.

Operation Nov. 25, 1902. Ether anesthesia. *Celiotomy.*—A loop of the ileum was drawn through the wound and five inches incised by the electro-thermic angiotribe, as in foregoing operation. The ends of the gut, still occluded by the desiccated strip of tissue, were placed in apposition and silk Lembert sutures were used to approximate peritoneal surfaces, thus leaving the intestine occluded. I depended upon subsequent sloughing of the clamped portions of gut. The operation was aseptic throughout. Bowels moved thirty-six hours after the operation. Milk diet; no medicine given. The dog is perfectly well to-day, one month after operation.

CASE III. Dog, weight forty pounds. Resection of intestine. Electro-thermic angiotribe. End-to-end anastomosis with Murphy button. Death.

Operation Dec. 10, 1902. Ether anesthesia. *Celiotomy.*—A coil of ileum was withdrawn and about five inches excised as in former operations with the electro-thermic angiotribe. The desiccated ends of the gut were invaginated and an end-to-end anastomosis made with a Murphy button. This was done with considerable difficulty, as the mesentery was severed too near the excised end of intestine. Wound closed with silkworm-gut sutures. Aseptic operation. Death forty-four hours after operation.

Autopsy Dec. 12 by Dr. Fulton. General peritonitis. Leakage about the Murphy button where infolded portion near mesentery had pulled out sufficiently to allow escape of septic material. Desiccated ends sloughed on one side, nearly so on the other. Not as satisfactory an operation as an end-to-end anastomosis with sutures.

CASE IV. Dog, weight twenty-five pounds. Resection of intestine. Electro-thermic angiotribe. End-to-end anastomosis with sutures. Recovery.

Operation Dec. 15, 1902. Ether anesthesia. *Celiotomy.*—Five inches of the ileum were resected by the aid of the electro-thermic angiotribe. An end-to-end anastomosis was made with five Lembert and a Cushing suture, inverting the desiccated ends of the intestine. *After treatment.*—Milk diet and dog bread. The dog seems to be perfectly well, since recovering from anesthetic. Bowels moved on the third day. No medicine given.

The advantages of the method are: (a) Rapidity of operation; (b) hemostasis without the use of a ligature; (c) no soiling of the peritoneum, thus ensuring an aseptic operation.

The gynecological cases here reported are selected from my service at the St. Joseph's Hospital.

CASE I. Removal of ovarian cyst. Plastic operation on right ovary. Downes' electro-thermic angiotribe. No ligatures. Recovery.

Female; nineteen years of age; single. Operation Nov. 9, 1902. *Celiotomy.*—In the right ovary was found a cyst, the walls of which were excised and the resulting wound sutured with cumol gut. An ovarian cyst the size of a hen's egg presented on the left side, and this cyst with the left Fallopian tube was removed. Two applications of the electro-thermic angiotribe prevented hemorrhage and left a desiccated strip of homogeneous tissue about three eighths of an inch wide. The recovery was uneventful. No ligatures were used throughout the operation.

CASE II. Abdominal hysterectomy with removal of dermoid cyst and intra-ligamentary cyst. Ureters catheterized. Downes' electro-thermic angiotribe. Recovery.

Operation Nov. 11, 1902. Female; colored; married; thirty-two of age. Both ureters were catheterized,

using Kelly's cystoscope with electrical illumination. This served as a guide during the operation. Upon opening the abdominal cavity, the omentum and intestine were found adherent to the fibroid mass and a dermoid cyst. With considerable difficulty the dermoid cyst on the left was removed. A uterus containing many fibroids and reaching to within two inches of the umbilicus was removed by a supravaginal amputation. The electro-thermic angiotribe was used to prevent hemorrhage, while clamps were sometimes employed to temporarily do the same. No ligatures were left in the abdominal cavity. Post operative period unusually free from pain. Recovery.

CASE III. Celiotomy. Ruptured tubal pregnancy. Removal of both tubes and ovaries. Ureters catheterized. Downes' electro-thermic angiotribe. Recovery.

Female; married; thirty-two years of age. Entered the hospital with a history of rupture of a tubal pregnancy about three weeks ago. The temperature and pulse, with history and examination, indicated infection of a pelvic hematocoele; so under gas-ether anesthesia, a vaginal section was made into Douglas' pouch, and by aid of irrigation and drainage the patient's condition improved. Four weeks later another operation on Nov. 15, 1902. *Celiotomy.*—Both tubes and ovaries were found diseased and removed. The electro-thermic angiotribe was used in place of ligatures. Pelvis irrigated with normal salt solution, and a gauze wick was drawn through Douglas' pouch into the vagina to drain pelvis. The ureters were catheterized previous to the abdominal operation to serve as guides. A small amount of pus appeared in abdominal wound, probably infected at the time of operation by removal of infected blood clots. Otherwise recovery uninterrupted.

CASE IV. Removal of pus tube and cystic ovary of left side. Ureters catheterized. Electro-thermic angiotribe. Recovery.

Female; married; thirty years of age; was operated on by my associate, Dr. Jones, about five weeks ago, a pus tube with many firm adhesions having been removed. The patient's condition at the time did not warrant the removal of an adherent pus tube on the opposite side, so the wound was closed. Operation, Nov. 20, 1902, for removal of pus tube and ovary on the left side by Dr. Jones, at which I assisted by catheterizing ureter as a guide. The electro-thermic angiotribe was used instead of ligatures. Recovery uneventful.

CASE V. Abdominal hysterectomy. Fibroids long standing, large size, many adhesions. Death from shock not due to inefficiency of the electro-thermic angiotribe.

Female; married; fifty-five years of age. Noticed mass in abdomen eighteen years ago. Tumor has gradually increased in size until it reaches to the liver and rises four inches above umbilicus. Patient suffers intense pain when not under influence of an opiate. Says she has taken four grains of morphia in a single day. *Diagnosis.*—Multiple fibroids with adhesions. Patient's physical condition poor, and although under treatment for some time it did not improve. Nov. 29, 1902, operation done only as a last resort at the earnest solicitation of the patient. The uterus, tubes and ovaries were removed with greater difficulty than I have ever encountered. The electro-thermic angiotribe was used in place of the ligature, and was of great value. The patient died from shock about ten minutes after the completion of the operation. No hemorrhage.

CASE VI. Complete prolapsus uteri. Vaginal hysterectomy, catheterization of ureters. Downes' electro-thermic angiotribe. Recovery.

Female; married; sixty-two years of age. Uterus presents, with vaginal walls outside of vulva and looks as large as an orange. Dec. 2, 1902, operation; gas-ether. The right ureter was catheterized with the aid of a Bransford Lewis cystoscope, the left ureter with Kelly's cystoscope, both being illuminated from an alternating current 110 volts, a Ritzer transformer being used. A vaginal hysterectomy was done very readily by the aid of the electro-thermic angiotribe. Although patient remained in bed for two weeks, she seemed to have scarcely any discomfort from the operation.

CASE VII. Abdominal hysterectomy for fibroids. Ureters catheterized. Downes' electro-thermic angiotribe. Recovery.

Female; widow; fifty-one years of age. Operation Dec. 9, 1902. Both ureters were catheterized and the catheters being allowed to remain *in situ* served as guides during the supravaginal amputation of a uterus containing eight fibroids. Both tubes and ovaries were also removed, the electro-thermic angiotribe being used to prevent hemorrhage. Recovery uneventful.

CASE VIII. *Celiotomy*. Double salpingo-oöphorectomy. Ureters catheterized. Downes' electro-thermic angiotribe. Recovery.

Female; married; twenty-one years of age. Operation Dec. 16, 1902. Both tubes contained pus, and the ovaries were found very large and had undergone cystic degeneration. They were removed by the aid of the electro-thermic angiotribe. Preliminary catheterization of the ureters having been accomplished, the catheters were allowed to remain as guides during the operation. The clamps were applied five times and the current, sixty ampères, allowed to remain on for from thirty-five to forty seconds.

Some may think the instrument is time-consuming, so I will state that from the beginning of this operation to the time when the abdominal wound was ready for closure was twenty-one minutes. The right ovary and tube was removed in six and one-half minutes, and its fellow in four and one-half minutes. The recovery was uneventful.

CASE IX. Abdominal hysterectomy. Fibroids; double salpingo-oöphorectomy. Ureters catheterized. Appendectomy. Downes' electro-thermic angiotribe. Recovery.

Female; single; forty-one years of age. Dec. 16, 1902. Examination under ether anesthesia. Ureters catheterized. Fibroid uterus found. Dec. 20, 1902, operation by my associate, Dr. Jones. A supravaginal amputation of the uterus, with removal of both tubes, ovaries and appendix was readily performed by the aid of the electro-thermic angiotribe. Recovery uneventful.

CASE X. Abdominal hysterectomy. Fibroids; double salpingo-oöphorectomy. Appendectomy. Downes' electro-thermic angiotribe. Recovery.

Female; married; forty-eight years of age. Operation Dec. 23, 1902. The uterus, containing a number of fibroids, was amputated at internal os and removed with both tubes and ovaries. The appendix besides having a meso-appendix, which reached to one-fourth of an inch of the tip, had a band of adhesion about the center, which caused the appendix to form a coil. The walls of the appendix were thickened and the blood vessels prominent. A small electro-thermic clamp was made to grasp, at one bite, the meso-appendix and appendix. A current of sixty ampères was allowed to pass through the instrument for twenty seconds. The appendix with its mesentery was then removed by cutting with a scissors through the center of a crushed and desiccated path made by the clamp. The stump was inverted and the peritoneal surfaces approximated by tying the loop and both ends of modified mattress suture in a bunch, as suggested by Dr. Reynolds. The recovery has been normal.

CASE XI. *Celiotomy*. Left salpingo-oöphorectomy. Left ureter catheterized. Appendectomy. Downes' electro-thermic angiotribe. Recovery.

Female; married; nineteen years of age. Dec. 23, 1902. Operation; gas-ether. The left ureter was catheterized and the catheter allowed to remain during the operation to assist in locating the ureter; as a pus tube, cystic ovary and numerous adhesions formed a large mass in left side of the pelvis. Upon opening the abdomen the uterus was separated from the posterior pelvic wall, and by careful manipulation the left pus tube and ovary were set free and removed by the aid of the electro-thermic angiotribe. The appendix showed evidences of an old inflammation, and was removed by the Downes' electro-thermic angiotribe. The meso-appendix was first clamped and the current turned on for twenty seconds, and then the appendix was clamped and the current applied for twenty-five seconds. The appendix with its mesentery was then removed by cutting through the parchment-like ribbon left by the clamp. A modified mattress suture approximated the peritoneal surfaces over the sterile stump. The wound was closed in layers. Peritoneum with cumol gut, fascia with cumol chromicized gut, and skin with

subcutaneous silver wire. Recovery perfect, scarcely any pain.

No ligatures were used during the foregoing operations, and no hemorrhage has followed the application of the electro-thermic angiotribe. The patients seemed to have less pain subsequent to operation than is usual when the ligature is used.

An alternating current of 110 volts, which is used in lighting the hospital, was employed by the aid of a Ritzer transformer, to heat the electro-thermic angiotribe and give light in the cystoscopic examination necessary to catheterize the ureters.

The use of these appliances may be learned in a very short time, as it is not necessary to have a profound knowledge of electricity to use the transformer or electro-thermic angiotribe.

Some of the advantages of the electro-thermic angiotribe are:

- (1) Rapidity of operation.
- (2) Asepsis and cleanliness during the operation; no soiling with blood, pus or feces, as one may meet with in the removal of a pus tube, appendix or portion of intestine by other methods.
- (3) Hemostasis without the aid of a ligature.
- (4) We have no secondary hemorrhage from the slipping of ligatures, or the subsequent infection of the same, causing death or discharging sinuses to remain for months.
- (5) We have less pain subsequent to operation, as the tissues are not puckered and constricted by ligatures.
- (6) The manner of using these instruments is very simple, and one should try this method before passing judgment thereon.

PLAGUE SERUM IN THREE CASES.

BY W. J. CALVERT, M.D., ST. LOUIS, MO.,

Formerly Assistant Surgeon, U. S. A.; Lecturer on Tropical Diseases in Medical Department, Washington University, St. Louis, Mo.

OWING to the limited amount of plague antitoxin in Manila, very little opportunity was offered to test its merits. The following cases are reported to help make up data for a more general conclusion. In the first case Yersin's serum was used, and Kitasato's in Cases II and III. I take this occasion to thank Professor Kitasato for so generously sending a quantity of his plague antitoxin to the Pathological Laboratory, Board of Health, Manila, P. I.

CASE I. S. L., adult male Filipino was admitted to San Juan de Dios Hospital at 9.30 A.M., July 7, 1900, where the diagnosis of plague was made at 1.30 P.M. Previous history is unknown. Smears from blood show numerous plague bacilli. Cultures from blood were positive. Patient was unconscious when removed to Plague Hospital. On admission, temperature was 39.7° C., pulse 140, and respiration 32.

Physical examination revealed an old itch; eyes dull, pupils dilated; frothy bloody discharge from mouth, tongue covered with brownish-white coat, edges clean and edematous; clotted blood about nares from previous hemorrhage; veins in neck pulsating; left side of thorax more prominent, movement less, vocal fremitus of lower portion more marked than on right side; percussion note in lower left lobe flat, tubular breathing; area of pulsation from fourth to seventh space and from left border of sternum to one centimeter left of nipple line,

no murmurs; spleen enlarged, abdomen otherwise negative; large, left femoral bubo and unconsciousness.

Diagnosis of bubonic plague with pneumonia in left lower lobe and left femoral bubo was made.

Twenty cubic centimeters of Yersin's serum were injected into the femoral bubo and 40 into right buttock. At time of inoculation, 3.15 P.M., temperature was 39.6°, pulse 140, stringy but regular, respirations 32. One-thirtieth gr. of strychnia and one-half oz. of whiskey were given every four hours. Following the inoculation a drop in temperature was noted, reaching normal at 11 P.M. Excepting a slight variation in rate, no change in the character of pulse observed; respirations fell to twenty-four. On 8th, second day in hospital, patient had one involuntary stool, and was for a time slightly delirious. Temperature remained high in spite of long sponge baths given every three hours. At 10 A.M., 60 cc. of Yersin's serum were injected into right buttock; temperature 39.8° C., pulse 170 and respiration 40. In the late afternoon, patient was decidedly worse, so no more serum was used.

During the 9th, third day in hospital, patient was becoming weaker; temperature ranged from 38.4° C. to 40°; pulse almost imperceptible and entire body bathed in cold perspiration. Patient was unconscious, and died at 1 A.M., July 10.

In this case the points of interest are left lower pneumonia, enlarged spleen, left femoral bubo and marked septicemia on third day before death. One hundred and twenty cubic centimeters of Yersin's serum were used.

At autopsy petechial hemorrhages in all of the organs, large spleen, consolidated left lower lobe and left femoral bubo were noted. Smears from the heart's blood and spleen contained very few bacilli; in fact, it was very difficult to find one bacillus. Smears from the consolidated lung and femoral bubo showed numerous bacilli. Cultures from heart's blood and spleen contained only a few colonies; while those from the lung and bubo showed many. In my experience, this is an exceptional finding, as the septicemia is progressive, amounting to bacteremia at or just before death. Perhaps, the serum may, to some extent, explain the disappearance of the bacilli from the blood and spleen.

CASE II. M. d. I. P., adult, female Filipino, was admitted to Plague Hospital on April 16, 1901, on second day of disease, with a right femoral bubo.

Physical examination revealed tongue heavily coated white; few moist râles over both lungs; pain on pressure over right iliac region and right femoral and inguinal buboes.

On April 17, third day of disease, patient was restless and complained of severe pain in bubo. At 2 P.M., 70 cc. of Kitasato's serum were used; temperature 39.9° C., pulse 112 and respiration 36; at 5 P.M. temperature was 40° C., and at 6 P.M. pulse was very weak. Two injections of 35 cc. each were given at 8 and 12 P.M. Throughout the night pulse was almost imperceptible, breathing shallow and pain throughout the body intense. Strychnia and whiskey were freely used. During the morning of the 18th, fourth day of disease, patient was nauseated but could not vomit; later in the day patient vomited several times, and toward night complained of severe pains throughout the body. At 6 P.M. an inoculation of 25 cc. was given. During the night patient was very weak. On 19th, fifth day of disease, patient was very restless, weak, respiration labored, pulse weak and irregular, and temperature below normal. At the point of first inoculation a diffuse subcutaneous hemorrhage was noted. At midnight an inoculation of 35 cc. was given; some delirium was later noted. On 20th, temperature was 102°, patient was brighter, free from pain and pulse good. Subsequent history unimportant, bubo was opened May 1. and patient was discharged from the hospital on June 2. Smears and cultures from the blood were positive on four successive days.

CASE III. J. C., adult male Filipino, was admitted to Plague Hospital on April 23, 1901, on second day of disease, with a large right femoral bubo.

Physical examination revealed thick, white coat on tongue, edges clean and edematous; face, thorax and abdomen negative, and a large, right femoral bubo. Diarrhea, severe headache and several attacks of vomiting were noted. At 2 P.M. 35 cc. of Kitasato's serum were injected into left buttock, temperature 102.2°, pulse 128, stringy and full, respiration 32. Following the inoculation a fall in temperature to 98.6°, pulse 132, and respiration 36 were noted. During the night patient was delirious and pulse very weak. During the 24th, heart sounds were weak and percussion note over both lungs defective. Femoral bubo was prominent; all of the inguinal glands involved, and edema of leg extensive. At 6 P.M. an inoculation of 35 cc. of serum was given; temperature 100.4°, pulse 160 and weak, respiration 36. At midnight another inoculation was given, patient delirious; April 25, fourth day of disease, patient was delirious; eyes dull; pulse rapid, weak and irregular; and few moist râles in both lungs. At 6 A.M. temperature dropped to 96°, to remain below normal until death at 4.30 P.M. Smears and cultures were positive from April 23 to time of death.

Points of interest in this case are severity of the attack, right femoral bubo with involvement of all inguinal glands, and septicemia from second day of disease until death. At autopsy the usual lesions of plague were noted: all of the right inguinal, iliac and lumbar glands were enlarged and surrounded by marked edema. A few bacilli were found in smears from the heart's blood and spleen, while those from the buboes were teeming with organisms. Pure cultures were obtained from the heart's blood and spleen, mixed cultures from the femoral gland.

Of the three cases only one survived. The usual terminal septicemia in Case I was practically absent, in Case III not marked, and in Case II a few organisms were found in the blood on four successive days. The drop in temperature following the use of serum must be noted, but its importance cannot be determined in this limited number of cases. Cases in which no serum is used frequently show a similar drop in temperature. It is believed that in Case II the serum was of value, and if larger quantities had been used in Cases I and III, more favorable results might have been obtained. It is very evident that large quantities of plague antitoxin must be used if favorable results are to be had.

Clinical Department.

THE GENERAL TREATMENT OF TUBERCULAR BONE AND JOINT DISEASES.

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

UNTIL the past few years the treatment of tubercular bone and joint diseases has been considered to be largely local in nature. The lesions in the joints have been looked upon quite generally as demanding simply mechanical treatment, and if the results were not good, the mechanical features were held to be responsible. Comparatively little attention was paid to the hygiene or the general condition of the individual.

During the past few years there has been a growing tendency among the profession to recognize the

fact that, while surgical tuberculosis represented in the beginning a local process, it was distinctly a debilitating disease which might easily result in its development elsewhere, and that in the treatment every effort should be made to improve the patient's nutrition and increase the resisting power.

The splendid work which has been done in the past decade in the treatment of pulmonary tuberculosis has had its effect or is having its effect upon the surgical profession, so that to-day the surgeon is not fulfilling his full duty unless in connection with local or mechanical treatment every effort is made to better the patient's general condition.

Out-of-door life should be insisted upon almost as much as with pulmonary tuberculosis. Forced diet is needed and the best possible hygiene both at home and when at work should be arranged, and these features are not for a few months only but should be observed by the patient during the remainder of his life.

This is also reasonable when we consider that comparatively few patients die strictly of tuberculosis, but that with a very large number death is due to septicemia. Such a condition must be combated by keeping the patient's health up to the very highest possible point, and it is the chief point in my discussion to urge upon the profession the greatest possible care in observing these details.

Medical Progress.

RECENT PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D., BOSTON.

AN ANALYSIS OF ONE HUNDRED CASES OF UTERINE FIBRO-MYOMA.

CULLINGWORTH¹ contributes an important paper on the natural history of fibroids from observations on 100 cases he has operated on. In every case the tumor has been subjected to careful pathological examination. The cases were not selected except that they were all admitted to the hospital because of symptoms needing attention or were seen in consultation with the view to operation. They include 89 abdominal hysterectomies, 9 abdominal myomectomies, 1 Caesarian section and 1 exploratory incision, making 100 cases. The important cases are described in detail. In 46 cases out of 100 the tumors were found to be healthy. In 52, secondary changes had taken place as follows:

Edematous and myxomatous, 27; myxo-sarcomatous, 1; cystic or fibro-cystic, 5; calcareous, 1; necrotic, subdivided into (a) necrobiotic, 15, (b) infected, 3, a total of 18; grand total, 52.

Complications caused by the tumors were as follows:

Serious peritonitic adhesions in 12 cases, hydrosalpinx in 5 cases, dilated ureters and hydronephrosis in 1 case, dilated ureters, hydronephrosis, suppurative pyelitis in both kidneys, with two phosphatic calculi and numerous abscesses in the right kidney in 1 case, ectopic gestation in 1 case, twisted pedicle in 2 cases.

Salpingitis was not once met with, and Culling-

worth believes that when it does occur in connection with uterine fibro-myoma, it is a mere coincidence. Pain is recorded as having been a noteworthy feature in 38 cases or two thirds of the necrotic cases, in three fifths of the cystic cases, and in nearly one third of the edematous cases. It is to be noted, however, that pain was complained of in about one third of the uncomplicated cases.

No general conclusions are drawn because the number of cases is too small, but the author hopes that other operators will publish their observations.

THE CASES OF UTERINE FIBROIDS TREATED AT THE GYNECOLOGICAL CLINIC IN ZURICH IN THE LAST THIRTEEN YEARS.

Dr. Schwarzenbach² analyzes the 393 cases who entered the gynecological clinic of the University of Zurich during the last thirteen years. Flowing and pain were complained of in 345 cases, flowing alone in 116, pain alone in 86, and both flowing and pain in 143. Urinary symptoms were present in 108 cases. Sterility was a frequent cause of the patients applying for treatment. Among 297 married women, 80 were sterile, or 26.9 %. A majority of the women were between 35 and 55 years of age; 261 cases were treated by laparotomy. Castration was practised in 19 cases, with 3 deaths. In 5 of the successful cases who were traced for from six to twelve years, the results were satisfactory, that is, the patients were relieved of flowing and the tumors diminished in size. Myomectomy was practised on 87, with 13 deaths. Thirty-five of these were castrated at the same time the myomectomy was done, and 52 were not. In 18 the uterine cavity was opened. In one case of myomectomy with castration it was necessary to do a supravaginal amputation seven years later, because of the development of another fibroid. In those treated by myomectomy without castration the flowing was lessened, especially in the two years following operation, and all the patients traced expressed themselves as pleased with the results, and in every case the uterus was found either of the same size or smaller than immediately after the operation. One of the patients who had a fibroid the size of a man's fist in the fundus uteri gave birth to a healthy child fifteen months after operation. Previous to the operation, she had had one child and one abortion at three months. Supravaginal amputation was practised on 109 cases. Up to 1892 the extraperitoneal method of treating the stump was used, with a mortality of 37½%. After 1892 the intraperitoneal method was used, with a mortality of 7.8%. Total hysterectomy was done only when supravaginal amputation was not practicable. There were 46 cases, with a mortality of 23.9%. It is to be said, however, that of these 46 cases, 31 were done in the year 1900 by improved methods, with a mortality of 12.6% only.

The author concludes that the supravaginal amputation is the operation of choice where myomectomy without castration cannot be done. He thinks that a majority of the patients came to operation too late; that on account of anemia, weak or fatty heart, the system is often unable to successfully combat infection, where with a sound heart and the blood in good condition the result is very different.

¹ Journ. of Obstet. and Gyn. of the British Empire, vol. i, 1902.

² Beiträge zur Geburts. und Gynäk., Bd. vi, Heft 1. 1902.

PHLEBOLITHS OF THE OVARIAN VEINS SIMULATING URETERAL STONES.

Clark³ reports the case of a woman forty-two years of age, the mother of two children, who had been operated on for a right floating kidney. She had made a good recovery and was well for a year when she had a recurrence of nervous symptoms, with dragging pain in the right side below the renal region. On palpation along the line of the right ureter, a distinct cord-like enlargement slightly tender to pressure was to be felt, and the probable diagnosis of tuberculous ureter was made. Catheterization of the right ureter yielded urine in which there were a few leucocytes and red blood cells. Examination for tubercle bacilli was negative, as also the results of injecting a guinea pig with the urine. The Roentgen ray revealed apparently five distinct calculi irregularly disposed just above and below the brim of the pelvis, and operation was decided upon. On operating it was found that what appeared to be five calculi were five small phleboliths in the tortuous and greatly varicose ovarian veins. They were lying more or less encapsulated in the vein wall close to the ureter. On tracing the veins upward to the kidney, they were found to continue markedly varicose and tortuous to their point of entrance into the renal veins. There were adhesions around the hilus and on top of the kidney, which no doubt had produced a slight kinking of the ovarian veins or had caused an obstruction to the renal circulation.

INGENIOUS DEVICE TO FACILITATE VAGINAL CYSTOTOMY.

E. C. Dudley⁴ describes a device to steady that part of the bladder wall which is to be incised in vaginal cystotomy and to protect the neighboring parts from injury. He introduces the blades of a small uterine dilator through the urethra, the convexity of the curve of the blades being towards the vaginal wall. The blades of the dilator are separated, and the bladder wall and vesico-vaginal septum being thus fixed the incision into the bladder is made between the blades.

DECIDUOMA MALIGNUM, A CLINICAL REVIEW.

In a lengthy article Ladinski⁵ goes over the literature of the subject and reports a case. He sums up as follows:

"The clinical features which should aid us in arriving at a diagnosis are,—

"(1) History of recent parturition or abortion, especially if a hydatid mole has been discharged or placenta retained.

"(2) Profuse hemorrhage occurring at irregular intervals without apparent cause, and not amenable to the ordinary treatment, and which recurs in spite of repeated curettages; the presence of a constant sanguineous discharge during the intervals of hemorrhage.

"(3) A persistently large and hyperplastic uterus and cervix, with a patulous os.

"(4) Pain in the pelvis.

"(5) Anemia, rapid loss of flesh and strength, and cachexia.

"(6) Characteristic nodule in the interior of the uterus in the early stage, that is, one or more minute dark-colored or reddish nodules springing from the endometrium either by a broad base or pedicle, and invading and penetrating the uterine muscularis towards the peritoneal surface.

"(7) The presence of metastatic deposits, especially in the vagina and lungs, the latter producing cough and bloody expectoration."

On account of the rapid growth and early metastases of deciduoma malignum the mortality is necessarily high. In 124 recently reported cases, the mortality has been 59%. This is to be contrasted with 52 cases occurring previous to 1897, as reported by Dorland, in which the mortality was 73%, the better showing in the later series being due to early recognition and prompt operation.

PELVIC LESIONS IN RELATION TO THEIR DISTINCTIVE EFFECTS UPON MENTAL DISTURBANCES.

Hobbs⁶ comments on the fact that a majority of male insane patients are single and a majority of female patients are married, and attributes the greater preponderance of mental affections in the married women to uterine lesions. He gives the results of the surgical treatment of the patients in the Asylum for the Insane at London, Ontario. Organic lesions were found in 25% of all the female population of the asylum, or, 253 female patients out of 1,000 female residents of the institution during the past six years had some pelvic disease or abnormality that needed gynecological treatment. All the examinations were made with an anesthetic, and the only success obtained was through surgical means. He says: "For the past thirty years annual reports were presented to the Provincial Government of all official statistics in connection with the varying movements of the population of London Asylum. These statistics are substantially correct, and are subject to government supervision. The official records show that for the biquinquennial period previous to the introduction of systematic surgical treatment, the average annual rate of discharges of patients recovered or improved, calculated upon the admissions, was, for the male residents, 35.23%, and for the female, 37.5%. . . . For the third quinquennial period, during which gynecological surgery was in vogue in addition to the ordinary methods of treatment, it was found that the annual rate of discharges among the men differed very little from that of the previous two quinquennial periods, being 35.92%. It was discovered, however, that the women during the third quinquennial period had advanced from 37.5%, the average of the previous ten years, to 52.7%, or a gain in the discharge rate among the women of 35%. This was certainly due to the surgical treatment of pelvic disease, which existed so largely among the female population, as the other methods of combating disease were practically the same as in previous years." Also, "The value of gynecological as compared with general surgery is proved by the results obtained after operations for the radical cure of hernia. In thirty-nine patients of both sexes who were afflicted with either a ventral, umbilical, inguinal or femoral hernia, a radical cure was attempted, and, I am pleased to say, with al-

³ Amer. Journ. Obstet., vol. xlv, p. 537.

⁴ Clin. Rev., April, 1902.

⁵ Amer. Journ. Obstet., vol. xlv, p. 463.

⁶ Amer. Journ. Obstet. vol. xlv, p. 186.

most uniform success as regards the obliteration of this physical lesion. The mental results succeeding the operation for hernias were almost *nil*, as no mental recovery occurred, although decided improvement in the general tone of these patients was observed." B. S. Schultze⁷ comments most favorably on Hobbs' article, and after abstracting it for the benefit of his German brethren states that he has for twenty years held the view that insane women should have the benefit of gynecological diagnosis and treatment. He quotes to this effect from an article of his published in the *Wiener Medizinische Blätter* for 1880, and says that he is glad that Hobbs' statistics bear out his views.

PSYCHICAL AND CONVULSIVE PHENOMENA INDUCED OR EXAGGERATED BY MENSTRUATION.

Viallon⁸ comes to the conclusion from a study of the cases in the Asylum of Bron and the survey of the literature that there is a toxic condition of the system produced by menstruation and that that toxic condition is the cause in certain cases of a variety of functional troubles, most frequently gastrointestinal or urinary. That under these conditions menstruation may be accompanied by elevation of the temperature, by characteristic mental troubles, usually by mental confusion, and among epileptics and general paretics by convulsive phenomena.

PRIMARY CARCINOMA OF THE URETHRA.

Brothers⁹ reports a case of this rare affection in a married woman fifty-nine years old who had reached the menopause at forty-nine years. The tumor involved the lower portion of the urethra and caused obstruction to its lumen. Brothers removed the tumor and closed the raw surfaces by a plastic operation. Microscopic examination showed the growth to be a pure epithelioma. In reviewing the literature he finds references to twenty-nine similar cases.

CONSERVATIVE OPERATIONS FOR THE CURE OF CHRONIC INVERSION OF THE UTERUS.

Dr. Oui¹⁰ does an anterior colpo-hysterotomy in cases of long standing complete inversion, dividing the uterus anteriorly from the external os nearly to the fundus by a longitudinal incision extending into the uterine cavity. He also opens the anterior cul-de-sac by a transverse incision which meets the longitudinal uterine incision at its middle portion to form a letter T. After the uterus has been reinverted, the incisions are closed with interrupted sutures.

Oui reports two successful cases and gives a tabulated statement of all the reported cases of inversion in literature that have been operated on, forty-three in number. His first case was done in 1900. Spinelli performed a similar operation with success in 1899.

The cases which had been subjected to laparotomy show over 30% of failures and over 15% mortality, and removal of the ovaries and tubes for inversion has a high mortality and unsexes the patient. Oui accordingly gives his preference to the vaginal route.

RADICAL ABDOMINAL OPERATIONS FOR CANCER OF THE UTERUS.

Wertheim¹¹ reports an additional series of thirty-one cases of radical abdominal operation (removal of the lymph glands as well as the parametric tissue and the uterus and adnexa) for cancer of the uterus. His previously reported cases number twenty-nine, making sixty in all. Each case is reported in detail with a diagram of the pelvis; the blood vessels, the uterus and the lymphatic glands being represented *in situ*. A cut of each uterus after removal is also given. At the end of the article six very good photographs are given, showing the different steps of Wertheim's operation.

It is interesting to note how infrequently the pelvic lymph glands are involved in the early stages of cancer of the cervix, judging by the diagrams. Every now and then a case showing not much cancerous tissue in the cervix exhibits one enlarged iliac gland. A majority of cases show no enlargement of the lymphatics, and a few of the advanced cases show infiltration of many glands. Wertheim thinks it unnecessary to remove the glands unless they are enlarged. In his second series he had five deaths as compared with twelve in his first series.

Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

PROCEEDINGS OF THE THIRTIETH ANNUAL MEETING, HELD IN NEW ORLEANS, LA., DEC. 8, 9, 10, 11, AND 12, 1902.

(Concluded from No. 1, page 18.)

SYMPOSIUM ON YELLOW FEVER.

ANNUAL REPORT ON YELLOW FEVER IN MEXICO.

This report was read by Dr. EDUARDO LICEAGA of Mexico, who presented statistics of the spread of the disease along the Mexican coast. The recent epidemic in Vera Cruz developed 877 cases, being the most severe in the country. His report showed that 873 cases were on the Gulf coast, while only 27 cases had been reported on the Pacific Ocean coast. The epidemic in the state of Vera Cruz had been diminishing. The report mentioned the number of cases reported by states where points of infection had been found. The death-rate was low, and had been held down by the successful management of the disease. The government of the state of Vera Cruz had adopted up-to-date sanitary measures for the prevention of the spread of yellow fever.

YELLOW FEVER EPIDEMICS IN ORIZABA, MEXICO.

This paper was read by Dr. NARCISCO DEL RIO of Mexico. The author related with particularity the history of the spread of the disease in his section. The inevitable conclusion was that the mosquito had been carrying his dangerous freight from place to place in the Orizaba section, thus causing the spread of the disease. The essayist found, in tracing the disease closely, that a coachman who had hauled one sick person had been bitten by a mosquito, and was soon taken down with the fever.

⁷ Monatsschrift f. Geburts. und Gyn., vol. xv, p. 383.

⁸ Annales de Gyn. et d'Obstet., Février, 1902.

⁹ Amer. Journ. of Obstet., vol. xlv, p. 67.

¹⁰ Annales de Gyn. et d'Obstet., Avril, 1902.

¹¹ Arch. f. Gyn., Bd. lxx, 1902.

They at once took the necessary means to meet this agency of transmission, and after that were successful in checking the spread of the disease.

YELLOW FEVER.

DR. JOHN W. ROSS, United States Army, gave at length his reasons for believing that the only way in nature for yellow fever to be contracted by man was from the mosquito. He recommended the following measures against the propagation of yellow fever through mosquitoes:

(1) To prevent those insects from stinging yellow fever patients.

(2) To destroy as far as possible the mosquitoes which have been infected.

(3) To consider any place unsafe so long as the last mosquitoes which have stung yellow fever patients may be alive in it.

He stated that the clear-cut, scientific observations and classical contributions of Surgeon H. R. Carter of the United States Marine Hospital Service, showing the interval (about two weeks) which occurred in houses between the first (infecting) case and the first group of cases, secondarily infected, impossible to explain by the theory of fomites, were now readily understood in the light of present knowledge of the elaboration of the yellow fever poison in the body of the mosquito, that process requiring not less than twelve days.

CONCERNING THE METHOD OF TRANSMISSION OF YELLOW FEVER FROM MAN TO MAN.

DR. WILLIAM C. GORGAS, United States Army, contributed a paper with this title. The author enunciated practically the same views that have been published in previous papers on this subject by him. As to whether the disease might be transmitted through fomites from man to man, or whether by the bite of fever-infected mosquitoes, the decision depended on what steps should be taken to confine yellow fever when it made its appearance, whether a fight should be made against the mosquitoes, or whether cargoes and vessels and all things that were to be transferred from point to point, in which fomites could be conveyed, should be thoroughly disinfected. If the germs of the disease could not be transferred in fomites, then the disinfection of vessels and cargoes was unnecessary. The only measures necessary would be the destruction of infected mosquitoes and the care of persons who might transmit the germ to the mosquitoes.

DR. MANUEL S. IGLESIAS of Mexico discussed the disinfection of railroad cars as a precautionary measure against the propagation of yellow fever by mosquitoes; while PROFESSOR GEORGE E. BEYER of New Orleans related his investigations regarding yellow fever in Vera Cruz.

DR. EDMOND SOUCHON of New Orleans did not antagonize the theory of the transmission of yellow fever by mosquitoes, but he did not believe that we were prepared to say that the mosquito was the only mode of transmission of the disease. After a close and careful study of the question, he had reason to believe that there was some other means of transmission. What it was he could not say. It might be fomites, or something we knew nothing about.

DR. HAMILTON P. JONES of New Orleans, who was in charge of the Beauregard Yellow Fever Hos-

pital in this city in 1896, said that despite the fact that three hundred people were exposed to mosquitoes as transmitters of the disease, as well as fomites, not one of them had been stricken, and he was still in the dark as to the doctrine of transmission of the disease.

DR. JOHN GUTERAS of Havana said that Havana was the first of the large cities which had appreciated the necessity of adopting precautionary measures against the mosquito, and was first to do so. He then explained the prophylactic measures which were carried out in Havana.

DR. E. R. CARTER of the Marine Hospital Service expressed the idea that if the disease was conveyed to an animal host, it was conveyed there by a parasite. He said the conveyance of the disease might occur in two ways by fomites: First, directly to the person, and, second, through an infected atmosphere.

DR. QUITMAN KOHNKE of New Orleans, after mentioning the fact that the board of health was doing all in its power to guard against the disease, said that still more strenuous efforts should be made to keep it from coming to New Orleans from infected ports. If the disease was conveyed by fomites as well as by mosquitoes, it was logical to conclude that there was a greater danger than if it was conveyed alone by the stegomyia fasciata.

REPORT OF COMMITTEE ON THE RELATIVE IMMUNIZING VALUE OF HUMAN AND BOVINE VACCINE VIRUS.

In the absence of the chairman of this committee, DR. PETER H. BRYCE of Toronto, Ont., the report was read by DR. C. P. WILKINSON. The studies of the committee led to obvious conclusions regarding vaccinia. Summed up briefly, these are:

"(1) That it is variola modified by being transmitted in either some accidental or experimental manner from man, its normal host, to some animal of the bovine species.

"(2) That in common with other microbic diseases, its germ has an optimum temperature at which it grows best, and it is logical to conclude that since the cow's normal temperature is $101\frac{1}{2}^{\circ}$ to $102\frac{1}{2}^{\circ}$ F., the germ of smallpox is modified in virulence by its successive passages.

"(3) Many experiments go to show that the same vaccine lymph not only produces different results in a series of animals, but also that the lymph taken from such, being different in quality, may so depart still further from the normal in subsequent transmissions, till it may fail entirely to 'take,' or may produce an imperfect vesicle, and be but little protection either against a subsequent vaccination with a stronger lymph, or against smallpox.

"(4) That in these respects it acts in a manner similar to smallpox, which in different outbreaks shows marked variations in virulence, and affects variously different individuals infected from the same source.

"(5) That an experimental testing of every batch of vaccine before sending it out from a station is a logical necessity, growing out of such variations; and this can readily be done on children, and by comparative tests on other calves and guinea pigs."

An extended series of experiments carried on in 1898, by Beclere, Chambon and Menard, directors at the Institute of Animal Vaccine, Paris, were of the greatest importance in showing the gradual in-

crease of the immunity caused by vaccination. The procedure was simply to inoculate, by a syringe, calves, subcutaneously, with fresh glycerinized lymph, and after three, four, five, six and seven days, inoculate the animal on the skin in the usual manner, and watch the progress of the vesicle. The effect on the vaccine vesicle of such subsequent inoculations, for instance, was: (a) Vesicles appearing a day sooner than in normal vaccination; (b) vesicles modified in external appearance, rapidly arrested or aborted in their development; (c) lymph with almost no virulence four days after inoculation.

The results of these experiments with the serum from vaccinated calves and men and monkeys which had suffered from smallpox, summed up, were:

"(1) The serum of a heifer taken fourteen days after inoculation is endowed with immunizing powers, preventive and curative, but also produces, when mixed with fresh vaccine, an anti-virulent lymph.

"(2) Vaccination with such lymph produces this effect whether the vaccine be introduced into the blood, the skin, or deeper tissues.

"(3) The serum from smallpox convalescents exerts the same anti-virulent action on vaccine as does that from variolized animals, as monkeys.

"(4) The period of vaccinal immunity varies much with different species, but the anti-virulent property of blood goes on decreasing and may disappear completely, although the skin in the same person may still resist re-inoculation with vaccine.

"(5) This anti-virulent property varies in different persons, but persists for twenty, thirty and even fifty years or over, in its partial protection against variolous and vaccinal infection.

"(6) We do not yet know whether this substance acts directly on the infected agents as a virulicide, or whether it acts as a stimulant on the tissue cells of the organism."

The committee had seen what the practice in the National Vaccine Establishment in London was, and the chairman said he was personally able to say that no expense had been spared in the great laboratories of the United States to provide every possible means by which vaccine lymphs of a normal virulence, free from extraneous germs, were prepared to-day with care, he believed, not exceeded in any government laboratory in the world. Why, then, were there complaints, especially from the profession, of abnormal results in vaccination? The reasons were given in their order, as follows:

"(1) A general absence of any teaching, in our schools of medicine, of the principles and practice of vaccination, as understood and carried out by Jenner and all his true successors, and as it is practised to-day in Germany, France and England.

"(2) A very general absence amongst the younger members of the profession, and wholly so in the younger generation of the people, of a knowledge of what a case, and yet more an epidemic, of smallpox of normal virulence means.

"(3) A very general impression, till recently, in both these classes, that vaccination could be reduced to a mere name, and that it did not necessarily mean the communication of a true disease in order to immunize against smallpox.

"(4) A similar impression for a time in the minds

of some producers of vaccine, that attenuated virus could sufficiently immunize, and would, further, sell better if it did not produce unpleasant effects.

"(5) The appearance some years ago of vaccines which had not been taken on the fourth or fifth days after inoculation of the calf, or had been taken at several successive sittings, and which necessarily contained active pus germs; or, on the other hand, a weak lymph, from animals which had not taken properly.

"(6) Neglect on the part of the operator, even the physician, to prepare the arm properly, prior to inoculation.

"(7) Improper method of inoculation, the deeper tissues being often wounded during scarification, with a greater inflammatory reaction as a result.

"(8) Neglect to protect the wound, after the vesicle had formed, against injury and the introduction from filthy garments and the finger nails of foreign matters."

Without further discussing the various points in favor of either humanized or of bovine lymph, the committee deemed it worth while to inquire how far there existed exact methods which were carried out in the production of bovine lymph in the United States and Canada, or whether the situation was so unsatisfactory that some new scheme should be adopted for more adequately meeting the situation. It might be observed:

"(1) That in all the European countries mentioned, the compulsory law provides for the systematic vaccination of all children within one or two years of birth.

"(2) That the law requires that only certified public vaccinators can perform the operation; and in England, at any rate, the certificate from some public vaccination station is demanded before any medical student can obtain graduation. There the work of vaccination goes on from month to month.

"(3) Precise directions are supplied for the performance of the operation, and especially for the seventh or eighth day inspection of the arm, and subsequent supervision of the patient.

"(4) That heavy fines may be levied upon any vaccinator who may be shown to have been careless in performing the operation.

"(5) That while in England gratuitous vaccination is given only to the poor, yet in Germany all the work is done at public expense, but in both cases the supervision of persons vaccinated is strictly insisted upon."

The committee concluded its exhaustive report in the following language:

"So far as your committee is able to judge, no practical scheme can be adopted by a state or provincial board of health, under existing legislation, for the supervision of the lymph to be used within its jurisdiction, unless it be that state boards would agree to recommend for use by their local boards of health only the lymph of such firms as will agree to pay for the presence in their establishments of a trained officer, who could certify that all lymph sent to such state or province had been tested and found to meet all the requirements which science to-day demands for the preparation of the lymph of the highest degree of excellence. Whether such a scheme would in practice be possible is not for your committee to express an

opinion upon, since the element of commercial competition would have to be considered; but the experience of many executive officers, both state and municipal, has been such as to make the adoption of such supervision, if practicable, eminently desirable."

The report was signed by the members of the committee, namely, Drs. Peter H. Bryce, William M. Welch and Eduardo Liceaga.

PROCEEDINGS OF THE SECTION ON BACTERIOLOGY AND CHEMISTRY. CHAIRMAN, DR. F. F. WESBROOK, MINNEAPOLIS, MINN.; SECRETARY, MR. GEORGE C. WHIPPLE, BROOKLYN, N. Y.; AND RECORDING SECRETARY, DR. H. D. PEASE, ALBANY, N. Y.

THE OCCURRENCE OF TUBERCLE BACILLI OF EXALTED VIRULENCE IN MAN.

The author of this paper, DR. M. P. RAVENEL of Philadelphia stated that the occurrence of tubercle bacilli in man, which had a high degree of virulence for experimental animals, was rare, if one judged by the published reports, and it was still more rare to find cultures which were highly pathogenic for cattle. So marked was the difference in pathogenic power of cultures isolated from man on the one hand, and from cattle on the other, that a division into races had been proposed depending on this feature; and Koch held that inoculation of a given culture into cattle would surely show whether it was of human or bovine origin. Believing that bovine tuberculosis was a fertile cause of the disease in milk-fed children, he had for some time past taken every opportunity possible of selecting cultures of tubercle bacilli from the mesenteric glands of those who had died of a tuberculosis which was not clearly of respiratory origin. This had led to the discovery of two cultures, one of which was as virulent for all animals on which it had been tested as cultures obtained from cattle usually were; and the other, while not nearly so virulent, was still much in advance of the usual human culture. The material from which these cultures were isolated was furnished through the kindness of DR. ALFRED HAND of Philadelphia.

OBSERVATIONS ON THE MORPHOLOGY OF BACILLUS DIPHTHERIÆ, BACILLUS PSEUDO-DIPHTHERIÆ AND BACILLUS XEROSIS.

DR. F. P. DENNY of Brookline, Mass., read this paper, which was based on the study of serial preparations made at intervals from the same cultures.

Bacillus diphtheriæ. — In young cultures, up to eight or twelve hours, the development was characteristic of all bacilli, and consisted in elongation of the rods and fission. The bacilli would stain evenly. After this time fission ceased in most of the bacilli and changes took place in the individual organisms. Granules developed; the rods became elongated and might become filamentous; the protoplasm might break up into segments; true branching might occur, though very rarely, all of which were changes characteristic of the higher bacteria and especially of the streptothrix. Certain variation in the conditions of growth might hasten to retard these changes. Thus variations in temperature and in the reaction of the media, also symbiosis, might prolong the solid staining

stage and make the diagnosis of fifteen-hour cultures difficult.

Bacillus pseudo-diphtheriæ. — This was like the young forms of bacillus diphtheriæ. It had no stage of development when it grew into long forms like the higher bacteria. On the contrary, the bacilli were even shorter in old than in young cultures.

Bacillus xerosis. — Young forms were solid, staining like young bacillus diphtheriæ. In older cultures the bacilli became elongated and the protoplasm would break up into segments; only rarely did granules appear in pure culture. In symbiosis, with other bacteria, granular forms might appear which resembled bacillus diphtheriæ.

THE USE OF IMMUNE SERUM IN THE SEPARATION OF TYPHOID AND COLON BACILLI.

DR. ADOLPH GEHRMANN of Chicago read this paper. The difficulty in the separation of these species was due to the constant tendency of bacillus coli to overgrow bacillus typhosus. The search for specific retaining agents had not resulted in entire success. If an immune serum, active for one or the other species, could be used to restrain the growth of one without distributing the growth of the other it would be an ideal method of procedure.

He related previous experiments along this line.

The serum of rabbits immunized against bacillus coli could be used for this purpose, and gave results that were positive by artificial mixtures of the two species. The method could be improved by using the blood of immune animals direct and by rapid cultivation in the incubator. For practical purposes this method was not as yet certain, and the establishment of a control was difficult. On material containing other species, the restraining effect of carbolic acid did not disturb the purpose of the blood that was used. Some rather indefinite results on the isolation of typhoid from water had been reported.

AN EXAMINATION OF THE VALUE OF CERTAIN ANTISEPTICS USED FOR THE PRESERVATION OF ANTITOXIN AND OTHER IMMUNE SERUMS.

In a paper on this subject, DR. JOSEPH MCFARLAND of Philadelphia said this investigation had for its object the determination of the antiseptic and bactericidal values of chlorotone, formaldehyd, chloroform, tricresol and carbolic acid. It had long been believed that the addition of $\frac{1}{2}\%$ of carbolic acid and 0.4% of tricresol and 0.1% of formaldehyd would satisfactorily prevent the growth of microorganisms in the serums so prepared. As some of these reagents threw down a precipitate, the question arose whether the reagent itself was destroyed, and too little remained to properly preserve the serum.

The research was conducted by preparing the serums with the proper proportions of the germicides, then adding known numbers of bacteria and determining their diminution or increase. The results showed that, other things being equal, formaldehyd was preferable to phenol, but objectionable because it did not kill molds. Phenol was better than tricresol, and the recommendation was made that hereafter tricresol be given up as a preservative of the serum.

FORMALDEHYD.

DR. H. W. HILL of Boston read this paper. His conclusions were that humidity was an important factor in formaldehyd disinfection. An amount of gas which failed to kill in six hours at 42% humidity killed in twenty to forty minutes at 100% humidity. Considering the unavoidable leaks and absorption of gas by walls, etc., found in practice, practical disinfection required a rapid discharge of gas and high humidity. The best of the generators tested ran not more than 15 cc. per minute, and the condensed effluent yielded in the first ten minutes only about a 30% solution, hence generation by boiling in the ordinary way was too slow. Spraying was somewhat objectionable from the wetting down of the contents of the room. Atomization by steam current under fifteen pounds pressure yielded from six to eight times as rapid a flow of full strength, with no polymerizing, and produced a high humidity.

THE DIMINISHING IMPORTANCE OF PUBLIC WATER SUPPLIES, AND THE CONSEQUENT SIGNIFICANCE OF OTHER FACTORS IN THE CAUSATION OF TYPHOID FEVER.

This was a joint paper contributed by PROFESSOR W. T. SEDGWICK and MR. C.-E. A. WINSLOW of Boston. The authors undertook to show:

(1) That in the state of Massachusetts, and in many of the larger cities of the United States, the public water supplies were now unimportant as vehicles of typhoid fever.

(2) That in cities having pure water supplies the annual curve of typhoid fever mortality closely followed that of annual temperature.

(3) That in urban communities supplied with pure water there still remained a typhoid fever tax of from fifteen to twenty-five deaths per 100,000 population.

(4) That this tax was due not to any peculiar conditions of soil, locality or climate (endemic factors), but to incomplete disinfection of typhoid excreta, with subsequent infection of various articles of food and drink. These factors, when acting upon a few or many persons at one time, might cause obvious epidemics, sometimes large, though generally small; but more often, the infection, in moving from one point to another, followed different and obscure routes for different victims, and hence might be described as prosodemic.

(5) That the only remedies for such prosodemic typhoid were absolutely thorough and universal cleanliness and disinfection of excreta.

OFFICERS FOR THE ENSUING YEAR.

President, Dr. Walter Wyman, Washington, D. C.; first vice-president, Dr. C. P. Wilkinson, New Orleans, La.; second vice-president, Dr. John L. Leal, Paterson, N. J.; secretary, Dr. Charles O. Probst, Columbus, Ohio; treasurer, Dr. Frank W. Wright, New Haven, Conn.

OFFICERS OF THE BACTERIOLOGICAL AND CHEMICAL SECTION.

Chairman, Dr. H. L. Russell, Madison, Wis.; vice-chairman, Dr. V. A. Moore, Ithaca, N. Y.; secretary, Mr. G. C. Whipple, Brooklyn, N. Y.; recorder, Dr. Henry D. Pease, Albany, N. Y.

Place of meeting, Washington, D. C., 1903.

THE PHILADELPHIA OBSTETRICAL SOCIETY.

STATED meeting Dec. 4, 1902, the president, Dr. JOHN M. FISHER, in the chair.

SOME PRACTICAL POINTS IN THE EXAMINATION AND TREATMENT OF DISEASES OF THE URETHRA, INCLUDING SKENE'S GLANDS,

by DR. HOWARD A. KELLY of Johns Hopkins University (by invitation).

Under the term labia urethrae Dr. Kelly described a well-defined important anatomical structure which has hitherto escaped the attention of clinicians. These labia consist, not in the rounded margins of the external urethral orifice which have been termed labia erroneously, but in well-defined lips or labia which project from two to four millimeters beyond the external meatus, and by their mutual approximation cover and protect the orifice from the bacterial flora constantly bathing the vulva. If a tri-valve speculum is introduced into the vagina, and the blades separated, the labia urethrae are also separated and the urethra is exposed.

They also exercise the physiological function during coitus of protecting the urethral orifice. Sometimes these labia project beyond the urethral orifice on either side like long elephant ears, much more conspicuous relatively than the labia minora in relation to the vaginal outlet. Sometimes they are long and narrow. In other instances one lip is long and the other short. The margin is generally an even one or slightly crenated. In one case a fimbriated margin was found. They disappear with age and mechanical insults.

Skene's glands lie just within the urethra at the bases of these labia. The function of these glands is clearly to moisten the urethral labia, particularly during coitus during the violent displacement of the labia with the urethral orifice up into the vagina, when the labia urethrae need constant lubrication to obviate the injurious effects of attrition; in this way they occupy a position relative to the urethral orifice corresponding to Bartholin's glands in their relation to the vaginal orifice.

Their affections are catarrhal or gonorrheal. The speaker cited one case which was possibly a cyst of the left gland due to a closed duct.

They may be treated by injection, incision or excision. In order to inject them Dr. Kelly showed a little syringe which fully met all the requirements, consisting in a delicate blunt-pointed canula about five centimeters long and one millimeter in diameter, a piece of simple rubber tubing drawn over the end of the larger canula after closing the other end then made an excellent syringe, serving by the elasticity of the walls of the tubing to draw a few drops of fluid up the canula. With a simple syringe of this sort, the amount of fluid injected was also fully under control. After citing a number of cases treated by injection and by excision, Dr. Kelly referred to an interesting case in the hands of Dr. Hunner, his associate, in which smegma bacilli were found in the abundant secretion from one of these glands, showing how readily a tuberculosis of the urinary tract might have been inferred even though the vulva had been cleansed before the patient passed her water.

DISCUSSION.

DR. R. C. NORRIS: We have all been interested in Dr. Kelly's very clear and explicit description of the anatomy of these labial folds at the meatus and of their function. I think all of us, of course, have been more or less watchful of Skene's glands, just as we have learned to be of Bartholin's glands, to enable us to make a diagnosis and not to overlook any case supposed to be gonorrheal. It is my own practice to look for the so-called gonorrheal maculae of Sanger in Bartholin's glands and for a similar appearance in Skene's glands, to aid in a snap diagnosis, as it were, of gonorrheal infection, later to be studied more accurately by bacteriological investigation.

The description of the labia of the urethra given by Dr. Kelly has been exceedingly interesting. I am sorry he did not go into the microscopical study of their anatomical structure. We frequently note that women who have borne many children have a puffy, red, swollen and sometimes eroded area at the orifice of the urethra, which, however, produces no pain and is not associated with the characteristic symptoms of caruncle. I have wondered whether or not these folds have anything in their microscopic structure to throw light upon the difference between the exquisitely painful caruncle and the erosion of vascularity above referred to, which is unassociated with pain. Dr. Kelly, no doubt, has had sections of these labia made, and it would be interesting to know his results. Furthermore, with his larger experience than ours in the study of these cases and his work in the urethral tract, I would like to ask whether, in addition to the silver preparations and carbolic acid he names, he has used any of the newer silver salts supposed to be of peculiar value in the treatment of gonorrhea. I refer to argyrol, protargol and similar silver salts. With the small area to be attacked and the results obtained so readily studied, it would seem to be an excellent opportunity to test thoroughly these newer preparations. I have been making use of them in gonorrheal cases, but my observations have not been sufficient to draw definite conclusions. I think no man has done his whole duty in studying a suspected gonorrheal case until Skene's and Bartholin's glands have been accurately studied.

Dr. Kelly's remarks are also of much interest concerning the macroscopic appearances of Skene's ducts and the delicate sense of touch which enables one to find these ducts. These facts should be of use to the general practitioner who has neither the time, knowledge nor facilities to study the condition bacteriologically.

DR. O. H. ALLIS: I have nothing to say more than that I must thank the lecturer for the subject which has been to me an exceedingly interesting one. I am especially interested, however, in one point, the point that Professor Dickson used to speak of, — that all physicians should wear gloves, and that their hands should be kept very delicate and very sensitive. For many years when I have been at the seashore I have amused myself with washing my hands with the sand, and have found how thoroughly it takes off the outer coat, the tough and corneal portion. I like to wash my hands with sand about once a week. It is an ordinary

experience for a surgeon to have some one see him who has a foreign body in some part; like a needle that has been run into a child's limb. Unless the fingers are very delicate they are apt to not detect it. When Dr. Kelly said he could feel these little ridges with his finger, I took it for granted that he either wears gloves or washes his hands with sand once a week or perhaps every day, or perhaps he has an exceedingly delicate skin. I shake hands with some surgeons and I should think they worked on the road with the pick. My own hand, although I have not done any hard work for years, is dry as a chip, and has a tendency to a corneal surface. For that reason I wash my hands once a week with sand, the finest I can get at the seashore, and I have slept with gloves on in order to keep my hands just as delicate and sensitive as possible.

As to any remarks upon the scientific bearing of this matter, I must leave that to the other gentlemen. I am much obliged to you, Mr. President, for saying that I am interested in anatomy. I assure you that I believe that a man who is not interested in anatomy has no business to be a specialist, or a surgeon. He cannot take at second hand; he has to go right to the cadaver and work. I was journeying with gentlemen last summer, and said to him that I was in the habit of doing a little dissecting every time I had an opportunity. He said he gave one or two days of the week to anatomy. I know progressive men are at work on anatomy. It is like all the works of the Infinite; you will never get anything beyond the first impressions. When Dr. Kelly has gotten through all his work, somebody may find that he has but touched the border. Another may take up the work where he left off and think no work has been done.

DR. JOHN C. DACOSTA: I think the society and gynecologists generally are very much indebted to Dr. Kelly for what he has taught us not only of the pathology, but of the treatment of Skene's glands. Personally I feel obliged to him, because it has been a problem to me how to inject those glands. He has shown us to-night. In two cases within a week, I should have liked very much to have injected the glands. I took a rough-and-ready mode of cleaning them out. It was very simple, taking a small triangular probe with sharp edges inserting it into the glands, by twisting it around I hoped to set up an inflammation and thus extinguish them. Both cases had been cases of gonorrhea.

I have found fluid extract of hydrastis one of the most useful remedies in almost all inflammatory affections of the urethra.

I am also glad to hear Dr. Kelly speak of the hairpin. I have, as the staff of the Jefferson Hospital know, often used an ordinary hairpin as a urethral speculum, and find with Dr. Kelly that it is one of the most satisfactory specula we can use in the urethra.

DR. KELLY closes: I request that the gentlemen here will do me the favor of giving close attention to the anatomical structures I have described. Please do not draw your conclusions from the first two or three women you examine. You will find the best defined urethral labia in younger women, where the vaginal orifice is relatively intact. I have not yet been able to make microscopic examination of these structures, as I would not be justified

in cutting off the tissues in the living patient and I have not been able to secure a recent cadaver. I would expect that they would be much like the hymen in structure, as they seem to form a part of the hymenial system. The nitrate of silver has been so satisfactory in varying solutions, that although I have occasionally tried the other preparations, I have gone back to it, and I do not feel justified in making experiments. I am waiting for other clinics, especially the men's genito-urinary, to settle the relative value of other silver salts.

In giving massage to the urethra and the glands, I make a glove for my finger by wetting a thin layer of cotton and then applying it like a little cap over the last joint of the finger, which in this way protects the skin and protects the tissues. Sanger, in agreement with Dr. Allis, is emphatic as to the value of sand in keeping the hands fair, soft and clean, and Kroenig in Leipsic says that it is one of the best agents in removing the epithelial roughness always found on the hands of those using bichloride of mercury.

Recent Literature.

Cancer of the Uterus. A Clinical Monograph on Its Diagnosis and Treatment, with the After Results in Seventy-three Cases Treated by Radical Operation. By ARTHUR H. N. LEWERS, M.D. (Lond.), F.R.C.P. (Lond.), Obstetric Physician to the London Hospital; Examiner in Obstetric Medicine to the University of London, etc. Philadelphia: P. Blakiston's Son & Co. 1902.

This is a valuable clinical treatise by a practical worker and careful observer.

The author writes from an experience of seventeen years in the treatment of uterine cancer. He says in the preface: "My intention has been to bring into prominence the fact that if cancer of the uterus, whether of the cervix or of the body, be met with in a reasonably early stage, there is a very good prospect that permanent relief will be secured by operative treatment. This proposition should not be accepted as true without the clearest evidence. In support of it, I have brought forward full particulars of nineteen cases, fourteen of cancer of the cervix, and five of cancer of the body of the uterus, in which periods of from four to more than fifteen years have elapsed since the operation without any return of the disease."

Lewers thinks that, as only about five per cent of cases of cancer of the uterus now come under the observation of the profession at a stage of the disease when there is any prospect of permanent relief, it is of vital importance to insist on the recognition of the early symptoms of cancer. He thinks that this result will be most likely to follow when women themselves are more generally familiar with the significance of the early symptoms. He makes a practical suggestion to this end that the Cancer Commission of England send a short leaflet mentioning the essential facts which it is so desirable

for women generally to know, to every medical man whose name appears in the Medical Directory, with a request that he should distribute them to such persons—for instance, matrons, nurses, district visitors—as seemed likely to use the knowledge to good purpose.

The author properly lays great stress on the fact that pain and cachexia are late symptoms of cancer. When pain is present, it is, as a rule, too late for radical operation.

Forty-seven per cent of Lewers' one hundred cases of cancer of the cervix had had five or more children, while only thirteen per cent of a hundred consecutive patients not suffering with cancer of the cervix showed this degree of fertility. From this he concludes that if a woman has symptoms of cancer of the cervix, and is known to have had five or more children, the probability that she has cancer is distinctly increased.

From an investigation of the ages among one hundred patients, he concludes that the liability to cancer of the cervix between the ages of thirty and forty is almost the same as that between the ages of forty and fifty.

In the cases of cancer of the body, on the other hand, most of the patients are between fifty and sixty years of age, and sterile.

Cancer of the cervix is considered at length, and then its treatment. High amputation of the cervix was formerly practised with good results, but has now given place to vaginal hysterectomy, except in those cases where the fundus is so large that it cannot easily be delivered by the vagina. In this case, abdominal hysterectomy is done. The after results of the radical operations are carefully traced in two chapters, the histories of the cases being given in detail. They are also given in tabular form. Cancer of the body of the uterus takes up the last third of the book.

Sufficient dilatation of the cervical canal by means of sterile laminaria tents, followed by anesthesia, and further dilatation with the steel dilator, so that the operator's finger may be introduced into the uterine cavity, is advocated as a routine measure in diagnosis in cases suspected of having cancer of the body.

Lewers is opposed to the extensive abdominal operations in which the lymph glands are removed. He advocates abdominal pan-hysterectomy when the fundus uteri is much enlarged and the vagina small, and vaginal hysterectomy in other cases of cancer of the body.

To the American reader the details of his operations, as described, seem to be lacking in nice points of technique. For instance, it is to be noted that, after performing abdominal pan-hysterectomy, he does not close the peritoneum over the wound in the vagina, a procedure which prevents infection of the peritoneal cavity from a suppurating wound in the vagina, prevents prolapse of the intestine into the vaginal wound, and lessens the probability of involvement of the peritoneal contents in the event of a recurrence of the disease later on.

The publishers have done their work well. The paper is heavy, the type large, and the illustrations of the pathological specimens are numerous and well executed.

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MEDICAL TEACHING OF SENIOR STUDENTS.

If much discussion leads to definite results, we can have no doubt that medical teaching, after it has passed through the present transitional stage, will stand upon a much higher plane of efficiency than it has in the past. No doubt discussion does much to clear the air and bring into prominence present deficiencies and future needs, but it must nevertheless be through trial and experience of methods that decisions are ultimately reached. In the meantime, the public expression of opinion and the views of men of wide knowledge as teachers are always suggestive and valuable.

A meeting of the Academy of Medicine has recently been held in New York, at which the present condition of medical education was discussed with much vigor and enthusiasm. The main paper of the evening was by Dr. William Osler, on "The Need of a Radical Reform in the Teaching of Medicine to Senior Students." The curriculum of the first two years appears to offer far fewer problems than the more practical work leading into practice, which the older students are called upon to do. The discussion at the meeting was limited practically to the latter years of the medical course. Dr. Osler spoke of the progress that had been made in giving the student first-hand knowledge, but he felt that the work of the last year should be made still more practical, and that the question narrowed itself down to the whole relationship of the senior student to the hospital; he should be started forthwith as a practitioner, taught how to observe, given good methods and a proper point of view. It was a safe rule not to have any teaching except with a patient as a text. The hospital also needed reform, in granting far greater facilities to medical students than they at present have in most medical schools.

All the work of the third and fourth years should be put into the hospitals. Experience had shown that the hospital, students, physicians and patients were alike benefited by active teaching in wards and out-patient departments. A method of effecting this needed reform was outlined by reference to his own experience in giving practical instruction to relatively large classes of students. The dispensary teaching was especially insisted upon, in which the students studied patients at first hand, were encouraged to follow the course of their diseases and later to report on them. At stated times the ground covered was gone over in review in a so-called "clinical round-up." This was the essential training of third-year students both in medicine and surgery. A further method was to give men an opportunity to serve as clinical clerks in the hospital wards, as has been the custom in the London hospitals for many years, a plan to which Dr. Thayer referred at considerable length in our issue of Dec. 25. We are glad to note that in spite of his insistence upon this eminently practical instruction, Dr. Osler thought systematic lectures still had a place. Whether or not they should be given must depend upon the individual teachers. Occasional quizzes and personal discussion of cases were strongly recommended. The general trend of all Dr. Osler's remarks was toward a closer relationship of the student with disease as observed in the living person, and, hardly less important, a closer relationship between the instructor and his student. It is no secret that a part, at least, of Dr. Osler's unusual success as a teacher lies in the practical application of this latter fact. He has disciples when many others merely have students.

Dr. H. L. Burrell of Boston followed Dr. Osler, and described the reforms which have taken place or are under contemplation at the Harvard Medical School. Three methods were suggested of improving the teaching of senior students:

First, to have a curriculum which shall consist of minimum required work and maximum elective opportunity, the aim being to give a student in the first three years the absolutely essential knowledge of fundamental studies necessary to make a well-informed physician, the fourth year to be entirely elective. The plan in detail is as follows:

(1) The fourth year to be elective without any restrictions; (2) the total number of hours required of each student to be one thousand; (3) certain courses to be recommended as fitting a student to become (a) a general practitioner, (b) a specialist in, or teacher of, any department of medicine; (4) an advisory committee to be appointed with whom the students may consult concerning the selection of studies; (5) in general the forenoon hours to be

devoted to practical work in hospitals and laboratories, and the afternoon hours to the lecture room and laboratories. The first year and a half is to be devoted to the study of anatomy, histology, physiology, physiological and pathological chemistry, pathology and bacteriology. The second year and a half, completing the three years, is to be devoted to medicine, surgery, obstetrics, hygiene, pharmacology, dermatology, gynecology, pediatrics, neurology, syphilis, ophthalmology, otology, laryngology, legal medicine and psychiatry. During these three years the student is to devote himself to these studies at their minimum. During the fourth year he may devote his one thousand hours of time to such electives as he may select.

Secondly he hoped to see a plan somewhat similar to that which has obtained in the London Hospitals adopted, by which all fourth-year students should serve as clinical clerks and surgical dressers in wards or out-patient departments. It was maintained that properly administered, such a plan would be of distinct advantage to student, hospital and medical school.

In the third place the scope and character of lectures and section teaching should be more clearly recognized and more intelligently applied.

Following the presentation of these papers, remarks were made by Dr. Alexander McPhedran of the University of Toronto, Dr. E. G. Janeway, Dr. W. B. James, Dr. W. Gilman Thompson and others. There was a mild disagreement with the views advanced by Dr. Osler and Dr. Burrell. Dr. Janeway thought that the conditions in New York were such as to demand adherence to old methods of amphitheater demonstration; Dr. James was wholly opposed to electives at any time in the four years, approved of the amphitheater clinic, and thought didactic lectures should be superseded by other methods of instruction; Dr. Thompson was of the opinion that outside instruction might be overdone.

In closing the discussion Dr. Osler vehemently reasserted that the medical student should have improved clinical facilities. He said in part, as abstracted in the *Medical Record* :

"What was wanted was an intimate contact of the student and teacher. Such a system of instruction would almost do away with medicine from a theoretical standpoint. It was not the teacher, the textbook, or the lecture that was going to teach the student, but the patient, and he must see patients and patients and patients. The hungry sheep look up and are not fed upon the proper food, and they will not be until there is a closer affiliation between the out-patient department and the hospital wards with the students."

Space does not permit any detailed comment on the foregoing, but one thing is strikingly apparent, that Baltimore, New York and Boston have markedly different ideas of progress and reform. Baltimore insists upon the personal element in teaching, New York is inclined to be satisfied with the present state of affairs, and Boston, contrary to its usual reputation for conservatism, is the exponent of radical change. After all is said, we are inclined to think that good teaching depends in great measure on good teachers, and that teachers must be allowed much freedom in method, if the best results are to be attained.

THE MASSACHUSETTS HEALTH REPORT.

The thirty-third annual report of the State Board of Health of Massachusetts brings to us the customary record of excellent sanitary work. There were no changes in the personality of the board during the year, but since its close Dr. F. W. Draper has felt obliged to resign his membership. Dr. Draper's long and distinguished career as a sanitarian will make the work of any successor a difficult one, and is second only to his still greater service as medical examiner. But in both capacities he has well earned the lasting gratitude of his fellow-citizens.

The general death-rate for the year 1901 was the lowest ever recorded, — 16.82, with great prevalence, however, of scarlet fever, diphtheria, cholera infantum and smallpox. The 778 cases and 101 deaths from smallpox, due to neglect of vaccination, naturally emphasize the board's recommendation of state control of vaccine virus. The typhoid rate, .195 per thousand, maintains the steadily diminishing mortality. The consumption rate, 1.75 from 4.27 per thousand in 1853, undoubtedly in large measure reflects better sanitary measures, although largely due to greatly improved, but still defective, registration of causes of death.

Twelve new acts of the legislature are recorded in regard to matters affecting the public health.

In the routine work of the board the year has been one of great activity, with regular meetings, food and drug inspection, hearings on sewerage and sewage and water and ice and odors, examinations of rivers and water supplies, purification of sewage and water, stability of sewage effluents, lead poisoning from drinking water, meadows and rivers; sewer outlets, bacteriological studies, culture examinations for diphtheria and tuberculosis, blood examinations for typhoid fever and malaria, antitoxin production. The board did well to exceed its appropriation by only a trifle over a third of one per cent.

The one hundred and fifty pages devoted to the subjects of "Advice to Cities and Towns" and "Health of Towns" are full of interest, especially to boards of health and health officers, and they show a marked improvement in the character of the work which has been accomplished from year to year throughout the state.

The three hundred pages devoted to the broad questions affecting supplies of drinking water, including the examination of rivers and water supplies and sewage, chemically and bacteriologically, and the purification of sewage and waters, together with the same questions as treated in previous reports, have made the board a standard authority on these subjects at home and abroad.

In the inspection of milk, 6,109 samples were examined during the year, of which 4,372 were above standard and 1,737 below. Fifteen were colored with annatto, 31 with aniline orange; 42 were preserved with formaldehyde, 12 with boric acid. Of 116 samples of butter examined, 2 oleomargarine and 5 renovated were sold as genuine butter. One of 49 samples of cheese contained boric acid. Thirty-four of 73 samples of cocoa and chocolate were adulterated, chiefly with starch, the names of the manufacturers being given. Ten samples of coffee were adulterated, out of 143, with peas, wheat or chicory. The high price of apples made cider vinegar largely not what it purported to be.

Of foods other than milk, 2,530 samples were examined during the year, and of drugs 468.

In the seven years of the board's production of diphtheria antitoxin, 147,699 bottles of antitoxin have been issued, and with most gratifying results, as shown by the board's analysis of the mortality from diphtheria in the state for three years, which proves conclusively the importance of the earliest possible administration of antitoxin in the treatment of diphtheria. For the purposes of diagnosis and release from quarantine 4,119 cultures were made.

For tuberculosis 797 specimens were examined; for typhoid fever, 108; for malaria, 91. Great good comes from the voluntary reports of deaths each week from the cities and towns, the annual reports of local boards of health, the required immediate report to the state board of cases of diseases dangerous to the public health and from the annual reports made under the law that in each city and town having a population of more than 5,000, as determined by the last census, at least one member of said board shall be a physician, and the board shall send an annual report of the deaths in such town to the state board of health in such form as shall be prescribed by the board. The board's use of the information gathered from these several sources is practical and important, and may in time lead to

that general recognition of the value of vital statistics which we need.

The examination required by an act of the legislature of 1901 has shown some interesting results with regard to the danger from eating uncooked shellfish taken near sewer outlets, as the colon bacillus was found in such in repeated instances. The investigation is still in progress.

REVIVAL OF THE INDEX MEDICUS.

It is a source of the greatest gratification to men interested in the progress of medical science and to scientific men in general, that the "Index Medicus," formerly under the editorship of Drs. John S. Billings and Robert Fletcher, is to be revived under the auspices of the Carnegie Institution. It will be remembered that this most valuable index was discontinued in 1899 through lack of financial support.

Beginning with January, 1903, publication will be resumed under the title "Index Medicus, Second Series," the editorship being in the hands of Dr. Robert Fletcher, formerly associated with Dr. Billings in the same work, and Dr. Fielding H. Garrison. So far as we are able to learn from the preliminary notice which is in our hands, the general plan of the new index will be very similar, if not identical, with that of the former publication. It will be issued each month as early as possible after the first day, and will represent the literature of the preceding month. On the completion of each volume there will be an annual index of authors and subjects issued, the subject part of which is to be elaborately sub-divided, according to a classification resembling that of the index catalogue of the library of the surgeon-general's office.

We sincerely hope that with the highly favorable auspices under which the republication is undertaken there will be no possibility of a lapse such as we have been having for the last three years.

MEDICAL NOTES.

SMALLPOX AND VACCINATION. — According to the bulletin of the Chicago Health Department, of the four cases of smallpox sent to the Isolation Hospital during the past week, one was an unvaccinated school child in South Chicago, contracted from a previously reported unvaccinated case; one an unvaccinated adult, who contracted the disease in the southern part of the state and arrived in Chicago six days previous to the attack; the source of the contagion in the remaining two cases — colored adults — has not yet been determined, but they were both unvaccinated.

THE CAT FEAR. — Dr. Weir Mitchell, 1524 Walnut Street, Philadelphia, will be glad to have reliable information from physicians and others as to the cat fear, and especially as to those persons who are aware of the presence of a cat without seeing it.

SIX DEATHS FROM PLAGUE. — It is reported that six deaths from plague occurred at Mazatlan, Mexico, on Jan. 2. Several new cases have been reported by the health authorities. All business and commerce are at a standstill, and the town is strictly quarantined.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Jan. 7, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 31, measles 9, typhoid fever 17, smallpox 13.

BOSTON MORTALITY STATISTICS. — Twenty cases of smallpox were found in Boston during the week ending Jan. 3, and four deaths are reported by the Board of Health. The whole number of deaths in the city was large, and so was the death-rate. The death-rate for the week was 21.17. The number of cases and deaths from infectious diseases is as follows: Diphtheria, 26 cases, 4 deaths; scarlatina, 32 cases, 5 deaths; typhoid fever, 14 cases, 4 deaths; measles, 8 cases, no deaths; tuberculosis, 20 cases, 23 deaths; smallpox, 20 cases, 4 deaths. The deaths from pneumonia were 32, whooping-cough 5, heart disease 24, bronchitis 12, marasmus 6. There were 16 deaths from violent causes. The number of children who died under one year was 41, under five years, 58, persons more than 60 years 67, deaths in public institutions 76.

A RECEPTION TO DR. MANLEY. — Dr. Thomas H. Manley of New York was tendered a reception by the medical profession of Hartford, Conn., at the Hunt Memorial, Monday evening, Dec. 22, 1902, and he gave a lecture on "Stenotic Obstructions of the Large Intestine." The following day, on the invitation of the medical staff, he operated at St. Francis' Hospital.

SMALLPOX IN MASSACHUSETTS FOR 1902. — In 1902 there were 2,263 cases of smallpox in Massachusetts, of which 1,015 occurred in Boston, as against 778 occurring in 1901. In a few small places the disease spread to epidemic proportions. Between 32 and 48 cases have been reported weekly for nearly three months past.

NEW YORK.

MEETING OF ASSOCIATION OF COLLEGE GYMNASIUM DIRECTORS. — The Association of College Gymnasium Directors held its sixth annual meeting at the

New York Athletic Club on Dec. 30 and 31, and a number of important papers were presented and discussed. Dr. Watson L. Savage, Columbia University, was elected president; Dr. Jay W. Seaver, Yale University, first vice-president, and Dr. W. A. Lambeth, University of Virginia, second vice-president. An interesting feature of the meeting was the exhibition by Dr. J. E. Raycroft of the University of Chicago of a plaster model of the average American college athlete, one-quarter life size, the dimensions of which were obtained by a comparison of the measurements of four hundred athletes, made in the gymnasiums of Harvard, Yale, Columbia, Cornell and other universities. One striking feature of the statuette, which is to be cast in bronze for the association, is the freedom from any abnormal display of muscle, such as is usually associated with the figure of the trained athlete.

MORTALITY STATISTICS. — The death-rate for the month of December was 17.48, against 16.20 in November and 18.96 in December, 1901. The corrected death-rate (excluding non-residents and infants under one week old) was 16.45. The following diseases showed a decline in mortality: The weekly average of deaths from typhoid fever decreased from 27.5 in November to 17 in December; from whooping-cough, from 7 to 3.75; from cancer, from 50 to 45; from diarrheal diseases, from 42 to 32.5 and from diarrheal diseases in children under five years, from 38 to 25.5. The following showed an increase in mortality. The weekly average of deaths from diphtheria and croup increased from 42 to 47.5; from scarlet fever, from 8 to 10; from measles from 3.5 to 6.75; from pneumonia, from 105.5 to 123.75; from bronchitis, from 35.5 to 42.75; from influenza, from 2.5 to 3.75; from pulmonary tuberculosis, from 139 to 145, and from diseases of the urinary system from 102.5 to 116.75. For the first time in two years there was no death from smallpox during the month.

The president of the Board of Health has reported to the mayor that the death-rate of New York City for 1902 was 18.74, which is considerably the lowest in the history of the department. The total number of deaths was 68,082, as compared with 70,803, and a death-rate of 20.02 for 1901; which is a decrease of 1.28 in the death-rate, and indicates the saving, for 1902, of 4,619 lives. The annual death-rates of the city since consolidation have been as follows: 1898, 20.26; 1899, 19.47; 1900, 25.97; 1901, 20.02; 1902, 18.74. The annual death-rate in each of the five boroughs is also the lowest on record. The rate for the two boroughs, Manhattan and the Bronx, which constituted the city of New York previous to consolidation, is 19.48, the lowest ever reported for that sec-

tion; the lowest previous record being in 1899, when the death-rate was 19.81. There were 582 fewer deaths from pulmonary tuberculosis than in 1901, and the report states that this result is due to scientific measures employed for the repression of the disease, which it is hoped will eventually be almost entirely eradicated. The usual recurrence of epidemic influenza was of short duration in 1902, and but few deaths resulted from it. There was a slight increase in the mortality from typhoid fever, but this was more than offset by a decrease of 100 deaths from smallpox. More than 800,000 persons were vaccinated by the department's physicians during the year. In scarlet fever there was a slight increase in mortality, but in diphtheria there was a decrease of 35%. For the first time in twelve years there was a decrease in the death-rate from cancer. Four thousand nine hundred and seven more births were reported than in the year 1901.

TRACHOMA IN SCHOOL CHILDREN TREATED.—Shortly before the close of the year the board of trustees of Bellevue and allied hospitals placed at the disposal of the Health Department the old building occupied by the Gouverneur Hospital before the erection of the adjoining new structure, for an eye hospital and dispensary; and during the last ten days of December, 2,128 cases of trachoma in school children were treated there, 116 of which were operated upon. Every child operated upon is detained over night, and in some instances for three or four days, in charge of nurses supplied for the work by the Gouverneur Hospital. From Sept. 8 up to the Christmas holidays 25,000 children were excluded from the public schools by the Health Department inspectors, a considerable proportion of this number being on account of trachoma.

Miscellany.

OUTBREAK OF TYPHOID FEVER TRACED TO OYSTERS.

THE *Lancet* of Dec. 20, 1902, refers to an outbreak of typhoid fever, occurring at Portsmouth, Winchester and Southampton, which, in the absence as yet of a thorough investigation, seems to have originated in contaminated oysters from the Emsworth storage ponds. At Winchester on Nov. 10 a complimentary dinner was given to the ex-mayor, and several persons who attended this banquet developed gastro-enteritis. Amongst those present were the ex-mayor, the dean of Winchester, Mr. Hanbury, M.P., and Dr. W. England, a well-known and greatly respected practitioner in Winchester. Dr. England died on Dec. 16 last, and the serious condition of the other invalids has been made known to the public through bulletins. At Southampton the chairman of the finance committee and his partner and the superintendent of the fire bri-

gade and some town councilors have been similarly affected, but are reported to be recovering. They all attended the corporation banquet held on Nov. 10. A waiter who was in attendance on the occasion, and who has since died, is stated to have suffered from typhoid fever. Several families in Portsmouth have also been attacked by typhoid fever, and it is reported that the source of the disease can be traced to the eating of oysters which came from Emsworth on the south coast. The oysters consumed at the Winchester banquet are understood to have come from Emsworth and the medical officer of health of Portsmouth has presented a report in which he attributes certain cases of typhoid fever to oysters from the Emsworth storage ponds. In connection with the Emsworth storage ponds the local government board report upon Oysters and Sewage Contamination shows that the drains discharge directly over the storage ponds. Since that report was written it is understood that certain of these drains have been intercepted and carried to the main sewer. This sewer still discharges alongside the oyster ponds, and on the rising tide the sewage cannot fail to pass into the ponds.

Obituary.

JOHN F. COUCH, M.D.

DR. JOHN F. COUCH of Somerville, Mass., died at his home in that city Jan. 4, aged fifty. Dr. Couch was born at St. John's, N. F. After graduating from school he went to work in a drug store and later entered the Harvard Medical School, where he received his degree in 1872. For a time he sailed as doctor on the barque "Kate Williams," and went as far as the Azores. He later took a course in obstetrics at the Rotunda Hospital Dublin, Ireland, remaining there six months. On his return he went to Somerville, where he was city physician, beginning in 1879, for three years, and a member of the Board of Health. He was a member of the Massachusetts Medical Society and a former president of the Somerville Medical Society. He was a trustee of the Somerville Hospital and one of the visiting physicians.

Correspondence.

ONE OF THE EARLY OPERATIONS UNDER ETHER.

WINCHENDON, MASS., Dec. 29, 1902.

MR. EDITOR: The following letter written by the late Dr. George Jewett, while a medical student, may be of some interest at the present time.

Dr. Jewett was for many years one of the leading physicians of Fitchburg.

The letter was addressed to the late Dr. Josiah Abbott, at that time a practitioner in Rindge, N. H.

Very truly yours,

J. G. HENRY, M.D.

BOSTON, Dec. 15, 1846.

DEAR SIR: In accordance with a promise I made you before I left home I embrace the present opportunity of giving you my whereabouts, and also a "nutshell view" of my present situation and advantages.

After as pleasant a ride as a snowstorm would admit, I arrived safe and sound in this city of "Yankee Notions," when like the frog in the olden times I commenced looking about to see among what people I had

fallen, and to find me a home. After being shown twenty rooms in the fifth or sixth story and running up and down stairs to my satisfaction, I concluded to stop at 276 Washington Street. I have a pleasant room, good coal fire, good table, etc., beside many other things which go to make up the sum of happiness and content.

I purchased one of the tickets to the lecture room, and matriculated, which would give me a right to the Clinical Lectures at the Hospital, occurring three times a week, and I procured the privilege of accompanying Dr. Bigelow in his morning visits.

I also attend all of the lectures when I am not in the hospital. Saturday is the day for operations, and a day which many an unfortunate subject of disease will long remember, and will recall the scenes which occurred on "Operation Day" with a thrill of horror.

Amongst the number of operations was one for the removal of the superior maxillary, which was affected with osteo-sarcoma. This you know is a fearful operation, but it was done by Dr. Warren and was successful. I will give you the case as it was one of particular interest.

The patient was a female about fifty years of age. Dr. Morton came forward and administered his "stupefying preparation," when Dr. Warren commenced by making an incision through the lip and down to the bone, carrying it to near the orbit of the eye, then by dissecting the integuments outwardly and making a large flap the diseased portion of bone was perfectly exposed.

By this time blood poured in streams, and running down the throat produced that peculiar kind of rattle, quaintly termed the "death rattle," while each effort of respiration was attended with a short suppressed scream. Suddenly the countenance became almost black, the hands also assumed the same appearance. This was an awful moment, and many who were unaccustomed to sights like this left the room. But the operator proceeded calmly as though nothing had happened. He seizes the stout bone pincers, for a moment the bones forming the roof of the mouth resist the force, another moment and they crackle under the forceps. Two or three efforts more and the work is done. But what an awful sight! The face cut seemingly all to pieces, the eyes starting from their sockets, the blood pouring in streams, the livid face and hands, the protruded tongue, that horrid rattle, the ineffectual efforts at respiration! All these combined truly made it an awful sight! Efforts were made to resuscitate her, and after a few moments by a convulsive effort of the chest the blood was thrown out and the lungs relieved. The patient was now freed from blood, the arteries ligatured, the lips of the wound brought together, and the patient left the room quite comfortable.

But there is one thing in particular in regard to this case and that was the condition of the arterial blood at the commencement of the operation, which was of a venous character. The same has been the condition of the blood in previous operations when the stupefying gas was given. Dr. Warren said that the great flow of blood did not alarm him as he thought it to be venous, but he found himself mistaken when he came to ligate the arteries. His explanation of the effect of the gas is this: When the vapor is given all the atmospheric air is excluded and nothing else inhaled, and there being little or no oxygen taken into the lungs the blood is not changed from venous to arterial, but retaining its venous character it is sent to the brain where it acts like the unrespirable gases—carbonic acid gas for instance—producing this stupor in which a patient may be cut all to pieces and not know it. The attention of all is being turned to this subject, and the safety of the community demands a thorough investigation of its character and mode of action.

There were also several other operations, among which was the removal of a scirrhus breast, amputation of the thigh of a young lady, the knee being affected with white swelling, removal of cancer from the lip and several others of less importance.

I attended a postmortem at the hospital one day last week, conducted by the younger Dr. Jackson, as he is generally called.

This was of great interest, but I must defer it till another time.

I remain your sincere friend,

G. JEWETT.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, DEC. 27, 1902.

| CITIES. | Population Estimated, 1902. | Reported deaths in each. | Percentage of deaths from | | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|-------------------------|-------------------------|--------------------------|-------------------|-------------------|-------|
| | | | Deaths under five years. | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid fever. | Scarlet fever. | |
| New York . . . | 3,665,352 | 1,207 | 356 | 22.78 | 22.12 | 3.56 | 1.19 | — | 3.31 |
| Chicago . . . | 1,852,828 | 598 | 180 | 29.92 | 15.21 | 2.01 | 6.52 | — | 1.84 |
| Philadelphia . . | 1,349,624 | 470 | 125 | 18.93 | 15.52 | .85 | 2.98 | — | 2.21 |
| St. Louis . . . | 603,717 | — | — | — | — | — | — | — | — |
| Baltimore . . . | 525,330 | 204 | 57 | 17.15 | 23.92 | 2.45 | — | — | — |
| Cleveland . . . | 411,826 | — | — | — | — | — | — | — | — |
| Buffalo . . . | 375,742 | — | — | — | — | — | — | — | — |
| Pittsburg . . . | 341,401 | 119 | 35 | 22.68 | 19.32 | 2.52 | 2.52 | — | — |
| Cincinnati . . . | 332,032 | — | — | — | — | — | — | — | — |
| Milwaukee . . . | 304,975 | — | — | — | — | — | — | — | — |
| Washington . . | 289,537 | — | — | — | — | — | — | — | — |
| Providence . . . | 185,870 | 87 | 20 | 13.44 | 23.78 | 1.03 | 2.06 | — | — |
| Boston . . . | 588,730 | 189 | 46 | 20.00 | 20.00 | 1.58 | 2.62 | 1.58 | — |
| Worcester . . . | 127,337 | 26 | 11 | 11.55 | 23.10 | — | 3.03 | — | — |
| Fall River . . . | 111,872 | 33 | 13 | 21.21 | 15.15 | 3.03 | 3.85 | — | — |
| Lowell . . . | 99,574 | 40 | 12 | 12.50 | 25.00 | 5.00 | — | — | — |
| Cambridge . . . | 96,334 | 15 | 2 | 20.00 | 20.00 | — | — | — | — |
| Lynn . . . | 71,144 | 12 | 2 | 8.33 | — | 8.33 | — | — | — |
| Lawrence . . . | 67,275 | 24 | 12 | 12.50 | 37.50 | 4.16 | — | — | — |
| Springfield . . | 66,854 | 21 | 7 | 14.29 | — | — | — | — | — |
| Somerville . . . | 65,882 | 24 | 7 | 16.66 | 41.67 | 4.16 | — | — | — |
| New Bedford . . | 65,574 | 40 | 16 | 25.00 | 22.50 | 5.00 | — | — | — |
| Holyoke . . . | 48,065 | 15 | 8 | 20.00 | 13.33 | — | — | — | — |
| Brockton . . . | 43,208 | 10 | 4 | 20.00 | — | — | — | — | — |
| Haverhill . . . | 40,392 | 11 | 3 | 9.09 | 9.09 | — | 9.09 | — | — |
| Salem . . . | 36,567 | 17 | 3 | 23.53 | — | — | — | — | — |
| Newton . . . | 36,336 | 8 | 1 | 37.50 | — | — | — | — | — |
| Malden . . . | 35,390 | 6 | 1 | 33.33 | 16.67 | 16.67 | — | — | — |
| Chelsea . . . | 35,264 | 12 | 1 | 8.33 | 16.67 | — | — | — | — |
| Fitchburg . . . | 33,848 | 11 | 5 | 9.09 | 27.27 | — | — | — | — |
| Taunton . . . | 32,759 | 7 | 1 | 14.30 | — | — | — | — | — |
| Everett . . . | 27,114 | 4 | 2 | 50.00 | — | 25.00 | — | — | — |
| North Adams . . | 26,583 | 6 | 2 | — | 16.67 | — | — | — | — |
| Gloucester . . . | 26,121 | 12 | 5 | 16.67 | 8.33 | 16.67 | — | — | — |
| Quincy . . . | 25,307 | 12 | 1 | 16.67 | 16.67 | — | — | — | — |
| Waltham . . . | 24,612 | 8 | 2 | 12.50 | — | — | — | — | 12.50 |
| Pittsfield . . . | 22,311 | 5 | — | — | 20.00 | — | — | — | — |
| Brookline . . . | 21,679 | — | — | — | — | — | — | — | — |
| Chicopee . . . | 20,390 | 12 | 9 | 33.33 | 16.67 | — | — | — | 33.33 |
| Medford . . . | 20,014 | 4 | — | — | 25.00 | — | — | — | — |
| Northampton . . | 19,460 | 8 | 1 | 12.50 | 12.50 | — | — | — | — |
| Beverly . . . | 14,814 | 1 | — | — | — | — | — | — | — |
| Clinton . . . | 14,645 | 4 | 0 | 25.00 | — | — | — | — | — |
| Newburyport . . | 14,478 | 8 | 1 | 25.00 | — | — | — | — | — |
| Woburn . . . | 14,285 | — | — | — | — | — | — | — | — |
| Leominster . . . | 13,953 | — | — | — | — | — | — | — | — |
| Hyde Park . . . | 13,858 | — | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | — | — | — | — | — | — | — | — |
| Melrose . . . | 13,384 | — | — | — | — | — | — | — | — |
| Westfield . . . | 13,038 | 1 | — | 100.00 | — | 100.00 | — | — | — |
| Attleboro . . . | 12,846 | — | — | — | — | — | — | — | — |
| Adams . . . | 12,813 | — | — | — | — | — | — | — | — |
| Milford . . . | 12,516 | — | — | — | — | — | — | — | — |
| Framingham . . . | 12,109 | 2 | 1 | — | — | — | — | — | — |
| Peabody . . . | 11,957 | — | — | — | — | — | — | — | — |
| Revere . . . | 11,894 | 1 | — | — | 100.00 | — | — | — | — |
| Gardner . . . | 11,544 | 9 | 4 | 33.33 | 22.22 | — | — | — | — |
| Weymouth . . . | 11,337 | 4 | 0 | 25.00 | — | — | — | — | — |
| Southbridge . . . | 10,838 | — | — | — | — | — | — | — | — |
| Watertown . . . | 10,600 | 2 | — | — | 50.00 | — | — | — | — |
| Plymouth . . . | 10,336 | — | — | — | — | — | — | — | — |

Deaths reported, 3,309; under five years of age, 957; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 729, acute lung diseases 642, consumption 352, scarlet fever 26, whooping cough 26, cerebrospinal meningitis 7, smallpox 12, erysipelas 8, measles 23, typhoid fever 84, diarrheal diseases 88, diphtheria and croup 90.

From whooping cough, New York 2, Chicago 12, Philadelphia 6, Pittsburg 3, Providence 1, Boston 2. From measles, New York 10, Chicago 7, Philadelphia 1, Baltimore 2, Pittsburg 2, Gardner 1. From erysipelas, New York 4, Chicago 2, Pittsburg 1, Boston 1. From smallpox, Philadelphia 3, Pittsburg 3, Boston 6.

In the seventy-six great towns of England and Wales, with an estimated population of 14,862,880, for the week ending Dec. 13, the death-rate was 19.6. Deaths reported, 5,578; acute diseases of the respiratory organs (London) 399, whooping cough 95, diphtheria 94, measles 232, smallpox 8, scarlet fever 52.

The death-rate ranged from 9.8 in Tottenham to 38.0 in West Bromwich; London 19.2, West Ham 17.0, Brighton 10.5, Portsmouth 18.2, Southampton 16.5, Plymouth 18.0, Bristol 22.6, Birmingham 20.5, Leicester 14.2, Nottingham 20.8, Bolton 15.8, Manchester 21.4, Salford 21.2, Bradford 18.1, Leeds 18.0, Hull 21.9, New Castle-on-Tyne 24.0, Cardiff 21.6, Rhondda 17.4, Coventry 16.6, Liverpool 29.4.

METEOROLOGICAL RECORD

For the week ending Dec. 27, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Wet'h'r * | | Rainfall in inches. | | |
|----------------------|--|---|--|--|--|--|--|--|---|---------------------------------|------------------------------------|--------------------------------------|--|--|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. | |
| S. M. T. W. T. F. S. | 21 22 23 24 25 26 27 | 30.36 29.88 30.12 30.30 29.96 29.78 29.78 | 40 50 30 21 28 27 26 | 53 58 42 28 34 32 32 | 25 42 17 14 22 22 19 | 71 80 78 64 63 74 73 | 100 75 78 64 63 100 80 | 26 82 71 63 60 74 73 | N S W N W N W N E N W W | E W N N N W W | 5 10 20 10 9 5 9 | 10 10 20 9 24 3 10 | O. O. O. C. C. O. O. | R. C. C. C. N. F. C. | .50 .74 0 0 .27 .22 .04 |
| <i>Mean</i> | 30.03 | | 40 | 23 | | 79 | | | | | | | | 1.77 | |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall. *Mean* for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JAN. 1, 1903.

BAILLIACHE, PRESTON H., surgeon. Leave of absence for seven days on account of sickness, under paragraph 179 of the regulations.

MATHEWSON, H. S., passed assistant surgeon. Granted leave of absence for seven days from Dec. 2, 1902.

GRUBBS, S. B., passed assistant surgeon. Detailed to represent the service at meeting of the American Public Health Association, at New Orleans, La., Dec. 8-12. Dec. 6, 1902. To proceed to Ensenada, Cal., for special temporary duty. Dec. 12, 1902. To proceed to Mazatlan, Mexico, for special temporary duty. Dec. 30, 1902.

KORN, W. A., assistant surgeon. Granted leave of absence for seven days from Dec. 25, 1902, under paragraph 131 of the regulations.

SCHERESCHEWSKY, J. W., assistant surgeon. To proceed to Charleston, S. C., and assume temporary command of the service during the absence, on sick leave, of Acting Assistant Surgeon P. F. Sams. Dec. 31, 1902.

ROBERTSON, H. MCG., assistant surgeon. Relieved from duty at Chicago, Ill., and directed to proceed to New York, N. Y., (Stapleton) and report to medical officer in command for duty and assignment to quarters. Dec. 30, 1902.

BOARDS CONVENED.

Board convened to meet at Washington, D. C., Dec. 26, 1902, for the physical examination of Chief Engineer Howison, R. C. S. Detail for the Board: Assistant Surgeon-General H. D. Geddings, chairman; Assistant Surgeon B. S. Warren, recorder.

Board convened to meet at Washington, D. C., Dec. 27, 1902, for the physical examination of Chief Engineer Maher, R. C. S. Detail for the Board: Assistant Surgeon-General H. D. Geddings, chairman; Assistant Surgeon B. S. Warren, recorder.

PROMOTIONS.

JOHN ACHENBACH to be pharmacist of the first class, Dec. 18, 1902.

E. S. MAGUIRE to be pharmacist of the first class, Dec. 18, 1902.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JAN. 3, 1903.

J. M. BRISTER, assistant surgeon. Detached from the "Frolic" and ordered to the "Elcano."

U. R. WEBB, assistant surgeon. Detached from the "Iris" and ordered to the Naval Station, Cavite, P. I.

H. A. DUNN, assistant surgeon. Detached from the "Vicksburg" and ordered to the "Frolic."

C. A. CRAWFORD, passed assistant surgeon. Detached from recruiting duty and ordered home to visit orders.

G. L. ANGENY, passed assistant surgeon. Detached from the "Lancaster" and ordered to the "Essex."

R. W. PLUMMER, assistant surgeon. Detached from the Naval Hospital, Chelsea, Mass., and ordered to duty at Chattanooga, Tenn.

G. F. FREEMAN, assistant surgeon. Detached from the "Essex" and ordered to duty at Naval Hospital, Chelsea, Mass.

W. H. ULSH, assistant surgeon, Dec. 22, 1902. Retired from active service, by reason of disabilities incurred in the line of duty.

H. C. CURL, passed assistant surgeon. Ordered to the Naval Hospital, Mare Island, Cal., for treatment.

NEW HAMPSHIRE MEDICAL EXAMINATIONS.

THE next Medical Examination held by the Regent of the New Hampshire State Board of Medical Examiners will be on March 3 and 4, at Concord, N. H.

RECENT DEATHS.

DR. DAVID JACOBSON, of Brooklyn, N. Y., died on Dec. 31, at the age of thirty-eight. He was graduated from the Medical Department of the University of the City of New York in 1888.

JOHN FRANCIS COUCH, M.D., M.M. S.S., died in Somerville, Mass., Jan. 4, 1903.

BOOKS AND PAMPHLETS RECEIVED.

Cytoscopic Appearance in Non-Tubercular Cystitis and Pyelonephritis in Women. By Edgar Garceau, M.D., of Boston. Reprint. 1902.

Chronic Suppurative Otitis Media. When Should Radical Surgery be Employed in Its Treatment, and of What Should This Consist? By George L. Richards, M.D., of Fall River, Mass. Reprint. 1902.

Empyema of the Frontal Sinus: Some Observations on Its Treatment. By George L. Richards, M.D., of Fall River, Mass. Reprint. 1902.

The Large Intestine Regarded as a Syphon. By R. W. Liffwich, M.D., of London, England. Reprint. Edinburgh. 1902.

Life and Work of the Late Prof. Christian Fenger. Memorial Address delivered to the Graduating Class of Rush Medical College, April 4, 1902. By N. Senn, M.D., Ph.D., LL.D., C.M., Professor of Surgery, Chicago. 1902.

The Purse-string Suture in Gastrorrhaphy for Gunshot Wounds: An Experimental Contribution. By N. Senn, M.D., Ph.D., LL.D., C.M., of Chicago. Professor of Surgery, Rush Medical College. Reprint. 1902.

The Present Status of the Carcinoma Question. By N. Senn, M.D., Ph.D., LL.D., C.M., of Chicago. Reprint. 1902.

Therapeutics of Dry Hot Air. By Clarence Edward Skinner, M.D., LL.D. Illustrated. New York: A. L. Chatterton & Co. 1902.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the General Editorial Charge of Gustavus P. Head, M.D. Vol. II. November, 1902. Illustrated. Chicago: The Year Book Publishers.

Light: Its Therapeutic Importance in Tuberculosis as Founded upon Scientific Researches. By J. Mount Bleyer, M.D., F.R.A., M.S., LL.D. Illustrated. Reprinted from the Journal of Tuberculosis, October, 1902.

The ABC of Photo-Micrography. A Practical Handbook for Beginners. By W. H. Walmsley, F.R.M.S., F.A.A.S. Illustrated. New York: Tennant & Ward. 1902.

The Proceedings of the Charaka Club. Vol. I. New York: William Wood & Co. 1902.

Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. de Schweinitz, A.M., M.D. Fourth edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1903.

A Report to the Surgeon-General of the Army, on the Dissemination of "Surra" by means of the Biting Fly (The Stomoxys Calcitrans), with Recommendations as to Measures for the Prevention of this Disease. By Joseph J. Curry, M.D. Reprint. 1902.

"Surra" or Nagana. A Report of an Acute, Fatal, Epidemic Disease Affecting Horses and Other Animals. By Joseph J. Curry, M.D. From the Army Pathological Laboratory, Manila, P. I. Reprint. 1902.

Blackwater (Hemoglobinuric) Fever: With a Report of Two Fatal Cases Occurring in the U. S. A. Military Hospitals at Manila, P. I. By Joseph J. Curry, M.D. Reprint. 1902.

The Nature of the Blood Changes Due to Attitude. By Joseph J. Curry, M.D., of Fort Bayard, N. M. Reprint. 1902.

Bubonic Plague. From the U. S. A. Pathological Laboratory, Manila, P. I. By Joseph J. Curry, M.D. Reprint. 1902.

Report on a Parasitic Disease in Horses, Mules and Caribao in the Philippine Islands. By Capt. Joseph J. Curry, M.D. Reprint. 1902.

Original Articles.

A SYNOPSIS OF TEN WEEKS' SERVICE ON THE BOSTON FLOATING HOSPITAL.¹

BY ROBERT W. HASTINGS, A.M., M.D., BROOKLINE, MASS.

THE fact that of the 690 cases sent to the Boston Floating Hospital this past summer, nearly 150 were sent by men of this society, makes it seem fitting that any medical report of the work should be first addressed to you. Evidently you know its location and purpose, yet a brief historical note may not be out of place.

The Boston Floating Hospital was and is in nautical circles the barge "*Clifford*," which formerly was towed down the harbor with excursion parties. It is said that 1,400 to 1,600 people have thus gone out on her. This will indicate to you something of the size of the boat and its possibilities as a hospital. When in 1893 the idea first came to Rev. Rufus B. Tobey that something similar to the work done on the New York floating hospitals might be started for the poor, sick little ones of Boston, he found a ready response. This boat was hired and went out five times in 1894. Thirteen trips in 1895, 14 in 1896, 25 in 1897, 56 in 1898, 57 in 1899, 63 in 1900, 66 in 1901 and 70 in 1902, show how the work has steadily grown. At first intended to be, like the New York boats, simply for the care of sick babies during the day, there came a time when one night there were two or three babies too sick to be sent home. Soon a ward was set aside for such very sick ones; then two wards, and finally two more. So that this last summer there were fifty-seven permanent cribs. Medical care and nursing, which at the first were purely voluntary, are now thoroughly organized. We have a resident physician, two medical services, each with visiting physician, senior and junior house officers and medical assistants, an out-patient service, with externe and medical assistants, which corresponds to the work first done on the hospital from 1894 to 1897, and a matron of nurses with about thirty nurses under her, most of them graduate nurses who come to take the training course, for successful work in which diplomas are granted.

This complete medical organization and equipment, which are largely the result of the thought and effort of Dr. Samuel Breck, made it seem to me well worth my time and effort to accept the position of resident physician for the past year. The results of my observations confirm those of the previous five years as visiting physician.

Our first trip was July 8. July 19 we had 60 patients, and began to refuse cases for lack of room. This crowded condition continued practically all the time till the second week in September. Some days we were obliged to refuse as many as twelve cases. In all, 128 cases were rejected or deferred, and 272 admitted. That is to say, in a summer which the health statistics of the Boston Board of Health showed to be unusually healthy, we were able to take care of only two in three of those who applied. This may explain to you why some case which you sent down was not received.

So extreme did the pressure become that on more than one occasion mothers sat with sick babies in their arms, waiting for a vacancy which could only come by the visit of the death angel. This will also suggest to you that the average case admitted was very sick and, indeed, 87 of the cases were in most desperate straits when received. This, in turn, affords an explanation for the 86 deaths, a percentage of 31. We were not discouraged by this, however, for German authorities state that the mortality in infants' hospitals is 75%, and Holt himself expects 45%. We do not claim to perform miracles, whatever may be the impression you have gotten from the newspaper articles. Please believe, what I know to be a fact, that the mention of any doctor's name in those reports is against the earnest protest of the physicians themselves, and apparently the inevitable result of being connected with a philanthropy about which the public desires to know everything. We try to furnish the little ones competent and continuous nursing care, accurately prepared food and plenty of fresh air. If you can secure these for your patients, they will do just as well in their homes as with us; for we do not claim to be more skillful nor more experienced than many of you. I shall endeavor to describe to you to-night how we seek to attain these three requisites and then briefly to state some of the lessons learned this summer.

Care.—Patients are admitted in very much the same way as to the Boston City Hospital. If day-patients, they are sent to the upper deck, styled Ward E. So far as possible, a tentative diet for these is ordered on the wharf, carrying out your suggestions if you have made any in the note or card which comes with the child. This makes it possible within fifteen minutes after the boat starts for suitable food to be given a baby which may have had no food for two or three hours. The externe with his assistants and nurses quickly determines the sickest of these day patients, and gives immediate attention to them. Under the supervision of the resident physician such medicine as is needed is ordered, and soon the regular routine of the day is started in this ward; for it combines with out-patient examination such hospital treatment as is possible in the limited time. The history of each patient having been taken and written out, the record is completed by a careful physical examination. Food and medicine are given at regular intervals. No food or medicine is allowed to be brought. The well children who could not be left at home are separated from the sick ones in a kindergarten, and the mothers have a chance to rest and breathe the fresh air themselves. Later in the day these mothers and well children have a substantial lunch, and the mothers a chance to listen to an instructive illustrated lecture, telling them just how to prepare modified milk, barley water, rice water, albumen water, etc., in their homes.

Now, all this is not so very different from what each one of you does in your contact with the cases; but we have the advantage that the child is with us under constant observation for six or seven hours, while you may be able to spend only a few minutes with each case. The improvement at the end of the day is sometimes astonishing, as doubtless you

¹ Read before the Norfolk District Medical Society, Nov. 25, 1902.

have yourselves noted. On the other hand, babies who gain during the day often lose all they gain and perhaps more, because of the hot, noisy ride home and the bad home surroundings of the night, and I trust that these brief notes will enable you more wisely to advise a mother whether she should leave her baby with us or not, as well as suggest to you the advantages which do accrue to the right cases.

Permanent cases go direct to the ward and are at once put to bed. There is the same careful history, and when the condition of the child will permit it, an accurate physical examination. Later this is supplemented by an analysis of the urine and examination of the blood. Ordinary cases are started on the routine ordered by the visiting physician. Unusual cases are seen by the resident physician, and suitable, immediate treatment ordered till the time of the regular visit of the visiting physician. These men usually came to us twice a day, at morning and evening. Whenever in their absence an emergency arose, it was reported to the resident physician and attended to by him. All cases were admitted and discharged by the resident physician, to whose care the patients were technically intrusted by the Board of Managers of the hospital.

A request for autopsy was made for every case of death where the religion of the parents did not forbid, and twenty-five such examinations were made. Nearly all of these were done by Dr. Walter R. Brinkerhoff, our pathologist, who is Dr. Mallory's first assistant at the Boston City Hospital.

So much for an outline of the hospital work. I trust it has not wearied you. Many details I have necessarily omitted. It is the work of a modern busy hospital, modified to meet the conditions and limitations of our time and space. Head nurses' duties, assistant nurses' records, special chemical and microscopical work of house officers and medical assistants, all form parts of the daily life and the "care" which strives to cure or, at least, relieve the little ones.

Food.—Our experience last year led us to believe that fresh, clean milk was better for babies, well or sick, than older Pasteurized or sterilized food. We desired to get clean milk of the morning's milking, delivered at the boat at 9 A.M. After various investigations an offer was received from the Walker-Gordon people, which was within the price limit set, and we visited their dairy out in Needham. If you have never seen a really clean dairy, it will well repay you some time to visit this one. You will there see how stables, cows, utensils and employes can be clean and kept clean and milk furnished with relatively few bacteria in it. There are other such stables near Boston, but they are not numerous, and it is of the very greatest importance that as physicians we insist upon clean milk. It will cost a little more, but where the health of children is at stake, the increase in expense is of no moment. Know where the milk that your patients have comes from, and insist that it is clean! We also received from the Walker-Gordon people 20% cream and distilled water. The milk and cream were, of course, iced.

We did not trust to their statements about the bacteria, but through the courtesy of Dr. Hibbert Winslow Hill, director of the Boston Board of Health Laboratory, on July 25, a sample of the

milk was tested and found to contain less than 10,000 per cc., and on August 4 the cream showed only 20,000 to 30,000 per cc. Feeling thus assured that our first material was all right, we set about testing our modifications and other preparations. Three formulæ are employed by us as stock preparations, styled, "A," "B" and "C" mixtures, with formulæ 1-6-0.6; 2-6-1; 4-6-1.5 of fat, sugar and proteid respectively. Twelve per cent cream is prepared by mixing milk and 20% cream, and this is diluted with 6% or 7% milk sugar solutions to produce these formulæ at the very time they are needed for use. Manifestly there was a chance for bacteria to enter, and we found that they did. Not less than thirty minutes of vigorous boiling sufficed to destroy the bacteria in the sugar solution; but this amount did the work, and Aug. 25 we received a favorable report from Dr. Hill, which was further confirmed on Sept. 9.

We therefore proved that it is possible to deliver to babies modified milk, which is practically sterile, without Pasteurization or sterilization, if sufficient care is taken in the preparation. If you believe that raw milk is better for babies, you can, therefore, be confident that it is possible to have it clean and pure.

With regard to this problem of raw *versus* Pasteurized food, we did not attempt a solution. None of our milk preparations this summer were heated beyond 100° F.,—this last at time of feeding. Hence our experience with these 690 cases lends approval to raw milk foods. The mothers, however, were always instructed in the art of Pasteurization, for we know that the milk generally sold to the public has millions of germs to the cubic centimeter.

We next tested our peptonized foods. These showed a great increase in the number of germs and a tendency not to hold together. We therefore used fresh extract of pancreatin and bicarbonate of soda, stopping the process when the first suggestion of bitter or the faintest acid reaction appeared, and bringing it at once to a boil for three minutes. This product was practically sterile. Our difficulty with the separation of the peptonized "B" and "C" mixtures was finally solved by peptonizing the 12% cream and then diluting with the sugar solutions, just as in the ordinary mixtures.

We did not make a large use of whey. During the last few weeks, however, we did try it on a series of cases. In its production we found much variation in the appearance of the fluid depending upon the methods employed. Another season we shall have these analyzed for fat and proteid. Using the method directed by Rotch we had a fluid containing no inconsiderable quantity of fat, and one which was well borne by the babies. We believe that whey for sick babies should be made with essence of pepsin and with whole milk, not skim milk. Perhaps a more extended experience, such as we certainly shall attempt next season, may correct these views.

Usually babies which came to us with gastrointestinal troubles were started on rice water. This method of treatment, started on one service, was soon adopted by the other visiting physicians. It was proven that a baby could be fed for two weeks

on nothing but rice water and only lose one half ounce in weight. The solution was made from flaked rice, such as may be bought at any grocery store and according to the directions printed on the package. The product was, therefore, partially dextrinized, since this rice has been partly cooked. Further efforts at dextrinizing by the addition of malt extract were not successful, and were succeeded by a mechanical mixture of equal parts of pure dextrin and flaked rice in the preparation. We do not know that this last, which we styled "dextrinized rice water," strictly speaking a misnomer, as you see, was any improvement on the plain rice water; but it also was well taken by the babies, and theoretically should be more digestible for those whose secretion of ptyalin is very small.

Babies who came to us with a history of vomiting were often started on the well-known albumen water or Jacobi's modification of that, which substitutes barley water for plain water. Barley water itself was but rarely used.

When real exhaustion was to be met, we used Panopepton or beef juice. The former was found to be really of very great value, and we used large amounts of it. When possible, however, we made use of our own beef juice. This was not prepared in the usual way. The meat of the "round cut" type is cut into dice one-half inch cube, slightly salted, and put into a clean fruit jar. This is closed and put in a water bath of not over 145° F. for one hour. The juice is squeezed in a meat-press, strained and kept on ice. The residue is mainly tough fiber, and the product very agreeable and nutritious. Much more is obtained in this way than in the ordinary way of blistering the steak and then pressing it. One hundred and forty-five degrees F. means as hot as you can put your hand into, and is easily maintained on the back of a kitchen stove. Care is, of course, necessary that it does not get too hot, else the meat will coagulate and the familiar old-fashioned beef-tea result.

Much more might be written descriptive of the methods of preparation and the efforts used to secure freedom from bacterial contamination and uniform products. The whole matter was very carefully worked out by our chemist, Dr. Charles E. Buck, a graduate pharmacist and senior in the Tufts Medical School. But the time will not permit. Perhaps, however, I have suggested a few practical points which may merit your discussion and assure you of the work we try to do.

Air.—The matter of fresh air was not a difficult problem this summer. There were very few hot days with high relative humidity. We therefore made use of our windows, just as you did. If we had better, fresher air, it was because all about us was a wide expanse of open water, from which the breezes blew unmixed with smoke or dust or foul odors. We have, however, down in the hold, an ice machine, steam pipes and a powerful fan which will take the hot air laden with moisture, freeze out all the moisture, warm it and send it in abundance to two of our wards, with a uniform humidity of 50% and a temperature of 72° F. Just what that means you must experience to understand. But we feel sure it has often meant life to a sick baby.

And now, what medical suggestions can we make to you? First, perhaps, our belief that these

diarrhea troubles of babies in the summer are infectious, just as typhoid fever is. We therefore keep flies away from them, destroy all the dejecta, and very frequently cleanse the hands and arms of doctors and nurses with a solution of cyanide of mercury. Since these precautions were instituted very few cases of re-infection or auto-infection have occurred. Before we were so careful they were not rare.

In dietetic treatment we accepted the dictum to cut off milk. Rice water or barley water are better than our mixture "A" even, which is about one of milk to five or six of water, and our experimental approval is unqualifiedly given to rice water. There is no practical harm and at least a theoretical advantage in the addition of dextrin.

Peptonized milk should not be disagreeable to the taste and need not be, and is an efficient food. Our use of it led to an important discovery very lightly touched upon in textbooks. Patients taking it had lumps in their dejecta. These were at once supposed to be curds, since they were not fat, and faulty preparation of the supposed peptonized food was charged. But careful tests showed that in a fair proportion of cases these lumps were neither fat nor curds, but mucus.

Nearly all our very sick cases had regular doses of brandy or whiskey. The charge that the brandy was inferior to the whiskey led us to have it analyzed by Dr. Charles Harrington at the Harvard Medical School. The results showed that best California brandy had 46% alcohol, while the best whiskey had only 39% alcohol.

A further means of stimulation of much value was normal salt solution under the skin, or, as it is technically called, hypodermoclysis. Sterile apparatus was always ready and warm, and was in daily, almost hourly, use. Every five or six hours and in amounts varying from an ounce to five ounces, given under the skin of chest, back or abdomen, was the rule. No harm resulted in any case, save two or three small abscesses, the cause for which was readily found in imperfect sterilization of the needle. It causes the baby little or no pain, and certainly seems to act as a powerful restorative. It can be readily given by a nurse, who must, however, give her entire attention to the matter.

Many of our patients refused to swallow their food. It was then given them by stomach tube or nasal tube. This, too, the trained nurse can do, and often after a day or two the usual method may be resumed. With us, this usual method was an eight-ounce bottle of Arnold sterilizer shape and a Davidson No. 26 nipple.

Enteroclysis or irrigation of the lower bowel was performed nearly seven hundred times. It was much more commonly used in the early portion of the season. This seems to be due to a growing feeling on the part of the physicians that cases for this treatment should be carefully selected. There were no bad effects. We commonly employed two quarts of solution, with a pressure of eighteen inches, through a flexible rubber catheter, Nos. 21 to 23, American scale, inserted gently twelve or fourteen inches. The usual solution was normal salt solution, sterile water or solution of soda bicarbonate from three drachms to the pint to one drachm to two pints. We also tried a solution of peroxide

of hydrogen $\frac{1}{2}\%$ to 4%, tannic acid solution, silver nitrate solution, lime water and creolin solution. This last was the only one which seemed to have any peculiar value. In strength of one-half drachm to two pints up to one drachm to a pint, it appeared to remove foul odor and especially to check bleeding. There were certainly several cases which, after careful irrigation with the creoline solution, failed to show the presence of blood in the movements which had previously contained considerable quantities. Reverse peristalsis was demonstrated by the appearance of the odor of creolin in the mouths of two patients and of the fluid itself in one.

For persistent vomiting nothing proved better than lavage, using two pints of normal salt solution.

We tested a few drugs and preparations. Panopepton, whiskey and brandy have been already mentioned. Fat-free tincture of digitalis was used in thirty-one cases, and with good effect. Seven cases of pneumonia were given the large initial dose of five or ten minims. The results seem to justify that rather heroic treatment. Tannalbin in doses of five to ten grains every two to four hours was efficient to check bloody movements which did not yield to any other treatment. Patch's "misco-line" — with the formula, in each fluid drachm zinc sulphocarbonate $\frac{1}{20}$ grain, salol $\frac{1}{10}$ grain, bismuth subcarbonate 1 grain, calomel $\frac{1}{60}$ grain, and pepsin $\frac{1}{4}$ grain — was tried on twenty-three out-patient cases with satisfactory results. A similar trial of a petroleum emulsion, much exploited as an intestinal antiseptic, was not at all successful.

Two or three relatively sure signs of approaching death were noted. One was the appearance of crown vomitus which did not contain blood or react to the hemin test. Another was the appearance of purpuric spots or streaks on the abdomen. In one case these very largely disappeared after the administration of a solution of gelatine, but the baby died. A third fatal sign is a drop of the temperature to 95° F. or thereabouts. There was no great difficulty in getting the temperature back to normal, but the babies died none the less surely.

Our postmortems taught us many things. Nearly every case of severe bowel trouble was proven to be, pathologically, acute follicular ileocolitis, with very marked thickening of the lower bowel, swelling of the follicles and often some ulcerations, and fatty degeneration of the liver. One case was met which justifies our clinical term gastro-enteritis, for all the inflammation was in the stomach and upper duodenum. The heart muscle was not usually much affected nor were the kidneys seriously involved. Two diagnoses of persistent ductus arteriosus and persistent enlarged thymus gland as causes of death deserve passing mention and later a more extended report.

I trust that this incomplete presentation of the work of the Boston Floating Hospital may prompt your continued helpful interest in it. During the past summer nearly a thousand people visited us, but of these barely a score were physicians. We should be glad to have you come, either morning or afternoon, that you may see just how the babies you send down are cared for.

A CASE OF RETINAL HEMORRHAGE IN A PATIENT OF SEVENTY-THREE. TREATMENT BY THE FARADIC CURRENT. COMPLETE RECOVERY.¹

BY HASKET DERBY, M.D., BOSTON.

In 1898 Professor von Reuss of Vienna published in the *Graefe Archive*² an article on the use of the Faradic current in certain affections of the eye. It was entitled, "New Experiences in the Electric Treatment of Inflammatory Affections of the Eye." Using sometimes the hand of the operator, but more generally a small flat copper disc or conductor, held on the head by a strap and resting on a layer of wet cotton applied to the eye, he employed a comparatively feeble current daily for periods varying from ten minutes to half an hour. This form of treatment was used in cases of scleritis, iritis, iridocyclitis, consecutive vitreous opacities and intraocular hemorrhages. In many instances it appeared to do good, its analgesic action in iritis being found to be particularly frequent and satisfactory.

In closing his account of the application of the interrupted current to the treatment of intraocular hemorrhage, Von Reuss says:

"It consequently appears that fresh bleeding into the anterior chamber and into the vitreous is favorably influenced by the Faradic treatment, but it is well not to forget that fresh effusions of blood, for instance after operations, often spontaneously and quickly disappear. Electricity can scarcely influence hemorrhages in and under the retina."

In spite of this discouraging statement it occurred to me to try this treatment in a case of extensive retinal hemorrhage that came under my care during the past winter. It was the first case of the kind I had ever submitted to a prolonged course of treatment. For therapeutics there had seemed little place in this affection, particularly when occurring in advanced years, and betokening a probably atheromatous condition of the cerebral arteries. I had for many years advised such patients to leave the recovery to nature, and assured them that the injury might, to a certain extent, be repaired. Unless a fresh giving way of the vessels occurred, a portion of the lost vision might ultimately return. I had generally, for the sake of doing something, advised a course of iodide of potash, and warned the family physician of what was to be apprehended. After that I dismissed the case from my mind. In the comparatively infrequent event of my seeing the patient again, months or years afterwards, I had rarely found much improvement, especially when the hemorrhage involved the macular region. The eye was permanently disabled.

Mrs. Blank, aged seventy-three, had been under my observation since 1884. She had a considerable degree of myopia, combined with astigmatism. Her vision, with the best neutralizing glass, had never been brought up to the normal standard, but remained about seven tenths in each eye. From time to time, generally once a year, she had visited me for the purpose of having her reading glasses adjusted, her myopia and astigmatism, as well as visual acuteness, remaining substantially the same.

¹ Read before New England Ophthalmological Society, Nov. 11, 1902.

² A. F. O., Bd. xlvii, S. 398 et seq.

Oct. 9, 1901, she came in, complaining that there was failure of vision in the right eye, this having lasted since the previous July. I was then absent from the country, so she failed to consult me. There had been little change since the trouble first appeared. With this eye, which was externally normal, the vision was now less than one tenth, and she complained that the letters of the test card appeared "spotted." The other eye remained as before. On dilating the right pupil, numerous retinal hemorrhages came into view. They were scattered over the entire fundus. The largest hemorrhage was in the macular region, and was quite extensive.

The application of the Faradic current was commenced Oct. 17, and used, ten minutes at a time, three times a week, up to May 26. A single absence from the city of ten days, occurring in the early spring, formed the only interruption. Small doses of iodide of potash were also administered during all this time. The peripheric hemorrhages began to absorb much more quickly than the macular, being substantially gone before the large one in this situation had shown any signs of yielding. The first improvement was, therefore, in lateral vision, but central before long followed suit. Dec. 20 vision had risen to nearly five tenths, Jan. 7 to six tenths, and on Feb. 7 the macular region was nearly free. Slight vitreous haziness long persisted, but finally cleared up. May 26 vision was nearly seven tenths, all the letters on the line being correctly made out, though with some effort. As this was her original vision, and nearly equalled that of the other eye, treatment was now suspended. My last ophthalmoscopic examination was made Sept. 2, and was conducted in the country; the light available was not very good, but as far as I could see there was not a single spot of hemorrhage in the fundus, a very slight grayish discoloration alone marking the site of the more extensive blood patches. About Oct. 15 the patient visited me at my office here, and I found vision nearly eight tenths, slightly more acute than I had ever found it before.

This is but a single case. The recovery may have been due to other causes than the use of the current. It is possible that it might have occurred spontaneously. But it is surely an unusual instance of a *restitutio ad integrum* in a person of over seventy, of very full habit and in an aggravated case. The treatment is so simple and so easily applied that I trust other members of the profession will follow it up and report their results.

The little single-cell battery used was the "Baltimore." Leach & Greene of this city are ready to furnish the special connections for the eye, and it is only necessary to inform them whether a single eye or both eyes are to be treated.

In conclusion, a single word on the analgesic properties of the Faradic current. This fact, that local pain is thereby often relieved, is hardly appreciated at its proper value. Von Reuss has again and again found this to be the case in iritis and irido-choroiditis.

Speaking of the interrupted current he says (*loc. cit.*): "Its principal effect is that of relieving pain; in this we are seldom disappointed. The effect is generally promptly witnessed, sometimes indeed in a surprising manner. Thus I once summoned for my lecture a patient with iritis, whose presence was

most important to me. On the way he was taken with severe pain and blepharospasmus, and it seemed impossible to exhibit his case. I used the Faradic hand; in a minute and a half he was free from pain, could open his eyes and be exhibited to a crowded audience without difficulty." He goes on to say that the pain generally returns in a few hours, and that the length of the painless interval varies directly with the length of the application of the current.

Meanwhile we note the same effects from its use in other departments of surgery. Dr. Douglas Graham³ has found it of great value in mitigating the pain caused by the breaking down of adhesions of the joints. Complete relief has followed, twenty seconds after the use of the battery had been commenced.

According to Beard and Rockwell, teeth have been extracted and felons and buboes opened with little or no discomfort to the patient while a strong current was passing through the affected parts. If this be true, may not opiates be, to a certain extent, discarded in the treatment of painful inflammations of the eye? The experiment is certainly worth trying.

VESICAL APPEARANCES IN RENAL SUPPURATION.

BY EDGAR GARCEAU, M.D., BOSTON,

Surgeon to Out-Patients in St. Elizabeth's Hospital and in the Free Hospital for Women, Boston.

IN an article by the author in the *Boston Medical and Surgical Journal*,¹ attention was called to the appearances of the bladder in cases in which the upper urinary passages are inflamed and suppurating. The conclusions then drawn were these: The first characteristic that attracts notice is the frequency with which some alteration, in the nature of ulceration or swelling, occurs about the orifice of the ureter on the side corresponding to the lesion in the kidney above. Thus, in the author's list of cases, which were nine, in eight this alteration was seen. In Brown's² list of eight we were not informed with exactness in all of the cases as to this point. In three, however, there was positive assurance of such alteration. In three others either no direct reference was made with regard to it or we were left in doubt. Thus in eleven out of the seventeen cases there was direct evidence given by cystoscopy, which at least excited suspicion that the upper urinary passage on the corresponding side was diseased.

It is fair to assume, therefore, that if lesions are present at or about the ureteral eminence, we may expect to find lesions on the upper urinary tract on that side. These observations are quite in line with those observed in tuberculosis of the ureter and kidney. Numerous observations are now on record which confirm this statement. The analysis of the six cases in which this alteration was not observed was interesting. In one case the bladder was so swollen as to forbid deductions being drawn as to the relative size of the eminences. In two cases the bladder was normal and the infection was

³ Faradism as an Analgesic in the Loosening of Joint Adhesions. *The Practitioner*, London, August, 1893.

¹ Vol. cxlvi, No. 23, p. 589, and Vol. cxlvi, No. 24, p. 627.

² *Johns Hopkins Hospital Reports*, 1901, Vol. x, Nos. 1 and 2. From H. A. Kelly's clinic, Baltimore.

confined to the kidney, as was proved by operation. In two cases no mention was made of the lesions in the vicinity of the ureteral orifice of the affected side. In one case a peculiar condition of affairs existed. It was the left kidney which was diseased, but the left ureteral orifice was normal and the right eminence was described as puffy and deeply injected. The urine from the right side was normal, while that from the left was purulent. No explanation was offered, and not so much would have been thought of it were it not that in another case³ very much the same condition existed. In this one we had all the symptoms referable to the right kidney, including a large tumor on the right side, while the right ureteral eminence was perfectly normal. Very purulent urine had been collected from the right ureter. Ulcerations were observed on the left ureteral eminence, but it should be stated that purulent urine had been collected from the left ureter. The amount of pus was very light, and at the last examination, made lately, no pus was found. This last case has been under observation since the article was written, and as the bladder has exhibited changes which are of great interest, it is deemed worth while to report the case in full.

Mrs. M., thirty-five years old, American born, married seventeen years. Her previous history was not remarkable. Her family history showed a tuberculous taint, one of her brothers having died of pulmonary phthisis. She was first seen in September, 1898. She was a thin, spare woman of slight build, of exceedingly nervous temperament, and she had lost a great deal of flesh and was much reduced in strength from the effects of her sickness. She gave the following history: Had always been subject to headaches, vertigo and attacks of nervousness. Her heart and lungs were negative; digestion was good, appetite rather poor, and she suffered somewhat from constipation. She had had one child, who was eighteen years old. She had had one miscarriage, and following this there was a history of "inflammation of the bowels," which confined her to bed for a long time. Her menstruation began at sixteen, was regular, lasted four days, and had always been painful. In 1880 the urinary history began. The first symptom was a severe pain in the right kidney region, the pain leading down the course of the ureter, of agonizing character and of such severity that she was obliged to take large quantities of morphine to control it. The pain lasted for a week, during which time she was part of the time unconscious. She does not remember now if there was any hematuria during this first attack. The next attack of pain occurred a few months later. It was short in duration and less severe. Since that time she has had severe attacks of renal pain several times each year, and there has always been soreness and more or less pain all the time. There was no history of catheter infection nor of gonorrhea, nor of rectal disease. Micturition began to get frequent and painful two or three years after the onset of the disease. It kept getting worse and worse until she was practically an invalid. She had to urinate ten or twenty times a day, and during the night she always had to get up at least ten or twelve times. There was no incontinence. The pain in the right kidney region

was always localized. It was of a deep, boring character; it often disturbed sleep, and pressure over the kidney was painful. In 1891 she was operated upon for stone in the bladder, by Dr. James R. Chadwick. This operation gave some relief, but the urinary and kidney symptoms still persisted. In 1892 a vesico-vaginal fistula was made by another surgeon, in the hope of curing this cystitis. The fistula was allowed to remain open for two or three years, and then the patient, becoming tired of it, resolved to have it closed. Several operations were performed by various surgeons, which were unsuccessful. In September, 1898, an ether examination was made by the author, with the following result: In the vagina two small, minute fistulae were seen just behind the vesicle neck, close to each other. Each admitted a small probe. Through the cystoscope the bladder was very red but not granular looking; excavated ulcerations were seen at the side of the left ureteral orifice. Each was one centimeter long and one half a centimeter wide. The excavations were shallow, but they had well-defined edges. The right ureteral eminence was *normal* in all respects. Both ureters were catheterized. The right catheter slipped out, hence no urine was obtained from this side. The urine from the left side showed a slight sediment, which consisted of pus chiefly, free and in clumps, some blood, much free fat, a few granular casts of small diameter, a few large hyaline casts with free fat adhering to them; no tubercular bacilli found. The right kidney was found to be enlarged.

The vasico-vaginal septum was incised through the fistulae, the edges pared and sutures taken.

The operation was successful, and there was no more leakage.

When she was about to go home, she was told to wash out the bladder herself twice every day with a 2% solution of boracic acid. This she has faithfully done up to the present time.

The diagnosis of the case was stone in the right kidney with suppuration, and probably stone in the left kidney as well. She did perfectly well from the time of her operation until July, 1902. During this interval the bladder bothered her moderately, but she had been in very much better health than she had for many years previously. There had been some pain in the kidney, but it was no more than she had been having during previous years. She was seen the 15th of July, 1902, and she gave this history: Two weeks before, she was riding in an electric car which was going at a high rate of speed. The motorman was obliged to stop the car suddenly on account of an obstruction on the track, and the sudden stopping of the car threw her violently against the seat in front of her. Her bladder was full at the time. Immediately she felt a gush of urine in the vagina, and she had been wet ever since the accident. On examination the milk test showed that the fistula had reopened and was discharging urine in quite large amounts. In November, 1902, at her urgent request, the fistula was operated upon again and with partial success. At the time of the operation a cystoscopic examination was made with the idea of seeing if there had been any change in the appearance of the bladder. To the author's great surprise the bladder was found to be almost entirely normal in appearance. The

³ Case V, author's list.

ulceration about the left ureteral orifice had entirely disappeared. Both eminences were perfectly smooth, of normal size, of no abnormal redness, and there was nothing about either of them which suggested in any way a lesion in the kidney above. The bladder, as a whole, was injected slightly in excess of normal, but the individual blood vessels were not engorged, and there was nothing in the appearance of the bladder which suggested chronic cystitis. The right kidney was larger than the left one. No attempt was made to catheterize the ureters, as it was not wished to mask the diagnosis by adventitious blood; but the urines were separated by use of the Harris instrument, with the following result: The right ureteral urine was pale, very thick, and it was a long time before it flowed through the instrument. Two cubic centimeters were collected in ten minutes. The odor was very foul. There was a urea percentage of .5%. The sediment consisted of large quantities of pus, a little blood, a few hyaline and granular casts and a few large-sized epithelia. The left ureteral urine flowed freely, and 8 cubic centimeters were collected in ten minutes. It contained 1.51% of urea. It was of an amber color, and the sediment, which was slight, contained *no pus*. It was made up of spindle-shaped epithelia, a little blood, a few hyaline and granular casts. It was evident from this examination that the left kidney was not seriously diseased and the presumption is that there had been purulent pyelitis or ureteritis on this side which had since disappeared. The right one was in a far-advanced stage of destruction. It has been proposed to her to have a radiograph picture taken of her right kidney, with the idea of discovering a stone; but she has steadfastly refused to allow this for some unknown reason. Stone is strongly suspected from the history of the case, and from the fact that guinea-pig tests have proven negative as regards tuberculosis.

The great interest in the case lies in these two points: First, that a suppurating kidney may exist in the body and that the corresponding ureteral eminence in the bladder may not be at all diseased. Second, that long-continued boracic acid vesical injections will and do, in these cases, reduce the intensity of the cystitis to almost *nil*. The diagnosis of a suppurating kidney in all cases like this one must be made by seeing purulent urine exuding from the corresponding ureteral orifice.

In conclusion we may say that in most cases of suppurative inflammation of the upper urinary passages, lesions will be seen at the site of the corresponding ureteral eminence, but that sometimes this sign is totally wanting. The sign, therefore, is not positive.

THE TREATMENT OF HAY FEVER.

BY LORENZO B. LOCKARD, M.D., DENVER, COLO.

THE treatment of hay fever must be considered under two heads, — prevention and palliation.

By preventive procedures from 60 to 80% will be rendered immune; by the palliative almost complete relief will be gained by the great majority, comparative comfort by the minority.

In nearly all of the remaining 20 to 40% of those subjected to prophylactic treatment, striking ame-

lioration will result, with fair prospect of complete freedom the succeeding season.

Even after the attack has well begun, a practical cure can be effected in many during the first few days of treatment. By a "practical" cure I mean the possibility of withholding all local sedative applications without relapse.

PREVENTIVE TREATMENT.

The preventive treatment must be both local and constitutional; the one to be undertaken in the fall immediately upon the cessation of the annual attack, the other to be inaugurated some four to eight weeks in advance of the day upon which an attack is expected.

LOCAL TREATMENT.

This may be summarized by saying, "Correct all abnormalities; if none exist, cauterize lightly the mucosa of those areas which are known to be particularly susceptible." In nearly all cases of hay fever some departure from the normal is found, usually in the form of an obstructive lesion.

Bosworth claims that this is the sole condition found in these cases, and while this may be accepted as a general rule, there are numerous exceptions. That a normal mucosa is found in a fair proportion of our cases is well recognized, and during the past season I have had one patient with a high degree of atrophic rhinitis, a condition which the same author says is never associated with hay fever.

He writes: "I have never seen a case of hay fever occur in connection with atrophic rhinitis or syphilitic disease whereby the lumen of the passages was abnormally increased. In all cases which have come under my own observation the lesion has been an obstructive one."

Whatever the abnormality, it must be corrected; if none presents, I cauterize lightly with galvanocautery the mucosa of both turbinates. By this cauterization, if carefully done, it is possible to so obtund the sensibility that nearly all irritants can be inhaled with impunity. This widespread cauterization has been severely condemned by many, but I have never seen other than good result.

Even when the nose appears normal it is frequently possible, after careful search, to locate areas of hyper-sensitiveness, and cauterization of these spots will then suffice.

The treatment of the nose may be delayed until spring if necessary, but when undertaken early a longer period for complete recuperation is afforded and the results are better.

CONSTITUTIONAL.

The general treatment is begun at least four weeks before an expected attack, and is given with three objects in view:

- (1) An increase in elimination and decrease in production of uric acid.
- (2) The correction of any existing neurosis.
- (3) The removal of constitutional or local abnormalities.

An excess of uric acid acts in two ways: first, by being directly accountable for the manifestations of the disease through its local irritant action upon the nasal mucosa, and, secondly, by being one of the most potent factors in the causation of various

neuroses. For this condition we administer for several weeks large doses of alkalithia or sodium salicylate, at the same time prohibiting all foods which form uric acid in excess, namely, meats (except in moderate quantities), carbohydrates, spices and condiments, tea, coffee and cocoa, alcohol, cheese, and certain vegetables, such as potatoes, cabbage, onions and celery.

A fair degree of exercise must be taken and water drunk in moderate quantities (from one to two liters daily).

1. NEUROSIS.

The various hygienic procedures known to be of benefit must be rigorously enforced. Of remedies having a tonic influence upon the general nervous system we have many, each in turn vaunted as a specific, but those which seem to me to be of most general service are such combinations as the following :

| | |
|-------------------------------|----------|
| Brucine phosphate | 1-10 gr. |
| Ext. hyoscyamus | 1-2 gr. |
| Quinine valerianate | 2 gr. |
| Camphor | 1 gr. |

One such pill four times daily.

| | |
|--------------------------|----------|
| Zinc phosphide | 1-10 gr. |
| Sod. arsenate | 1-20 gr. |
| Reduced iron | 1 gr. |

One, three times daily.

Strychnine sulphate in gradually increasing doses up to 1-20 grain thrice daily, for several months preceding an expected attack, is frequently of considerable value.

If, immediately preceding an expected attack, the patient is nervous, a very common condition, I rely upon the quieting effect of chloretone, and through this influence I believe it is sometimes of service in warding off attacks.

Occasionally we find evidence of gout, rheumatism, dyspepsia and other abnormal conditions, and they must be combated.

Under such prophylactic procedures we may anticipate a large percentage of cures, estimated by various observers at from 50 to 80%.

In a total of nearly forty cases in the past two years, my percentage has been about 80.

In those cases dependent upon rag weed as an etiologic factor, Curtis claims to have immunized about 60% by administration of liquor ambrosia, but as the formula is secret, I have not administered it in any cases. In several instances I have given the fluid extracts of ambrosia and solidago for the relief of the developed disease, where other remedies had failed, with good results.

Unfortunately the great majority of sufferers come to us only after the attack is fully established, asking for palliation.

Until recently we could do little more than say to them, as Bishop has so aptly expressed it, "Suffer little children, for of such is the kingdom of heaven." Now, thanks to new therapy and a new conception of the etiology, we can promise partial relief in all cases and complete amelioration for the great majority.

ABORTIVE TREATMENT.

Occasionally, even at this period, much can be accomplished by local treatment. In a case reported

by the author in the *Laryngoscope* of November, 1898, by a partial turbinectomy performed at the height of one of the severest cases I have ever seen, immediate and complete relief was given. For three nights preceding the operation, the patient had not closed his eyes on account of the accompanying asthma, but this ceased at once upon removal of the offending body, and the following morning he returned to work in a large seed house without relapse. Such results must be rare, but it shows that operative procedures, even at this time, may sometimes be permissible and advantageous.

If, in any case, the nasal occlusion cannot be overcome by the usual remedies, I do not hesitate to cauterize or amputate the involved parts. Each operation must, however, be as restricted as is consistent with good results, in order to guard against excessive swelling and irritation.

In all cases I administer nitro-muriatic acid (not the dilute), three to five drops after meals and before retiring; and in only a few cases has it completely failed. Upon omitting a single dose, however, the symptoms recur.

Occasionally after prolonged use, the acid will cause diarrhea, and if this occurs we can substitute for the time being the acid phosphates, but I believe them to be much less efficacious than the pure nitro-muriatic. In several cases in which the acid phosphates failed, when given by other physicians, the nitro-muriatic gave almost immediate and lasting relief.

Lemonade will frequently be of value as a temporary makeshift. The acid I consider almost a specific; it fails no oftener than other so-called specifics, and in the great majority relief is almost immediate, that is, within twenty-four or thirty-six hours.

In twenty-seven cases treated during the season of 1901 by this method, twenty-four were almost completely relieved. Two were benefited to a slight degree, and in one instance there was, for a time, complete failure. In this case, after failure to secure relief, the patient went to the mountains for a week, where she was entirely free. Immediately upon her return the old enemy raged again, but it was at once subdued and held in check for the balance of the season by the same remedy that had previously failed.

For the nasal discomfort, adrenalin chloride is a remedy of great power. More efficacious than cocaine, it does not lose its power, no matter how frequently used, and having no deleterious constitutional or local effects can be used *ad libitum*.

I do not believe it ever fails where the swelling is short of the point where nothing but surgical procedures can avail.

In all cases I have the adrenalin followed by some such oily spray as —

| | |
|---------------------------|-------|
| Camphor | 5 gr. |
| Pine-needle oil | 3 gr. |
| Glymol | 1 oz. |

This spray, or one of a simple oil, should be used whenever one goes into the open air, the oil base forming a coating for the mucosa that protects to a certain extent against dust and pollen.

Under this treatment the intolerable itching of the eyes disappears, the conjunctiva clear, the nose remains patulous and the hydrorrhea vanishes.

Occasionally this last symptom persists and then atropine alone is indicated, or if any irritation remains, in combination with morphine and caffeine.

In those rare cases where the acid treatment fails to produce the desired results, it may be attained by the internal administration of the dried suprarenal glands, five grains, three to five times daily. In some cases their action is most beneficial. In one of my cases the tablets gave complete relief and in one severe abdominal pain followed within a few moments after each dose of five grains. This occurred so constantly, even when their use was resumed after a withdrawal of several weeks, that there could be no question as to the cause. If the itching of the eyes is not relieved, the wearing of smoked glasses and the use of some such simple eye wash as boric acid with camphor water will frequently suffice.

The instillation of a few drops of a $\frac{1}{10000}$ adrenalin chloride solution will frequently give a surprising result.

While the action of the gland upon the eye is said to endure for not more than thirty to sixty minutes, I have found that its use will frequently cause alleviation of the itching throughout the entire day. Why this should be so I do not know.

During the past season I have given to three patients the fluid extracts of *solidago* and *ambrosia*; one was completely relieved within forty-eight hours, a second stated that they relieved her more than any other remedy tried, and in the third no change was noticed. Owing to the impossibility of getting sufficient quantities of the drugs, no further trials could be made. In connection with other treatment they might well be tried in all cases.

The wearing of nasal masks I consider worse than useless; never have I seen the slightest benefit result, and the discomfort occasioned is usually as great as that of the disease for which they are used. While the treatment outlined is usually sufficient to overcome an accompanying asthma, it occasionally fails even when the coryza manifestations have been subdued. In such instances it is wise to cauterize the posterior turbinates and septum, for hypersensitive areas at those points are peculiarly liable to provoke asthmatic seizures.

In several instances I have been able to cut short an attack in this way; if unavailing, it is necessary to resort to some one or more of the various antispasmodics. A simple procedure which has sometimes been efficacious is the use of the cold douche to the spine before retiring. In this connection it is interesting to note that ice bags applied to the spine will sometimes abort a typical attack of hay fever.

For this form of asthma I have found nothing so generally useful as large doses of *dracontii* in combination with *belladonna*, spirits *chloroform* and *altheæ*.

In conclusion I will consider the rationale of this treatment. In the production of the disease we recognize three factors, —

(1) A neurosis.

(2) Some lesion or hypersensitive condition of the nasal membranes.

(3) The inhalation of pollen or certain odors.

That some derangement of the nervous system renders certain individuals susceptible to the action

of pollen or other irritants is evident, both from the history of the individual and from the clinical picture presented. In corroboration of this statement we have the following facts: —

(1) To a certain degree the disease is hereditary; several members of the same family frequently being affected.

(2) The prevailing family tendency is in the direction of nervous affections.

(3) In the great majority of cases the patient is himself of a nervous temperament.

(4) Periodicity of attacks. They usually recur at the same time each year, and last the same number of days each season without respect to the varying climatic conditions of the different years.

(5) Extreme nervousness preceding attacks and exacerbations.

(6) Influence of suggestion and anticipation. This is shown by the periodicity of attacks and the influence of sudden emotions either in originating or preventing attacks. Mackenzie reports a case in which an attack of rose cold was precipitated by smelling an artificial rose, and one that came from looking at a picture of a hay field. I have one patient whose attack never begins until she has seen another sufferer, and whose symptoms are always aggravated by hearing another patient sneeze.

(7) It is a so-called "aristocratic" disease; that is, it occurs chiefly in that class most subject to various neuroses, a small minority only coming from the lower walks of life.

That some neurosis is a potent factor is evident, and that the uric acid diathesis is largely accountable is generally accepted. That diverse nervous phenomena may result from an increase of uric acid in the blood is well recognized, and it has been proven that this condition obtains in hay fever. Because we have some abnormality of the nose and the presence of irritating qualities in the air, this setting free of the acid provokes nervous coryza instead of some one of the other conditions recognized as due to the diathesis.

Bishop says, "Heredity is probably the chief factor in determining the direction in which the uric acid diathesis will afflict an individual, whether it results in migraine, angina pectoris, asthma, nervous catarrh (hay fever) or some other neurosis; but, undoubtedly, accidental or acquired conditions may act as directing or localizing agents." The strongest proof of the action of uric acid is afforded by experimental therapy; attacks can often be produced and controlled at will by treatment and diet.

The administration of sodium bicarbonate to increase the alkalinity of the blood in one subject to hay fever, results in almost immediate aggravation of all symptoms; counteract by acids, and alleviation ensues. For quick relief of an attack we do not aim to eliminate but to precipitate an excess from the blood, elimination being accomplished in the periods between attacks. Conclusions based upon such results are definite.

2. NASAL ABNORMALITIES.

That some derangement of the nasal mucous membrane is requisite has been so conclusively demonstrated that it need not be here discussed.

3. POLLEN.

Neither of the preceding causes, acting alone or together, is sufficient to provoke an attack. Added to them there must be some irritant to be inhaled, usually in the form of pollen, although sometimes a simple odor is sufficient.

Completely remove any one of these three factors and the disease will be mastered; as we cannot materially reduce the number of inspired pollen, we direct our efforts to the first two, — the neurosis and the nasal condition.

POISONING OF THE UNDERWOOD FAMILY BY WOOD ALCOHOL.¹

BY E. G. HOITT, M.D., MEDICAL EXAMINER, MARLBORO, MASS.

At 4.30 P.M., Feb. 13, 1899, while one of the worst blizzards of which our New England climate can boast was in progress, I received a summons by telephone, from one of our shoe manufacturers, that, in a little house in the rear of his factory a caller had discovered that four of its inmates lay dead on the floor, and others, three in number, were partially unconscious.

In company with the city marshal and one of his force, I went immediately to the place and found four dead bodies lying on mattresses on the floor. The bodies, partly dressed, were identified as those of Edward L. Underwood, head of family, aged forty-eight; his daughter, Frances, aged eight years; a daughter Olive, aged twenty-two years. Beside her lay her illegitimate child, John Clifford, aged two years. The bodies were lying in a natural position; the *rigor mortis* was well developed. All had appearance of having been dead several hours.

I found in an adjoining room, Mrs. Adelia Underwood, aged forty-four, wife of Edward, mother and grandmother of deceased children, her son Guy, aged eleven, and one Robert McMullen, not a member of the family but a frequent caller at the place. All seemed in a dazed condition.

Mrs. Underwood made the statement to me that she was afraid that other members of her family, in the adjoining room, were going to die. She afterwards admitted that she was aware they had been dead since early morning. When asked why she had not notified some one of the fact, she said "she did not know."

I asked Robert McMullen his name. He replied, "It was none of my business." When asked what he was doing there, said that was his business. I also inquired if he was aware there were dead bodies in the adjoining room. He replied, "What of it?" and "What are you going to do about it?"

When asked if he was acquainted with me, said, "No, and did not want to be."

Guy, the boy, stated that none in the house had previously been sick; that all retired the night before, upon the mattresses, in the following order: First, his father, next to him on his left was himself, on his left lay his mother, next Frances, then Olive, and by her side her baby.

He said that McMullen slept on a lounge in the adjoining room. He (Guy) said he awoke about midnight and all seemed to be asleep, the house was

warm, saw no smoke and detected no odor. Said his mother soon awoke and gave them all some tea to drink, but was not positive it was tea, that she also drank of the same, but not from the same cup. Said his mother gave him some tea the night before, which he vomited, and that he did not vomit prior to taking the tea. Said all of the family drank liquor, and that they gave it to the baby also. He said he awoke at 9 A.M., Feb. 13, and thought his father was dead, and so informed his mother, who made no reply, but went out of the room. He then told McMullen, who came in and looked at them, said he did not believe it. He also went out of the room.

He next learned that little Johnnie, Olive and Frances were dead, and so informed his mother, who attempted to give them some tea, but was too nervous to do so. Said Miss Lillian Clark called in the afternoon to see Olive, and his mother would not let her in, but told her that she had gone to work — said his mother told him to keep still and say nothing.

I ordered the dead bodies to be removed to the city morgue, McMullen to be taken in custody, and placed Mrs. Underwood and her boy Guy under the care of the city physician at police station.

I made an autopsy on Miss Olive, in presence of Drs. C. L. Cutler and P. J. Dervin. The body was clothed in chemisette, dress waist and pair of black stockings. There was partial *rigor mortis*, lips and tongue were pale, latter forced against teeth, pupils equally dilated, white froth was oozing from nose and mouth, abdomen large and distended, as though containing foreign body, thumbs flexed on palms of hands, fingers flexed on thumbs. There were no marks of violence on body. The brain was normal in appearance, left lung adherent to diaphragm, otherwise both lungs normal. Pericardium contained about one drachm of yellow serous fluid; heart normal in size and weight; anterior and posterior walls of stomach were congested, also upper part of small intestines. Stomach contained about eight ounces of fluid and some solid particles of undigested food — transverse colon markedly distended with gas and very much congested. Gall bladder contained half an ounce of bile. Liver, kidneys and bladder were normal. Uterus contained eight-pound female child, in eighth month of development.

I will here state that from good authority I learned that two years prior to this circumstance, she (Olive) gave birth to a full-term child, which was drowned in a pail of hot water, with her mother's assistance.

I then made autopsy on body of Edward L. Underwood, father of Olive, aged forty-eight years. Body was clothed in black vest, brown flannel outside shirt, light brown undershirt, dark pants, under drawers, one black stocking on left foot, none on right. There was partial *rigor mortis*, face pale, pupils equally dilated, lips and tongue livid. I found liberally distributed on body pediculi capitis, vestimenti and pubis. Penis was bandaged with white cotton rags, which contained gonorrhoeal discharge, with some oozing from meatus. Brain was normal in appearance, both lungs normal. Pericardium contained about two drachms of yellow serous fluid. Heart was abnormally large, right

¹Read before the Massachusetts Medico-Legal Society, Oct. 1, 1902.

auricle, right ventricle and left auricle distended with dark fluid blood, left ventricle empty. Otherwise heart appeared normal. Anterior wall of stomach and pyloric end of same, also small intestines, showed inflammation. Stomach contained about six ounces of fluid, no solid particles of food. Bladder distended and contained about one pint of urine. All other abdominal organs appeared normal.

Following this I made autopsy on body of Frances, aged eight years, daughter of Edward. Body was clothed in corset waist, white ribbed undervest and drawers and black stockings. There was dark fecal matter on nates, seat of drawers and back side of undershirt. Face was pale, eyelids partially open, pupils unequally dilated, lips and tongue livid. *Rigor mortis* was entirely absent. Both pleural cavities contained about four ounces of serous fluid; lungs were normal. Pericardium contained about one ounce of fluid; right auricle distended, right ventricle partially distended with dark fluid blood, left auricle empty, left ventricle fully distended. Heart was normal in size, weight and appearance. Stomach appeared normal, and contained about five ounces of fluid. Small intestines were slightly congested. Bladder contained about one ounce of urine. Liver was normal in size, weight and appearance. All other abdominal organs were normal.

Lastly I made autopsy on body of John Clifford Underwood, aged two years, illegitimate child of Olive, whose autopsy has been previously reported. Body was clothed in dark flannel dress, white undervest and drawers, cotton diaper, containing fecal matter and urine, chest protector, string of Job's tears beads on neck, no shoes nor stockings. Left cheek, nose and forehead were ecchymosed, pupils equally dilated, lips and tongue pale. Each pleural cavity contained about three ounces of amber colored fluid. All thoracic organs appeared normal. Stomach was distended with gas and slightly congested on anterior surface; contained about four ounces of liquid, no solid food. Gall bladder contained half a drachm of bile. All other abdominal organs appeared normal. Bladder was empty. After making autopsies on all the bodies I removed from each subject the stomach with contents, portions of intestines, liver and kidneys, and sent same under seal to Dr. Edward S. Wood for his examination.

He reported to me that his analyses of contents of all stomachs revealed wood alcohol in sufficient quantity to produce death.

Later on I learned that it was an established custom of this family to drink anything of an intoxicating nature, and that it was freely given to the younger children. A day or two before their death Miss Olive stole from the factory in which she was employed a quantity of wood alcohol.

Mrs. Underwood, the wife, mother and grandmother, was under the city physician's care for several weeks, in a critical condition, but made a good though slow recovery.

Last month she died at the poor house, from a complication of diseases unknown to the writer. Thus ended this branch of the Underwood family, aside from the boy Guy, now fourteen years of age, who gives promise of following in the footsteps of his degenerate family.

WOOD ALCOHOL POISONING.¹

BY S. W. ABBOTT, M.D., NEWTON, MASS.

SEVERAL months ago some deaths occurred in Beverly from alcohol poisoning, and as they appeared to be of an exceptional character, I wrote to the Board of Health of that city, asking for more definite information in regard to them. It appeared from the reply which was received that three men had drank freely from a bottle marked "*Colonial Spirits*," and all of them had died soon afterward. I then sent to one of the department stores in Boston and obtained an unbroken sample of the same article, submitting it to a chemist, who, after analyzing its contents, pronounced it to be "wood alcohol." The same article is now being sold under several different names. Deaths of this character appear to be on the increase, and some sort of legislation seems necessary to prevent their occurrence. The only measures which occur to me at present as practicable are the requirement that all retail packages of wood alcohol sold under any name shall be very distinctly marked or labeled as poisons, and also the requirement that such articles shall be deemed to be poisons, and shall be sold only by a registered pharmacist, and then only when a record of the sale has been made.

There is, however, a possible difficulty in obtaining such legislation in the interest of public safety, since the patent medicine trust has a well-organized lobby, always watchful against any interference which may be opposed to its financial interests. The grasping spirit of "*Commercialism versus the Public Health and Safety*" has defeated many a life-saving measure in recent years.

A word about alcohol poisoning in general. There seems to be a kind of popular sensitiveness in the matter of calling alcohol a poison. Whatever doubt exists relating to the question of the food value of alcohol, there can be little doubt in the minds of medical men as to its poisonous qualities. It is not necessary to shut a man up in a box and feed him on alcohol for a week in order to settle this phase of the question. We need only refer to the highest medical authorities upon poisons, and upon forensic medicine. Orfila, Christison, Taylor, Tardieu and Boehm all agree as to the poisonous qualities of alcohol both in the production of acute and chronic poisoning, and Caspar, Lehmann, Beck and Woodman and Tidy treat of the medico-legal side of the question. The excellent paper read before this society by Dr. Sabine of Brookline upon the same subject gives ample proof in the same line of inquiry.

A few years ago I had the curiosity to select from all the medical examiner returns for one year every case in which the medical examiner had reason to believe that the death was due either directly or indirectly to alcohol. The whole number was 235 out of a total of 1,651 from all causes returned by the medical examiners, or over 14% of the whole number returned, including homicides, suicides, accidents and deaths by other causes. Among these latter were many from acute alcoholic poisoning (see Registration Report for 1888, p. 399).

If wood alcohol were to come into very common

¹ Read before the Massachusetts Medico-Legal Society, Oct. 1, 1902.

use, and be sold as freely as ordinary groceries or other commodities, without any legal limitation, it is probable that such deaths as have been reported to-day would become of more common occurrence, and action would have to be taken for their prevention.

Medical Progress.

REPORT OF PROGRESS IN ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D., AND R. SOUTTER, M.D.

ARTHRITIS DEFORMANS.

BECHER¹ writes of the early diagnosis of arthritis deformans coxæ. There is marked limitation of abduction on the diseased side before joint changes are present, with increased bony thickening about the trochanter, which seems higher. Treatment is plaster of Paris or celluloid fixation, with splint massage and gymnastics.

C. L. Dane² reports an autopsy of a case of rheumatoid arthritis (spondylosis rhizomelia) with no cord lesions but with degenerative changes of the linings of the hip joints. The patient was thirty-five years old, slightly alcoholic, and had had a brief attack of caisson disease with paraplegia seven years before. The present illness lasted one year and manifested itself in the knees and hips. Death was sudden.

Goldthwait³ states that the treatment of osteo-arthritis is medical and mechanical. The medical treatment consist of general tonics, without anti-rheumatic drugs.

Mechanical treatment of osteo-arthritis of the spine will vary, according to the severity, from a corset with steels or a spring steel brace to a long plaster jacket; the latter should be used in cases requiring bed treatment, as bed alone is not sufficient to maintain the curves of the spine and good fixation. If there is much deformity, frequent jackets to correct a little at a time should be applied. Three to four weeks is usually enough to gain all that is possible. Jackets are worn three to four months, then a light brace. There is often immediate relief of pain with treatment, but this may take three days to several weeks if the disease is of long standing. There may be acute exacerbations, but never a genuine return of the disease when cure has occurred.

Koenig thinks osteo-arthritis coxæ, as observed in twenty-one cases, appears as a distinct disease. The etiology is not clear. Pathologically, it is pan-arthritic disease of the joints and capsules, beginning in the cartilage with swelling; the cartilage then becomes absorbed and leaves bared bone. There are cartilage and bony proliferations about the joint. The ball-and-socket hip joint is changed into a ginglymus. Motion becomes more and more limited. In the joint are found separated on fused bits of cartilage the so-called arthritis deformans joint mice. The pronounced form of the disease is more common in persons of about forty. In typical cases, it does not follow other diseases.

Among laborers the course is typical. The joints are more painful after rest. Hoffa says that limited abduction is characteristic. When the disease is established, it remains without change, becoming neither better nor worse. Total stiffness of the hips results.

In young people total loss of motion usually occurs within one year, but very few early treated cases become totally stiff. Koenig has never seen a cure in arthritis deformans coxæ. Extension gives some relief; regular, passive motion, sparingly used, is useful in treatment. A surgical operation may be of benefit. Resection of diseased bone relieves the stiffness and the pain arising from new bone formation, and the patient may then be able to work. Apparatus cannot be used to much advantage. After operation the ability to walk without pain has always been accomplished.

Mayet⁴ discusses the history of spondylose rhizourélique. After tracing the various theories he lays much stress on those of Teissier and Roche, who believe it is analogous to certain diseases of the nervous system. The atrophy, nutritive disturbance, dry skin, symmetry of distribution, regular progression, insidiousness, the scleroderma, porosity of the bone, vasomotor edema, the alteration in the sensation of contact, pain, heat, cold, etc., the girdle sensation, seem to be of nervous origin.

There are three classes:

(1) Chronic deforming rheumatism, that is, rhizoneurosis.

(2) Chronic rheumatism following acute rheumatism.

(3) Chronic gouty rheumatism of articular origin.

In autopsy of cases areas of spinal meningitis were found, and at times the spinal roots were affected. Disease of the dura was found in another case. Klippel found disease of the anterior horn.

The spine becomes ankylosed. Many men have demonstrated specific organisms, but none have been proven beyond doubt. The etiology is unknown, lowering of vitality seems to be important, as do dampness and cold. It is apt to occur in poorly nourished persons.

These conclusions are reached: Ankylosis⁵ is of the vertebrae; the vertebral column is always affected in the disease; there is no deformity of smaller joints; men are affected oftener than women; it is a disease of early adult life; it is noticed first in the hips and sacrum.

Painter⁵ describes the pathological lesions of rheumatoid arthritis with microscopic slides and x-ray illustrations.

The disease is distinctly polyarticular, affecting the young and middle aged, usually women. Locally there are spindle-shaped swelling of the joints, synovial distension, no bony enlargement, atrophy of the soft parts and articular cartilages and often erosions. Rheumatoid arthritis is constantly confused with osteo-arthritis.

In rheumatoid arthritis the phalangeal articulations are most commonly attacked. Later the large joints are affected.

In osteo-arthritis the spine is affected early: there is less atrophy than in the rheumatoid variety;

¹ Berl. Klin. Woch., 1901, No. 47.

² Tr. Amer. Phys., Phil. 1901, xvi, 427-430.

³ Osteo-arthritis of Knee, B. M. & S. J., 1902, cxlvi.

⁴ Gaz. des Hôp. de Paris, 1902, lxxv, 689.

⁵ Trans. Amer. Orthoped. Ass'n, 1902.

there is no synovial swelling, moreover the enlargements are bony, caused by bony overgrowth (not cartilage degeneration as in rheumatoid arthritis).

In rheumatoid arthritis the most manifest lesions are joint changes, increase of synovial fluid, membrane and cartilage alterations, changes in the peripheral and central nervous system, in muscles, viscera, blood vessels and lymph glands. The two types of arthritis deformans are almost never seen in the same person. Rheumatoid arthritis is not inflammatory.

It is suggested that the changes in rheumatoid arthritis are due to fatty metabolism.

According to Baton,⁶ surgical treatment of osteoarthritis is rarely called for, the treatment is generally medical, bathing with local applications. A cure is not expected. Generally there is little or no effusion, but sometimes this is present and requires surgical treatment. The fluid is more serous, that is, less oily, than in ordinary synovitis, and this may be the cause in part of the creaking and stiffness. Operated cases in this disease should not be kept at rest long. Effusion into bursæ, often remote from the affected joint, sometimes requires treatment. They must be incised, drained, curetted, washed with carbolic acid and sutured. A small drain is left. Loose bodies are frequently found in the joints.

T. J. Roynton⁷ experimented with a diplococcus taken from the joint of a man suffering with osteoarthritis. The man died from acute carbolic acid poisoning. Several joints were affected. By intravenous injection of the diplococcus into rabbits, the disease was reproduced, without cardiac lesions, and the diplococcus recovered from the animals.

After various experiments, he concluded that this diplococcus is the cause of rheumatoid arthritis, and differs from the rheumatic fever diplococcus.

C. G. Stockton⁸ showed a skeleton of the spinal form of arthritis deformans. The patient died at forty-four, after being in hospital fifteen years. During the last three years all the joints were stiff. There was at death very slight motion in a few of the joints in which there had been none in life, but all the joints were ankylosed. The tendon grooves were deeply marked.

LATERAL CURVATURE.

Deviations in the vertebral column in the schools at Lausanne-Combe.⁹

It has been generally believed that school work is largely influential in the causation of lateral curvature. The admirable report by the physician of the school of Lausanne and his two associates demonstrates this beyond the possibility of reasonable doubt. Statistics show, according to the report that in countries where obligatory instruction exists, the percentage of deviated spines increases greatly, while in non-civilized races scoliosis is very exceptional.

In examining abnormal curves it is necessary to determine the normal attitude, and on examination it was found that this is not the so-called military

position, but one in which in profile the vertical line passes through the vertex, touching the ear just behind the angle of the maxilla, crossing the body in the bicotyloid plane, passing behind the patella in front of the tibia, falling on the foot at the Chopart's articulation.

The abnormal positions besides scoliosis are, (1) kpyhosis, round shoulders; (2) lordosis, hollow back; (3) kypholordosis, a combination of 1 and 2; (4) flattened back, when the shoulders and pelvis are flat, but the lower dorsal region is curved forward.

The latter deformity is apparently not rare, as it is found in 17% of the children. It does not increase during school life; it affects girls more frequently than boys, and country more than town girls. The relation of this to the development of scoliosis is less important than has been supposed. Ten per cent of the flat backs have scoliosis, and children with this deformity need watching, as they are somewhat more disposed to scoliosis than other children.

The report covers the examination of 2,314 children, and antero-posterior curvatures were found in 5.8% of the cases, boys being a fraction of a per cent more frequently affected. The curves increase the longer the children are exposed to school life; 2.7% in the lower class and 4% in the upper class. Of these, 9% showed evidence of rickets and 90% were without rickets. In half the cases the curvature were combined with scoliosis.

In scoliosis, the influence of a difference in the length of the limb was not found as important a predisposing cause as has been asserted. Of 571 scoliotics, 6.8% had shortened limbs. The influence of flat foot is shown to be slight in the development of scoliosis, by the fact that this defect found on one side in 23.9% of the boys (1,290 cases) was found in only 8.4% of the scoliotics.

Scoliosis, according to Eulenburg's figures, increases in frequency in the age of school life to an alarming degree; 8.9% being between the age of two and six; 88.6% from six to fourteen, the age of entrance into scoliosis examined by Eulenburg being six. In adults there is not a progressive increase in percentage of scoliotics.

In the schools at Lausanne, 24.6% were found scoliotic out of 2,314 children examined. Boys, contrary to the ordinary opinion, were affected nearly as much as girls; boys 23%, girls 26.7%. Left scoliosis increased less frequency than right as the children grew. Lumbar scoliosis is much more common in girls than in boys, but dorsal scoliosis is nearly as common among boys as among girls; while total scoliosis is more common among boys, marked scoliosis is more common among girls than boys.

The anemic condition appears to exercise a predisposing influence, though not a determining one, on scoliosis. Muscular development does not appear to present a certain obstacle to the development of vertebral curvatures, nor muscular weakness a certain cause. Growth exerts an important but not the principal predisposing cause in vertebral curves. Rachitis also is a cause of great importance, but not the only cause, as 65% of the cases with rickets show no evidence of vertebral curves.

⁶ Surgical aspect of osteo-arthritis of the joints. Edinburgh M. J., 1902, N. S., xi - 248.

⁷ Med. Press and Circ., London, 1902, N. S., lxxiii, 82.

⁸ Tr. Ass. Amer. Phys., 1901, xvi, 691-94.

⁹ Annal. de Méd. & Chir. Infant., Vol. v, 1901, p. 325.

SCOLIOSIS.

Schulthess¹⁰ combats Lovett's article in the Transactions of American Orthopedic Association, 1900, and does not agree that side backward bending to the affected side can be successfully relied upon as a curative measure in scoliosis.

CONGENITAL SCOLIOSIS.

Broca and Mouchet¹¹, reviewing the literature and their personal experience, have collected thirty-five cases. Of these a certain number presented the deformity in connection with some other defect, — imperforate anus, absence of radius and exencephalus. Certain cases exist where the congenital deformity is entirely in the spine. The cause of this is not known, and the writers are inclined to consider the cases as due to an unknown anomaly of vertebral ossification. In a few cases examined by the x-ray, a left hemiatrophy of the twelfth dorsal vertebra, with absence of the left twelfth rib, has been observed.

The treatment consists, according to the writer, in plaster corset correction under an anesthetic, followed by massage and gymnastics.

CONGENITAL DISLOCATION OF THE HIP.

Cathala and Veau¹² report an anatomical examination of a case of congenital dislocation of the hip in a child of four, treated by the method of Lorenz, where death took place from diphtheria one month after reduction. The pectineous was almost completely torn. The capsule did not present an hour-glass contraction preventing passage of the head. The capsule was unusually thick in front, but was thin behind. The cotyloid cavity was well shaped, with well-marked borders. The round ligament was present. The femoral head was small. There was a cartilaginous prolongation on the neck on its posterior surface, not present on its anterior.

Experimenting with methods of manipulation on this specimen, it was found that the upper part of the acetabular edge, which separates the two cavities, the true and the false, presents the chief obstacle, by its prominence, to reduction by direct traction. In order to make the reduction, it is necessary to flex the femur in the pelvis and make a slight external rotation. The head is to be brought down to the posterior part of the acetabulum where the edge is less prominent; the thigh should be then abducted and the head will slip into the acetabulum.

The advantage of the position of the limb in forced abduction to ninety degrees, with external rotation over a position of extension with internal rotation, is that the head is pressed against the upper border of the acetabulum better than if the limb is in an extended position. In an externally rotated position with extension, the head is held closer to the acetabulum by the tension of the capsule, than in the position of internal rotation which relaxes the anterior part of the capsule. The position of flexion and internal rotation fixes the head poorly in the acetabulum, and this is also true of abduction with internal rotation.

All movement which presses the head upward and forward helps in maintaining the reposition,

whereas a pressure which tends to crowd the head against the posterior inferior part of the joint, the weakest portion of the joint, does not help to secure the head in the acetabulum.

Josserand¹³ reports fifty cases of reduction of congenital dislocation of the hip by the method of Lorenz. The death and autopsy of a child four months after the operation and after treatment demonstrates anatomically the success of reduction by this method. Of the 50 cases, one died of diphtheria, one was removed before the completion of the treatment.

In the 48 others, 27 luxations were unilateral and 21 bilateral, that is, 69 articulations subjected to treatment. The results were 25 reductions, 37 transpositions, 2 fractures, 3 relapses, 2 cases where the head could not be moved. Of the 27 unilateral reductions, 12 were reduced, that is, 44%. Of the 42 bilateral, 13 were reduced, or 30%.

Forty-two cases were younger than five. Sixteen unilateral with 9 reductions, 56%. Twenty-six bilateral with 10 reductions, 38%.

Twenty-seven cases were older than five. Eleven were unilateral with 3 reductions, 27%; 16 were bilateral with 3 reductions, 18%.

The articulation presented in all cases certain anomalies: prominence of the head after reduction, a slight lengthening of the limb after the operation, one-half to one centimeter, and in one instance a shortening.

Of the successful cases 25 walked without a limp. Eleven unilateral, 9 reductions and 2 transpositions. Fourteen bilateral, 6 reductions and 6 transpositions. All but one were under one year of age.

The author considers operation advisable in children under five, but not over ten.

Ochsner¹⁴ reports an autopsy on a successful case, one year after successful reduction by the Lorenz method, in a child of four, with double dislocation.

Interesting articles are presented by Joachums-thal.¹⁵

PROPER FOOT WEAR — THE TREATMENT OF WEAKENED AND FLAT FEET.

Sampson¹⁶ in an excellent article points out the defects of the ordinary shoe, and emphasizes the necessity of a boot which gives plenty of room in the front of the shoe, preventing crowding of the toes, and at the same time grasps the heel of the foot firmly. He advises in a weakened foot the use of a toe post, cut out of tin, which is slipped into a slit in an inner sole of cardboard which exactly fits the inside of the boot. The toe post prevents hallux valgus, and adducting the toe prevents abduction of the front of the foot. In flat feet a plate is necessary.

FLAT FOOT IN NEGROES.

Muskat¹⁷ examined the feet of a troop of Tongo negroes, and finds that the popular idea of the flatness of the negro foot is incorrect. In this he agrees with Hartmann and Herz.

¹⁰ *Annal. de Méd. & Chir. Infant.*, 1901, 773.

¹¹ *Annals of Surgery*, August, 1902, p. 198.

¹² *Berlin. Klin. Woch.*, 1902, pp. 848, 875; and by Brun, *Presse Médicale*, 1902, p. 221.

¹³ *Johns Hopkins Hospital Bulletin*, p. 8, vol. xlii.

¹⁴ *Deutsche Med. Woch.*, 1902, June 26, 471.

¹⁰ *Zeit. f. Orthop. Chir.*, x Band, 3 Heft, 1902, p. 455.

¹¹ *Gaz. Hebdom. de Méd. & Chir.*, 1902, p. 529.

¹² *Soc. Anatom.*, Octobre, 1901, p. 540.

DEFORMED CHINESE FEET.

Perthes¹⁸, in an interesting radiographic study of a Chinese lady's foot, considers this acquired deformity an excellent demonstration of what change can be effected upon normal growing bone by long-continued pressure.

Reports of Societies.

MEETING OF THE MASSACHUSETTS MEDICO-LEGAL SOCIETY, OCT. 1, 1902.

FRED. E. JONES, M.D., QUINCY, MASS., SECRETARY.

DISCUSSION OF POISONING BY WOOD ALCOHOL.

DR. S. W. ABBOTT: The people that die from such causes are most all tipplers. There are not many people who drink intoxicating liquors, except those who will take pure alcohol, unless they are the pretty decided tipping class.

Now, wood alcohol, a bottle of which I hold in my hand, has been purified to take the color out, and in all appearances it is the same as pure alcohol. It is not to be taken internally, and is marked on the bottle, "Must not be taken internally," but a great many people cannot read and write, and this is the class that drink it. It should have a good, big red label, marked in large letters, as all poisons, and the red label has come to be the label pretty well marked for poisons. Dr. Draper has enumerated a list of twenty or thirty poisons, but wood alcohol is not among them.

DR. A. E. PAINE: Has not wood alcohol the odor of creosote?

DR. S. W. ABBOTT: It is more pungent than creosote, and does not resemble it.

DR. S. D. PRESBREY: I am happy to say that my experience is extremely limited. I do not know that I ever saw a case of illness, or a case of death, from the use of wood alcohol. If I have, it has gone by me without my appreciating it. I have heard of tipplers using wood alcohol, but, as has just been said, they are those who are so thoroughly addicted to stimulation that almost anything would do that was a stimulant, and almost anything is "fish for their net" if it is alcohol.

I have heard that some of the large manufacturing concerns in Taunton, where the hoisting jacks are used, with wood alcohol instead of water, to raise large bodies, have had great trouble by the men tapping the pump and taking out the alcohol. Some had to substitute something else, so that it could not be considered palatable. But those who are so fond of intoxicants often care less about the palatableness than the stimulation. My experience as a medical examiner is purely nothing. I have learned to-day more than I have ever known.

DR. S. W. ABBOTT: It seems to me that there is something in the specific nature of wood alcohol that is more poisonous than the degree of poison, —something more specific than the degree of poison. It seems to me that the sweeping character of these deaths in Dr. Hoitt's paper, and the three in Beverly who were all killed by it, would indicate this.

DR. A. E. PAINE: Would like to ask Dr. Hoitt,

if, in making the autopsy, he did not discover the odor of wood alcohol?

DR. E. G. HOITT: I would say that on the first autopsy that I made, I detected the odor but of course that was not positive as a cause of death; so far as I could see this was the cause, and so I sent the parts to Dr. Wood with a report of the case, and he had every reason to believe that wood alcohol caused the deaths. The conditions of the stomach. I would say to Dr. Presbrey, were normal. In the stomach, where they have been on a long tippy, you would see a slight congestion of the cells. The confirmed drunkard will drink anything. This family was educated to it, even to the baby, two years old. They gave it to him every time that they took it. In this particular case, they had been drinking freely, as there had been a lull in the shops. They ran out of money, and finished up on wood alcohol, as they could not get anything from any one. I do not know how much they drank, or how much was stolen; she got it once in a pitcher and once in a bottle. I found a five-pint bottle that had contained wood alcohol, and that was also sent to Dr. Wood. I had no knowledge of how much each drank, or which one died first.

I thought that it was an interesting case.

DR. A. E. PAINE: I was with Dr. Holmes just after the making of wood alcohol started in an adjoining town. Two fellows, working in one of the shoe factories, took one or two quarts home into the town of Avon, or East Stoneham. They died within twenty-four hours. Dr. Holmes made the autopsy; the odor was very perceptible through the abdomen and in the urine, and there was a congested condition of the stomach.

The man who ran this wood alcohol place, who is now connected with a large establishment in Buffalo, had suffered from cystitis; he was very sick; he said (this was after these men died) he thought that it was the result of the wood alcohol. He tells me since that it is a common occurrence for the men working over it, or working at it long, to have an attack of cystitis.

DR. B. H. HARTWELL: I am very glad that we have this article to examine, and also that the matter has come before the society. The increasing use of wood alcohol leads us to think that we may have our attention called to it more than in the past.

I called on one of the large furniture finish places and inquired as to the use of wood alcohol in the arts, and I was told that they are using it very much more than in the past. The common alcohol sells for \$2.75, and the wood alcohol for only 75 cents per gallon. It smells and is sweet, the same as common grain alcohol. . . .

There was an instance of poisoning from shellac in the Foxboro Hospital, as under these conditions wood alcohol is used in shellac, and it will do just as well as the grain alcohol. The superintendent had it under lock and key. The patients in using this shellac, as the trustees were having some painting done, were told of its poisonous character by the superintendent, but they thought that he told them that to keep them from drinking it. You know, workers in shellac precipitate it by pouring water into a tumbler with some shellac, thus making a gum, and then drinking the water. Knowing this habit of shellac workers, he told them

¹⁸ Archiv f. Klin. Chir., vol. lxxvii, p. 620.

of its poisonous character; nevertheless, they took it, and two died. That fact was new to me, that shellac workers or finishers knew of this way of getting drink at the expense of the owner of the shellac, by diluting it with water.

DR. A. W. BUCK: I had a case last March of a man forty-four years old, (I have the notes here in my pocket). He was not working for two weeks, and was in the habit of drinking. On Sunday (this was on a Monday), he drank from an eight ounce-bottle full of liquid, and drank the entire contents, in small portions through the day, thought to be methyl alcohol, which had a red label on the bottle marked "poison." The son had bought some furniture of a mechanic, and had this bottle full of wood alcohol, to use on it, hid in the closet. The man gave his wife some of the alcohol, saying that it was good liquor, but she refused to drink it, saying that it was not good. His son George called his attention to the red label marked "poison," and he said that the labels were simply a bluff. I do not know how long after he drank before he died, but this man drank all day Sunday in small quantities through the day. Monday morning, when he awoke, he complained of not feeling well, but did not care to have the physician called then; he felt as if he were going blind, the son said he complained of blindness, and he walked about feeling his way, all morning; he lay down about twelve o'clock, and spoke at that time, and then died about one o'clock. There was no autopsy; the man drank from a bottle which had a red label, which goes to show that although even with the red label it does not seem to protect the public if they care to poison themselves.

I knew of a case like the case at Foxboro, — poisoning by shellac. The results were almost identical with this case reported to-day. As I understand it, the shellac gives up the wood alcohol in it.

DR. MEAD: Simply to swell the list I will mention two cases, painters. They drank about a quart of wood alcohol, as near as I could learn in questioning about the cause of death; there was no autopsy. This happened about five years ago in the city of Newton.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

STATED meeting, Dec. 8, 1902; the president, ANDREW H. SMITH, M.D., in the chair.

DR. OLIVER T. OSBORNE, professor of materia medica and therapeutics in Yale University, read by invitation a paper on

THE SIGNIFICANCE OF VARIATIONS IN THE INTERNAL SECRETIONS.

It was his purpose, he said, to state briefly what we really know of the most important secretions and what we are perhaps justified in surmising. The conditions which have been proved to be caused by disturbances of an internal secretion are, acromegaly, cretinism, myxedema, Addison's disease and about half the cases of diabetes. The conditions that he would like to see proved as due to some disturbed internal secretion were, hysteria, neurasthenia, possibly melancholia in its first stages, hemophilia, rickets, atheroma, sclerosis, gout, leu-

kemia, chlorosis, shock, what we call a neurotic condition, and all cases of diabetes. He purposed to leave out of consideration the various digestive juices, and consider only those of the most important ductless glands.

The action of the thyroid and suprarenals might be taken up together, as in many ways they were diametrically opposed. The thyroid is perhaps the main organ of the body to furnish vaso-dilating stuff, while the suprarenal glands are without doubt the main organs to furnish vasoconstricting stuff. Hypersecretion of the thyroid, or the feeding of thyroid substance, will always dilate the peripheral blood vessels and reduce arterial tension; on the other hand, the blood pressure raising power of suprarenal extract is without equal in physiology or therapy. Many physiologists believe that the vasomotor center in the medulla is sufficient to explain the normal heat production and heat loss. We do not know what part these two glands play in this alternating opening and shutting of the blood vessels, but the babe has but an imperfectly developed thyroid, while its adrenals have been observed to contain no vaso-contracting stuff, and we find that the babe's temperature varies with that of its surroundings, it having no heat governor or regulator. The thyroid gland seems to be the one that has the most to do with the health of the skin, and if this gland becomes atrophied or enlarged by connective tissue elements displacing its parenchyma, the skin becomes harsh and dry. If the condition is sufficiently aggravated, mucin appears in the tissues, and the condition of mucus or myxedema is present. Normally the thyroid gland begins to atrophy from forty-five to fifty years of age, and the advent of old age allows, sooner or later, the skin to become dry, harsh and rough, and perhaps to shrivel or wrinkle. In this condition of the skin in the old, and where there have been scaly eczemas due to dryness of the skin, he has found thyroid to be one of the best treatments. Diminished thyroid secretion allows the blood tension to become higher; hence the old adage that we are always and only as old as our arteries seems proved to be true. Diminished secretion of the thyroid tends to allow (he would not say cause) an endarteritis, which later may lead to true atheroma. Perhaps the reason that syphilitics have such a tendency to sclerosis is that mercury long given may interfere with the secretion of the thyroid, and he believes that the large class of so-called alterative drugs have such so-called alterative action because they act upon one or more of the ductless glands, modifying their secretion. It was his opinion that under-action of the thyroid allows connective tissue growth in many organs (in other words, it allows sclerosis), and that the feeding of thyroid in small doses is one of our best treatments to prevent the advance or, at least, to slow up this connective tissue formation. In cases of arterio-sclerosis, also, where nitroglycerin is of value in reducing the disturbances from high tension, he has found thyroid of marked benefit; while the iodides, which have been so much used for these conditions have been proved to be stimulant to the thyroid secretion.

Taking up the opposite condition, namely, that of shock, we find that here, whatever may be the cause of the disturbance, there is always the same

underlying pathology,—very low blood pressure and dilated or even paralyzed vessels. At the same time the body loses the heat so necessary to life, in consequence of the dilatation of the peripheral vessels. Whether severe pain has caused an enormous secretion of the thyroid, or what is more probable, temporarily paralyzed the adrenals, or both, we do not know. When shock follows laparotomy, whether from splanchnic plexus injury or from the necessary manipulations disturbing the adrenal glands, the most important indication is for something that will contract the blood vessels, and this condition, he believes, may be most satisfactorily met by suprarenal or adrenalin chloride, or suprarenal solutions. As the action in raising the blood pressure lasts less than a minute, in treating shock it will probably be found best to inject a solution drop by drop into a vein, timing the rapidity by the behavior of the pulse. Any of the preparations of suprarenal may be given on the tongue for absorption there, but, unfortunately, it has been proved that when taken into the stomach the blood pressure raising power of suprarenal is absolutely lost. Suprarenal is also a strong cardiac stimulant, as well as a vasomotor contractor. Reichert has recently shown that in profound morphinic narcosis the adrenal secretion is stopped. This explains some of the symptoms of the last stage of opium poisoning, showing the danger from loss of heat in these cases, and suggests suprarenal treatment.

The thyroid secretion is a marked cerebral stimulant, while if it is greatly exaggerated we have headache and brain irritability, and we can even feed it to the point of causing convulsions. In morbid conditions he has occasionally awakened the mental faculties by thyroid. In the vasomotor ataxia of neurasthenia it would seem as if the suprarenal glands might not be doing their work. The thyroid may throw some light on the intangible cause of hysteria. In women it is known that this gland normally hypersecretates with each menstrual period. Again, 80% of all cases of exophthalmic goitre, or Graves' thyroid disease, occur in women. He believes this affection to be due to a hypersecretion of the thyroid, for the reason that its symptoms are exactly those caused by the over-feeding of thyroid. On the other hand, 80% of all cases of myxedema also occur in women, and this is well known to be due to under-secretion of the thyroid. Graves' disease occurs mostly between twenty and forty, or during the most active period of thyroid life; while myxedema almost invariably occurs from forty-five to fifty-five, when the thyroid normally begins to atrophy. Between these opposite points of profound hypersecretion and practical absence of secretion are all gradations of increased or diminished secretion, and many of the troublesome, unaccountable, intangible symptoms in women are due to this variation in thyroid secretion. At the time of the menopause if this gland continues to secrete more than is needed for the organism, we have the hot flashes, the full-headedness, the palpitation, and the nervous phenomena so well known at this period of life. Again, he has found that in delayed menstruation, with or without anemia, no drug is so efficient in causing normal menstruation as thyroid extract, given in three grain doses three times a day. He has also frequently found, in feed-

ing thyroid for other purposes, that menorrhagia was caused.

Having referred to cretinism, he went on to say that the thyroid gland in some way regulates the elimination of nitrogen in the urine. We can feed thyroid to patients whether they are obese or not, and increase the nitrogenous output. On the other hand, the time when the thyroid begins normally to diminish its secretion is the time when men and women begin to add weight. Whether the suprarenals have anything to do with the loss of red blood corpuscles in Addison's disease is not known, but the patient apparently dies of what might be considered an ultimate vasomotor paralysis. It has been lately shown by Herter that these glands have something to do with the production of glycogen. We undoubtedly do have many cases of diabetes mellitus without any pancreatic or nervous disease. In such a case he found that under the action of suprarenal substance given by the mouth the output of glucose was diminished, the diacetic acid disappeared and the acetone and ammonia were greatly diminished. He has long suspected that the suprarenals have something to do with gout, and in cases with gouty joints, high tension blood vessels, and gouty asthmatic attacks he has found that small doses of thyroid (the opposite of suprarenal) are of considerable immediate benefit, as well as tending to cause all kinds of gouty attacks to become very much less frequent. This may be partially due to the action of thyroid on nitrogen elimination.

The pituitary secretion is probably always exaggerated in the condition of giantism, and is certainly always diseased in acromegaly. It is probable also that in every patient affected with giantism who lives long enough, the case will assume the acromegalic type; giantism being nearly homogenous overgrowth of bone, while acromegaly is irregular bone growth. In several cases of acromegaly he has found the severe headache relieved by feeding pituitary. The glands of the body appear to be more or less interchangeable in their functions. In acromegaly some of the early symptoms are due to too much action of the thyroid, but later in the disease the thyroid secretion is diminished. In these cases the autopsy shows the thyroid to be atrophied, at least as to its parenchymatous portion, and a large number of the typical signs of acromegaly are due to this pseudo-myxedema. Pituitary substance stimulates the heart and contracts the blood vessels, but is greatly inferior to suprarenal in this respect.

The thymus gland, which atrophies in childhood and disappears after puberty, contains the largest amount of nuclein, and hence of phosphorus, of any gland of the body, and will serve the purpose of any nuclein treatment. Inductively it would seem that this gland, which is so active during the period of greatest bone growth, must have something to do with the formation of bone salts. As these earthy salts are all necessary permanently to encapsulate or to heal tuberculous lung lesions, Dr. Osborne thought that theoretically thymus should be of value, and practically he has found that in tubercular cases it is an aid to whatever hygienic or medicinal treatment is instituted. Many cases of exophthalmic goitre improve under its use, but he has never found any treatment that would positively stop hyper-

secreting glands except morphine or codeine. Thymus extract has shown some coagulant action on blood, and as this gland has been found absent in hemophilia, it should be tried in that affection. It would also seem, theoretically, of value in rickets and perhaps in the scurvy of children. We are so much at sea in regard to the physiology of the internal secretions of the pancreas, spleen, testicles, ovaries, mammary gland and parotid, that no safe indications for their use can as yet be made out, and whatever is done in a therapeutic way is purely empirical. Of course, any gland, like the testicle, which contains nuclein will give tonic phosphorus to the system.

In speaking of the study of the blood he referred to a case of lymphatic leukemia, which has been under observation for a year and a half. The patient is a man sixty-four years of age, who has all the glands of his body enlarged. Over 98% of the white blood cells are lymphocytes, only a little over 1% being polymorphonuclear leucocytes, while normally about 75% of white cells should be of the polymorph variety. In the laboratory one mooted point was settled, namely, that these white cells do not break down. Another interesting point was that any treatment which greatly reduced the size of his glands always made his white blood count greater and his red blood count less. This was true of sodium bicarbonate, and notably so of arsenic. Nucleic acid did not cause any increased number of polymorphonuclear cells. If fed in large amount it did cause a diminished white blood count, but also diminished the red blood count. His red blood count always improved under red bone marrow, and as regularly declined under any other treatment. In this case, then, there is undoubtedly disease of the red bone marrow; also it is pretty good physiological proof that the red bone marrow produces red blood corpuscles, and also good proof that the feeding of red bone marrow supplies that deficiency. Physiologists are about equally divided as to whether the lymphocytes are the origin of the polymorphonuclear leucocytes, or whether the latter grow from the bone marrow. This case having practically no cells of this variety, and the red bone marrow showing such evidence of disease, it would seem pretty good physiological proof that these polymorphonuclear leucocytes are formed in the red bone marrow.

DISCUSSION.

DR. WILLIAM H. THOMSON said that as the subject was such a large one he would confine himself entirely to one of the well-known diseases apparently connected with a ductless gland, namely, Graves' disease. His own impression, however, was that this affection is not due to disordered secretion of the thyroid. This gland, he believed, was involved only secondarily, as the spleen was in ague. As to the diagnosis between ordinary or parenchymatous goitre and exophthalmic goitre, while both diseases begin with enlargement of the thyroid gland, they have nothing else in common. Graves' disease is entirely distinct from a parenchymatous goitre. Anatomically, at least as far as we can recognize, they do not differ, but clinically they are absolutely different. Dr. Thomson stated that from a careful study of Graves' disease, he had made out

twenty-four characteristics, none of which were met with in parenchymatous goitre. Among these were persistent and extreme tachycardia, muscular tremors, local paralysis, headache (particularly of the form of migraine), special affections of the senses (as deafness, tinnitus aurium, etc.), severe intestinal derangement (especially diarrhea) and insomnia. In the cases he had collected he had been careful to exclude all hospital cases, as this was the most chronic of all diseases, and it was only in private practice that patients could be successfully followed up. In twenty-eight out of over forty cases of which he had complete records, all of the symptoms he had enumerated were met with. The cases without goitre were on the whole the most severe, and where this was present, the constitutional symptoms bore no relation whatever to the size of the goitre.

As to the pathology of the disease, it appeared to him that for this we must look to toxins in the gastro-intestinal tract. Thus, he had known the tachycardia to be reduced by from 20 to 50 beats by a single dose of a mercurial. In any case where there is persistent tachycardia not related to any inflammatory condition of the heart, the probability is that it is one of Graves' disease. The thyroid gland is involved in only about one-half the cases. His own view was that one of the functions of the thyroid was to neutralize the poisonous materials generated in the gastro-intestinal tract, and that when these materials were in excess a hypertrophy of the gland was liable to occur. This hypertrophy, however, was not an essential characteristic.

DR. E. D. FISHER said that the animal extracts seemed to him to act in one way or another as stimulants. Thus, nuclein was useful in senile enfeeblement. In backward children (not those who were the subjects of cretinism, but who were poorly developed), he had seen good results from the use of potassium iodide and thyroid extract. In weakly children of from two to three years, the thyroid seemed to supply something which was lacking in the system. Its administration need not exclude the use of cod liver oil or other agents which might be indicated. As to thyroid in the treatment of melancholia, he had found that in a hospital where this was tried, while sometimes there might be an evanescent improvement, the final results were entirely unsatisfactory. There was no pathology to this disease; it was simply a mental condition. In myxedema and cretinism we know the results. There was a form of arterial disease, not dependent on well-recognized pathological conditions, such as syphilis, Bright's disease, etc., in which anatomical changes are sometimes met with in the comparatively young. There were some changes going on (yet not endarteritis); some nutritional disease was present which made the man older than his years. In such cases we had the early breakdowns; neurasthenia or an apoplectic seizure might occur. It was in instances of this kind that he hoped that thyroid or some other extract might prove successful in arresting the nutritional change. As to pituitary in acromegaly, he could not say that this extract always gave results.

DR. J. LEONARD CORNING said that the thymus seemed to play a part in the elaboration of the bone salts, as was suggested by a comparison of the salts found in the gland with those so freely dis-

tributed in the bones. The large percentage of those related to organic compounds found in the thymus tends to heighten the probability of this gland's agency in the preparation of the so-called bone earth. Again, the fatty degeneration and atrophy of the gland as puberty draws near, at a time when growth has already proceeded apace and the sway of the balance heretofore so largely in favor of integration is no longer necessary, tend still further to support the theory. With regard to disturbance of the thyroid as a possible source of hysterical and other neurotic derangements, he supposed that most had seen functional cases recalling in some of their features, at least, the phenomena of exophthalmic goitre, cases which had gone on to improvement, more or less, under the exhibition of thyroid extract. But while this was true, there were others, differing apparently little, if at all, from these, which showed no such improvement. Both classes of cases were, to his mind, significant; the first showing a distinct relation of cause and effect, and the second pointing rather to a defect of nosology than of theory. Then we had to consider the possible consequences of over-activity of the organ, a condition to combat which we might probably have to look principally to the opiates. The crucial observation of Brown-Séquard, in 1856, that ablation of the suprarenal glands in guinea pigs and frogs is followed by lowering of the blood pressure and body temperature, progressive paralysis and ultimately death, affords ample demonstration of the physiological significance of the gland. Add to this his further observation that animals so treated might, by subcutaneous injections of extracts of the healthy gland, be restored to a relatively normal condition, and we have a very forcible suggestion as to the future therapeutics of the adrenal derivatives. With the improved chemistry of the drug, it has found favor with some in the management of cardiac weakness, hay fever, edema of the lungs, and even diabetes insipidus, not to mention hemorrhage, especially of gastric and pulmonary origin. Its hemostatic power is, indeed, one of its most significant and promising features. A still more extended application of the gland in the management of conditions more or less largely due to circulatory inefficiency is likely to follow, in view of its remarkable physiological importance, as shown by experiment. Let us hope that the veil which has so long shrouded the more intimate chemistry of the cell is about to be lifted, at least part way; that with this revelation of the more illusive phases of normal cell metabolism will come a complementary appreciation of the pathological chemistry of cell-life, and, in fine, that this double estimate (this comparison of the tissue chemistry of health with that of disease) may result in a more effective management of many baffling conditions. Certainly the suggestions brought forward in Dr. Osborn's paper are rationally inspired, and should help on to fruitful consequences.

Dr. R. W. WILCOX said that when ablation of the thyroid is practised, death from shock may ensue. The reason for this Dr. Osborn has explained. Patients who have had it ablated, and are fed on thyroid, suffer from what may be called continued shock. Thyroid is a potent remedy, and when it is given its effects should be watched with the greatest

care, as grave symptoms are liable to arise. The same is true of suprarenal extract. Not excepting the barium salts, suprarenal is the most powerful vaso-constrictor which we possess. Its first and principal action is on the arteries. Secondly it acts as a cardiac stimulant, but this effect is not produced until some time after it has powerfully constricted the vessels. It is sometimes given in acute emergencies in heart troubles, but from what has just been said it can readily be seen that in such emergencies it is just as dangerous as digitalis. In young girls, and especially chlorotic girls, Dr. Wilcox has found no remedy which so satisfactorily regulates the menstrual flow as mammary extract. It should be given for five or six days before the expected period. In anemic girls who flow profusely it is of great service.

Dr. AUSTIN FLINT said that a few years ago little or nothing was known concerning the physiology of the ductless glands, and what knowledge we now possess has been derived very largely from the pathologist. He had been surprised and gratified at the wide range of subjects connected with variations of the internal secretions, and their therapeutic applications, discussed in the paper. He could not but feel, however, a certain amount of incredulity in regard to positive, practical results, as it seemed to him that this whole subject was as yet only in its infancy.

Prof. GRAHAM LUSK spoke in regard to the thyroid. Reverdin, in 1882, showed that marked disturbances occurred after extirpation of this gland. He as well as Kocher showed these changes to be like those described by Gull in 1873, and called myxedema. Schiff, in 1856 and later, operated on sixty dogs, fifty-nine of which died within four weeks. If a part of the gland was left, however, or if thyroid was administered by subcutaneous injection or by the mouth, there was an absence of the disturbances mentioned. The importance of these results is apparent. The effects of removal of the thyroid are found to be as follows:

- (1) Emaciation; intestinal absorption.
- (2) Myxedematous tissue. Mucin is found in the early stages in man and in the monkey. Later there occurs a hyperplasia of connective tissue, embryonic in character. The skin is hard, rough and dry, because there is no secretion. The hair becomes thin and gray, and falls out.
- (3) Abdominal vaso-dilation; fatty and colloidal degeneration of the liver and kidney; hyaline degeneration of the arterial walls.

All of the above phenomena are removed after feeding thyroid.

- (4) Metabolism abnormally low; subnormal temperature. The heat reduction is not due to circulatory changes.

- (5) Nerve and muscle disturbances. Fibrillary contractions occur; in monkeys clonic cramps and tetanic spasms. There is decrease in nerve activity, as shown in motor paralysis and anesthesia. The face loses its expression, because the innervation of the muscles is interfered with. The spasms are of central origin, and due to the action on the spinal cord. There are physical disturbances, due to the action on the cerebral cortex; mental weakness, irritability, stupidity.

(6) The pulse is unchanged in myxedema. If thyroid extract is fed, the pressure is lowered and arterial relaxation occurs.

(7) Diuresis is produced.

Dr. OSBORNE, in closing the discussion, spoke of the importance of small doses in giving the organic extracts. Large doses, as of the thyroid, may occasion a great deal of injury. He was much impressed, he said, with Dr. Thomson's views on Graves' disease. As a result, he would in the future diminish the nitrogeinous food supply of his patients. As to the effect of mercury, he thought it probably stopped some secretion. He could not but believe still, however, that Graves' disease has a great deal to do with the thyroid gland. Alteratives all stimulate the thyroid to greater activity. He had hoped that the physiologists would have said something about the origin of the polymorph-nuclear leucocytes of the blood.

Recent Literature.

A Manual of Practical Anatomy. By the late Professor Alford W. Hughes, M.B., M.C. (Edin.), F.R.C.S. (Edin.), F.R.C.S. (Eng.), Professor of Anatomy, King's College, London, etc. Edited and compiled by ARTHUR KEITH, M.D. (Aberd.), F.R.C.S. (Eng.) In three parts. Part III. The Head, Neck and Central Nervous System. Philadelphia: P. Blakiston's Son & Co. 1902.

We have already reviewed the two preceding volumes of this book. The difficult subjects of the head, neck and central nervous system are treated in a manner similar to the topics already covered. No attempt is made to describe structures exhaustively, but the important bearings of topographical anatomy are everywhere brought into the foreground with good success. The volume is profusely illustrated, and many of the illustrations have the attraction of originality. The three compact volumes taken together form a practical textbook of anatomy which cannot fail to be of service to a wide circle of students and physicians.

The ABC of Photo-Micrography. A Practical Handbook for Beginners. By W. H. WALMSLEY, F.R.M.S., F.A.A.S., charter member American Microscopical Society, etc. New York: Tennant & Ward. 1902.

Photo-micrography has taken a firm hold upon the scientific mind, and has become a necessity in the work of publishing papers on widely diversified medical subjects. The manifest advantages of this means of reproduction over the inevitable inaccuracy of drawings, gives it, forthwith, a place from which it cannot be dislodged. This small book of 155 pages, by an expert on the subject of which he writes, is therefore most welcome. It is intended for beginners in the art of photographing with high powers, and details the steps in simple and straightforward language. The volume is embellished with several half-tones in the text and a number of plates illustrative of the work which may be done. We commend the book as a most timely discussion of an increasingly important subject.

The Earth in Relation to the Preservation and Destruction of Contagia. Being the Milroy Lectures delivered at the Royal College of Physicians in 1899, together with other papers on Sanitation. By GEORGE VIVIAN POORE, M.D., F.R.C.P. London, New York and Bombay: Longmans, Green & Co. 1902.

This work of Dr. Poore will well repay careful reading. Dr. Poore is a diligent observer and an original thinker, and while he is not always in accord with the views of ultra-sanitarians, his views appear to be founded upon a sound and logical basis. He is a strenuous advocate of the utilization of household sewage, by applying it to the soil for the purposes of agriculture. In support of his views, he quotes the experience of Holland, where the death-rate of the principal cities has been reduced, since 1877, from an average of about twenty-four or twenty-five per thousand to seventeen or eighteen, under a system of careful utilization.

In his treatment of the subject of the spread of typhoid fever, he says: "Of one thing I am convinced, and it is this, that *under no circumstances whatever should typhoid excreta be mixed with water.*" This may be good sanitary doctrine, but when he says on a following page, "I think there is small room to doubt that the great cause of the increase and wide epidemicity of typhoid fever in modern times has been the water-closet," we can hardly agree with him, since such is not the general experience in American cities.

Undoubtedly the prevalence of typhoid fever in Lawrence, previous to 1893, was due to the free discharge of water-closets in Lowell into the public sewers, carrying with such discharge many typhoid bacilli. But this was an exceptional instance. The greater number of typhoid epidemics of the present day are traceable to the rural districts where sewers and water-closets do not exist.

In his lecture upon milk he shows them the conclusions of Sir Richard Thome as to the cause of the great number of deaths from *tabes mesenterica* in the first year of life, as shown in the registrar general's report, are not entirely trustworthy.

The following pithy sentence from his lecture upon "Dietetics" may be commended to the legion of patent food advertisers: "Our women, especially among the rich, are neglecting the sacred privilege of suckling, and are content to leave their offspring to the tender mercies of advertising tradesmen, who compare badly with the she-wolf that nurtured Romulus and Remus."

Handbook of Medical and Orthopedic Gymnastics. By ANDERS WIDE, M.D. Second revised edition. New York: Funk & Wagnalls Co.

The second edition of this excellent work will be welcomed not only by those interested in the art of massage but by physicians and medical teachers as well. The book avoids superfluity and gives succinctly the principles which are to be borne in mind by the practitioners of the method of manipulative therapeutics. Without attempting an undue amount of medical instruction, the writer presumes in the reader a sufficient amount of practical knowledge, and neither over-instructs nor is superficial.

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THE LIFE AND CORRESPONDENCE OF HENRY INGERSOLL BOWDITCH.¹

The biography of Dr. Bowditch by his son is a delightful story of a noble and beautiful life, vividly and charmingly arranged and told for the most part in Dr. Bowditch's own words. He was most fortunate in his parents and early associations, and throughout his life in his home and family relations. He was born in Salem, in 1808, at a time when the influences which developed the finest types of New England character were at their best. Charles Follen, at Harvard, was the first of his teachers to stimulate him to the highest ideals in his education, and he was worthily followed in the medical school by Jacob Bigelow, John Ware and James Jackson. During his two years in Europe he was a favored pupil of the great Louis, listened to Andral, Chaumel, Piorry and Trousseau, and came in contact with Jouffroy, Magendie, Legendre, Lafayette, Herschel and Paget, visiting in his holidays places endeared by memories of Scott and Burns, received cordially everywhere as a son of the distinguished translator of La Place's "*Mécanique Céleste*." His life more than justified these generous opportunities, and he believed that his opportunities imposed upon him corresponding obligations.

When he returned to Boston in 1834, he had chosen medicine rather than surgery, and he never overcame his aversion to using the surgeon's knife. He devoted much of his spare time to translating Louis, to essays and investigations on *Trichina spiralis* and *Lymnæa*, which attracted Virchow's attention, to original work with the microscope, to teaching auscultation and percussion, on which he wrote an excellent manual, and to hos-

¹Life and Correspondence of Henry Ingersoll Bowditch. By his son, Vincent Y. Bowditch. In two volumes. Boston and New York: Houghton, Mifflin & Co., The Riverside Press, Cambridge. 1902.

pital and dispensary practice; at the same time writing abundantly, attending medical societies, of which he founded one, — the Boston Society for Medical Observation, — reporting cases and taking an active part in discussions. He took the greatest interest in the American Medical Association from its beginning and in broadening its field of usefulness, urging a liberal feeling in ethics and the same rights and privileges to women as to men. He also became an active member of the American Academy of Arts and Sciences and of the Thursday Evening Club.

The mighty struggle was going on that made Indiana, Illinois, Nebraska, Kansas and California free states, and doomed slavery. Runaway slaves were escaping North all along from the coast to the Ohio River. In one Boston house it was not uncommon to find three or four runaway slaves in hiding, waiting for a dark night to start again on their way towards Canada and liberty. The anti-slavery party in New England was at the height of its great activity. Of course Dr. Bowditch joined them. He soon became one of the leaders, entering into the work with all the fervor of his nature, arousing public sentiment, influencing state and national legislation, helping runaway slaves, giving, as he said, as much time as he could spare from his professional duties. In the words of the poet Whittier, "His great enthusiasm for freedom and humanity cheered and stimulated us throughout the long struggle." For a man like Dr. Bowditch in a city such as Boston was then, that meant rare courage and great personal sacrifice.

As early as 1846 he became interested in improving workingmen's tenements, and, after twenty-five years' labor in that field, in securing the passage of an act of the legislature establishing the Boston Co-operative Building Company, which he did so much to direct in its great work.

Positions as admitting physician to the Massachusetts General Hospital and instructor of the medical students of Harvard were followed in due time by the professorship of clinical medicine and appointments as visiting physician and, later, consulting physician to the Massachusetts General and the Boston City Hospitals. He gave his help most generously in the early days of the Carney Hospital, where, as physician and president of the medical staff, the Catholic sisterhood found in him their most earnest support. No one of the hundreds of students who were brought under his influence can ever forget the lofty spirit with which he inculcated in them "the divine zeal for study and for the acquirement of all medical knowledge necessary for any true lover of our 'noble art.'" His patients felt his sympathy and entire devotion. How many times

he came home at night after having given to patients more than the sum of his fees for the day no one will ever know; and he gave himself with his gift.

Dr. Bowditch's skill and training, with an accident to his finger, early led him to devote his attention chiefly to thoracic diseases, and, at the request of the Massachusetts Medical Society in 1854, he prepared his famous paper, read in 1862, on "Soil-Moisture as a Cause of Consumption," which gained him eminence at home and abroad, and led up to the creation of the Massachusetts State Board of Health in 1869, of which he was chairman for ten years, becoming then chairman of the National Board of Health, newly created to meet the great yellow fever epidemic. As chairman of these two boards, pioneers in sanitary reform in this country, Dr. Bowditch gave more of his time than he could spare from his strictly professional duties, and deemed the sacrifice in his income, which was no small gift, part of his share in that great work. Beside making investigations himself, and suggesting them for others in both boards, he had the power of uniting men of varying interests and temperaments to work together in harmony, in spite of unusual difficulties, that was an incalculable help. His centennial address on "Hygiene in America," in 1876, he thought caused his selection as president of the American Medical Association the following year.

In 1850, in utilizing a discovery by Dr. Morrill Wyman, and tapping the chest, which he did safely three hundred times for pleural effusion, finally overcoming all objections to the operation, he became, to quote Dr. Donaldson, one of the benefactors of his race. The titles to his publications, one hundred and sixty-six as given in the Report of the Proceedings of the American Academy of Arts and Sciences, attest his industry and his wonderful power of concentration. In his second, third and fourth visits to Europe, it was a great gratification to him to find the fruits of his labors so well known and appreciated there.

When the war of the rebellion came, in 1861, Dr. Bowditch entered into it with patriotic fire, serving as volunteer to aid wounded soldiers in Virginia, as medical examiner for recruits, with the Sanitary Commission, doing more than any one else to create the public opinion which forced Congress to provide an efficient ambulance system. As friend and co-worker with Governor Andrew and Charles Sumner, he gave his time without stint and his whole soul without reserve, crushed by the death of his eldest son, the soldier hero, but bearing the terrible blow bravely and without a murmur.

Of the beauty of Dr. Bowditch's declining years, of his tenderness and devoted affection always to those dearest to him, of his loyalty to his friends

and his faithfulness to every duty, his letters are full. Strength, truth, courage and religious faith fill his journals, which often show also eloquence, dramatic power and literary grace, reflecting the exact observation and accurate description taught him by Louis. If his life was a strenuous one, his enjoyment of fun and frolic and music was as great as his love of work. He grasped his opportunities with thankfulness that their duties had come to him, and he always blessed the happy marriage that brought him his best counselor and wisest friend as well as devoted wife.

Those who knew Dr. Bowditch could not but feel the inspiration of his example. His life and correspondence is an exquisite picture of strength and beauty of character, as well as a thrilling story of the great anti-slavery fight, which every one will do well to read, made most attractive by the publishers' art and skill.

THE TOXICITY OF CARBON MONOXIDE.

IN view of the frequency of fatal accidents from the inhalation of illuminating gas, it is a matter of importance to determine the danger limit, or the percentage of such gas in the air of a room which would prove fatal during the ordinary occupancy of a room during a single night.

During the course of a series of experiments conducted by the Massachusetts Board of Health in 1884, it was found that there were very many factors which had a decided effect in modifying this percentage.

The toxic element in illuminating gas is unquestionably the carbon monoxide which it contains. Nearly twenty years ago the State Board of Health, by means of these experiments¹, determined the comparative poisonous character of coal and water gas, and found that there were very many limitations as to the question of fatality among those exposed to the action of illuminating gases, such as the size of rooms, the rate of flow through burners or leaks, the length of exposure, and the existence of cracks, or other outlets, as well as the porosity of the walls.

No definite attempts were then made to ascertain with precision what percentage of gas of either kind, when admitted to a room, was sufficient to cause death. It was found, however, that in a room containing 800 cubic feet (about the size of an ordinary hotel bedroom), with a burner wide open, and gas escaping at the rate of six feet per hour for ten hours, not more than 2 or 3% of gas would be found in the room at the end of that time, although there should be 7.5% in an air-tight

¹ Report of 1884, Sixth Supplement of Health Department, H. L. & C.

chamber. The balance had escaped through the walls and small openings. But even this small amount, of 2 or 3%, was found to be fatal to animals, since nearly one third of its volume consisted of carbonic oxide, or from 0.7 to 1% of the air of the room.

A series of experiments² appears to have been made by Professor Mosso at Turin, Italy, in a tight, iron chamber, constructed for the purpose. Its capacity was 5,740 liters (203 cubic feet), and it was lighted by a glass window and hermetically closed by a door. The first experiment was made upon a man, who entered the chamber at 3.30 P.M., and 0.177 of a cubic foot of carbon monoxide was admitted. Smaller quantities were afterward let in at intervals up to 4.48 P.M., when 0.635 cubic foot had passed in, or 0.3% ($\frac{1}{333}$) of the capacity of the room. At 5.10 the man came out and declared that he had not suffered from the experiment, though for the last twenty-two minutes he had breathed the air at its maximum toxicity.

Ten days afterward he submitted to another experiment. He entered the chamber at 3.50 P.M., pulse 83, respiration 28. Five minutes later 0.177 cubic foot of CO was introduced, and three minutes later the pulse was 81, respiration 28. At 4.10 the same quantity of CO was again admitted. In five minutes the pulse was at 80 and respiration 38. At 4.34, 0.25 cubic foot was introduced, and ten minutes later the breathing had again dropped to 28, pulse 82. A minute later 0.14 of gas was introduced, making in all 0.35% of the air capacity of the room, or $\frac{1}{285}$. The man was left undisturbed till 5.16 P.M., when he was examined. His pulse was 86, respiration 26. Four minutes later he left the room, after remaining in it one hour and twenty-five minutes, during thirty-five minutes of which he was exposed to the maximum amount of CO in the chamber. Except for a certain amount of "heaviness" in the head, he did not seem to be materially affected. There were slight changes in the pulse and respiration, and he had some headache.

Several months later (in March) the same man submitted himself for experiment again. He took food as usual at midday, and entered the experimental chamber at 4.15 P.M. Five minutes later the gas was admitted slowly, and the supply was stopped at 4.37 P.M., 0.92 cubic feet of gas, or 0.43% ($\frac{1}{233}$) of the capacity of the room having been introduced. At 5.03 P.M. Professor Mosso was informed that the man's breathing was imperceptible. On entering the room he found the man motionless, with his head "in a cataleptic position," but his arms were not rigid and moved easily,

neither contracting nor dropping. He was dragged out and laid on the floor. Breathing had ceased and the pulse was imperceptible. Artificial respiration was resorted to, and a strong jet of compressed oxygen directed upon his face. By 5.07 P.M. danger had passed and respiration began — slowly and superficially at first, then deeper and more frequently. The man had violent muscular contractions; shuddered, and moved like one in an epileptic fit. On being called by name he opened his eyes, but did not speak, and he relapsed into a state of depression when the administration of oxygen ceased. By 5.9 P.M. consciousness had returned, but he remembered nothing about what had happened. His pulse was then 120.

M. Grehaut, another experimenter, employed this limit or percentage of CO in experimenting upon dogs, and found that this percentage, 0.43 (less than one-half of one per cent), was sufficient to kill a dog after one hour's exposure. On examining the animal after death, bright red blood was found in the veins. A portion drawn from the vena cava showed a high percentage of carbon monoxide. Part of the venous blood was agitated with oxygen for measuring the respiratory capacity, and the result demonstrated conclusively that it was greatly oxy-carbonated, and could absorb but little oxygen. This caused the animal's death.

From these experiments M. Grehaut concluded that a proportion of CO equivalent to $\frac{1}{233}$ of the air capacity of a room, or 0.43%, is sufficient to cause death either of man or dog.

These experiments were not made with illuminating gas but with pure carbon monoxide, its most poisonous constituent.

ACID INTOXICATION IN DIABETES.

THE discovery that diabetic coma was due to an acid intoxication of the body was a notable advance in our knowledge of diabetes. It furnished a starting point for further investigation. This was first directed to the determination of the specific acid, and almost sooner than could be expected the problem was solved by Minkowski and Külz, who isolated B-oxybutyric acid from the urine of patients dying in diabetic coma. A little later this question was more thoroughly studied by Magnus Levy. He showed that the body of such a patient contained as much B-oxybutyric acid and its derivatives per kilo body weight as Walther had found necessary to produce acid intoxication in a dog.

The symptomatic treatment of diabetic coma in consequence received a great impetus. To be sure but few cases have recovered from actual coma by the use of alkalis, but unquestionably the prophyl-

² Journ. of Gas Lighting, etc., London, Nov. 18, 1902.

lactic use of bicarbonate of soda has prolonged life for months. Progress, however, is still being made in this condition, and, as is usually the case, along strictly scientific lines.

The source of the B-oxybutyric acid and its derivatives was the next question to be attacked. These bodies may be synthetically produced in the system or derived in some way from the food. The latter is the far more reasonable hypothesis. Of the three classes of food stuffs, carbohydrates were the first to be excluded as a possible source. This was easy of demonstration, for it was found that the acid intoxication produced by an exclusive meat and fat diet disappeared at once when carbohydrates were eaten. Not so easily has the matter been settled with proteids. But the case is fairly represented by the statement that v. Norden in his third edition has changed his former opinion and accepted Magnus Levy's view that proteids are not the source.

Having ruled out the carbohydrates and proteids, the fats remain by exclusion the source of the acid intoxication. And there is much in favor of this explanation, but into this we cannot now enter. If this is accepted, the next question which arises is as to the nature of the fat. Is it one particular kind of fat, or is the variety indifferent? It is with this special subject that some suggestive work has recently been done. Hagenburg has reported that a diminution in the excretion of acetone followed the exclusive use of fat when taken in the form of bacon; Schwarz, on the other hand, noted an increase of acetone with a diet containing much butter. Grube has repeated their work qualitatively, and confirms their results. It is too early yet to draw far-reaching inferences from these data, but it seems probable that the higher fats, palmitin and stearin, have less to do with the production of diabetic coma than the lower fats, olein and butyric acid, which are present to such great extent in butter. If the coma of diabetes could be traced to one special variety of fat, a new and simpler problem for study would be gained. In the meantime, it may be well to urge our advanced cases of diabetes to eat less butter, but more fat of meat.

MEDICAL NOTES.

INVESTIGATION OF CATTLE PLAGUE OF RHODESIA. — It is reported from Berlin that Professor Koch has sailed for Beira for the purpose of investigating the cattle plague in Rhodesia. The disease is said to be unusual in character and to date only from the late war. Imported cattle are said to have succumbed early to the disease.

DESTRUCTION OF PLAGUE-INFECTED RATS. — The statement is made that swarms of rats supposed to be infected with plague which infest the sea wall at Yokohama are being destroyed by carefully cementing over every possible mode of egress from the wall.

PATHOLOGICAL LABORATORY IN EAST ORANGE, N. J. — Dr. William B. Graves of East Orange, N. J., is reported to have given a well-equipped bacteriological and pathological laboratory to the Orange Memorial Hospital. The laboratory will be at the disposal of all physicians living in the Oranges.

THREE CENTENARIANS. — Miss Mahala Terry, a "real" daughter of the Revolution, died recently in Simsbury. She had lived over a century, having been born in Simsbury on Independence Day, 1802. Mrs. Hannah Burke, the oldest woman in Taunton, died last week at the reputed age of 101 years. The death of Refugio Hernandez Pontolongon, who is said to have been the oldest inhabitant of Mexico, is also announced. The claim of an age of 124 years may be taken with some allowance.

A DOUBTFUL COMPLIMENT. — The following statement has recently appeared in the columns of one of our esteemed contemporaries, in relation to the death of a distinguished member of the profession: "Dr. —'s death, however, was doubtless inevitable, as he enjoyed all the advantages of skilled attendance." If this be our attitude toward ourselves what wonder that those without the professional ranks should scoff!

THE JOURNAL OF CUTANEOUS DISEASES. — Beginning with the issue for January, 1903, "The Journal of Cutaneous Diseases" will be under the editorial management of Dr. James C. White and Dr. John T. Bowen of Boston, Dr. James Nevins Hyde of Chicago, Dr. Henry W. Stelwagon of Philadelphia, Dr. Prince A. Morrow, Dr. Edward E. Bronson, Dr. George T. Jackson and Dr. John A. Fordyce of New York.

Dr. A. D. Mewborn of New York will be the acting editor. It is the desire of the new management to present a monthly review of all important advances in dermatology and syphilis both in this country and abroad.

The journal has been made the official organ of the American Dermatological Association and will publish, in addition to its transactions, the proceedings of all the local societies throughout the country devoted to this specialty. All communications relating to the editorial department should be addressed to Dr. A. D. Mewborn, 224 West Fifty-second Street, New York.

DIET EXPERIMENTS.—Owing to certain criticisms of food preservatives brought against American exportations, the Department of Agriculture has instituted systematic experiments to determine whether or not the substances used are deleterious. Twelve healthy young men are to receive daily with their food certain of these preservatives, and careful record made of their effect. Accurate records will be kept of the weight, etc., of the men during the progress of the experiments. Interesting and important results are anticipated.

A NEW "MEDICAL LIBRARY AND HISTORICAL JOURNAL."—On Jan. 15 a new medical journal with the above title will be published, "Devoted to the Interests of Medical Libraries, Bibliography, History and Biography." It is designed to fill a place occupied by no other journal, and will be the only magazine published in the English language devoted to the subject of medical history.

Original articles will embrace the subjects of medical history and biography, practical medical library administration and economy, medical bibliography, the care of books, the history, construction and use of medical libraries, etc. A bibliographical feature will be the publication of a complete index medicus of every current medical book, both English and foreign. All communications should be addressed: Medical Library and Historical Journal, 1313 Bedford Avenue, Brooklyn, N. Y.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Jan. 14, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 30, scarlatina 41, measles 19, typhoid fever 18, smallpox 17.

MASSACHUSETTS CREMATION SOCIETY.—At the recent meeting of the Massachusetts Cremation Society, it was stated that there were 217 cremations in 1902 at their Forest Hills Crematory, an increase of 45 over 1901. In Mount Auburn there were 134 cremations last year, as against 119 in 1901. Altogether, 1,749 persons have been cremated in and about Boston since the establishment of the practice.

The late Dr. John Homans, 2d, an active member of the society, and at the time of his death its clerk, left \$1,000, which is to be used for improvements in the building and its approaches at Forest Hills.

LONG ISLAND HOSPITAL.—Dr. Simon F. Cox has been appointed resident physician at the Long Island Hospital, Boston Harbor.

LOWELL INSTITUTE LECTURES.—Dr. Henry P. Bowditch is now giving a course of lectures in the Lowell Institute on "Some Problems of Modern Physiology." In the last lecture he considered "Foods and Relishes," speaking at some length, under the heading of the latter, of the physiological action of alcohol.

A WARNING TO PHYSICIANS.—We are informed by the Boston office of the Pinkerton Detective Agency that the individual who has been recently visiting the offices of physicians in the Back Bay district and claiming to represent the agency is not in their employ, and that they will be obliged for information by telephone regarding him.

SMALLPOX AT FOXBORO, MASS.—Several very mild cases of smallpox are reported to have appeared among the inmates of the Massachusetts Hospital for Dipsomaniacs and Inebriates at Foxboro, Mass. A very rigid quarantine has been established, and there is small probability of a spread in the disease.

REUNION OF BOSTON CITY HOSPITAL NURSES.—A large number of nurses of the Boston City Hospital Training School celebrated the twenty-fifth anniversary of the school last week, at the Vose House, in connection with the hospital. Addresses were made by Dr. George H. M. Rowe, Dr. Edward Cowles, Dr. David W. Cheever, the Hon. Henry H. Sprague for the Board of Trustees, and Miss Linda Richards, who was the first superintendent of nurses at the hospital. Miss Richards urged the desirability of state registration of nurses as a possible means for the prevention of such unfortunate occurrences as those associated with Jane Toppan. A hall clock was presented to the building by Mr. A. Shuman, of the Board of Trustees.

NEEDS OF TAUNTON INSANE HOSPITAL.—The trustees of the Taunton Insane Hospital, in their annual report, ask for a new building for male nurses, for further accommodation for patients, and for the acquisition of more land. It is also urged that provision should be made for criminal insane women, as is done for men. The parole system which has been extensively used is claimed to have proved entirely satisfactory.

COMPULSORY VACCINATION IN MELROSE, MASS.—The Board of Health of Melrose, Mass., has ordered compulsory vaccination in case of all those who have not been vaccinated within fourteen months. Physicians will be employed for the work. This measure is wholly prophylactic, since no cases of smallpox are reported in that city.

AWARD OF SCHOLARSHIPS IN THE HARVARD MEDICAL SCHOOL.—The following scholarships have been awarded to students of the first year for 1902-03: The Lewis and Harriet Hayden scholarship of \$200 was equally divided between Marcus L. Barker and James G. Trimble, both of the first year. The David William Cheever scholarship of \$250 was awarded Arthur H. Crosbie, of the first year. The income of the John Foster Fund amounting to about \$150 was equally divided between Henry W. Godfrey and Charles H. Holt, both of the first year.

MILK INSPECTION IN BOSTON.—As a result of charges brought by the milk inspector of Boston, a large number of cases were recently investigated in the Municipal Criminal Court. Fines were imposed on five persons for the sale of adulterated milk, on three for the sale, without warning, of oleomargarine, and on one for selling vinegar not made from apple juice. Six cases are on bail, awaiting further investigation, and a number more are to be disposed of later.

CAISSON DISEASE.—Cases of caisson disease, occurring in workmen at the East Boston tunnel, continue to report at the hospitals. Two have recently been treated at the City Hospital Relief Station.

TYPHOID FEVER AT LITTLETON, N. H.—Typhoid fever is reported to have appeared in epidemic form at Littleton, N. H. Lancaster and St. Johnsbury are also having a considerable number of cases.

NEW YORK.

DR. N. H. HENRY, ADJUTANT-GENERAL.—Governor Odell has reappointed Dr. Nelson H. Henry of New York, adjutant-general of the state.

APPOINTMENT OF DR. L. E. LAFETRA.—At a meeting of the trustees of Columbia University held Jan. 5, Dr. L. E. LaFetra was appointed instructor in diseases of children and chief of clinic in that department at the College of Physicians and Surgeons.

A NEW INCINERATING PLANT.—What is considered by engineers as one of the most important innovations in the Street Cleaning Department for many years is an incinerating plant, which has been put into operation by the commissioner, Dr. Woodbury, at a department pier on the Hudson River front. It is the device of H. D. B. Parsons, the consulting engineer to the department, and embodies the result of his investigations in regard to the disposal of refuse made in Boston, Montreal and various European cities. The expense of run-

ning the plant is very small, and it consumes sixty tons of rubbish a day, or one fifth the entire amount collected in the borough of Manhattan. Of the sixty tons of material, there remains but one ton of ash, and this is utilized by the Park Department for fertilizing purposes. The experiment has proved so successful that arrangements will be made for the establishment of a sufficient number of other similar plants at various points to dispose of the entire refuse of the city.

LEMON JUICE AND TYPHOID FEVER.—It having been announced by the Chicago Board of Health that lemon juice is a preventive of typhoid fever, and that a teaspoonful of it in a glass of water contaminated with typhoid bacilli is sufficient to destroy the germs, Dr. William H. Park, of the bacteriological division of the New York Health Department, recently made a series of experiments at the laboratory in East Sixteenth Street, with a view to confirming or disproving the statements made. It was asserted that the experiments of the Chicago bacteriologists, instituted in consequence of the fact that Dr. Asa Ferguson of London had reported that lemon juice was destructive of typhoid germs, had confirmed Dr. Ferguson's results in every instance. Dr. Park found that, although the citric acid killed the micro-organisms, the action required too much acid and too much time to render lemon juice practically serviceable as a prophylactic. His experiments showed that two and a half teaspoonfuls of the latter, added to half a glass of water, failed to destroy all the bacilli in thirty minutes. A typhoid culture which had been subjected to a one per cent solution showed in thirty minutes one fifth as many colonies as before, while in the case of a one-tenth of one per cent solution the colonies were reduced only one half in that time. Motile bacilli in small numbers were also still visible in a drop of a five per cent solution after thirty minutes' action. In speaking of the matter Dr. Park stated that his previous opinion as to the inadequacy of lemon juice for the purpose named was confirmed by the tests, and that it was far safer to boil or properly filter the water than to trust to lemon juice to destroy any typhoid bacilli which might be present. It is reported by the State Board of Health that the deaths in the state during the last quarter of 1902 were one-tenth of one per cent less than in the corresponding quarter of the previous year. There was a diminished prevalence of most infectious diseases (notably smallpox) and of diseases affecting infancy and childhood, but some increase in the mortality from diseases of the respiratory, circulatory and nervous systems. The total number of deaths was less than the average of the last five years for the corresponding period.

THE DEATH OF "TOPSY."—"Topsy," an elephant ten feet high and weighing six tons, which had become unmanageable, was recently successfully electrocuted (to employ the somewhat barbarous expression which usage has now sanctioned) at Coney Island. It is stated that the current used was of the strength of sixty-six hundred volts, one electrode being applied near the right fore foot and the other near the left hind foot, and death appeared to be practically instantaneous. Within ten seconds the animal fell and rolled over on her right side motionless, and in two minutes from the time of turning on the current she was pronounced dead. Just previous to the application of the electricity about an ounce of potassium cyanide was given to the elephant in her food, in case the current should not work successfully.

PHIPPS INSTITUTE FOR STUDY OF TUBERCULOSIS.—It is announced that Henry Phipps of New York, formerly a partner of Andrew Carnegie, is to establish in Philadelphia an institute, to be called his by name, for the study, treatment and prevention of tuberculosis, and that he will endow it with at least one million dollars. It is also stated that preliminary arrangements have already been made to have the International Congress on Tuberculosis meet in Philadelphia, under the auspices of the institute, in 1905. It is expected that when the congress is held in Paris next year, its biennial session rule will be suspended in order to admit of this.

EMPLOYMENT OF NURSES TO VISIT TENEMENT HOUSES.—During the past autumn the Health Department has inaugurated the employment of nurses to visit the tenement homes of the children of the public schools, a measure which has added very materially to the practical usefulness of the more rigid medical inspection of the children at the schools, particularly as regards diseases of the eye. It was thought that it was not enough to send home the pupils excluded for some form of contagious affection, usually of the eye, skin or hair. The parents did not know how to care for them, and if they could not return speedily much valuable time would be lost. Accordingly, the experiment was tried of placing a nurse from the Nurses' Settlement on duty, with the children of five schools under her supervision. Visiting the homes of the excluded children, she showed the mothers what to do for them, treating in twenty days eight hundred and twenty-five cases of such a character as she was competent to manage (securing medical care for more serious ones), and enabling nearly all the children to return to school. Encouraged by this success, the department has increased the number of such trained nurses to thirteen, and it is expected still further to extend the system.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 3, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|-------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid fever. | Scarlet fever. |
| New York . . | 3,785,156 | 1,241 | 348 | 20.62 | 13.05 | 3.62 | 1.53 | .80 |
| Chicago . . | 1,935,270 | 628 | 186 | 22.76 | 17.51 | 2.22 | 3.50 | .80 |
| Philadelphia . | 1,378,527 | 532 | 130 | 18.42 | 16.92 | 2.44 | 1.88 | — |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . | 533,712 | 214 | 56 | 17.29 | 19.62 | 3.27 | .93 | — |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . | 351,745 | 175 | 61 | 23.42 | 17.14 | 3.42 | 2.86 | .57 |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — |
| Washington . | 295,103 | — | — | — | — | — | — | — |
| Providence . . | 191,230 | 72 | 15 | 11.10 | 26.37 | 1.39 | — | — |
| Boston . . | 603,163 | 238 | 58 | 20.59 | 18.50 | 1.68 | 1.68 | 2.10 |
| Worcester . . | 132,044 | 33 | 11 | 12.12 | 21.21 | — | 3.03 | — |
| Fall River . . | 115,549 | 48 | 22 | 10.41 | 14.58 | — | — | — |
| Lowell . . | 101,959 | 34 | 14 | 14.70 | 20.59 | 5.88 | — | — |
| Cambridge . . | 98,639 | 25 | 8 | 12.00 | 12.00 | — | — | 4.00 |
| Lynn . . | 72,497 | 21 | 3 | 19.05 | — | 4.76 | — | — |
| Lawrence . . | 69,766 | 21 | 10 | 14.28 | 33.33 | 4.76 | — | — |
| Springfield . | 69,389 | 28 | 6 | 7.14 | 10.71 | — | 3.57 | — |
| Somerville . . | 68,110 | 14 | 6 | 7.14 | 57.12 | 7.14 | — | — |
| New Bedford . | 67,198 | 31 | 11 | 16.13 | 29.03 | 3.22 | — | 3.22 |
| Holyoke . . | 49,286 | 14 | 5 | 7.14 | 21.42 | — | — | — |
| Brookton . . | 44,873 | 15 | 2 | 20.00 | — | — | — | — |
| Haverhill . . | 42,104 | 10 | 3 | 40.00 | 30.00 | — | — | — |
| Newton . . | 37,794 | 6 | 1 | — | — | — | — | — |
| Salem . . | 36,876 | — | — | — | — | — | — | — |
| Malden . . | 36,286 | 7 | — | 28.69 | — | — | — | — |
| Chelsea . . | 35,876 | 9 | 3 | 11.11 | 22.22 | — | — | — |
| Fitchburg . . | 35,069 | 7 | 4 | 14.30 | 14.30 | 14.30 | — | — |
| Taunton . . | 33,656 | — | — | — | — | — | — | — |
| Everett . . | 28,620 | 10 | 2 | 20.00 | — | 10.00 | — | — |
| North Adams . | 27,862 | 6 | — | 16.67 | 16.67 | — | — | — |
| Gloucester . . | 26,121 | 5 | 2 | 40.00 | — | 20.00 | — | — |
| Quincy . . | 26,042 | 4 | 1 | 25.00 | — | — | 25.00 | — |
| Waltham . . | 25,198 | 12 | 1 | 16.67 | 25.00 | — | — | — |
| Brookline . . | 22,608 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,589 | 5 | — | — | 40.00 | — | — | — |
| Chicopee . . | 21,031 | 11 | 4 | 27.27 | 9.09 | 9.09 | — | 9.09 |
| Medford . . | 20,962 | 6 | 1 | — | 16.67 | — | — | — |
| Northampton . | 19,883 | 8 | 0 | 12.50 | — | — | — | — |
| Beverly . . | 15,302 | — | — | — | — | — | — | — |
| Clinton . . | 15,161 | 8 | 4 | 25.00 | — | 12.50 | — | — |
| Leominster . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . | 14,478 | 4 | 0 | — | 50.00 | — | — | — |
| Woburn . . | 14,300 | — | — | — | — | — | — | — |
| Hyde Park . . | 14,175 | 6 | 1 | 50.00 | — | — | — | — |
| Adams . . | 13,745 | — | — | — | — | — | — | — |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . | 13,600 | — | — | — | — | — | — | — |
| Melrose . . | 13,600 | 3 | — | 33.33 | — | — | — | — |
| Westfield . . | 13,418 | 4 | — | — | — | — | — | — |
| Milford . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . | 12,722 | 7 | 2 | 14.30 | 28.60 | — | — | — |
| Framingham . . | 12,534 | 6 | 2 | 33.33 | 33.33 | — | — | — |
| Peabody . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . | 11,844 | 5 | 0 | — | 20.00 | — | — | — |
| Southbridge . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . | 11,077 | 4 | — | — | 50.00 | — | — | — |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,537; under five years of age, 984; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 697, acute lung diseases 574, consumption 357, scarlet fever 24, whooping cough 37, cerebrospinal meningitis 5, smallpox 12, erysipelas 6, measles 17, typhoid fever 65, diarrheal diseases 61, diphtheria and croup 101.


From whooping cough, New York 6, Chicago 10, Philadelphia 4, Baltimore 1, Pittsburg 4, Providence 1, Boston 5, and Lawrence, New Bedford, Springfield, Haverhill, Gloucester and Framingham 1 each. From erysipelas, Chicago 4, Philadelphia 1, Pittsburg 1. From smallpox, Pittsburg 7, Boston 4, Philadelphia 1.


In the seventy-six great towns of England and Wales, with an estimated population of 14,862,880, for the week ending Dec. 20, the death-rate was 19.6. Deaths reported, 5,582; acute diseases of the respiratory organs (London) 409, whooping cough 98, diphtheria 100, measles 223, smallpox 6, scarlet fever 72.

The death-rate ranged from 6.5 in Wallasey to 28.0 in Newport (Mon.); London 19.6, West Ham 14.4, Brighton 25.1, Portsmouth 17.1, Southampton 16.5, Plymouth 16.1, Bristol 23.2, Birmingham 19.5, Leicester 13.3, Nottingham 16.7, Bolton 16.2, Manchester 20.1, Salford 26.8, Bradford 18.7, Leeds 18.7, Hull 22.5, New Castle-on-Tyne 21.0, Cardiff 21.9, Rhondda 18.7, Liverpool 26.4.

METEOROLOGICAL RECORD

For the week ending Jan. 3, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|----|---------------------|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| S. . 28 | 30.02 | 20 | 26 | 14 | 77 | 85 | 81 | W | S W | 11 | 12 | C. | C. | 0 |
| M. . 29 | 30.16 | 32 | 42 | 21 | 69 | 100 | 84 | S | S W | 6 | 16 | C. | R. | .04 |
| T. . 30 | 30.12 | 36 | 41 | 30 | 86 | 57 | 72 | W | W | 9 | 12 | F. | C. | .06 |
| W. . 31 | 30.25 | 33 | 40 | 26 | 70 | 34 | 52 | W | S W | 12 | 12 | C. | C. | 0 |
| T. . 1 | 30.16 | 39 | 50 | 28 | 39 | 40 | 40 | S W | S W | 12 | 15 | C. | C. | 0 |
| F. . 2 | 30.19 | 40 | 46 | 34 | 53 | 60 | 58 | W | S E | 10 | 6 | C. | O. | 0 |
| S. . 3 | 29.52 | 39 | 42 | 36 | 100 | 96 | 98 | E | S W | 38 | 12 | R. | O. | .78 |
|  | 30.06 | | 41 | 27 | | 69 | | | | | | | | .88 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall.  Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JAN. 8, 1903.

BAILLIACHE, PRESTON H., surgeon. Granted leave of absence, on account of sickness, for thirty days, from Jan. 6. Jan. 8, 1903.

CARTER, H. R., surgeon. Leave of absence for three days from Jan. 5, 1903, under paragraph 179 of the regulations.

GREENE, J. B., passed assistant surgeon. Relieved from duty at New York (Stapleton). Dec. 31, 1902.

GRUBBS, S. B., passed assistant surgeon. To proceed to Guaymas, Mexico, for special temporary duty. Jan. 8, 1903.

PARKER, H. B., assistant surgeon. To report to chairman of Board of Examiners at Washington, D. C., Jan. 12, 1903, to determine his fitness for promotion to the grade of passed assistant surgeon. Jan. 5, 1903.

VON ELDORF, R. H., assistant surgeon. To report to chairman of Board of Examiners at Washington, D. C., Jan. 12, 1903, to determine his fitness for promotion to the grade of passed assistant surgeon. Jan. 5, 1903.

ANDERSON, J. F., assistant surgeon. To report to chairman of Board of Examiners at Washington, D. C., Jan. 12, 1903, to determine his fitness for promotion to the grade of passed assistant surgeon. Jan. 5, 1903.

ROBINSON, D. E., assistant surgeon. Relieved from duty at Seattle, Wash., and special temporary duty at Port Townsend Quarantine, and assigned to duty at Port Townsend Quarantine. Dec. 31, 1902.

KEYES, J. M., acting assistant surgeon. Granted leave of absence for thirty days from Jan. 5. Dec. 24, 1902.

SAMS, F. F., acting assistant surgeon. Granted leave of absence, on account of sickness, for thirty days, from Jan. 1, 1903. Jan. 5, 1903.

BROWN, F. L. pharmacist. Granted leave of absence for ten days from Dec. 25. Dec. 27, 1902.

SCHLAAR, W. F., pharmacist. Relieved from duty at Washington, D. C., and directed to proceed to Boston (Chelsea), Mass., and report to medical officer in command for duty and assignment to quarters. Jan. 6, 1903.

RESIGNATION.

Acting Assistant Surgeon J. M. Keyes resigned, to take effect Feb. 3, 1903.

BOARD CONVENED.

Board convened to meet at Washington, D. C., Jan. 12, 1903, for the examination of assistant surgeons to determine their fitness for promotion to the grade of passed assistant surgeon. Detail for the Board. Assistant Surgeon-General W. J. Pettus, chairman; Assistant Surgeon-General G. T. Vaughn; Assistant Surgeon-General H. D. Geddings, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JAN. 10, 1903.

E. S. BIGERT, medical director, retired. Detached from the Naval Recruiting Station, New York, and to continue duty at Marine Recruiting Station, New York.

T. WOOLVERTON, medical inspector, retired. Ordered to the Naval Recruiting Station, New York.

J. H. HOLLOWAY, assistant surgeon. Commissioned assistant surgeon from Sept. 26, 1902.

J. A. GUTHRIE, passed assistant surgeon. Detached from the "Yorktown" and ordered to the "Vicksburg."

K. OHNESORG, assistant surgeon. Detached from the "Vicksburg," and ordered to the "Yorktown."

A. E. PECK, assistant surgeon. Detached from the "Annapolis" and ordered to the Naval Station, Cavite, P. I.

U. R. WEBB, assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered to the "Annapolis."

B. F. STEPHENSON, medical inspector. Retired from active service on account of disabilities incurred in the line of duty, Jan. 3, 1903, and to continue on duty at Naval Hospital, Portsmouth, N. H.

S. H. DICKSON, medical inspector. Detached from the "Iowa" and ordered to the "Newark" as fleet surgeon of the South Atlantic Station.

H. H. HAAS, passed assistant surgeon. Detached from the "Montgomery" and ordered to the "Prairie."

J. E. PAGE, passed assistant surgeon. Detached from the "Newark" and ordered to the "Mongomery."

SOCIETY NOTICES.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY.—The annual meeting of the society will be held at 3 Park Street, Boston, Mass., on Thursday, Jan. 15, 1903, after the dinner.

Dinner will be served at 6.30 P.M.

DR. AGNES C. VIETOR, Secretary,
Trinity Court, Boston.

BOSTON MEDICAL LIBRARY MEDICAL MEETING.—The regular meeting will be held in the John Ware Hall, Medical Library Building, The Fenway, on Monday, Jan. 19, 1903, at 8.15 P. M. sharp.

Program: "Consideration of Blood Pressure," statement by the president; Prof. George W. Crile, M.D., of Cleveland, Ohio, "Some Observations on the Methods of Controlling the Blood Pressure"; Harvey Cushing, M.D., of Baltimore, Md., "Clinical Value of Blood Pressure Observations."

Discussion: Prof. Wm. T. Porter; J. M. Jackson, M.D.; R. C. Cabot, M.D. Dr. F. B. Lund will show a "Case of Intercapulo-thoracic Amputation for Sarcoma of the Median Nerve."

ARTHUR K. STONE, M.D., Secretary,
543 Boylston Street.

RECENT DEATHS.

ALBERT WARING ATWATER, M.D., whose death has recently been announced, was born at Burlington, Vt., July 24, 1861, and was graduated at the University of Vermont Medical College in 1885. He established himself at St. Regis Falls, N. Y., where he practised up to the time of his last illness. He was unmarried. He was the third successive physician of his name.

NATHANIEL DOWNES, M.D., M.M.S.S., died in Boston, Jan. 8, 1903, aged eighty-four years.

CARL A. EICHLER, M.D., a retired New York physician, died on Jan. 4 from cardiac disease, at the age of seventy-six. He was born and studied medicine in Germany, and came to this country in 1858. At one time he was deputy health officer on Staten Island.

RESIGNATION AND APPOINTMENTS.

DR. A. L. MASON has resigned the position of visiting physician at the Boston City Hospital, and has been appointed a senior physician upon the staff of the hospital.

DR. GEORGE G. SEARS has been appointed a visiting physician at the Boston City Hospital in place of Dr. Mason, resigned.

DR. JOHN W. BARTOL has been appointed an assistant visiting physician in place of Dr. Sears, promoted.

There is a resulting vacancy in the Medical Out-patient Department of the Boston City Hospital.

BOOKS AND PAMPHLETS RECEIVED.

X-Rays in the Treatment of Cancer and Other Malignant Diseases. By Emil H. Goubbé, B.S., M.D., of Chicago, Ill. Reprint. 1902.

Life and Correspondence of Henry Ingersoll Bowditch. By his son, Vincent Y. Bowditch. In two volumes. Illustrated. Boston and New York: Houghton, Mifflin & Co. 1902.

A Case Illustrating the Neglected Results of Infantile Paralysis, and the Treatment. By Samuel W. Kelley, M.D., of Cleveland, Ohio. Reprint. 1902.

Rheumatic Appendicitis. A Study of the Relation of Rheumatism to Appendicitis. By William A. Edwards, M.D., of Coronado Beach, Cal. Reprint. 1902.

Littoral California. By William A. Edwards, M.D., of Coronado, Cal. Reprint. 1902.

Report of the Commissioner of Education for the Year 1900-1901. Vol. I. Washington: Government Printing Office. 1902.

Original Articles.

VAGINAL CELIOTOMY, ITS SCOPE AND LIMITATIONS.¹

BY J. RIDDLE GOFFE, M.D., OF NEW YORK,

Professor of Gynecology in the New York Polyclinic Medical School and Hospital; Visiting Gynecologist to the New York City Hospital, etc.

In a paper read at the twenty-fourth annual meeting of the American Gynecological Society, held at Philadelphia in May, 1899, I said: "In the evolution of the vaginal method as a route of attack in the surgical treatment of pelvic diseases we have now reached that stage in which it is no longer confined, on the one hand, to simple puncture and drainage, nor limited, on the other, to the radical operation of hysterectomy. Experience has gradually broadened the application of this method to various conditions in the pelvis, and, with the improved technique, has so facilitated the work that in the hands of the expert the condition must be extremely rare that is not amenable to it." Since that time I have found this method applicable to conditions beyond the limits I then assigned it. One procedure which I deem of great value will enter into the discussion to-night.

There are two vaginal incisions through which the pelvic cavity can be reached; one posterior to the cervix into Douglas' pouch, and the other anterior to the cervix, separating the bladder from the uterus and opening up to view and touch the entire contents of the pelvis. The latter is the one which affords the greater facilities for operative procedures, and the one which I depend upon almost exclusively. The posterior incision is frequently used in connection with it to afford additional opportunity for manipulation, and, in some cases, for the purpose simply of securing drainage. Briefly, the procedure consists in making a transverse incision in front of the cervix corresponding to that employed in complete vaginal hysterectomy. Through this incision the bladder is dissected from the uterus up to the peritoneal fold. The peritoneum may then be incised and the peritoneal cavity opened, or that can be left until the next step in the process is completed, which consists in making a longitudinal incision through the vaginal mucous membrane and sheath throughout its entire length. This is accomplished by grasping the edge of this transverse incision either side of its middle point by two artery clamps. Tension upon these clamps puts the anterior vaginal wall upon the stretch, and an incision is made with the knife from the neck of the bladder down to the center of the transverse incision. The bladder is then dissected off the vagina for the distance of an inch or an inch and a half either side of this longitudinal incision. The purpose of this longitudinal incision and the separation of the bladder is to secure sufficient room in which to work. The dissection is done almost exclusively with the handle of the scalpel and the finger, and the hemorrhage is inconsiderable. Through this opening, whether in virgin or multipara, ample space is afforded for whatever radical or conservative work upon the uterus and its appendages may be indicated.

The simplest and at the same time very important function which is subserved by an incision into any of the large cavities of the body is that of an exploratory operation. An exploratory incision, so far as possible, should be free from danger; should give facilities for gaining the desired information, and at the same time afford opportunity for the completion of such surgical procedures as may be indicated.

In my hands the anterior vaginal incision fulfills these functions most satisfactorily. (1) It is free from danger; more than that, it is devoid of any untoward or annoying consequences. When I first began its use I felt that it might be followed by more or less serious bladder symptoms. In this, however, I have been happily disappointed. Indeed, I have yet to meet the first case in which there has been any symptom following this procedure referable to the urinary apparatus. The tissues through which the opening is made seems to be unusually tolerant of traumatic interference, and the generous blood supply of these parts favors prompt and complete healing. (2) As an exploratory incision I have found it to afford the means of accurate, definite and reliable information in regard to the entire contents of the pelvis. (3) The third condition is the important one, but experience alone reveals how wide is the scope of its application.

The simplest application of the vaginal method, and the one that probably commends itself most widely, I was about to say universally, to the profession, is incision and drainage of pelvic abscesses. Accumulations of pus in the pelvis may have various locations, depending upon whether they arise from puerperal conditions or the results of infection under all the general conditions of life. But whether the pus be in the cellular tissue, in the Fallopian tubes, in the ovaries or in peritoneal spaces between coils of intestine and adjacent tissues, the conservative and at the same time the efficient method of attack is vaginal incision and drainage. Under these conditions the anterior incision is rarely used, the opening being made posterior to the cervix or in the lateral sulci of the vagina. The predominant indication for this procedure is in cases of large pelvic abscesses, in patients acutely ill and in those prostrated from long-continued suppuration. Noble of Philadelphia says that in this class of cases this procedure gives in his hands a mortality of 2% as contrasted with one of 25% or more by abdominal section. There is no question concerning the positive merits of the drainage operation; it is done quickly, does not cause shock to the already weakened patient, and permits her to recover from the critical condition in which she is placed by the large abscess. I doubt not we are all ready to subscribe to this.

Polk and Pryor of New York and Henrotin of Chicago have been bold enough to insist that the formation of pus in the adnexa in cases of acute gonorrheal endometritis should be anticipated by vaginal incision and drainage. They all report favorable results in cases so treated. The rationale of the treatment consists in draining away the infected secretions and so depriving the diplococci of culture medium. My own experience with two such cases has led me to believe that playing with fire under such circumstances is rather dangerous

¹ Read by invitation at the regular monthly meeting of the Boston Obstetrical Society, Nov. 18, 1902.

business, and I prefer to wait until the disease has become self-limited and then repair the damage rather than run the risk of mixed infection and peritonitis through the traumatism produced by the operation. Vaginal incision and drainage has by universal consent or approval taken the place of vaginal puncture.

One point in the technique I wish to emphasize, and that is that the incision through the vaginal tissue should be sufficiently free in its extent to afford opportunity for careful investigation with the finger and ensure a sufficiently patulous opening during the succeeding drainage period. The uterosacral ligaments are such important structures in retaining the uterus in its normal position that I am careful not to interfere with their structure, and after entrance through the peritoneum into Douglas' pouch prefer to dilate and stretch rather than to cut.

In cancer of the uterus, provided the case is operable, it seems to me we have a positive indication for the vaginal method, namely, vaginal hysterectomy. I know this is still under discussion and there are some operators who advocate the ligation of the internal iliacs and the radical pursuit of glands. My personal belief, however, is that any cancer of the uterus that cannot give a fair prospect of cure by vaginal hysterectomy had better be left alone — the radical abdominal operation being attended with too great mortality to justify its use.

Coming now to the anterior incision, the condition in which I first applied it was that of retro-position of the uterus, and perhaps it may be well to speak of that first. I am a great believer in the principle that the uterus is supported exclusively by its ligaments, that when a uterus remains in normal position it is because its ligaments retain it there, and when a uterus gets out of its normal position it is because the ligaments have failed to do their duty. This is indisputably the case in unmarried women who suffer from procidentia. In cases, therefore, of displacement of the uterus, the ligaments and the ligaments alone are the proper tissue to utilize in restoring and maintaining the uterus in its normal position. The success attained by the Alexander operation of shortening the round ligaments at the external ring, and by the Wylie-Mann operation of shortening the round ligaments intraperitoneally, led me to utilize the round ligaments for this purpose, and my plan of procedure consists simply in shortening the round ligaments inside of the pelvis; but I do it through the vaginal incision instead of the abdominal.

The technique is as follows: After entering the peritoneal cavity, the uterus is dragged down firmly by traction forceps and the finger passed over the fundus and slipped along until it hooks over the broad ligament near the cornu. The round ligament near to its origin from the uterus is then seized between the index finger, which is on the posterior face of the broad ligament, and the thumb, which is anterior. The cervix is now pushed back into the posterior fornix and the traction forceps removed, the cornu of the uterus in the meantime being dragged forward and downward into the vagina. The bladder and vagina are pushed up by a retractor or the index finger of the other

hand, and by a little persistent effort the entire uterus is delivered into the vagina. The round ligament, first of one side, then of the other, is caught by an artery clamp from one to two and a half inches from the horn of the uterus and dragged down in the form of the letter U. A fine, twisted silk ligature is now passed through the ligament at as remote a point from the forceps on the outer side as will allow of approximation when it is continued through the ligament near the horn of the uterus. It is then tied, thus shortening the round ligament to an extent equal to the length of tissue taken up in the loop. The two arms of the loop between this suture and the forceps are then stitched together by two sutures of silk, and finally a third one catches the tip of the loop and attaches it to the anterior face of the uterus just at the origin of the round ligament. This latter suture is simply for the purpose of disposing of the loop of tissue, although it doubtless affords an additional support. The horn of the uterus thus treated is allowed to resume its position in the pelvis. The other horn of the uterus is drawn down and the round ligament of that side treated as in the first instance. The uterus is then allowed to take its normal position of anteversion, and the bladder tissue is adjusted to its original position. Two catgut sutures sew up the transverse incision in front of the cervix, and the running catgut suture restores the vagina along the longitudinal incision. The vagina is then packed with gauze and the operation is completed.

Cases of retroversion complicated by adhesions, either of the uterus or of the appendages, are made to conform to this technique after the adhesions have been broken up by the finger. Where the adhesions extend to the bottom of Douglas' pouch and are difficult of access, a posterior vaginal incision is made, and through this the separation of the adhesions is completed.

It is my custom always in these cases, after delivering the uterus into the vagina, to bring down the appendages also, first one side and then the other, and do such conservative work upon them as may be indicated. This work consists of such procedures as puncturing with a Pacquelin cautery multiple cysts of the ovaries, in some cases resecting portions of the ovaries, at the same time freeing the Fallopian tubes from adhesions, opening up the fimbriated ends, and under a stream of normal saline solution massaging the tubes, squeezing out any retained secretions, probing the tubes to discover their patency or obstruction, and, when necessary, amputating them at a point that will afford a patulous tube from there on to the uterus.

My work in this department of conservation of tissue and function of the ovaries and tubes in connection with shortening the round ligaments has been most satisfactory. In cases of pyosalpinx where the tube is hopelessly destroyed, the greatest facility is afforded for dissecting out the tube from the horn of the uterus and closing its bed with sutures. My cases illustrate all forms of complications from the simple removing of diseased appendages through the whole range of conservative procedures to the removal of the products of conception in ectopic pregnancy, dermoid cysts and myomectomy for small fibroids.

Anterior colpotomy is used by different operators for accomplishing the relief of displacements in various ways. Duhrsen and Wertheim shortened the round ligaments sometimes by doubling them upon themselves, as I have described, and sometimes by fastening a loop of the round ligament to the vaginal incision. The latter method is advocated especially by Vineberg of New York. In certain instances the uterus is attached to the vaginal wall by the method known as vaginal fixation. The dangers of this last method, I think, have been greatly exaggerated, and the unfortunate consequences that have followed in the cases reported have undoubtedly been due to an extreme anteversion of the uterus. Judgment must be used in determining the point upon the anterior uterine wall at which the vagina is attached. I frequently put a sustaining suture through the anterior uterine wall, attaching it to the vagina in cases in which I find undeveloped round ligaments or in which the inflammatory deposit at the base of the broad ligaments tends to hold the cervix forward in the pelvis.

In this connection I might refer to the comparatively new procedure of shortening the uterosacral ligaments for the relief of retroversion. Dr. Boyée of Washington has resorted to this in a greater number of cases perhaps than any other operator, sometimes reaching the ligaments through an abdominal incision and sometimes through a posterior vaginal section. I have used it in connection with shortening of the round ligaments in three cases and found it a feasible procedure in cases in which the vagina is relaxed and the cervix low in the pelvis. I reach the ligaments through the posterior vaginal incision and shorten them by doubling them on themselves as I do the round ligaments. My conviction is that the uterosacral ligaments are a most important factor in retaining the uterus in its normal position. They are, indeed, the all-important factor. Whether they are shortened and made to perform their normal functional support by direct operation upon them or whether the indirect result of some other operation enables them to involute and recover their tone and sustaining power, certain it is that unless they come to the aid of the other ligaments and hold the cervix high in the hollow of the sacrum, sooner or later the condition of displacement will be reproduced.

Speaking from my own experience, although, like most of us, I have had more or less experience with all the operations that have been suggested for the relief of displacements, I have not found one that has given me such universal satisfaction as shortening of the round ligaments through the vaginal incision. At the last meeting of the American Gynecological Society I reported 130 cases that I have submitted to his procedure during the past six years. This number has increased to nearly 150 at the present time. So far as my knowledge goes, I know of but three failures in this series of cases, and these were due to some departure from the regular procedure in which a modification was attempted. Among the 130 cases ten are known to have become pregnant and eight have gone to full term, pregnancy proceeding most comfortably and satisfactorily, and the uterus retaining its proper position thereafter. Of the miscarriages one was in a syphilitic negress, and in the other the cause could not be learned.

In my experience the most frequent cause of retro-displacement of the uterus is suppurative disease of the appendages, involving from 75 to 80% of all cases coming under my observation requiring surgical interference for this affection.

The Alexander operation, pure and simple, is applicable, therefore, to an extremely limited number of cases; it becomes necessary therefore, in order to treat the remaining cases satisfactorily and effectively to open into the peritoneal cavity, and the question is, Shall it be done through the abdomen or shall it be done per vaginam? The advantages of the vaginal operation are that the healing process goes on unconsciously to the patient, without any more constitutional or local disturbance than that which attends a simple trachelorrhaphy. The patient is not mindful of having had an incision made, nor does she bear upon her person any trace of a surgical operation. There are no adhesive plasters to be applied, no stitches to be removed, no bandage or supporter to be worn; there is no ugly scar, and there is no danger of a future hernia.

With these considerations in mind, the idea suggests itself that this procedure has its most appropriate application in cases of congenital or acquired retro-displacement in unmarried women. Among my cases I have six of congenital retroversion or flexion in unmarried women, whose ages ranged from nineteen to twenty-seven years. In these cases, although the vagina was small and the hymen intact in all of them I was able to perform this operation, and effected a cure in all.

The condition in cases of congenital displacement is rather peculiar. In them the uterovesical ligament is shortened, the uterosacral ligaments are lengthened, and the cervix is drawn forward into the axis of the vagina. The anterior vaginal wall, too, is attached low down on the anterior lip of the cervix, thus drawing down the short arm of the lever and throwing the long arm or fundus back into the hollow of the sacrum. The operation through the anterior fornix necessarily severs the uterovesical ligament at its attachment to the cervix and sets the latter free so that it swings back into the hollow of the sacrum and allows the fundus to come to the front. In these cases in closing the vaginal incision after the round ligaments have been shortened, the attachment of the anterior vaginal wall is carried up on the anterior face of the uterus. This brings the pull of the uterovesical ligaments on the long arm of the lever or the fundus. The application of this principle has been made use of by Dr. Reynolds of Boston most satisfactorily in the treatment of these cases. Congenital cases of retro-displacement are notoriously difficult to cure, but with these combined procedures my results have been uniformly successful. All the cases now being under observation, two of them for four years, one for three and a half years, one for three years, one for one and a half years and one for one year. These women bear no mark upon their persons of having been submitted to an operation.

Myomectomy.—The trend of gynecological work in all its departments for the past ten years has been strongly toward conservatism, seeking not only to preserve anatomical structures but also to conserve physiological function. This has nowhere

been more conspicuous than in the application of myomectomy in preference to hysterectomy in the treatment of fibroid tumors of the uterus, and the further it is extended the more numerous become the cases in which it is apparent that myomectomy can be applied and the uterus preserved.

Dr. McCosh of New York has perhaps carried the application of this principle to a greater extent than any other operator of which I know. In a paper presented before the American Surgical Association at Albany last June he reported a most interesting series of cases in which he removed from one tumor in one case to thirty-six tumors in another one, and yet a very presentable organ was left. He advocates a careful search for even the smallest tumors, and in their removal goes to the extreme of bisecting the uterus antero-posteriorly from the fundus down to the internal os, later restoring the uterus to as nearly a normal condition as possible. "It is often gratifying," he says, "when the uterus has been dropped into the pelvis to observe what a well-contracted and comparatively shapely organ has been constructed out of what fifteen minutes previously had appeared to be a more or less ungainly mass of ill-treated uterine tissue." Even after most radical work of this character, he reports three cases out of a total of thirty-one in which pregnancy ensued and went on to a successful issue. He advocates taking these tumors out by either route, as the case may indicate, sometimes per vaginam and sometimes per abdomen. It has been demonstrated that when tumors are small they can be reached through the vagina, and the advantages of this route of attack secured in their removal. The bed of the tumor requires careful and delicate treatment to avoid hemorrhage and, in my experience, the anterior vaginal incision in selected cases offers these advantages to a most satisfactory degree. In three instances I have removed fibroid tumors in this way. In one the tumor was situated on the posterior wall of the uterus just above the internal os, and was a mural fibroid. This was associated with retro-displacement of the uterus, and the patient suffered from all the symptoms attendant upon both conditions, as well as from adhesions to the rectum, from the lower end of the tumor along the posterior wall of the uterus to the top of the fundus. The steps of the operation were as follows: After curetting the uterus and packing it with gauze, the posterior vaginal incision was made, opening into Douglas' cul-de-sac. Through this opening adhesions were broken up by digital manipulation as far as could be reached, but the tumor could not be made to appear with sufficient clearness and facility of approach to justify its removal. The anterior incision was then made. Through this opening the balance of the adhesions were broken up, and by combined manipulation the uterus was delivered into the vagina. With the fundus at the vulva, and in full view of a class of students, the tumor was shelled out and its bed closed with tier sutures of chromicized catgut, Lembert sutures closing the peritoneum. The round ligaments were then shortened through the same incision, the uterus restored to the pelvic cavity, the bladder adjusted to its normal position, and the vaginal wound closed. A strip of iodoform gauze was passed into Douglas' cul-de-sac for drainage and the vagina lightly packed with

gauze. Convalescence was smooth. The operation was done in October, 1899, and the patient has since been free from all the symptoms of which she previously complained, she menstruates normally and considers herself perfectly well.

The second case was submitted to operation in December, 1899, and was that of a woman aged forty-three, married twenty years, mother of four children, the youngest being eight years of age. The patient complained of having endured wretched health since the birth of her last child, her condition growing steadily worse. She was anemic, weak, thin, nervous, and complained of insomnia. The menstrual flow was excessive; backache and leucorrhea were constant. Examination disclosed the fact that she had an extensive laceration of the perineum, bilateral laceration of the cervix, with diseased glands and hypertrophied tissue. The uterus was retroverted and immovable, being wedged in place by a number of fibroid developments on the posterior wall and at either side. At the operation the uterus was curetted and packed with gauze. Trachelorrhaphy was performed, the anterior lip being completely rimmed out. Through the anterior vaginal incision, by patient, careful and persistent manipulation, the uterus with its fibroids was delivered into the vagina. Two of the growths, which were somewhat larger than a normal ovary, were subperitoneal and partially pedunculated. These were readily pinched off, and smaller neoplasms to the number of five, making seven in all, were dissected out of the uterine wall. The round ligaments were then shortened through the anterior incision, and the operation was completed as in the former case, after which the floor of the pelvis was repaired. The patient's temperature remained normal throughout her convalescence, and on the nineteenth day after the operation she left the sanitarium for her home, two hundred miles from New York. She has continued to regain her health and strength, and has been relieved of all her symptoms. I saw her last June.

The third case was an unmarried woman of twenty-seven, and was submitted to operation in May, 1900. She gave a history of having been a sufferer all her life from dysmenorrhea, backache and an uncomfortable sensation in the pelvis. Examination revealed a large, retroverted, adherent uterus, with a small fibroid in the anterior wall just above the neck and between the uterus and the bladder. In this case the anterior vaginal incision was made, but the tumor was too large to permit of delivering the fundus; however, by lifting the bladder strongly on a retractor and drawing out the uterus with volsellum forceps, the tumor was brought into full view and two smaller tumors were revealed, one at the side and the other a little higher on the anterior wall. The three were removed in the usual way and the uterine wounds closed. The fundus was then delivered into the vagina and the round ligaments were shortened to relieve the displacement. There were no untoward symptoms in the patient's convalescence, and she has been relieved of all her unpleasant symptoms.

Of course uterine polypi can as a rule be removed *per vias naturales*, but even in cases in which the tumor is large and requires morcellation for its removal the work can be greatly facilitated by

performing anterior vaginal incisions, thus carrying the bladder high in the pelvis and making room for manipulation. There is no objection under these circumstances to splitting up the anterior uterine wall as far as may be necessary to reach the seat of the growth. After removal the uterus contracts down and can be easily restored to its normal condition. It has been found that the danger of infection from the interior of the uterus, which was formerly thought to be very great in these cases, is of no great importance, except in cases of sloughing polypi. In a myomectomy recently, in which a large tumor was removed from the fundus uteri by abdominal section, I broke through into the uterine cavity and, finding the mucous membrane extensively degenerated, I curetted the uterus through the opening in the fundus, swabbed it out well, and then carried some gauze down through the cervix into the vagina. There was no infection following the procedure, the patient making one of the most afebrile convalescences that I have ever seen. Dr. McCosh made cultures of scrapings from the uterine cavity in a number of his cases, but in only one instance did he get any growth, and even that was thought to be an accidental contamination.

Martin of Germany is strongly in favor of the vaginal route in dealing with fibroids of the uterus. He insists that the size of the tumor is not in itself a contraindication, since growths of large size can readily be removed per vaginam by morcellation. On the other hand, in the presence of firm suprapelvic adhesions, especially intestinal, the abdominal route is preferable; but deep pelvic adhesions and intraligamentary tumors are best handled from below. The writer fears injuries to the bladder and ureter more than he does hemorrhage, especially the former. He has never injured the ureters during vaginal myomectomy, though this accident has frequently occurred in his abdominal operations. When it is possible he enucleates tumors without removing the uterus. In young women he tries to leave one ovary. During three years he has performed 87 vaginal and 31 abdominal myomectomies. The latter were all complicated, and 6 terminated fatally. Of the vaginal operations 35 were total hysterectomies, with no deaths, and 52 were enucleations, with 2 deaths.

The possibility of dealing with small tumors per vaginam seems to me to change radically the viewpoint in cases of fibroid tumor. Between the waiting policy of those who take the position that an unmarried woman suffering from a fibroid tumor, however insignificant, should not be permitted to marry, but that nothing should be done looking to its removal, unless after months or years of waiting and watching the tumor shows signs of growth—between this position, I say, and the attitude of those of the radical wing of the profession who insist that in all cases of fibroid tumor of the uterus nothing suffices but prompt and sweeping hysterectomy, we have now a middle ground, which seems to me a golden mean, in which we can say to a woman suffering from a fibroid tumor, "Have it removed at once." This will not only relieve her present and anticipated troubles, but it will also set her mind at rest. If a tumor or tumors be small, they can be removed per vaginam with the least possible traumatism, danger or discomfort.

If the tumors are too large to permit of this procedure, they are amenable to myomectomy by the abdominal incision, radical work of hysterectomy being confined to an extremely limited number of cases, and those usually in women at or beyond the menopause.

Sterility.—At the recent meeting of the American Medical Association at Saratoga, I presented a paper on vaginal section for the relief of sterility, and christened my paper, "Is It Justifiable to Enter the Peritoneal Cavity under These Circumstances?" In this paper I took the position that in cases in which the husband had been eliminated as the cause of sterility, the causal factor can be located either in the easily approached condition of antelexion and endometritis, or in some occluding pathological condition that prevents the progress of the ovum from the ovary to the uterus. In many instances the latter condition is caused by the most trivial mechanical interference, such as cobweb adhesions surrounding the ovary, or restraining the fimbriae and binding the tubes in tortuous and constricted positions. These conditions are in many instances the result of remote infection from a chronic endometritis, and are frequently impalpable by abdominal manipulation. I therefore deem it entirely justifiable in cases of sterility, after dilating the cervix and curetting the uterus, to open into the pelvis through the anterior vaginal fornix as an exploratory procedure, dealing with the appendages according to the conditions found. In that paper I reported four cases, three of primary sterility and one acquired. In all of these cases the operation was performed primarily and solely for the purpose of relieving sterility. In one case I found enlarged and cystic ovaries with a sclerotic condition of the ovarian envelope. In the second case there was present such a condition of degeneration of the ovary and tube of one side as to indicate their removal, which was done. Upon the other side a cobweb mesh of adhesions enveloped the appendages, and an advanced cystic degeneration of the ovarian follicles was present. A section of the ovary was therefore done, the wound being closed with fine silk, and small cysts to the number of six were punctured with the Paquelin cautery. In the third case cobweb adhesions surrounded the adnexa, the tubes being kinked and constricted. In this case the adhesions were broken up, the ovaries and tubes were both washed with saline solution, the tubes being massaged and probed to ensure their patency. In the fourth case similar procedures were instituted, the round ligaments being shortened and the cervix and perineum being repaired. Three of these four cases became pregnant, and were in due time delivered of healthy children. Of course this work could have been done through the abdominal incision, but from the standpoint of the patient, the simplicity of the operation per vaginam and its freedom from danger indicate that the vaginal route is the more desirable for the treatment of these conditions.

Cystocele.—The latest application of anterior vaginal incision is in the relief of cystocele. Probably as much time and ingenuity has been expended in the effort to relieve prolapse of the anterior vaginal wall and bladder as in any one gynecologic operation. Of all those that have been suggested not one is

recognized to-day as effecting a permanent cure. The reason doubtless lies in the fact that the principle invoked in all these operations has been that of support from below rather than suspension from above. Dr. Reynolds of Boston in a paper presented at the last meeting of the American Gynecological Society² emphasized strongly the principle of suspension in treating these cases, and described a method by which he endeavored to secure some support from the broad ligaments, but the denudation was simply in the vagina mucous membrane, and the amount of support obtained from the broad ligaments by this procedure is extremely questionable. It occurred to me that if the bladder, after being separated not only from the vagina but also from the uterus, as in my method of vaginal section, could be rotated upon its transverse axis and if a point sufficiently low upon its inferior wall could be carried high upon the broad ligament and anterior face of the uterus, all of the slack in the base of the bladder could be taken in, the uterus and its ligaments, both the broad and the round, would afford sustaining power, and the stretched and weakened vaginal wall could be excised to fit the new condition. Acting upon this suggestion, I have recently put it into practice and with a result that gives promise of proving permanent and entirely satisfactory. After the bladder had been stitched up, as just described, the flaps of vagina on either side of the longitudinal incision were cut away to the extent of an inch, and the gap closed by a running suture of chromicized catgut. The condition of the patient previous to operation was that of extreme procidentia of the bladder, the sound after passing into the urethra immediately turning out through the vulva to reach the bottom of the pouch. In this case there was also retroversion of the uterus. Previous to attaching the bladder to the broad ligaments, the round ligaments were shortened, thus affording sufficient support for the new duties impressed upon them. Examination of this patient two months after operation reveals the uterus in perfect position, the anterior vaginal wall straight and firm and the function of the bladder perfect.

I have not gone into the minute details of all these various procedures, nor have I burdened you with long reports of individual cases, my effort being simply to present, as it were, a bird's-eye view of the possibilities of pelvic work along the vaginal route.

On general principles I believe all of us are ready to subscribe to the dictum that so far as the patient is concerned any operation that can be as well done through the vagina as through the abdominal incision is better done along the vaginal route. The possibilities of this work will undoubtedly vary with individual experience, but the more experience I have, the broader becomes the field of application, until it seems to me that any pathological condition that is confined to the true pelvis can be dealt with as satisfactorily, with as perma-

nent results and with far greater safety to the patient through the vaginal incision than through the abdominal incision. My cases have embraced every variety of disease from simple retroversion with adhesions to prolapsed and cystic ovaries, unilateral and bilateral salpingitis, ectopic gestation, fibroid tumors of the uterus and dermoid cysts. The method lends itself to every form of conservative work upon the uterus and its appendages that has been suggested in the trend of recent modern gynecology. The successful application of it requires patience, experience and skill, but when once the profession has been convinced of its superiority I believe it will steadily and rapidly grow in favor and become the accepted method for the man who practices the specialty of gynecology. It is hardly to be expected that the general surgeon will perfect himself in the technique of this line of work, but there is every reason why the gynecologist should, and it is my growing conviction that the distinguishing characteristic of the future gynecologist will be that he does his work through the vagina while the general surgeon does his pelvic work as a rule through the abdominal incision.

A CASE OF ACUTE PANCREATITIS, AND NECROSIS OF FAT TISSUE; LAPAROTOMY; DRAINAGE; DEATH NINE DAYS AFTER THE OPERATION; AUTOPSY.

BY GEORGE H. MONKS, M.D., AND DAVID D. SCANNELL, M.D.,
BOSTON.

In view of the widespread endeavors to determine the signs and symptoms by which acute hemorrhagic pancreatitis may be recognized, the report of the following case seems justified by the information it offers.

REPORT OF THE CASE.

E. Q., female, aged forty, married, entered the Boston City Hospital on the evening of Oct. 4, 1901, and was assigned to the service of Dr. Monks. She stated that she had had two attacks of a similar nature to the present one, three and five years before, respectively. On both of these occasions the essential symptoms were nausea and vomiting (persistent for two days in each instance), epigastric and right hypochondriac pain (dull and constant in character, and not radiating), chills, fever and constipation. There had been, so she said, no jaundice and nothing unusual in urine or dejecta. There were no symptoms suggesting collapse. These attacks were not severe enough to keep the patient in bed more than four or five days. Before, between and since these attacks the general health of the patient had been excellent. No history of alcohol.

Present illness. — Sixty hours before entrance, a gradual onset of increasing pain in epigastrium and both hypochondria, distinctly more marked on the left. This pain was of a dull, boring, non-radiating character, with frequent brief exacerbations, but not agonizing. Coincidentally with it were severe attacks of nausea and vomiting. No chills, fever or jaundice. For the previous three weeks the bowels had been more than usually constipated. During the twenty-four hours following the begin-

²"There are two anatomic points which seem to me to underlie success in the operation for cystocele. . . . We should utilize the natural supports of the anterior vaginal wall instead of simply denuding and gathering together the over-stretched portions. Second, that we should not only avoid using any part of the over-stretched portion of the wall but should actually excise and do away with it, both of which objects should be attained without the performance of an unnecessarily extensive or severe operation."

ning of the attack, the vomiting was persistent. It was not bilious. Increasing exhaustion, but apparently no sudden collapse. During the past thirty hours constant nausea, but no vomiting. Abdomen became somewhat distended and slightly tender, especially in the epigastrium.

Physical examination (at time of entrance).—Patient well-developed, obese. Temperature 100.2°. Pulse 120, of poor volume and tension. Respiration 36, shallow. Facial expression anxious; marked pallor (almost waxy); cold sweat on forehead. Pupils normal. Lips dry; tongue coated; breath foul.

Heart.—Area of cardiac dullness normal. Sounds regular, but weak. Soft systolic murmur at apex transmitted to axilla.

Lungs.—Left side negative. Right side, pleuritic friction in axillary line from fourth rib downwards.

Abdomen.—General distention, slightly more marked in upper half. Occasional visible peristalsis to right of median line. Muscular spasm marked, especially in upper half of abdomen; general tenderness, especially in epigastric and hypochondriac regions. The distention, spasm and tenderness render palpation unsatisfactory. Abdomen is generally tympanitic, except in flanks, where there is marked dullness, not changing with position. No fluid wave can be made out.

Extremities cold up to elbows and knees respectively. No edema. Patient vomits repeatedly during examination; the vomitus is fluid and sour-smelling; no blood or feces. Death seems imminent.

Entrance treatment.—A high turpentine enema is given without result and without diminution in distention. General stimulating treatment.

Urinary examination.—Color, slightly turbid. Odor, normal. Reaction, acid. Albumen, slight trace. No sugar. Sediment shows considerable pus, free and in clumps; no renal or bladder elements. No test for sulphates.

Blood examination.—Reds, 3,900,000; whites, 12,500; hemoglobin, 65%.

Oct. 6 (second day after entrance). General condition unchanged. There is still considerable nausea and vomiting, and no satisfactory results are obtained from repeated high enemata. No fatty stools. The waves of peristalsis are distinctly more marked. The pulse is of poorer quality than at time of entrance. Urine unchanged.

Oct. 10 (sixth day after entrance). Distinct improvement in patient's general condition. Pulse maintains an average of 120, with better volume and tension. Extremities warm. Vomiting much less frequent. During past two days good results have been obtained from enemata, without resulting, however, in any diminution of abdominal distention or spasm. Tender areas on abdomen unchanged. Dullness still present in flanks, not changing with position. No chills. No jaundice. Urine averages daily 20 to 25 oz. Chest negative. (Patient and relatives refuse permission for operation, even in case of improvement.)

Oct. 14 (tenth day after entrance). For past two days there has been no nausea or vomiting. Temperature normal and pulse improved. General condition of patient distinctly better. Normal de-

jecta without enemata. For first time since entrance, distention markedly diminished. Practically no spasm. *A distinct mass in the left anterior lumbar region* can now be felt. This mass, which is palpable bi-manually, is tender, ill-defined, firm and immovable. It is dull on percussion. There is moderate spasm of the abdominal muscles directly over it. It is suggestive of hydro- or pyonephrosis, or perinephritic abscess. No epigastric tenderness. During past three days there has been marked increase in the daily amount of urine, as it now averages 50 oz.; no sugar.

Oct. 21 (seventeenth day after entrance). The systemic condition of the patient is progressively better. The pulse and temperature, however, show marked irregularities. No nausea or vomiting. Free, normal catharsis. Abdominal condition remains about the same. The mass in the left anterior lumbar region is more palpable, especially bi-manually. It occupies, anatomically, the position of left kidney. It is still tender, but only on deep palpation. Indefinite fluctuation can now be made out. The abdomen elsewhere is negative. Daily amount of urine now averages about 55 oz. There is no sugar. Sediment shows considerable pus, free and in clumps, a small amount of abnormal blood, and a few caudate cells, resembling those from pelvis of kidney. No casts.

Oct. 25 (twenty-first day after entrance). Irregular and frequent chills. Temperature shows tendency to fairly wide daily variations; pulse tending upward. General condition still good. Abdomen same as at last note. Urine unchanged in amount and character.

Oct. 28 (twenty-fourth day after entrance). Nausea and vomiting have again appeared. Abdominal distention has slightly increased, and the daily amount of urine has diminished to 35 oz. General condition of patient fairly good. (Permission for operation has at last been obtained.)

Operation (Dr. Monks).—Under ether, an incision four inches long is made in the left loin down to the region of the kidney. Before that organ is reached, however, there escapes from the wound a considerable quantity of greenish-black fluid with masses of soft, friable material (diagnosed pathologically as "necrotic fat"). A large amount of this necrotic material is "scooped out," exposing the kidney itself. No normal perirenal fat is to be seen. The kidney is irregularly resistant, and the capsule much reddened. There is no evidence of dilatation of pelvis or kidney. The ureter is apparently normal. No suppuration.

Although the operative manipulation has been rapid, the patient suddenly collapses. Iodoform wicks are quickly inserted, and a dry sterile dressing applied. The patient is taken from the operating table almost pulseless. Duration of anesthesia, thirty minutes.

Oct. 29 (twenty-fifth day after entrance, and first day after operation). Post-operative recovery from shock fairly prompt and satisfactory. The patient is distinctly more comfortable than just before operation. Some general spasm in epigastric and hypochondriac regions. No abdominal distention. Inspection of operative wound shows considerable discharge, made up largely of greenish-black material similar to that removed at operation. It is

mixed with more or less blood. No pus. The wicks are removed and fresh ones introduced. Apparently there has been no digestion of the walls of wound. Rectal feeding is instituted on account of persistent nausea and vomiting, and inability to retain any food taken by mouth.

Oct. 31. Patient shows a distinct improvement in most respects. Fluids in small amounts are tolerated by stomach. Abdominal condition unchanged. The discharge from the wound is profuse, purulent, slightly sanguinolent, odorless. It apparently contains considerable necrotic fat.

Nov. 2. Absolute incontinence of urine and feces has developed in last two days. Abdomen moderately distended and universally tender. No marked spasm. General appearance of patient resembles that noted at entrance. Condition of wound and character and amount of discharge unchanged.

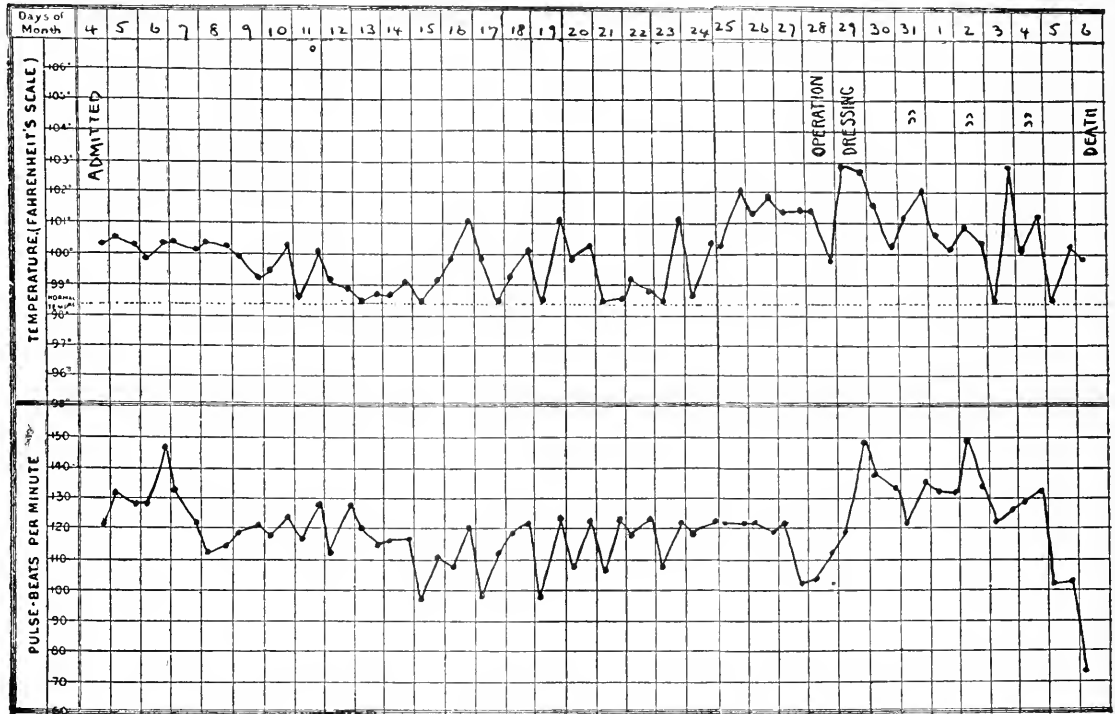
and connecting with retroperitoneal (perinephric) space. Moderate edema of ankles.

Peritoneal cavity.—Omentum fatty. Opposite operation wound folds of small intestine are hemorrhagic and glued together by slight exudate. Fat necroses occur as miliary yellowish nodules overlaid by peritoneum, a few on posterior surface of omentum, many on lining of lesser peritoneal cavity, and a group of one dozen or more upon mass of fat overlying adhesions between tip of left lobe of liver and spleen.

Appendix normal. Mesenteric lymph nodes normal.

Pleural cavity.—Moderate slender adhesions over left front. Surface otherwise normal. No increase of fluid. Right cavity effaced by delicate adhesions, sparing only right apex.

Pericardial cavity.—Slight increase of clear fluid.



Nov. 6. Failure has been progressive, and, in last two days, rapid. Retention of nourishment impossible. Almost constant nausea and vomiting. Wound still discharges freely. Patient obviously moribund.

Death occurred on this date (thirty-third day after admission and ninth after operation).

AUTOPSY.

The autopsy was performed on Nov. 7 by Dr. E. E. Southard of the Pathological Department of the hospital, and the records are available through the courtesy of Dr. F. B. Mallory.

Autopsy fourteen hours postmortem.

Well developed, well nourished white female; rigor; lividity. Operation wound in left lumbar region, below and parallel with last rib, 8 cm. in length, with gray-green disintegrated mass flecked with dark hemorrhagic areas, lying at the bottom

Two milk patches, irregular, with an average diameter of two centimeters upon anterior surface of heart. Similar smaller areas slightly elevated at base of aorta. Epicardium otherwise normal. Considerable sub-epicardial fat.

Heart (weight 260 gms.).—Both chambers filled with dark elastic (postmortem) clot; myocardium normal; no intrafibrillar fat in frozen section. Valves normal except mitral, which shows slightly elevated yellowish areas next to free border.

Lungs.—Voluminous, crepitant. Moderately anthracotic throughout. Very slight hypostatic congestion of dependent regions. Bronchi filled with greenish-brown mucus.

Spleen (weight 85 gms.).—Capsule normal. On section surface red, somewhat translucent, very slightly pulpy, with evident trabeculae and Malpighian bodies doubtfully made out.

Gastrointestinal tract.—Mucosa and muscularis normal throughout. Sub-peritoneally, the duo-

denum shows two or three miliary or slightly larger yellowish nodules. Bile papilla patent.

Pancreas.—The region of the pancreas is occupied by a grumous greenish-gray to black mass, in which the only recognizable element consists of fibrous strands, presumably remnants of interlobular pancreatic tissue. The mass is throughout retroperitoneal and has not burst into lesser peritoneal cavity, although rupture is readily brought about by postmortem manipulation. In a few places there are collections of more fluid character. Smears from various regions show no organisms or recognizable cellular elements. The lower portion of the head of the pancreas appears normal. Wirsung's duct can be demonstrated, and contains no stones. This transverse necrotic mass is continuous inferiorly and to the left with similar, perhaps more hemorrhagic material which surrounds the kidney, approaches the bottom of the operative wound and has infiltrated the left retroperitoneal region as far as the left iliac vein and the muscular mass superior to the brim of the pelvis. The surface of lesser peritoneal cavity anterior to necrotic mass shows several slightly raised yellowish nodules from $\frac{1}{4}$ to $\frac{1}{2}$ cm. in diameter, usually several centimeters apart. The relatively normal pancreas at the head shows similar spherules of necrosis. The inferior surface of liver, the superior surface of the mesogaster and the inner surface of the spleen are walled off from the necrotic mass by nothing more than a pale, thin layer of delicate fibrous tissue. The splenic flexure of the colon is not involved in the necrotic process, and only the most posterior portion of its mesentery has been infiltrated.

Liver (weight 1,700 gms.).—Moderately firm and gray-red with hint of yellow, with lighter areas in the reddish mottled field; the centers of pale areas sometimes show slight foramina—the central veins.

Gall bladder.—Pale from thin investment of fibrous tissue. Its ducts are patent, the common duct somewhat dilated. Two mulberry stones of a grayish-yellow color, somewhat smaller than cherries, are found in the gall bladder. No stone or sign of stones in either duct. Bile thick, yellowish green.

Kidneys (weight 365 gms.).—Left kidney: capsule strips with some difficulty, leaving a gray-red surface with red points corresponding to glomeruli. On section the markings can be made out but are indistinct, and the cortex shows a few miliary, irregularly scattered paler areas supporting fat or cloudy swelling. Fresh examination shows very slight intra-epithelial fat. Pelvis smooth, pale, without abnormal contents. Right kidney: Capsule strips readily, markings distinct. Kidney as a whole looks redder than the left. No intra-epithelial fat. Pelvis normal.

Adrenals.—Left adrenal necrosed and unrecognizable. Right adrenal normal. Bladder and genitalia normal.

Aorta.—Shows transverse atheroma above sinuses of Valsalva, and a few narrow, slightly raised yellowish areas down the arch parallel with major axis.

ANATOMICAL DIAGNOSES.

Necrosis of body and chief portion of head of pancreas.

Necrosis of left adrenal.

Necrotic mass in entire left retroperitoneal (perinephric) region, but not involving renal substance.

Fat necrosis of the peritoneum.

Hepatic congestion.

Mitral atheroma.

Aortic atheroma.

Chronic pericarditis (milk patches).

Chronic adhesive pleuritis, bilateral.

Operation wound.

Localized peritonitis opposite wound.

Cultures, negative.

MICROSCOPICAL EXAMINATION.

Liver.—A fairly coarse vacuolation of varying diameter but in many cases as broad as a cell-cord, prefers the outer third of the lobule. The epithelium is everywhere granular. The interlobular tissue surrounding certain capillaries, and a few focal areas where the fatty transformation is at its height, show a good many polynuclear leucocytes. In places vacuoles in cells contain hyaline globules.

Lung.—Bronchi well preserved. Peribronchial anthracosis.

Kidney.—Epithelium swollen and granular.

Heart.—Pigment in moderate amount.

Pancreas.—Portion from normal-seeming head of pancreas (*v. gross* description) shows some fairly normal lobules, between which are comparatively wide reaches of interlobular tissue, into which masses of blood have been effused. In places the connective tissue nuclei remain or may be reinforced by lymphoid nuclei; but elsewhere the interlobular tissue may be represented by granular eosinophilic debris, with linear spaces once occupied by crystals. In one place fat tissue is well preserved.

Spleen.—Trabeculae and Malpighian bodies normal. The chief constituents of the pulp are evenly scattered lymphoid cells and blood globules. Plasma cells are prominent; and almost as many polynuclear leucocytes appear on closer search.

REMARKS.

Attention is especially directed to the following points:

(1) The previous existence of two attacks, presumably due to gall-stones, the connection of which with a subsequent pancreatitis is rendered probable by constantly accumulating evidence.

(2) The extension of the fat necrosis towards the left adrenal and kidney, emphasizing the value of posterior drainage in such cases.

(3) The possible importance of the destruction of the adrenal in producing the fatal issue.

(4) The negative results of bacteriological examination in extensive necrosis of the pancreas and fat tissue.

CEREBRAL SYPHILIS.¹

BY ALBERT E. BROWNRIGG, M.D.,

Superintendent Highland Spring Sanatorium, Nashua, N. H.

THAT syphilis may cause severe disturbance of the internal organs is a comparatively modern idea. Most of the earlier writers ascribed the associated nervous symptoms rather to the effects of treatment than to specific organic changes. They devoted their whole attention to describing the external ap-

¹ Read before the Nashua, N. H., Medical Society.

pearances of the disease, though there were some who mention the occurrence of "internal pustules" and of the rising of "syphilitic vapors" to the brain.

Ballonius, in the early part of the seventeenth century, was the first to definitely describe syphilitic gumma of the brain. But postmortem examinations were rare, and so it is not surprising to find that Hunter in 1787 but expressed the prevailing opinion of his time when he taught that the internal organs and especially the brain could not be affected with syphilis.

Schutzemberger, in 1850, published the results of his studies on cerebral syphilis, and directed general attention to this subject, which Virchow and other pathologists soon elaborated with their accumulated data from the postmortem table. So fascinating and prolific did this topic become, that a host of investigators made it their special field, and within the last decades it has been brought from its former obscurity to one of the most clearly recognized and definite of brain affections.

ETIOLOGY.

Why syphilis should attack the central nervous system in some and not in others similarly infected has caused much discussion.

Age, sex, environment and nutrition would seem not to be determining factors in predisposing to special lesions of the nervous system. It used to be thought that the use of mercury tended to inflammation and degeneration of the brain, and that consequently those cases that were vigorously treated with mercurials were more apt to have syphilitic brain disease. This theory was not well borne out by clinical facts and, besides, Kussmaul and others have clearly proved that the degeneration from mercury is of an entirely different anatomical character.

Virchow first called attention to the undoubted fact that the localization of syphilitic lesions in the skin, bones, etc., is often determined by external injuries and accidents. If this is true of the tissues in general, it would seem to afford a reason why those cases in which the nervous system is subjected to excessive work, worry, shock, or irritation from intoxicants are the ones most likely to have cerebral lesions supervene. For similar reasons, we can understand that persons inheriting a neurotic constitution would thus afford a vulnerable point to the inroads of the poisonous principle, and it is a clinical fact that such persons are particularly liable to have lesions develop in the nervous system comparatively early in the disease.

PATHOLOGY.

To intelligently comprehend the variety but essential unity of the cerebral lesions of syphilis, it must be borne in mind that they are all essentially inflammatory in character. It is generally conceded that syphilis is due to infection with a specific microbe, and the result of its growth in the nervous system, as elsewhere, is a peculiar form of exudative inflammation. The chief seat of its activity is in the walls of the cerebral blood vessels, with consequent arteritis and impairment of nutrition of the brain tissue beyond the lesion. This leads to localized edemas and ischemias, areas of softening and manifold impairment of function.

Associated with this inflammatory reaction there exists a peculiar exudation or infiltration about the affected vessels. These infiltrated areas are apt to be distinctly localized and are called gummata. They sometimes appear as small aneurism-like swellings upon the periphery of the vessels (gummatous periarteritis), but may grow to quite large tumor-like proportions and become broken down in the center. Sometimes, as often at the base of the brain, this exudation may be more diffuse and involve pretty generally the vessels of the meninges of the floor of the cranium, though they are more rarely seen in that over the vertex (gummatous meningitis).

Besides these two very distinctive lesions of syphilis, we commonly have associated therewith a proliferation of the subendothelial lining of the vessels which may seriously encroach upon or even wholly obliterate their lumina. This *obliterative endarteritis* is not peculiar to syphilis, but a very common result of its invasion.

The whole process then is due to the irritating effects of the syphilitic microbe, and the gummata are but secondary products of the inflammation, much as pus is the product of the invasion of the tissues by the ordinary cocci.

Besides these direct and primary lesions of the brain due to syphilis, there are two degenerative diseases chiefly affecting the nerve cells of the brain which are most commonly produced by the remote effects of the syphilitic poison in the blood. They generally come on after the patient has been apparently cured of all syphilitic symptoms and are thought to be produced by the action of ptomaines in the blood rather than to the activity of the microbe itself. They are generally spoken of as the post-syphilitic brain degenerations and include clinically the diseases known as locomotor ataxia and paresis. The scope of this paper, however, will not allow of but a passing reference to these last two important and common brain affections.

SYMPTOMATOLOGY AND COURSE.

There are so many slight variations in the symptoms and their combinations that it is hard to form a mental picture of the disease type merely by mentioning *seriatim* the symptoms that *may* occur. Perhaps it will be better to review in brief a clear case of the affection which came under our care within the last year, and which presented nearly all the classical symptoms in their usual order.

E. W. was born with a silver spoon in his mouth, and early in life was fostered with especial care on account of a neurotic tendency in the family. This spoiling process but tended to increase this natural tendency in the child who, though soon well educated and traveled, became wilful and wayward, and could not deny himself anything that appealed to his appetite or fancy. While a student abroad he formed many *liaisons*, and, 't was whispered, had a wife in England, France and in Germany. Six years ago he met his death by seducing what he supposed to be a vestal virgin from one of the shrines in Japan. From her he contracted syphilis. He took treatment from leading specialists, generally selecting that form proposed that was the easiest. He also took special "postgraduate courses," so to speak, at some of the baths in Germany. All outward

evidences of the affection disappeared, and on the outbreak of the Spanish War he enlisted and went through the hardships of a year's campaign in the Philippines. This evidently acted as an exhausting and hastening factor, for a short time after returning home he was taken with gradually increasing neuralgic pains in his head, especially over the vertex and just above, and in, the eyes. These pains were very persistent and did not react well to treatment. Besides the inability to use his eyes on account of the pain, he found his eyesight rapidly failing, and took to strong glasses, which but partially corrected the defect.

Within a fortnight of the onset of symptoms he grew so bad that his father took him to a sanatorium near Boston. This, however, not proving satisfactory he was removed to a second. While at the latter place, he suddenly had a shock with partial paralysis of the left side and ptosis of the right eyelid. This grew better in a few days and he was sent to the Highland Spring Sanatorium in October, 1901, about one month after the first onset of symptoms.

On entrance he appeared fairly well nourished and presentable, but acted somewhat as if slightly intoxicated. His gait was unsteady, shuffling and at times markedly ataxic. He dragged his left foot more than his right; knee jerks were slightly diminished, ankle clonus not present; the eyes reacted both to light and accommodation, and Romberg's test was negative. There was a marked iodide eruption on the skin, as evidence of recent vigorous treatment. His hand grasp was weaker than normal. He wandered about, taking but little interest in conversation, as if in a brown study, made irrelevant remarks and appeared half asleep. If aroused, however, by vigorous questioning, he would brighten up and show nearly normal intelligence and judgment on nearly any topic, with evidently no serious impairment of memory for the distant past. Of recent events he was not so sure and sometimes entirely at fault. He complained of a nearly constant headache, and realized somewhat the difficulty he experienced in making the finer movements with his hands, as in buttoning his clothes or in writing. He fumbled everything he touched from lack of accurate sensations and co-ordination rather than from definite tremor of the muscles. His appetite and digestion were good. Occasionally he would suddenly become nauseated and refuse a meal, or vomit what he had eaten without much nausea.

He improved somewhat for a fortnight and then began to show more serious mental defects. He became untidy in his habits, more forgetful and careless, and then so confused as to be definitely deluded. He complained of a peculiar sensation in his head which made him think he was on a steamer at sea, and he would move in his seat on the piazza as if righting himself to the pitch of the vessel and perhaps startle every one present by a question as to how soon would we all reach Liverpool at this rate of speed. Thus a few delusions and hallucinations became perceptible, probably from transitory circulatory disturbances in the brain. They were never very marked and not at all troublesome. His speech all along had grown thick and inaccurate in expression, drawing, with the occasional elision of

several words at the end of a sentence as if he had changed the current of his thoughts and forgot what he was going to say. For days at a time he would be very sleepy and rouse only for food. Again, at other times, he would have abnormal thirst and drink large quantities of water, though it was cool weather. This was likely to be accompanied by marked polyuria.

On Nov. 10 he had another shock which caused complete paralysis and coma. His family physician, brought up in consultation, pronounced it apoplexy and refuted our opinion and said he would not live twenty-four hours, certainly not one week, so complete was the paralysis which involved even the nerves of the forehead. He lay thus for several days, and we had to resort to tube feeding. He gradually grew stronger, although never after was he able to leave his bed except to lie on a reclining chair.

His special attendant had to care for him as for a helpless child, although the paralysis passed away from the right side completely and to a great extent from the left. There still remained on the left more or less spastic rigidity. He developed bilateral bed sores, and in fact every area of pressure soon became broken down and would not heal. He could understand fairly well, but his mind was weak, and gradually he failed to recognize members of his own family, became slowly very much demented, and finally died after an attack of a shock-like character, with depression of the heart, on March 12, 1902, just six months after the onset of symptoms.

At autopsy the brain appeared somewhat softer than normal. The dura and pia were slightly thickened and more opaque over the base and in small patches over the vertex, and the arteries showed some general thickening with sclerotic patches. On section the corpus striatum presented a peculiarly soft, yellowish, degenerated appearance over an area on each side larger than a walnut and corresponding to the area of supply of the middle cerebral artery. Under the microscope the brain tissue in these areas was plainly in process of fatty degeneration with destruction of the medullary sheathes. The walls of the finer vessels were much thickened and the channels in places nearly occluded. Evidently the essential cause of the fatty degeneration was the poor blood supply afforded by the terminals of the middle cerebral artery. No definite gummata were found. The meningitis of the base and vertex probably accounted for the headache and cerebral nerve palsies, while the hemiplegias were probably due to acute congestions or edemas of the brain substance, consequent upon some new occlusion of an arterial branch.

DIAGNOSIS.

The diagnosis of cerebral syphilis often presents very great difficulty from the almost innumerable series of combinations of functional impairment that may be complained of. Indeed, it is not always possible at a first examination, or even on several, to be certain of the localization of the principal lesions on account of the varying blood supply and the rapid changes of the symptom groups. There are no pathognomonic symptoms or group of symp-

toms. Their general course and variety help us just as much as the individual symptoms themselves.

The chief points that help to a suspicion of the disease are :

- (1) Headache and vertigo.
- (2) Nausea and vomiting.
- (3) Optic neuritis.
- (4) Cranial nerve palsies or paralyses.
- (5) Apoplectiform attacks, or more gradual attacks of somnolence or coma, with partial hemiplegia.
- (6) Irritability and general mental failure.
- (7) Polyuria and polydipsia.
- (8) Marked remittent character to all the symptoms and their changeability.

The chief danger lies in overlooking a persistent headache, or other single symptom in an otherwise apparently healthy patient until some serious mishap, as hemiplegia or organic change, like optic neuritis, supervenes. Very many of these cases have come from the best practitioners and even specialists, and have been treated for a long time for some defect in the secretion of hydrochloric acid in the stomach, or lack of motility of the small intestine, which has, they think, caused all the headache and nausea and dizziness. The character and grouping of the symptoms, not their mere presence or absence, is an important point. The usual time of onset is about the third year after primary infection, and because more males than females contract syphilis, nervous syphilis occurs seven times more often in men than in women.

As first observed by Lancereux, definite localized brain syphilis may be noticeable by the appearance of headache and facial paralysis and optic neuritis as early as the first month after the primary chancre. In such rare cases, anti-syphilitic treatment is apt to be more successful and the general prognosis far more favorable than in others where the brain symptoms come on in the late stages of the disease. [Since writing the above a subsequent similar case showed marked facial paralysis on both sides only *four days* after the first appearance of the secondary eruptions and before they had become general over the body. In less than three months under the usual rigorous measures, the paralysis and other associated nervous and skin symptoms had disappeared, except a slight remaining weakness in the muscles of the right cheek.] Many cases in the late periods run a similar course to that of true general paralysis, from which it is hard to distinguish them.

PROGNOSIS.

As before stated, those cases occurring early in the course of the general systemic infection offer usually the best chance for recovery, which may be complete or partial, according to the amount of brain tissue destroyed. If there has been hemiplegia, with much cerebral degeneration, some of the results will ever after remain. If the symptoms are arrested when simply caused by pressure from exudation about a nerve or nerve center, nearly complete recovery may be looked for. In the later cases, in which the lesions include a more chronic arterial change and gradually lessening blood supply to the affected area, the results are less encour-

aging, although still more hopeful than for other forms of intracranial new growths. The fatal cases usually live from six months to three years. The duration depends, of course, considerably on the special location of the principal lesions.

TREATMENT.

As a prophylactic against inducing the disease to gain a more certain foothold on the nervous system, it is wise to warn all recently infected syphilitics to "take life easier" than usual, as part of their medical treatment, to avoid alcoholic and other excesses, and especially worry and mental strain. On account of the undoubted danger of cerebral involvement, even in the early "secondary" stages, it is safest to pursue the mixed treatment almost from the start, and even after all external signs of the disease have disappeared, to have the patient take regular doses of iodide of potassium up to the end of the third year. Indeed, special care should be exercised during this third year, as it is then that the majority of the cerebral cases first define themselves.

When undoubted cerebral symptoms occur, it seems the general consensus of the best opinions that iodide of potassium is our chief mainstay, and that to secure any very definite results very large doses have to be administered, even to the utmost limits of their peculiar tolerance to this drug. No definite maximum dosage can be fixed upon. Some have taken as high as 1,500 grains a day, in divided doses, with apparent benefit. Usually considerably smaller doses will suffice, and marked remission of the symptoms and sometimes very remarkable and startlingly rapid recoveries follow. In other cases, as in the one cited above, no apparent hindrance to the disease process can be obtained, and I have often thought that in these the iodide hastened the degeneration by interference with the assimilation of food. The unsuccessful cases belong especially to those occurring some years after the initial lesion.

Clinical Department.

THE IMPORTANCE OF CAREFUL EXAMINATION AND FREQUENT CULTURES IN DOUBTFUL THROAT CASES.

BY W. P. COUES, M.D., BOSTON,

Agent, Board of Health.

THE following case well illustrates the subject of this note: Mr. S. P. D. was seen the evening of Jan. 11, 1902. Three days before he began to feel slight sore throat, not sufficient to keep him from his work. On inquiry it was learned that the patient had seen a little child on Christmas Day who subsequently, about two weeks before I saw my patient, developed diphtheria. Other than this the past history was unimportant.

Examination showed the pharynx uniformly red-den, the tonsils somewhat swollen, and some edema of the uvula; there was no membrane visible. The general condition of the patient was good.

Jan. 12. The appearance of the throat on

superficial inspection was the same, but on tipping up the uvula with a throat stick there was seen on its posterior surface a triangular piece of membrane the size of an almond. A culture was taken and 4,000 units of the State Board antitoxin given, and the patient isolated. A positive report was not obtained until the third culture.

The membrane remained confined to the posterior surface of the uvula. There was very slight constitutional disturbance. The patient was sent later to the Boston City Hospital, and made a good recovery.

The points of interest were these: The membrane was confined entirely to the posterior surface of the uvula. Three cultures were taken before a positive result was obtained.

In closing I cannot do better than to quote a few of the rules laid down by Dr. Fussell¹ in his admirable article on diphtheria.

"(1) Always make a culture in throat cases; diphtheria cannot be diagnosed without it.

"(2) When called to see a case of sore throat which is of doubtful character give antitoxin at once and make the diagnosis by culture afterward.

"(3) Always give a large dose, from 2,000 to 4,000 units in the writer's hands has proved sufficient, but in desperate cases much larger doses may be used, as proved by the Boston experience."

Medical Progress.

REPORT OF PROGRESS IN ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D., AND R. SOUTTER, M.D.

[Continued from No. 3, p. 67.]

PARALYSIS.

LE BRETON¹ employs traction rather than tenotomy or myotomy in the contractures of infantile paralysis. But in cerebral paralysis tenotomy and myotomy are of great service in simplifying treatment, and traction is of no service. He performs these operations in clubfoot, clubhand, congenital and acquired torticollis, severe psoas contraction; in Pott's disease, and in long standing hysterical contractions; in pseudo-muscular hypertrophy, in the later stages of the paralysis; in Friedrich's ataxia; and in post-typhoidal contractions.

Arnold² recommends a board apparatus, sliding horizontally, arranged to give horizontal motions, with or without resistance as a means of increasing power of a paralyzed extremity. Useful in cases with very little power.

Stadilman³ reports a case, of six years' duration, with inability to stand or walk, from ataxic paralysis. By special exercises and manipulations the ataxic movements disappeared in three months; the paralysis had decreased, and the child was able to stand and walk.

Gibney⁴ reports the history of tendon transplantation as performed at the Hospital for Ruptured and Cripples in New York. The first operation was done July, 1896.

The operations, after treatment, and cases in the hospital are reported: Twenty-four cases of equinovagis, five of valgus, 19 of equino-varus, 12 of equinus, three of calcaneus, 10 of hemiplegic wrist-drop, five of dangle leg, one of congenital thumb. There are also two long tabulated lists, one containing the details of tendon transplantations, the other, astragalectomies, arthrodesis cases and transplantations. Preparatory treatment should always be begun before the operation.

Hoffa⁵ states that the prognosis in paralytical contractures is better than in congenital. After correction, he uses plaster for many weeks. Apparatus or arthrodesis is used to stiffen the joint, and, better still, tendon transplantation. There is a description of these different methods given in detail. How the new power is induced in the force-giving muscle has not yet been decided.

In⁶ made experiments on cats and dogs with various tendon transplantations. The tendons were later examined histologically. He reports also an examination of one human transplantation a year after operation. In a few weeks after operation, there is a new formation of young tendon bundles. This is delayed by infection, or if there is hemorrhage in the operation. For months the new formation process goes on. Slight over-correction must be maintained a long time after the wound has healed.

From a review of the literature, and from the author's personal experience, Townsend⁷ of New York considers that there are great possibilities in tendon transplantation for the relief of paralytic deformities. From the nature of the cases it is not desirable to lay down rules as to the particular operation for given cases, for each case requires separate consideration. The after treatment is most important, especially in cases affecting the lower extremity. A thorough knowledge of the different kinds of braces is almost essential. Contracted tendons should never be absolutely divided, but they should be lengthened, for they may become useful later.

Vulpinus,⁸ in a treatise on severe paralytic conditions, reports the cases of six patients who were unable to walk or stand, and who were treated by apparatus. No specific treatment could be advised for all, as each required apparatus peculiarly adapted to the deformity of the case, and much ingenuity was often required. All were able to walk after treatment.

TENDON TRANSPLANTATION.

Waterman⁹ gives the history of tendon transplantation, sketches the symptomatology and the diagnosis, and gives indications for operation, its technique and results. Although Nicoladoni introduced the operation in 1881, it had been known a century ago.

¹ The Value of Diphtheria Antitoxin, by M. Howard Fussell, Phila. Med. Journ., Oct., 1902.

² New York Med. Journ., lxxvi, No. 7.

³ New York Med. Journ., Aug. 16, 1902.

⁴ Bull. General de Therap., Nov. 23, 1901.

⁵ New York Ac. Med., May 20, 1902.

⁶ Zeit f. diät und Phys. Therap., 1902.

⁷ Münch Med. Woch., 1901, 51.

⁸ New York Ac. of Med., May 20, 1902.

⁹ Zettschrift, 1902.

¹⁰ Med. News, July 12, 1902.

Waterman recommends stretching the tendons before transplantation to have them in a condition of normal relaxation. It is best to use the button-hole method. Suture should be made with silk or kangaroo tendon.

White¹⁰ reports eleven cases of tendon transplantation, and suggests using massage to strengthen the muscles for some time previous to operation. There is a description of the usual technique of the operation. He notices an increase in the size of the ankle joint in a short time after the transplantation.

Tubby¹¹ reports eleven cases, successfully treated, of calcaneo-valgus. The peroneus longus and the flexor hallucis longus were attached to the tendo-Achillis. He believes this to be a good use of the flexor longus hallucis, as it is of little use to the foot in walking, and the flexor brevis is sufficient to flex the great toe. In cases where the peroneus longus is used alone, Tubby splits it, sutures one half to the side of the Achilles, and passes the other half through the Achilles and sutures there. In three cases of spastic paralysis he strengthened the supinators and flexors of the forearm by transplantation of the flexors, thereby changing the promotor radii tires into a supinator.

Dane¹² makes a plea for early operation in calcaneo-valgus, namely, arthrodesis, instead of apparatus, which is heavy and checks the growth by constriction. Tendon transplantation is recommended for slight cases. The advantages of an early operation are as follows:

- (1) Expensive apparatus for years is avoided.
- (2) Success may be expected, since in early stages the bones are relatively normal in shape and articulation.
- (3) The tissues are in plastic activity in childhood and favorable for operation.
- (4) Lower limb statistics are not as much disturbed by operation as by apparatus.
- (5) The muscles are not compressed by apparatus if the operation is performed and the child exercises more fully.

Objections to early operation, are, — (1) Lack of union. (2) Injury to epiphysis. Neither are probable with the exercise of ordinary care.

Whitman.¹³ In paralytic talipes of calcaneus type the long arch of the foot is noticeable. This is due to the approximation of the anterior and posterior support by retraction of remaining muscles and adaptation and shortening of the other tissues.

(1) Willet's operation, (2) tendon transplantation, (3) arthrodesis, are the three operations worth considering. Willet's operation consists in dividing and shortening the tendo-Achillis sufficiently to hold the foot at right angles.

Tendon transplantation, Nicoladoni's operation, and two lateral peronei are inserted into the Achilles. It is palliative and of least value.

Arthrodesis is intended to establish a right angle ankylosis and to dispense with apparatus. The method recommended by Whitman is the removal of the astragalus, and all the above-mentioned procedures enter into the operation; that is, the opera-

tion of Whitman's might be called astragalectomy, arthrodesis, tendon shortening, tendon transplantation and backward displacement of the foot. The first and last are the most important parts.

ELEVATION OF THE SCAPULA.

Kansch¹⁴ reports five cases of congenital elevation of the scapula, with trapezius defect in three, and only part of the muscle in the other two. Massage, gymnastics, treatment by apparatus and transplantation of the rhomboids were successful.

Lamm¹⁵ reports his own and several other cases of high position of the scapula. Torticollis and resulting kyphosis and scoliosis were present in a few instances.

Joachismal found thirty-six cases, — two where the deformity was bilateral. No abnormality at birth was noted. In two the arm was turned behind the back. Bollon reports scanty liquor ammoniac in a case, and has noted that children with high scapulae sleep with arms behind the back. Other coincident congenital defects were found by Roger and Hutchinson; namely, an opening in the cervical and dorsal vertebrae; cartilaginous connection between the scapulae and vertebrae; enlarged scapulae, especially laterally congenital herniae, imperfect pectoral or trapezius muscles, congenital hip, torticollis.

Wachter¹⁶ reports forty-three cases from the literature and adds two of his own of high position of the shoulder-blades. He thinks the cause is congenital malformation and not mechanical. The normal spine of the scapula should be at the level of the third and fourth dorsal spine. Many congenital defects were found with the deformity.

Goldthwait and Painter¹⁷ report two cases of congenital elevation of the scapula. These were operated upon and with improvement. In one case the cause was similar to that of torticollis. The contracted muscles were largely replaced by fibrous tissue. The operation consisted of myotomies with re-attachment of some of the muscles. Recovery was uneventful.

In the second case there was a band attaching the upper angle of the scapula to the vertebra. This was excised. Both cases recovered uneventfully with a very good result as to function.

CARIES OF SCAPULA.

Délaup¹⁸ reports a case of extensive caries and necrosis of the scapula in a man twenty years old. The scapula was excised and the soft parts so attached to the clavicle as to have a useful arm without atrophy and thirty degrees of possible abduction from the side.

COXA VALGA.

Gangolphe¹⁹ describes the deformity of coxa valga with antero-posterior position of the neck, felt clinically, and confirmed the x-ray. The limb was held in the position of abduction and external rotation. Manclan reported cases of this deformity, but with other co-existent deformities, namely, spinal curve.

¹⁰ Brit. Med. Journ., 1901, 589.

¹¹ Brit. Med. Journ., 1901, 585.

¹² Am. Med., Aug. 16, 1902, p. 256.

¹³ Tr. Am. Orth. Assn., 1902.

¹⁴ Mittelsaus Grenzgel Med. and Chir., ix, 9-111, and Central. f. Chir., 1902, 22.

¹⁵ X. Zeitschrift Orth. Dis. Strambsbourg, 1901.

¹⁶ Discus., Strausbourg, 1901.

¹⁷ Trans. Am. Orth. Assn., 1902.

¹⁸ Orleans Parish Med. Soc., June, 1902.

¹⁹ Rev. Orth., July, 1902, 249.

The onset was with fever, and later the deformity developed.

Hofmeister reports a case beginning with a chill, fever and pain in the hip. The patient was kept in bed for ten days, and the pain and other symptoms disappeared.

GROWTH OF BONE.

Morin²⁰ reports on the growth of bone as studied by x-ray pictures. An x-ray picture of an embryo of two months was taken and a series of radiographs made from children at the ages of three years, three and a half, four, six, six and three quarters, and one from a child sixteen years old. The different parts of the skeleton are taken up separately and the changes noted in each at these different periods. Many measurements are given.

Taylor, H. L., reports a growth of bone in forty cases of bone disease of the knee, and concludes as follows:

(1) In first four years the affected leg is longer than the other. In adults and in the young, when the disease has lasted more than seven years, the limb is shorter.

(2) The femur is nearly always longer in the first four years, and the length of the limb is due to this bone.

(3) The tibia may be longer early but generally it is shorter, especially in old cases where the disease has subsided.

(4) In cases where the extremities are of the same length the femur will be found longer and the tibia shorter on the diseased side.

(5) The foot at the end of one year shows a difference in favor of the well side.

(6) The increase of length in the femur is at the expense of the foot and tibia, but at the end of a year all are found behind in growth.

ILIO-PSOAS BURSA.

Lund²¹ makes a report on the ilio-psoas tendon bursa as it occurred in eighteen subjects in the dissecting room. The bursa communicated with the joint by a free opening. Lund suggests this means of draining the joint. The bursa is reached by a vertical incision just below Poupart's, between the anterior crural nerve and the femoral artery.

KNEE JOINT.

H. W. Allingham, F. R. C. S.,²² reports fifty-nine cases of internal derangement of the knee, all operated upon. In these cases there was either locking of the joint or recurring weakness with pain and swelling. The causes as found by operation are summarized as follows:

(1) Semilunar cartilage, internal or external, split, loose, displaced or torn in one or both extremities; or trouble with the coronary ligament.

(2) Loose bodies in the joint.

(3) Torn or hypertrophied alar ligament or hypertrophied fringe of synovial membrane.

(4) Rheumatoid arthritis.

(5) No obvious derangement.

In general, operation is the most satisfactory treatment. Recovery was rapid; failure in a proportion of all serious cases is inevitable. There

was considerable trouble and delay in convalescence owing to profuse synovial secretion and to a tendency to stiffness in the joint.

W. E. Blodgett²³ refers to the auscultation of the knee-joint with a Bowles stethoscope which has a soft rubber cap over diaphragm. During the examination all movements are passive. The knee from extreme extension is flexed, then smoothly extended and flexed several times. The first movement up and down gives the most sounds. Three distinct sounds are heard and many combinations, — (1) snapping, creaking; (2) grating, coarser, rougher and less discrete than the first; (3) a decided squeak. The first and second groups of sounds are similar. The sounds increase with age.

Guentcheff²⁴ considers that a joint mouse is due to trauma and is liable to increase in size. Of the cases analyzed, four sixths were in the knee-joint and one sixth in the elbow; males more often affected than females. The body is of cartilaginous or bony origin. In rare cases fragments of ligaments have been found or sanguineous coagula. Beside foreign bodies, synovial fringes may cause mice in the knee; also they arise frequently from the pathological changes in arthritis deformans.

Lorenz²⁵ states that in ankylosis of the knee with deformity there will be found, after the disease has subsided, contraction of the posterior capsule wall and changes in the ligament. Apparatus usually causes no relief. In some cases Wolff's apparatus does relieve, but it takes too long in the more serious cases. *Redressment forcé* is too dangerous. Absolute bony ankylosis demands operation with incision and correction with the osteoclast. In this way least damage is done to the bones. Serious cases may take two hours or more. Stretching should be gradual and there should be slight over-correction. This procedure is less dangerous than excision.

HOT-AIR TREATMENT OF JOINTS.

Potts²⁶ has seen benefit from the use of hot-air treatment for ankylosed joints.

INSERTION OF METAL FILM TO CURE ANCHYLOSIS.

Puporac²⁷ re-establishes joint function in cases of ankylosis of the elbow by Chlrenisky's method. After separation of the bony parts a piece of metal magnesium was put between the surfaces. The functional result was not very good. Passive motion, electricity and massage were used. Passive motion was extremely painful; while complete motion was not restored, the patient was able to resume her work and was well satisfied.

Keetley²⁸ says that after erosion of a tubercular elbow, he prevented ankylosis by putting a thin gold plate in the joint. After two months it was removed.

HIP DISEASE.

Broca²⁹ has written three articles on hip disease with especial reference to the clinical condition and

²⁰ Rev. Ortho., Paris, July, 1902.

²¹ Boston Med. and Surg. Journ., Sept. 25, 1902.

²² Lancet, London, March, 1902.

²³ Boston Med. and Surg. Journ., cxlvi, 3.

²⁴ Rev. Med. Suisse, 174 et 416, 1901, Nos. 6 et 7.

²⁵ Zeitschrift Ortho., 1902.

²⁶ Therap. Gaz., Detroit, June, 1901.

²⁷ Wien. Klin. Woch., xv, 859, 1902.

²⁸ London, 1901, Brit. Med. Journ., II, 1657.

²⁹ Rev. Ortho., II, 4-2-59.

treatment. Non-tubercular hip disease is included. Coxitis is divided into suppurative and non-suppurative, operative and non-operative. His treatment is vigorous but conservative. He does not favor excision, but early drainage is indicated.

Dane³⁰ reports the amount of motion allowed with different hip splints, and points to the value of grasping the pelvis in order to obtain good fixation. In a splint which grasps the thorax with an arm, the jar on the hip is increased.

(1) The Taylor splint with one perineal band and three and one-half pounds of traction, allows 35° to 40° of motion in flexion.

(2) With unbearable traction, 15°.

(3) With three and a half pounds of traction and two perineal bands, 16° to 27°.

(4) The Dane splint with one band, 9° to 11°.

(5) With two bands, 6°.

(6) The Lovett splint allows even less.

Downs³¹ operates early in hip disease, especially when there is abscess. He uses the Doyen instrument, which enables him to remove all the disease in from ten to fifteen minutes. Excision is indicated if the head or neck are extensively diseased and when the epiphyseal line is involved, even if the head and neck are normal. The trochanter should be removed whenever excision of the head and neck is indicated.

La Ginchaqua³² has published sixteen cases of spontaneous dislocation of the hip in acute hip disease.

Archambaud³³ treats hip disease without immobilization. He reports 71 cases treated mechanically, using Hessing's apparatus with an auxiliary crutch.

König³⁴ has written extensively on 758 hip cases, 568 tubercular, 110 acute infectious, 30 gonorrheal, 22 arthritis deformans, 20 miscellaneous. Tubercular hip disease and infectious coxitis are described and compared. The latter is divided into three groups: synovial coxitis, osteo-coxitis and osteo-myelitis. Arthritis deformans of the hip is described as a distinct disease, in a short space.

Lance³⁵ describes juxta coxale disease. In 1,000 cases there were but 38 cases of tuberculosis of the pelvic bones without involvement of the joint. In early cases of abscess, with little or no limp, the coxalgia must have been secondary and the disease due to the pelvic bones. This Lance has often demonstrated by the x-ray.

Jonon³⁶ reports a case of dislocation of the hip in tubercular coxitis reduced successfully eighteen months later.

Lovett³⁷ reports on the value of traction and fixation alone, and decided in favor of traction. Both are often necessary to limit the motion well within what nature allows. For cases with 45° and over of motion in flexion, he recommends the ordinary hip splint; for cases with from 25° to 45° of motion in flexion, the Dane splint; for cases with 20° to 30° and less, the Lovett splint. This splint is for severe cases, and often they will not have to stay in bed when it is used.

Leroux³⁸ has had good success in the marine treatment of tubercular bones and joints.

Taylor³⁹ makes a report on 40,000 cases, 13,000 of tuberculosis, two fifths of the vertebrae, two-fifths hip, one-tenth knee. There is an elaborate treatise with statistics and tables.

Romineano and Bolinteano of Bucharest report a cinematograph study of the walk in hip disease. The report confirms what we are used to seeing.

CONGENITAL CLUBHAND.

Redard⁴⁰ of Paris performs the operation on club-hand in two parts: First, a subcutaneous section of the ulnar is made; then manual straightening and immobilization by plaster-of-Paris follows. In the second operation he removes the trapezoid fragments of the lower ulnar, and the separate bones are sutured. The hand is easily adducted. Two lines of silver wire keep the fragments in position. The whole is placed in position and the limb is held with plaster. In fifteen days massage is begun. He prefers operation for relief of deformity of the forearm and hand to apparatus.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF BOSTON.

MEETING of Nov. 18, 1902, Dr. J. G. Blake in the chair.

DR. J. RIDDLE GOFFE of New York, by invitation, presented a paper entitled

THE IMPROVED VAGINAL METHOD OF OPERATING FOR THE RELIEF OF PELVIC DISEASE IN WOMEN.

(See page 81 of the JOURNAL.)

DR. EDWARD REYNOLDS: Mr. President, It is somewhat difficult for me to speak upon this subject because the work we were privileged to see this afternoon has left my opinions in a somewhat chaotic state. I do not know whether I shall find that Dr. Goffe has affected my preconceived ideas a good deal or not at all. It seems to me that the keynote of success in surgery is the remembrance always, all the time, at every step, and at every operation, that the operation is done for the benefit of the patient. I have done a great deal of vaginal work in two limited lines, namely, operations to provide for the support of the uterus, and dealing with pus in the pelvis through the vagina.

I have believed, and do still believe, that radical work is better done through the abdominal incision. I told Dr. Goffe before I came here that I intended to speak very plainly, so far as my ideas went, upon what I have learned and seen to-day. He did three operations to-day. The first was a retroversion with thoroughly adherent appendages. Tying off was difficult, and he met with all the difficulties that we are all so familiar with, and I must confess that he perhaps met them as well by the vaginal route as they could be dealt with by the abdominal method; but I think any good operator could have dealt with that case through

³⁰ Trans. Am. Ortho. Assn., 1902.

³¹ Trans. Am. Ortho. Assn., 1902.

³² Paris, J. Rousset et Cie., 1901.

³³ Rev. Ortho., Paris, 1901.

³⁴ Die Specielle Tub. der Knochen und Gelenk, das Hüft Gelenk bearbeitet, von König.

³⁵ Rev. Ortho., Paris, 1901, 2 s. II, 441-76.

³⁶ Rev. Ortho., Paris, 1901.

³⁷ Tr. Am. Ortho. Assn., 1902.

³⁸ Cong. de Méd., Paris, xlii.

³⁹ New York Med. News, 81, No. 7, Aug. 16, 1902.

⁴⁰ Trans. Am. Ortho. Assn., 1902.

the abdominal route, and have done the work in not much more than half the time, and fully as well. The second case was a similar one with fewer adhesions, and I think he did that better and more quickly than it could have been done by the abdomen; and that case upset my ideas a good deal. In the third case the patient had been having a temperature, and was very sick. He removed radically the offending tube and ovary through the vagina, where I should have drained it by extra-peritoneal incision.

As I think the matter over carefully, it seems to me that in considering the operation to be done—that is, whether it is to be done by the vaginal route or by abdominal incision, the cosmetic issue should not be considered, but only what is the better and safer procedure; not what the patient prefers. As I look further at the indications and contra-indications for the vaginal route, it seems to me that asepsis in the vaginal route is much more difficult to obtain than by the abdominal route, but I have learned that after extensive operations by the vaginal route the patients show less shock, less digestive disturbance, and less disturbance of other functions, than after the same amount of trauma by the abdominal route. We must bear in mind that not only Dr. Goffe but other experienced operators have declared that they do not get infection by the vaginal route.

I do see, I think, one pretty clear indication for the use of the vaginal route, if the operations come out as well as they are said to do, and as it seems *a priori* that they may, and that is in plastic operations, especially cystocele. I shall probably feel bound to try the vaginal shortening of the round ligaments in connection with shortening the anterior wall for the class of cases where I have to do plastic operations, and add the correction of a displacement.

I must say that while I am not a bit converted as to the superiority of the vaginal route, I yet feel that I must think the matter over once more.

DR. W. H. BAKER: I think we all feel indebted to our friend, Dr. Goffe, for coming here and giving the society the benefit of his paper and his operations. It was certainly a very beautiful sight to see the facility with which Dr. Goffe brought the fundus down, and the readiness with which he did the operations at the Free Hospital for Women. I can see many advantages in using the vaginal incision. I did the first vaginal hysterectomy in this city about 1884. Since that time I have done a great deal of that work by the vagina, but as the years have gone on I have grown stronger and stronger in favor of the abdominal route, or the combined method. In malignant disease where the cervix is affected, I have used the vaginal route. After we have removed the cancerous uterus there is something wanting to prevent its recurrence. In the series of cases which I presented years ago I always followed the knife and scissors with the cautery. Seventeen years have passed away since those operations were done, and there has been no recurrence in many of the cases which I have been able to follow. The diagnosis was confirmed by the microscope. I am a strong believer in the efficacy of the cautery supplementary to the knife in cases of malignant disease, and

if that can be done as well by the abdominal method as by the vaginal method, why all right; but such is not the case, so I prefer the combined method in these cases.

I can see a great deal that is of advantage and practical in the anterior incision that Dr. Goffe uses.

In regard to myomectomies, inasmuch as myomas are naturally located in the body of the uterus and seldom in the cervix, I think we can remove them better through the abdominal incision than we can by the vaginal incision.

DR. WALTER L. BURRAGE: My only regret is that I was unable to see Dr. Goffe's technique this afternoon. In November, 1895, I read a paper before this society on operating by the vaginal route. Since then I have devoted myself more particularly to the posterior vaginal incision, and perhaps I have neglected the anterior vaginal incision, but I have done so on this account,—I think the posterior route permits better drainage, and I have felt disinclined to make the extensive separation of the bladder from its attachments, called for by the anterior route. My own experience has been that shortening the round ligaments by the abdominal route, according to Dr. Goffe's method, that is, stitching the round ligaments folded on themselves to the anterior face of the uterus, has not been very successful. I remember doing five cases of that sort about two years ago, and three of them were failures. Very likely I did not do them right, although I did them very carefully. Not having had success with shortening the round ligaments after this method by the abdominal route I have not felt like doing it by the vaginal route. There has been a question also about shortening the utero-sacral ligaments. I have shortened the utero-sacral ligaments by the vaginal route with success. I did it in a case of prolapse, and was gratified with the result, but I think it is a very difficult operation. I have found it necessary to divide the utero-sacral ligaments, especially in cases of retroposition with antelexion, more frequently than to shorten them. My view being that shortened utero-sacral ligaments are the cause of more trouble than lengthened ones. I do not think we have learned all there is to know as to the mechanics of retrodisplacements, and I think Dr. Goffe has taken a step in the right direction. I must say, however, that at present I feel that I can correct malpositions of the uterus better by the abdominal route, for I can see better.

Lately I have had great success with the operation devised by Dr. J. C. Webster of Chicago. He seizes the round ligaments about two inches away from the uterus, carries the folds through perforations in the broad ligaments below the utero-ovarian ligaments, and stitches them to the posterior surface of the uterus at about the region of the utero-sacral ligaments. In that way not only is the uterus raised up in the pelvis but also the ovaries and tubes. Often after the Alexander operation, and sometimes after suspensio uteri, the ovaries and tubes are left prolapsed. As I have said, I feel rather inclined toward the abdominal route in attacking these cases, because we can see more. I know Dr. Goffe has great skill in operating by the vaginal route and I can see advantages in the route, but my experience leads me more to the abdominal route.

DR. CHARLES M. GREEN: I have known of Dr. Goffe's work by the vaginal route before now, and I would like to express my great admiration of his skill. I have had no experience in operating by the vaginal route, but have done all my work by abdominal incision. The latter route seems to me more surgical; but in absence of personal experience with the vaginal route, my preference for the abdominal route may be based on prejudice rather than opinion.

The chief objections to the abdominal route seem to be that there is greater shock than attends operation by colpotomy, and that the abdominal scar is objectionable to many women. There is probably less shock by the vaginal route; but there is seldom any serious shock in skillful operation by the other method. There is, of course, some risk of hernia through an abdominal scar; but this risk is constantly diminishing with increased care and skill in closing abdominal incisions. The objection to an abdominal scar does not influence me in the slightest.

It evidently requires far greater skill to work successfully by the vaginal incision; and probably some operators who do very creditable work by the abdominal route could never acquire the technique of the vaginal method. It seems to me that, as Dr. Baker has said, every surgeon should use the route by which he can work with the greatest success.

However, we must not regard this question as settled. The time may yet come when the vaginal route will be a generally accepted surgical method for a large proportion of cases. Meanwhile, I wish heartily to congratulate Dr. Goffe on the admirably skillful work he is doing.

DR. F. B. HARRINGTON: In septic cases I prefer the vaginal route, as a general rule. I believe that the more critical the patient's condition, the safer this route becomes. The incision which I prefer is a vertical one in the median line through the vagina into the posterior cul-de-sac.

This incision can be enlarged by dilators. It does not jeopardize the ureters, and is accompanied by very little hemorrhage, which is often severe with a transverse incision. Tubes dilated with pus and separate abscess cavities may be opened and drained. I do not attempt extensive removal of diseased tissues. It is marvelous how great the repair of septic pelvic organs will be after thorough incision and drainage. In a number of instances I have seen pregnancy follow treatment by the vaginal route, when if operation had been done by the abdominal route, the tubes and ovaries would certainly have been removed, and sterility have resulted.

Dr. Goffe's experience, and the description of his method, has been very interesting and instructive to me. I shall be inclined to make greater trial of this route as a result.

DR. G. W. KAAN: I had the privilege of seeing Dr. Goffe operate, and was interested to see how much could be done through the vagina. Intra-abdominal operations upon the round ligaments to hold the uterus forward have not proven reliable, and I would not expect them to prove more so if done per vaginam. The good results obtained by Dr. Goffe must be due to his special technique. By his broad dissection of the anterior vaginal wall, and by

pushing up the bladder, he gains a wide healing surface which, when union is assured, helps to hold the fundus forward. Further than this, when he puts a gauze drain through the posterior cul-de-sac he gets a resulting cicatricial union by second intention, which in its contraction draws the cervix backward and upward.

As to cosmetic results, the curved incision, which later is covered with the new growth of hair, is as much to the purpose as the vaginal scar; moreover, it is a question whether these extensive dissections of the vaginal wall do not leave an element of weakness. I have now under my care a number of cases where the sole discomfort is in connection with the cicatrix of a vaginal operation.

As I saw Dr. Goffe's operations it seemed to me there was a much greater loss of blood than if done by the abdominal route.

While recognizing Dr. Goffe's ability and great dexterity in operating through the vagina, I feel that the route through the abdominal wall is the best for most operators.

DR. MALCOLM STORER: I can only say that some years ago, after a certain amount of experience with the vaginal method, I became discouraged, and since then have done almost everything by the abdominal route.

We must remember that there are many cases where the vaginal operation is called for. Success in the vaginal operations is perhaps more dependent on familiarity and experience than in abdominal. I feel that I must have this familiarity, and what I have seen of Dr. Goffe's work this afternoon leads me to feel that as I become more at home in the vaginal route, I shall find its field continually broadening,—as Dr. Goffe says.

I want to say just a word about the scar. I don't think Dr. Reynolds and Dr. Green have been quite fair about this. Many women do object to the scar. I can think of many women who are troubled a great deal about their scars, even when they are ideally inconspicuous from the surgeon's point of view. It seems to me if the patient does object to it, and if the surgeon is as able to do the operation by the vagina, it is well to allow her to choose.

DR. FRANK A. HIGGINS: I have been very glad of the opportunity to hear Dr. Goffe's paper on the vaginal route for operation. The part which interests me most is that relating to his operation for retroversion of the uterus. Although I have performed the operation of ventro-suspension for retroversion a good many times, I have never felt perfectly satisfied that it is the best operation, or that it is perfectly satisfactory as an operation. There are many cases, in which the uterus is large and heavy and sinking down in the pelvis, that ventro-suspension seems to be just the operation for, but for the small uterus in a patient likely to become pregnant, I am not entirely satisfied with it. I have done the vaginal operation for retroversion only once, but with an excellent result in that patient.

I think as the result of Dr. Goffe's paper and his visit to Boston, I shall try his operation for vaginal shortening of the round ligaments, and I hope with success.

DR. J. R. GOFFE: Mr. President and Gentlemen of the Boston Obstetrical Society,—I appreciate fully and value most highly the thoughtful consid-

eration you have given to my theme. I had no expectation of arousing any enthusiasm over this method as an active factor in your work; it is unreasonable to expect that among men so experienced and skilled in the technique of abdominal work. But I did indulge the hope that my presentation of the subject might appeal to some of you and perhaps induce you to widen the class of cases in which you find the method applicable in your practice. Dr. Reynolds has given you a most accurate report of the work done this afternoon. It is almost photographic in its faithfulness to the clinical picture presented, and in the fairness of his estimate of the work. The remote results will be embodied, I trust, in a later report.

The function of the round ligaments has been alluded to by one speaker, and in his reference to the experiment of cutting the round ligaments without producing displacement of the uterus there was a gracefully implied criticism of my use of the round ligaments to relieve displacement. My idea of the function of the round ligaments is that they limit the excursions of the fundus uteri. When the bladder fills, the fundus rises and approaches the promontory of the sacrum. When the bladder empties, the round ligaments (which are composed of muscular structure) contract and pull the fundus again to the front so that the intra-abdominal pressure will impinge upon its posterior face. In pregnancy the round ligaments have a very important function in keeping the fundus forward against the abdominal wall so that the intestines cannot get in front of it. They serve the purpose also, when artificially shortened, to keep the fundus to the front and in position till the more important structure of the utero-sacral ligaments can recover its sustaining power and do the work permanently.

Dr. Harrington in his remarks suggested the principle that underlies the vaginal work and to my mind makes it superior to the abdominal route. In cases of acute pelvic abscess he says his experience has convinced him that the operation of choice is vaginal section. Now why? Because he has found that such cases do not stand operation well and it is a far safer procedure for the patient to open through the vagina than through the abdomen. The same rule holds in patients emaciated and worn out from prolonged pelvic inflammation. Now if the vaginal section is so much freer from danger in this class of cases that it becomes a life-saving measure as contrasted with a fatal issue when laparotomy is done, it must be accepted as freer from depressing effect in all other conditions, and experience confirms this *a priori* conclusion. The shock is less, incomparably less, and so is the danger of subsequent peritonitis. Indeed, in all my vaginal work, I have not had a single case of general peritonitis, while prolonged operations involving intra-pelvic work and multiple procedures along the vaginal tract are borne without the least depression beyond that occasioned by the prolonged anesthesia. Many of the cases requiring intra-pelvic work also suffer from lacerations of the cervix and perineum and cystocele. What could be more systematic or logical than begin with the vaginal section, doing such conservative work upon the appendages as may be indicated, then shorten the

round ligaments for the relief of displacement, do a trachelorrhaphy and a colporrhaphy, and wind up with a perineorrhaphy? Such work can all be done without leaving the operating chair.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE TWELFTH ANNUAL MEETING,
HELD AT ST. JOSEPH, MO., DEC. 29 AND 30, 1902.

FIRST DAY. — MORNING SESSION.

The association convened in the Commercial Club Rooms, under the presidency of Dr. JAMES E. MOORE of Minneapolis, Minn.

AN ADDRESS OF WELCOME

was delivered by Dr. J. GEIGER of St. Joseph, Mo., which was responded to by the president.

Dr. C. H. MAYO of Rochester, Minn., presented a paper entitled,

EVOLUTION OF THE TREATMENT OF CANCER OF THE RECTUM.

Certain definite results are desired in operations upon cancer of the rectum, namely, permanent cure, low operative mortality and a controllable anus or its best substitute. These results are modified by location, stage of progress, and by the age and condition of the patient. Previous to 1870, operative treatment was almost limited to palliation and lumbar colostomy. From 1870 to 1880 there was a marked advance in all surgery. Drainage methods were developed. Kocher exposed the rectum by removal of the coccyx, and several perineal operations were advocated. From 1880 to 1890 the development of the germ theory revolutionized surgery, and this period was marked by antiseptics and drainage. More extensive perineal and vaginal operations were advocated, and Kraske made his great advance by resecting the sacrum. The modern surgical treatment is the block removal of the rectum, glands and gland tissue from below, in some cases, but more often by a combined abdominal and perineal method. Through an abdominal incision a low section of the sigmoid is made, this portion of the colon being saved as a fecal container, and the cut ends of the bowel inverted and closed by a circular suture, rendering the remainder of the operation aseptic. The rectum is separated laterally and below by a peritoneal incision and pushed down with the glands and fat by blunt dissection, the separation being carried as low as possible beneath the bladder, the remainder of its removal being completed through the perineum. The sigmoid is freed sufficiently to bring the cut end out of an inguinal McBurney muscle separation opening, the skin incision of which is one and one-half inches to one side, and to which the end of the sigmoid is sutured. The bowel is also sutured within the abdomen to prevent prolapse, and a pad compression of the skin-covered sigmoid loop gives a fairly controllable anus.

To sum up the main objections of the past, the author stated that we have:

(1) Ineffectual removal with local recurrence, so common in the perineal type.

(2) The extensive mutilating character of the Kraske before operative conditions were known.

(3) The frequent failure of all methods of union of proximal and distal portions of the bowel, which, when united with the destruction of the levator ani and internal sphincter, and anus saved, represented but one third of the controlling apparatus of the bowel.

(4) The frequent formation of stricture, either cicatricial or cancerous after operation, necessitating inguinal colostomy.

(5) The loss of the fecal container in straightening the sigmoid.

That sentiment, and not chance, has proven the main reason for continuing to place an uncontrollable anus in an inaccessible situation. The gain in the combined operation has been in a selection of the operation to the case, radical removal, *en masse*, with all glands, fat and connective tissue, or colostomy for palliation; the retention of the sigmoid as a fecal container; the peculiar formation of the anus, giving a fair control in an accessible situation.

DR. H. C. CROWELL of Kansas City, Mo., followed with a paper entitled

CARCINOMA UTERI.

Unless very early discovered, he believes that nothing is gained by hysterectomy for carcinoma of the cervix. Later operations may avail in carcinoma of the body of the uterus. The diagnosis should be confirmed by the microscope in the hands of a competent pathologist. The uterus must be freely movable, capable of being dragged down to the vulva. If not, it is quite probable that the disease has involved the utero-sacral ligaments and adjacent tissue, making an operation of doubtful utility. If the disease is clearly made out by touch, appearance and clinical history, it is rarely possible to secure a radical cure by hysterectomy, if the fatal termination is not accelerated. In cases well advanced, his individual experience leads him to believe that more days or months, as the case may be, are added to the life of the patient than by any attempt at extirpation, by cutting and scraping away the necrotic tissue, down to solid tissue, burning that surface with the thermo-cautery, and treating subsequently by touching the surface occasionally with 4% formalin. By this treatment disintegration is retarded, hemorrhage and discharges are checked, enabling the patient to recuperate sometimes to a remarkable degree. The suffering is lessened, and the patient is relieved of the shock and dangers attending more radical procedures. The essayist urged more frequent early examinations of parous women, who should be advised of the expediency of such examinations as a routine safeguard after the age of thirty-six.

These two papers were discussed jointly.

DR. M. L. HARRIS of Chicago pointed out the necessity of making a laparotomy previous to the operation in all cases in which the disease extends high and the surgeon is not perfectly sure from his examination that it is limited to the lower part of the bowel. His remarks had reference to the paper of Dr. Mayo. This preliminary laparotomy should be for three purposes: (1) For examination, in order to determine whether or not the case is operable; (2) to facilitate operation, provided one is

necessary. The surgeon could decide if it is a case for complete operation by the combined method.

(3) To perform a colostomy if the case is inoperable. He thinks colostomy is an extremely valuable operative procedure in many cases.

DR. HENRY T. BYFORD of Chicago thinks the author of the second paper, Dr. Crowell, is too pessimistic. He narrated the case of a woman upon whom he operated more than ten years ago. In this case cancer had involved the entire cervix. Both he and the friends of the patient thought she would surely die, but the woman was still alive, and has not had a recurrence. He said he could report a number of cases of carcinoma of the cervix that had recovered following operation.

DR. H. D. NILES of Salt Lake City, Utah, said he recently had a case in which he was in doubt as to whether the stricture of the bowel was syphilitic or malignant. He used such measures as were available, and was still in doubt. He thinks in such a case it would be wise to do a colostomy and at the same time explore parts of the bowel. An excellent result was obtained so far as the sphincter was concerned. The patient had excellent control of the bowels. The gridiron incision and the advisability of doing a colostomy when in doubt, are the points that impressed him as he listened to the paper of Dr. Mayo.

DR. A. C. BERNAYS of St. Louis, Mo., said he has had the opportunity of seeing Dr. Mayo perform the operation he had described, the case being one of very hard carcinoma, confined to the last portion of the rectum, about one inch above the sphincter. The operation, as executed by the Mayo brothers, was a beautiful piece of surgery, and any one who has the opportunity of seeing this operation done will hereafter perform it in preference to any other.

DR. D. S. FAIRCHILD, of Clinton, Iowa, stated that after having had some experience in operating for cancer of the rectum by the sacral route, and having had but one permanent recovery, he was interested in the combined operation described. He is thoroughly convinced that surgeons, after witnessing this method of operating, will conclude that it is the procedure which will be adopted hereafter.

DR. A. E. HALSTEAD of Chicago reported a case of

DISARTICULATION OF THE HIP FOR SARCOMA OF THE FEMUR,

after which he made some remarks upon the diagnosis and prognosis in sarcoma of the femur.

DR. B. B. DAVIS of Omaha, Neb., called attention to elevation of temperature in cases of sarcoma of the femur. Several years ago he had a case of sarcoma of the femur, his first diagnosis having been osteomyelitis of chronic form rather than sarcoma, simply because of the temperature at the time, but he soon found out his mistake. In consulting standard textbooks, he said no mention was made in regard to elevation of temperature in these cases. This was a symptom which should be remembered.

DR. JOHN P. BORD, of Omaha, Neb., mentioned a case of carcinoma of the neck of the femur. Six or eight months previously, a stationary engineer, forty-five years of age, while pursuing his occupa-

tion, sustained a fracture of the neck of the femur from slight violence. There was a history of alleged rheumatic pains or sciatica prior to this time. After his injury the patient was taken to his home, attended by other physicians, who saw him a number of times, and he was treated for his fracture, so that when the speaker saw him it was too late to do the man any good on account of marked cachexia.

While in a fleshy individual he thinks it would be impossible to differentiate this condition by ordinary manipulative methods, yet with the aid of the x-ray, in cases of fracture sustained from comparatively slight violence, the surgeon might be led to suspect the condition and secure the advantage of an x-ray examination to determine the early existence of the disease.

DR. WILLIAM JEPSON, of Sioux City, Iowa, mentioned six cases of sarcoma of the femur, two of which developed at the upper end of the femur, and were not subjected to operative intervention. In four the disease involved the lower end of the femur, one of which had begun directly in the tibia, involving the knee joint and then the femur, and the other three were of the periosteal type. Three of the four were subjected to amputation at the junction of the upper with the middle third; the other one was subjected to primary hip joint amputation. Of the three subjected to amputation through the thigh, two died; in other words, two of the three were subjected to secondary disarticulation of the femur at the hip joint. One of these two died; also one not subjected to this operation. Out of six cases there are only two living.

DR. HALSTEAD, in closing the discussion, said he has seen two cases of spontaneous fracture of the humerus with central sarcoma. Pathological fracture was the first evidence. In the case reported, of central giant-cell sarcoma, Coley's toxins were used for six months continuously, yet the tumor seemed to grow as fast as it did before their use. Patient was also treated by the x-ray for six months without any benefit. In all cases of sarcoma the use of Coley's toxins has not been followed by success.

DR. A. E. BENJAMIN, of Minneapolis, Minn., read a paper entitled

OBLIQUE INGUINAL HERNIA.

The author spoke of the treatment of hernia by the early practitioners, saying it was painful, unsatisfactory and harmful. The present method of operating for hernia, however, is a noted example of the evolution of surgery.

He said surgeons have reached a point in hernial operations where a permanent cure is quite certain, still there are too many methods and a larger percentage of relapses than we should have. Some of the causes of imperfect results were pointed out.

An operation that is not altogether new, but worthy of consideration, is as follows: The patient is prepared by having the parts shaved the morning of the operation. In doing so, infected areas or vesicles are avoided, which may result when the shaving is done the previous evening or before the parts have been thoroughly cleansed. The time intervening between the evening and morning of the operation favors a greater multiplication of micro-organisms. The bowels are emptied and subse-

quently kept free from gas accumulation, which lessens the internal pressure. An ordinary incision for a Bassini operation is made. The aponeurosis of the external oblique is slit up to a point opposite the internal ring. The fibers of the internal oblique and transversalis muscles are divided by blunt dissection, thus opening the inguinal canal. The internal oblique and transversalis muscles are found closely connected. They are not separated, but the aponeurosis of the external oblique is carefully and thoroughly removed from the internal oblique. The lower portion is dissected down to Poupart's ligament, and the transversalis separated from the peritoneum. Such careful dissection and positive identification of structures are an important aid in securing direct apposition and firm union. It corrects all defects of nature in this region. The cord is now raised and silkworm gut sutures introduced, passing through the skin, Poupart's ligament, internal oblique and transversalis. The loop is made on the lower side of the transversalis. The needle, re-entering the transversalis and internal oblique, passes through the skin to the outer and lower side of the cut near the point of entrance. From three to five sutures are similarly introduced. These sutures pull the internal oblique and transversalis below the shelving edge of Poupart's ligament, and are observed to make a firm barrier against any internal force. The sutures are then tied over rolls of sterilized gauze. The spermatic cord rests upon the internal oblique. The external oblique is then closed over the cord. Interrupted figure-of-eight sutures are introduced, bringing the external oblique in apposition with Poupart's ligament. This also approximates the skin, and the sutures are tied over a roll of sterilized gauze. The sutures are usually left two weeks.

The author drew the following conclusions from this operation:

- (1) There are no sutures for the tissues to absorb.
- (2) There is no additional culture media in which infectious micro-organisms may grow and cause deep abscesses.
- (3) There are no buried, non-absorbable sutures left to irritate the tissues and cause further trouble.
- (4) There is no necrosis from tight sutures, therefore few, if any, stitch abscesses.
- (5) The gauze rolls act as elastic cushions, which prevent scars from the sutures.
- (6) The operation completely closes the breach, and makes a firm wall.
- (7) All sutures, after serving their purpose, are removed, leaving only the natural supports.

FIRST DAY. — AFTERNOON SESSION.

DR. W. W. GRANT of Denver reported a case of

RUPTURE OF GALL BLADDER OR DUCT FROM VOMITING, WITH RUPTURE OF THE APPENDIX IN THE SAME PATIENT.

He also reported two recent cases of appendicitis because of the interest connected with drainage and phagocytosis. In connection with these cases, he states that he is satisfied of having saved some patients after peritoneal extravasation by the

liberal use of gauze for drainage. In abdominal operations drainage imperils the integrity of the abdominal wall, therefore predisposes to hernia. It should consequently be dispensed with as soon as possible. But in the enthusiasm for new theories and facts, in a justifiable belief in the efficacy of hyperleucocytosis, he believes it is not wise to discard hastily surgical procedures which have stood the test of abundant experience.

Dr. Grant closed his paper by reporting a case of acute yellow atrophy of the liver at length, which was accompanied with a report by the pathologist. Whether the condition is primarily a general infectious disease of a rare and unusual nature, or primarily a local infectious disease of the liver, is not known. The suggestion of an intestinal origin has no distinct foundation. The resemblance to phosphorus poisoning is striking, though differing in important particulars. While the urine of both may contain leucin and tyrosin, they are more constant in the former disease. Evidently the disease is rapidly diffused through the circulation, and future investigations will probably disclose a bacterial origin and nature.

Dr. B. B. DAVIS of Omaha, Neb., read a paper on

CHRONIC PANCREATITIS AND PANCREATIC CYST.

Two cases were reported, one of pancreatic cyst, the other chronic pancreatitis, both of which had previously been subjected to exploratory abdominal section, and the diagnosis of malignant disease of the pancreas made.

In discussing the etiology of pancreatitis, the author stated that infection was considered the determining factor in most cases, the infection being secondary to gall stones, cholecystitis, gastritis, duodenitis and zymotic diseases, particularly typhoid fever and influenza. It was thought probable that syphilis, alcoholism and general arteriosclerosis might also cause a small percentage of the cases.

In diagnosis, the clinical symptoms will have to be depended upon. Glycosuria, fatty stools and muscle fibers in the stools, which theoretically ought to be diagnostic factors in pancreatic disease, practically have usually been found absent. In cases in which glycosuria was present, destruction of the islands of Langerhans has been found to exist. In all cases in which infection is the causative factor, prolonged drainage of the gall bladder was recommended.

Dr. M. L. HARRIS emphasized the frequency with which stomach troubles preceded chronic pancreatitis. It is possible that stomach troubles, cases of ulcer of the duodenum, are undoubtedly instances of chronic pancreatitis, and may be the result of infection.

Dr. J. W. ANDREWS of Mankato, Minn., read a paper on

GUNSHOT WOUNDS OF THE STOMACH,

and reported a case of a boy eleven years of age, upon whom he had operated. The patient rallied from the shock, and did well for the first three days after the operation, when he began to fail, and died on the eighth day. A postmortem examination showed that death was from septic peritonitis.

(To be continued.)

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THE ESSENTIALS FOR SUCCESSFULLY TREATING TUBERCULOSIS.

It is well, from time to time, to pass in review the present state of our practical knowledge regarding tuberculosis. It may appear to some that we have not made very much advance since the original work of the late Dr. Henry I. Bowditch on the distribution of the disease and its relation to soil and moisture. The discovery of the tubercle bacillus later, by Koch, has naturally added largely to our knowledge of the disease from a scientific standpoint, but the treatment has assumed more and more the character advocated by Dr. Bowditch and his immediate successors. Certain points, however, seem worthy of attention at this time when the sanitarium treatment of the condition appears to be at the very height of its popularity. In the first place, however enlightened physicians may be on the subject, there is a very popular impression that successful treatment of the disease can be had only at certain places. It is unquestioned that Colorado and many localities in the West and South are more desirable than places nearer the seaboard, but it should not, therefore, be inferred that tuberculosis may not be treated with a large measure of success in almost any portion of the country. The establishment of sanatoria in very many states, and the success attending the treatment of patients at these various institutions, demonstrates beyond question that location is by no means the only element to be considered. This fact certain members at least of the profession have long been aware of. The laity is naturally slow to accept the newer position. Elevation above the sea level is another matter about which there has been a considerable degree of controversy. For example, in this State it has recently been very vigorously maintained that no new sanitarium should be built at a height

of less than a thousand feet above sea level, and this in spite of the fact that equally good results have been obtained very much below this level, as, for example, at Sharon as compared with Rutland. It may, therefore, at the present time be accepted that, although certain definite advantages result to persons suffering from tuberculosis by residence in high altitudes and long distances from the coast, it must, nevertheless, be acknowledged that the relative advantages of these regions have been overrated, and that most excellent results may be obtained very much nearer home.

The question of classification of patients suffering from consumption should be given far more attention in the future in order that some uniform standard may be established and just conclusions drawn from available statistics. This has been insisted upon by certain men prominent in the study of tuberculosis, and it is to be hoped their example may be followed by all who publish statistics on the subject. For example, the terms "cured," "arrested," "advanced," as applied to tuberculous persons, are to the ordinary mind absolutely vague and indefinite. If a uniform standard could be established under which each of these terms might have an absolutely definite meaning, much benefit to the cause of statistics would forthwith result. The significance of the various terms are given by Dr. V. Y. Bowditch as follows, in the recent report of the Sharon Sanitarium:

"The term 'incipient' is applied to cases in which the physical signs, such as changes in percussion or respiration, possibly a few *râles*, are confined to small areas, usually in one or both apices of the lungs, and in which only slight constitutional signs, such as fever, indigestion, or loss of strength are present.

"The term 'well-marked incipient' is applied to those who have larger areas of the lungs involved with similar constitutional symptoms.

"The term 'advanced' is applied to those in which the areas involved show more or less consolidation or even excavation of the lung tissue, accompanied by more or less fever and other constitutional symptoms.

"The term 'arrested' is applied to all cases in which cough and fever have disappeared, when the sputa, if present, show an absence of bacilli, the general symptoms and appearance being those of health when they leave the sanitarium.

"The term 'cured' is not used until many months after the disappearance of all active symptoms and when the patient has returned to ordinary conditions of life. Many of those discharged as 'arrested,' however, would, from their general condition, be with justice classed under the more favorable term."

It is, perhaps, not a matter of vital consequence exactly what nomenclature should be adopted, but it is unquestioned that public and professional interest in the subject is sufficiently widespread to demand a uniform standard of some sort. By this means alone can statistics be made of value in the work which is now before us of determining upon ways and means of caring for the various classes of tuberculous persons with which every community is provided.

The lessons, now becoming familiar to physicians, but which the laity still needs to have reiterated again and again by every means at our disposal, are that climate and location, important as they are, are far less essential to the well-being of the consumptive than general hygiene, good food and open air. Given a location on fairly high ground, with a sandy soil, and protected from the violence of north and east winds, the consumptive will do well, provided the most rigid personal hygiene be required, regarding food, sun and air. This is apparently what experience is teaching.

SALT STARVATION IN THE TREATMENT OF EPILEPSY.

THE dietetic treatment of disease in general is coming to have a more and more prominent place in therapeutics. The theories recently advanced regarding the possible etiological relationship of disorders of the digestive tract in relation to epilepsy have perhaps directed particular attention to problems of metabolism in this disease. However this may be, it seems to have been demonstrated that the chlorides are undesirable in persons suffering from epilepsy, and that the restriction of diet containing them is of positive benefit. A short paper, to which must be given weight on account of the wide experience of the author, Dr. L. Pierce Clark, formerly assistant physician at the Craig Colony, has recently appeared in the *New York Medical Journal*.

Dr. Clark calls attention to the fact that epileptics are usually extremely fond of table salt, and that many eat as much as 300 or 400 grs. a day, leading to a saturated condition of the body tissues with the chlorides. By giving less salt it is naturally easily possible to reduce the sum total of chlorides. It has also been found by animal experimentation that bromine can replace chlorine in body tissues, hence by withdrawal of salt and continual administration of bromides an organic bromide compound is formed which fulfills the physiological roll of chlorine and also acts as a sedative to the disease. The principle is not a new one, but particular attention from a practical

point of view has been drawn to it of late. It is furthermore found that the dosage of bromide may be very materially decreased in the salt starvation method. Particularly is this treatment to be recommended in severe so-called idiopathic cases requiring large doses, and hence in danger of intoxication. It is also of value in cases where bromide proves of little value in those totally intractable to the bromide salt and in chronic cases in which long-continued sedative action is necessary. It has been suggested, and is perfectly capable of being carried out, that sodium bromide should be substituted for table salt in the patient's food.

It is not maintained that this simple treatment should replace general hygienic measures for the relief of the condition, but it is Dr. Clark's opinion that the withdrawal of salt marks the greatest therapeutic advance in the treatment of epilepsy since the discovery of the bromides. Fortunately for the practical usefulness of the method it is inexpensive, easily carried out by the patient, and requires no elaborate instructions. Sufficient evidence is accumulated to make it altogether desirable that the withdrawal of salt should be insisted upon in all cases of so-called idiopathic epilepsy.

THE DECADENCE OF TYPEWRITING.

RECENT experiences force upon us the conviction that typewriting has not proved an absolutely un-mixed blessing to the human race. We would not for a moment disparage the merits of the "writing machine" as a very marvelous mechanical invention, but when placed in the hands of certain members of the human family, it becomes a veritable thorn in the flesh. Good typewriting, done by persons of intelligence and special training in the subjects of which they write, we need not discuss; its merits are self-evident. But the time has certainly come to enter a vigorous protest against the increasing amount of bad typewriting, done by persons who are unable or unwilling to spell correctly, who apparently know nothing of punctuation, paragraphing, or capitalization, and whose knowledge of technical terms is too limited to merit consideration. These factors, added to an evident carelessness in the mere mechanical execution of the work, has produced a variety of type-written copy which makes us long for the days when writers had time to express their thoughts in script, and took a certain pride in correct orthography. These days are, however, apparently past, with small hope of return. The hurry is too great to permit of care in such details, and the typewriter has undoubtedly finished the work of demoralization.

The conscienceless way in which manuscript is presented to us, and, we have no question, to others engaged in like pursuits, is worthy of serious investigation and persistent protest. Not long since we found it necessary to reject an entire report, because of its hopeless confusion of phraseology and neglect of the ordinary rules of grammatical construction and spelling. It was impossible to correct, and its evident inaccuracies rendered such an attempt, even, unadvisable. Such manuscripts mark the extreme of a perfectly apparent tendency. Expression, grammar, spelling and all the other details which go to make up acceptable English have suffered and are suffering at the hands of careless and imperfectly educated stenographers and typewriters.

A still greater responsibility rests with writers, who in an excess of confidence in their subordinates do not revise their manuscripts before sending them for publication. The result is that invariably errors and inaccuracies creep in which in spite of editing find their way, in part, into the final printed paper. That all this tendency to carelessness is increasing year by year there cannot be the slightest doubt. Whatever advantages in the way of economy of time modern methods of expressing one's ideas may have, they certainly do not conduce to the improvement of our medical literature either in form or quality.

After writing the foregoing we were glad to find a similar sentiment expressed in forcible language by our contemporary, the *New York Medical Journal*.

MEDICAL NOTES.

"THE KING'S SANITARIUM NUMBER." — The issue of the *London Lancet* for Jan. 31, 1903, is devoted to a consideration of sanatoria for tuberculosis. The three prize essays on the King's Sanitarium are published in full, written by Drs. Arthur Latham, F. J. Wethered and Egbert C. Morland. The essays discuss in great detail all matters pertaining to the establishment and maintenance of ideal sanatoria for consumption, and should be widely read by physicians generally and especially by those interested in the problems underlying the most economical and satisfactory methods for the treatment of tuberculosis.

PLAGUE AT MAZATLAN, MEXICO. — In spite of sanitary precautions and medical care the number of cases of plague at Mazatlan, Mexico, is said to be steadily increasing. The disease has also appeared at neighboring towns.

STREET-CAR COLDS.—The *Bulletin* of the Chicago Health Department makes the following comments on the evils of street cars: "‘Street-car colds’ are, in the experience of every physician in general practice, increasing with frightful rapidity. Pneumonia and bronchitis, as direct results, are endemic in every part of the city. Since the first of the year there has been a 22% increase in the deaths from these two diseases, and, as compared with the first ten days of 1902, the increase is a little more than 41%. Again the department urges that every able-bodied person shun the street cars, both surface and elevated, as far as possible. Especially should men, young and middle aged, walk rather than ride in them any reasonable distance. A brisk walk to his office would be vastly better for every business man than a ride in the mephitic, disease-saturated atmosphere of street cars."

ENNO SANDER PRIZE.—The Enno Sander Prize, of the Association of Military Surgeons of the United States for 1903, will be awarded to the author of the best essay on "The Differential Diagnosis of Typhoid Fever in Its Earliest Stages." The board of award will consist of Dr. Austin Flint of New York, Colonel Calvin DeWitt of the Army, and Prof. Victor C. Vaughan of Ann Arbor. Full information concerning the contest may be obtained from Major James Evelyn Pilcher, Carlisle, Pa., the secretary of the association.

THE JOURNAL OF INEBRIETY ENLARGED.—The *Bulletin*, a quarterly medical review, which has been published since 1892 by the American Medical Temperance Association, has been consolidated with the *Journal of Inebriety*. The latter journal, which first appeared in 1876 under the editorial care of Dr. T. D. Crothers of Hartford, Conn., was the first and is still the only medical periodical in the world devoted exclusively to the scientific study of the neuroses and psychoses of spirit and drug diseases.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Jan. 21, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 34, scarlatina 26, measles 6, typhoid fever 11, smallpox 5.

BURNING OF CONVALESCENT HOME OF CHILDREN'S HOSPITAL.—The Convalescents' Home of the Boston Children's Hospital was destroyed by fire Jan. 20, at a loss of \$25,000. At the time there were about fifty patients in the building, all of whom were removed safely.

BEQUEST TO ADDISON-GILBERT HOSPITAL.—Through the will of the late George R. Bradford of Gloucester, the Addison-Gilbert Hospital of that city receives \$10,000 for the purpose of maintaining a free bed for indigent persons.

APPROPRIATION FOR AN EMERGENCY FUND IN MAINE.—A resolution has been presented to the Maine Senate, appropriating \$10,000 for an epidemic or an emergency fund, with special reference to smallpox. It is said that the State Board of Health has asked for this amount of money in order that prompt action may be taken to prevent the spread of contagious diseases.

NEW YORK.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.—At the annual meeting of the Medical Association of the Greater City of New York, held Jan. 12, Dr. Ransford E. Van Gieson of Brooklyn was elected vice-president, and Dr. Arthur C. Brush, chairman for the Borough of Brooklyn, and Dr. P. Brynberg Porter was re-elected recording secretary. The corresponding and statistical secretary reported that during the year 123 new members had been elected, and that the roll of membership now numbered 600. There were ten deaths during the year.

A CENTENARIAN.—Albert J. Akin, owner of the Mizzen Top Inn, in Dutchess County, died at his New York residence, on Jan. 12, in the one hundredth year of his age. Mr. Akin was possessed of a remarkably vigorous constitution. When he was ninety-six years old his thigh was broken in a fall from his carriage, and the fracture united perfectly; and in the following year, when he met with another carriage accident, in consequence of which he suffered from concussion of the brain and several fractures, he astonished his medical attendants and friends by making an excellent recovery.

ADULTERATION OF PHENACETIN.—The fact that phenacetin powders recently purchased from a certain druggist were adulterated having been called to the attention of the Health Department, a suspicion was felt that such adulteration might be being practised by others, and an investigation was ordered. Out of three hundred and seventy-three samples of phenacetin obtained by the inspectors from as many pharmacists in the boroughs of Manhattan and the Bronx, it was ascertained that in no less than three hundred and fifteen the drug was more or less adulterated, and the sellers are accordingly to be called to account. In some instances, it is stated, the powders sold as phenacetin contained no phenacetin at all.

APPOINTMENT. — The president of the Board of Health has appointed Dr. George Taylor Stewart, until recently superintendent of Bellevue and Allied Hospitals, general superintendent of the hospitals of the Health Department, embracing the Reception Hospital and the various hospitals for contagious diseases.

CASES OPERATED UPON BY DR. LORENZ. — At a meeting of the New York Academy of Medicine, held Jan. 15, addresses were delivered by the retiring president, Dr. Robert F. Weir, and the president-elect, Dr. Andrew H. Smith. At the orthopedic section of the academy on Jan. 16 four patients were presented by Dr. Newton M. Shaffer, and three by Dr. Virgil P. Gibney, who had been operated upon for congenital dislocation of the hip by Dr. Lorenz during his recent visit to New York, and all showed satisfactory progress. Dr. Royal Whitman also presented a case of cure in a male child operated on by the Lorenz method about a year ago.

FORMALIN IN SEPTICEMIA. — At the last meeting of the New York Obstetrical Society a case of puerperal septicemia, due to streptococcus poisoning, was reported, in which the patient's life was apparently saved by the intravenous injection of formalin. The woman was admitted to the Bellevue Hospital in a desperate condition, with a temperature of 108 and a pulse of 160. The beneficial effect of the novel procedure is stated to have been very prompt, and after a second injection the pulse and temperature subsided to normal.

A MEDICAL FELLOWSHIP AT COLUMBIA UNIVERSITY. — It is reported that a fellowship in medicine has been established at Columbia University having an annual value of \$1,200.

THE "HAPPY DAY." — The excursion steamboat "*Happy Day*" was launched with appropriate ceremonies on Jan. 10. The boat is being built for Charles M. Schwab, to convey children to Recreation Park, at Richmond Beach, Staten Island, which Mr. Schwab purchased last year and which will be open during the coming summer as a day resort for the poor children of New York. She is expected to carry from fifteen hundred to two thousand on each trip, and will be provided with hospital accommodations for those requiring medical attendance.

BEQUESTS OF ISAAC T. CARPENTER. — By the will of Isaac T. Carpenter, who died on Dec. 16, a bequest of \$1,000 each is left to the Woman's Hospital, the Society for the Relief of Ruptured and Crippled, the Mount Sinai Hospital, the German Hospital and Dispensary, the Nursery and Child's Hospital, and a large number of other New York medical and charitable institutions.

Miscellany.

TREVES ON VIVISECTION.

THE following statement by Sir Frederick Treves of his position in regard to vivisection is taken from a letter written by him to the *Journal of the American Medical Association* and published in part in their issue of Jan. 10:

"My solitary utterance on the subject of vivisection is contained in an address delivered at Birmingham, in October, 1898 (*Lancet*, Nov. 5, 1898). Speaking of the suturing of intestine, I said that I had found that operations on the intestines of dogs were useless as a means of fitting the surgeon for operations on the human bowel.

"Those who are familiar with the controversial methods of the antivivisection party will not be surprised that certain of my remarks have been cunningly isolated from the context and have been used in advertisements, pamphlets and speeches to condemn all vivisection experiments as useless. . . . No one is more keenly aware than I am of the great benefits conferred on suffering humanity by certain researches carried out by means of vivisection."

Correspondence.

LETTER FROM EGYPT.

ASSOUAN AS A WINTER RESORT.

ASSOUAN, Jan. 1, 1903.

MR. EDITOR: Dec. 13 may be said to have been the first day of the present winter in Cairo, where chilly weather and more or less rain may be anticipated from then on to Feb. 1, a fact upon which stress should be placed in the interest of those who come to Egypt in search of a warm and equable climate.

On the date referred to the air was cold and the sun completely obscured by heavy clouds—a warning to such as knew the country that the time to move further south had arrived.

At Luxor, two days later, the air was balmy, and the sunshine almost too warm for comfort from 11 A.M. until half an hour before the close of day.

A visit to the tombs of the kings resulted in bitter disappointment at finding that the most recently excavated one had been looted (undoubtedly by the native guardians in charge, although nothing was proved) and everything worth stealing removed before the public had an opportunity of visiting it.

Nothing remained but the mummy in its sarcophagus, stripped of all emblems of royalty; and the fact that the mural decorations were of rather an inferior kind did not tend to improve one's feelings, as we slowly ascended three interminable flights of stone steps to reach the outer air.

Here in Assouan winter consists of two or three weeks during which certain nights and mornings are fairly cold, and the sun is at times obscured by passing clouds.

These conditions may alternate with almost the opposite extremes—like to-day, for instance, when the temperature was 85° F. on the western terrace of the Cataract Hotel (in the shade) at 3 P.M. and a clear blue sky stretched from horizon to horizon. Roughly speaking, the Assouan winter begins about Christmas Day and terminates Jan. 15 or a little earlier, after which the heat increases pretty steadily until March 1, when, as a rule, it becomes too great for comfort, notwithstanding the northerly wind which still continues to blow quite stead-

ily. Then is the time when Gezireh (or better still, Ramleh) is far pleasanter than any of the other resorts in Egypt.

At the great dam (just above the First Cataract) most of the gates are now closed, and the water has risen to within three feet of what will be its highest level. One's preconceived notions of the "great lake" which was to result from this storage of the Nile's flow undergo a change when looking down from a hill which commands a very extensive view. A sheet of water perhaps three times the size of Jamaica Pond (at a rough guess) is seen immediately back of the barrage, while further south the river beyond Philæ is apparently not so very much wider than before. The fact is the river banks are steep and rocky for almost the entire district (100 miles), which is affected by the dam, so that while the depth of water (65 feet immediately behind the masonry) is much increased, the superficial area is not so very much affected, and but little arable land is submerged. This holding back a billion tons of water does not in the least affect the climate of Assouan; for aside from the comparatively slight increase of water surface, a southerly wind which might possibly bring moisture this way is practically unknown in winter.

So the place remains the driest and warmest spot where one can live in comfort at a time when the inn-keepers of the Riviera are proclaiming what their well-trained thermometers are doing for the comfort of the deluded multitude who seek warmth and clear skies in one of the most treacherous and unsatisfactory climates in the world.

I visited Philæ a few days since and found a well-known artist, Mr. Henry Bacon, busily engaged in recording in color his final impressions of such portions of the island's architectural beauties as yet remain above water.

The fact that his native servant killed a fair-sized cobra within a very few feet of his easel caused him only a momentary distraction—for the steadily rising water had already covered the foundations and lower walls of every building except the temple of Isis, and time was precious.

The final submersion will leave the floor of the temple about two feet above water, and everything which has been under water will be shapeless when it is drawn off,—a mass of Nile mud. Tourists are now rowed into the Kiosk, and there is very fair fishing in the Birth House!

Cholera is a thing of the past, and a few days will bring the usual travelers to the Land of the Pharaohs.

Very truly yours,
F. GORDON MORRILL, M.D.

Obituary.

MAJOR JAMES CUSHING MERRILL, U. S. A.

MAJOR JAMES CUSHING MERRILL, a well-known army surgeon and ornithologist, died at his home in Washington, D. C., on Oct. 27, 1902. He was born in Cambridge, Mass., in 1845; graduated at Harvard, and took his medical degree in 1874 at the University of Pennsylvania. As assistant surgeon in the army he served for many years in various parts of the West,—on the Texas-Mexican frontier, in Oregon, Montana and what is now Oklahoma. It was during this period that he carried out his extended study of birds and fauna. For many years his name was familiar in American ornithological literature, and his contributions, especially those in the Smithsonian Reports, are of distinct interest and importance.

A keen observer and a trained naturalist, Dr. Merrill was also an enthusiastic sportsman, and showed much spirit and resourcefulness in the pursuit of big game.

The last five years of his life were spent as librarian in the surgeon-general's office in Washington. He was associated with Dr. Fletcher on the Index Catalogue. At this time ill-health led gradually to his adopting a secluded mode of life. Naturally extremely modest and reticent about his own achievements, he was a genial, kindly man, an accomplished linguist, a trained scientist and an eminent naturalist.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JAN. 10, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|--------------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|-------------------|-------------------|-----|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid fever. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,320 | 331 | 21.66 | 12.42 | 3.4 8 | .82 | — | .82 |
| Chicago . . . | 1,935,270 | 625 | 161 | 25.12 | 9.44 | 1.76 | 4.64 | 2.56 | — |
| Philadelphia . | 1,378,527 | 552 | 127 | 16.29 | 19.54 | 1.99 | 3.34 | .72 | — |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | — |
| Baltimore . . | 533,712 | 217 | 54 | 20.27 | 17.97 | .92 | 1.84 | — | — |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 146 | 31 | 23.28 | 23.98 | 3.43 | 6.84 | 1.38 | — |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | — |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | — |
| Washington . . | 295,103 | — | — | — | — | — | — | — | — |
| Providence . . | 181,290 | 90 | 24 | 20.00 | 15.55 | 2.22 | 2.22 | — | — |
| Boston | 603,163 | 335 | 60 | 21.70 | 19.14 | 1.70 | — | 1.70 | — |
| Worcester . . . | 132,044 | 33 | 16 | 6.06 | 18.18 | 3.03 | — | — | — |
| Fall River . . | 115,549 | 55 | 24 | 14.40 | 14.40 | 1.80 | — | — | — |
| Lowell | 101,959 | 43 | 20 | 2.65 | 32.55 | — | — | 2.32 | — |
| Cambridge . . | 98,639 | 23 | 6 | 30.43 | 26.09 | — | — | — | — |
| Lynn | 72,497 | 10 | 4 | 30.00 | — | — | — | — | — |
| Lawrence . . . | 69,766 | 30 | 12 | 33.33 | 16.67 | 16.67 | — | 3.33 | — |
| Springfield . . | 69,389 | 23 | 5 | 17.39 | 4.34 | — | 4.34 | — | — |
| Somerville . . . | 68,110 | 29 | 7 | 20.69 | 20.69 | — | 10.34 | 3.45 | — |
| New Bedford . . | 67,198 | 38 | 12 | 18.42 | 18.42 | — | 2.63 | 13.15 | — |
| Holyoke | 49,286 | 9 | 3 | — | 44.44 | — | — | — | — |
| Brookton | 44,873 | 5 | 1 | 40.00 | — | — | — | — | — |
| Haverhill . . . | 42,104 | 10 | 1 | 10.00 | 50.00 | — | 10.00 | — | — |
| Newton | 37,794 | 6 | 1 | — | 33.33 | — | — | — | — |
| Salem | 36,876 | — | — | — | — | — | — | — | — |
| Malden | 36,286 | 13 | 5 | 15.49 | 7.70 | — | — | — | — |
| Chelsea | 35,876 | 21 | 5 | 19.05 | 19.05 | — | — | — | — |
| Fitchburg . . . | 35,069 | 7 | 3 | — | 14.30 | — | — | — | — |
| Taunton | 33,656 | 16 | 4 | 12.50 | 18.75 | — | — | 6.25 | — |
| Everett | 28,620 | 5 | 4 | — | — | — | — | — | — |
| North Adams . . | 27,862 | 4 | 1 | 25.00 | — | — | — | — | — |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | — |
| Quincy | 26,042 | 10 | 2 | 20.00 | — | — | — | — | — |
| Waltham | 25,198 | 8 | — | — | 12.50 | — | — | — | — |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | — |
| Pittsfield | 22,589 | 8 | — | — | 37.50 | — | — | — | — |
| Chicopee | 21,031 | 6 | 4 | 50.00 | 16.67 | — | — | 33.33 | — |
| Medford | 20,962 | 5 | 1 | — | — | — | — | — | — |
| Northampton . . | 19,883 | 8 | 2 | 12.50 | — | 12.50 | — | — | — |
| Beverly | 15,302 | 5 | — | — | — | — | — | — | — |
| Clinton | 15,161 | 4 | 1 | 25.00 | 25.00 | 25.00 | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 8 | 2 | 12.50 | — | — | — | — | — |
| Woburn | 14,300 | — | — | — | — | — | — | — | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | — |
| Adams | 13,745 | — | — | — | — | — | — | — | — |
| Attleboro | 13,677 | — | — | — | — | — | — | — | — |
| Marlboro | 13,669 | — | — | — | — | — | — | — | — |
| Melrose | 13,600 | 4 | — | 50.00 | 50.00 | — | — | — | — |
| Westfield | 13,418 | 5 | 1 | 40.00 | 20.00 | 40.00 | — | — | — |
| Milford | 13,129 | — | — | — | — | — | — | — | — |
| Revere | 12,722 | 2 | 1 | — | — | — | — | — | — |
| Frammingham . . | 12,534 | 3 | 2 | — | — | — | — | — | — |
| Peabody | 12,179 | — | — | — | — | — | — | — | — |
| Gardner | 11,928 | — | — | — | — | — | — | — | — |
| Weymouth . . . | 11,344 | 7 | 1 | 42.90 | 28.60 | — | — | — | — |
| Southbridge . . | 11,268 | — | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 2 | — | — | 50.00 | — | — | — | — |
| Plymouth | 10,730 | — | — | — | — | — | — | — | — |

Deaths reported, 3,650; under five years of age, 939; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 756, acute lung diseases 637, consumption 368, scarlet fever 48, whooping cough 46, cerebrospinal meningitis 7, smallpox 5, erysipelas 7, measles 18, typhoid fever 76, diarrheal diseases 69, diphtheria and croup 94.


From whooping cough, New York 10, Chicago 10, Philadelphia 6, Baltimore 2, Pittsburg 3, Providence 5, Boston 3, Cambridge 2, Worcester, Lynn, Springfield, North Adams and Quincy 1 each. From erysipelas, Chicago 3, Baltimore 1, Boston 1, Somerville 1, Taunton 1. From smallpox, Pittsburg 1, Boston 3, Lynn 1.


In the seventy-six great towns of England and Wales, with an estimated population of 14,862,880, for the week ending Dec. 27, the death-rate was 16.9. Deaths reported, 1,826; acute diseases of the respiratory organs (London) 409, whooping cough 91, diphtheria 76, measles 159, smallpox 11, scarlet fever 65.

The death-rate ranged from 4.8 in Hornsey to 26.6 in Merthyn Tydfil; London 16.6, West Ham 15.0, Brighton 18.0, Portsmouth 13.3, Southampton 12.1, Plymouth 13.7, Bristol 17.0, Birmingham 16.8, Leicester 12.5, Nottingham 17.6, Bolton 18.3, Manchester 18.6, Salford 19.8, Bradford 19.2, Leeds 16.1, Hull 22.5, New Castle-on-Tyne 16.9, Cardiff 18.5, Rhondda 21.8, Liverpool 21.8, Wallasey 21.3, Newport (Mon.) 21.2.

METEOROLOGICAL RECORD

For the week ending Jan. 10, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barom-eter. | | Ther-mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|---|-------------|-------------|---------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|----|---------------------|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. . | 4 29.60 | 38 | 42 | 35 | 66 | 63 | 64 | W | N W | 9 | 8 | C. | O. | 0 |
| M. . | 5 29.78 | 36 | 40 | 33 | 58 | 58 | 58 | W | S W | 9 | 7 | C. | O. | 0 |
| T. . | 6 29.54 | 32 | 38 | 27 | 58 | 100 | 94 | S | N W | 8 | 11 | R. | N. | .32 |
| W. . | 7 29.46 | 27 | 36 | 18 | 71 | 98 | 84 | W | S E | 11 | 8 | O. | N. | .02 |
| T. . | 8 29.26 | 28 | 38 | 19 | 82 | 46 | 64 | W | N W | 6 | 14 | C. | O. | .01 |
| F. . | 9 29.60 | 14 | 19 | 10 | 62 | 53 | 58 | N W | S W | 7 | 15 | C. | O. | 0 |
| S. . | 10 30.01 | 20 | 27 | 14 | 53 | 51 | 52 | W | S W | 12 | 12 | C. | O. | 0 |
|  | 29.61 | | 34 | 22 | | | 68 | | | | | | | .41 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall.
 Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JAN. 15, 1903.

WHITE, J. H., assistant surgeon-general. To proceed to Brunswick, Ga., for special temporary duty. Jan. 13, 1903.

CARTER, H. R., surgeon. Leave of absence for three days under paragraph 179 of the regulations, amended so that it shall be for two days only.

GUITERAS, G. M., passed assistant surgeon. To report to chairman of board of examiners at Washington, D. C., Jan. 15, 1903, for examination to determine his fitness for promotion to the grade of surgeon. Jan. 13, 1903.

OAKLEY, J. H., passed assistant surgeon. Granted leave of absence for two days from Jan. 21. Jan. 13, 1903.

LAVINDER, C. H., passed assistant surgeon. Granted leave of absence for one month from Jan. 28. Jan. 13, 1903.

DUKE, B. F., acting assistant surgeon. Granted leave of absence for ten days from Jan. 4. Jan. 7, 1903.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence for five days from Jan. 13. Jan. 10, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, WEEK ENDED JAN. 17.

H. H. HAAS, passed assistant surgeon. Ordered home via "Prairie."

J. E. PAGE, passed assistant surgeon. Detached from the "Newark" and ordered to the "Montgomery."

R. E. LEDBETTER, assistant surgeon. Detached from the "Illinois" and ordered to the "Newark."

F. L. BENTON, passed assistant surgeon. Detached from recruiting duty, and ordered to Washington to accompany Battalion of Marines to the Philippines. Jan. 24.

R. L. TAYLOR, W. P. KEENE, D. P. McCORD and W. H. JANNEY, doctors. Appointed acting assistant surgeons for three years' service.

C. A. CRAWFORD, passed assistant surgeon. Resignation accepted to take effect Jan. 12, 1903.

R. B. CHAPMAN, II, W. JUDD, J. T. MILLER and R. A. CAMPBELL, doctors. Appointed acting assistant surgeons for three years' service.

D. P. McCORD, acting assistant surgeon. Ordered to Lansing, Mich., on duty with recruiting party.

R. L. TAYLOR, acting assistant surgeon. Ordered to Ogden, Utah, for duty with recruiting party.

W. H. BUCHER, passed assistant surgeon. Detached from Naval Hospital, Norfolk, Va., and ordered to Naval Hospital, Pensacola, Fla.

F. T. GORDON, pharmacist. Ordered to the Naval Dispensary, Washington, D. C.

APPOINTMENT.

EDMUND D. CODMAN, Esq., has been appointed a trustee of the Boston City Hospital.

LECTURES ON THE NEUROSIS AND PSYCHIASIS OF SPIRITS AND DRUG ADDICTIONS.

Dr. T. D. Crothers of Hartford, Conn., will deliver a course of lectures on "Alcoholism, Morphineism and Other Drug Manias," in the hall of the New York School of Clinical Medicine, 328 West Forty-second Street, between Eighth and Ninth avenues. These lectures will be given on the first Tuesday of every month at 11 A.M. and 8 P.M. The profession is cordially invited to attend.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The annual meeting of the society will be held in Sprague Hall, Medical Library Building on Monday, Jan. 26, 1903, at 8.15. Statement by the president regarding the future of the society. Discussion. Report of the treasurer; election of officers.

ARTHUR K. STONE, M.D., Secretary,
 543 Boylston Street.

HARVARD UNIVERSITY MEDICAL SCHOOL.—At a meeting of the president and fellows of Harvard College, Jan. 12, 1903, it was voted to appoint Melville Forrest Rogers, D.M.D., instructor in operative dentistry.

Voted to appoint Wilder Thleston, M.D., assistant in chemistry for the second half of 1902-1903.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.—The ninety-seventh annual meeting of the society will be held Jan. 27, 28 and 29, 1903, in the City Hall, Albany, commencing at 9.15 A.M. on the 27th and ending at 1 P.M. on the 30th.

Business Committee: Ernest Wende, Chairman, 471 Delaware Ave., Buffalo; Hamilton D. Wey, Elmira; J. Montgomery Mosher, Albany.

RECENT DEATHS.

DR. MARCUS K. GOLDSMITH of New York died on Jan. 16, at the age of fifty-five years. He was graduated from the medical department of the University of the City of New York in 1885.

DR. HILBERT B. TINGLEY, a prominent physician of Rockaway Beach, Borough of Queens, New York, was killed at the Holland Station of the Long Island Railroad, Jan. 14. While attempting to board a train his foot slipped and he was thrown beneath the wheels. Dr. Tingley was graduated from the University of Baltimore in 1889, and was thirty-seven years old. He was president of the Rockaway Taxpayers' Association.

CHARLES EDMUND CHASE, M.D., M.M.S.S., died in Woburn, Dec. 26, 1902, aged fifty-three years.

WILLIAM H. HILDRETH, M.D., died Jan. 15, in Newton, after a short illness. He was a graduate of Dartmouth College, and has lived in Newton since 1870. He retired from practice about five years ago.

BOOKS AND PAMPHLETS RECEIVED.

Simultaneous Paretic Mydriasis. Subluxation of the Lens and Rupture of the Choroid, with Marked Involvement of the Retina; and a Peculiar Form of Persistent Pupillary Membrane. By Alexander Duane, M.D., of New York. Reprint. 1902.

Some Considerations on the Hygienic and Prophylactic Treatment of Myopia. By Alexander Duane, M.D., of New York. Reprint. 1902.

A Report on Radio-Therapy. By Thomas L. Butler, M.D., of Louisville, Ky. Reprint. 1902.

The Treatment of Corneal Infiltrations by Iodine-Vasogen. By Alexander Duane, M.D., of New York. Reprint. 1902.

Studies from Institute for Medical Research, Federated Malay States. The Malarial Fevers of British Malaya. By Hamilton Wright, M.D. Vol. 1, No. 1. Philadelphia: P. Blakiston's Son & Co. 1902.

Transactions of the American Surgical Association. Edited by Richard H. Harte, M.D. Vol. XX.

Cancer and Other Tumors of the Stomach. By Samuel Fenwick, M.D., F.R.C.P., and W. Soltan Fenwick, M.D. (Lond.). M.R.C.P. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

A System of Physiologic Therapeutics, a Practical Exposition of the Methods, Other than Drug-giving, Useful in the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A.M., M.D. Vol. V. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Le Remède Typhique dans la Fièvre Typhoïde. By Dr. Julio Mendez. Reprint. Buenos Aires. 1902.

Cancer of the Larynx Cured by X-rays. By W. Scheppegrell, A.M., M.D., of New Orleans, La. Reprint. 1902.

The Practical Medicine Series of Year Books, comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly under the General Editorial Charge of Gustavus P. Head, M.D. Vol. III. December, 1902. Illustrated. Chicago: The Year Book Publishers.

Original Articles.

CHYLOUS ASCITES. REPORT OF A CASE DUE TO TOTAL OCCLUSION OF THE THORACIC DUCT.¹

BY PERLEY P. COMEY, M.D., WORCESTER, MASS.

PATHOLOGY

BY WM. W. MCKIBBEN, M.D., WORCESTER, MASS.

THE patient, Mr. A. F. P., age sixty-one, retired manufacturer, family history excellent, well built, exceedingly healthy man. His illnesses had been very few indeed for a man of his years; had smallpox many years ago and a broken leg later. About four years ago he had an attack of renal colic due to calculi; otherwise well.

The history of the present trouble began the 18th of March, 1902. He had a chill, severe pain in the right groin and leg, high fever, ached all over, stomach disturbed, and the whole system seemed affected. In a day or so, the right limb began to swell, became reddened, and had a cakey feel. The inflammatory condition extended on to the abdomen and across to the other side; also across the back and loins, but not to the other limb. It resembled a general infection with localized cellulitis, and it seemed as though the process would go on to suppuration. My diagnosis was phlebitis.

In a few days the fever and all symptoms of inflammation began to subside and the patient was more comfortable, but the swelling and slight fever remained for perhaps a week. The patient continued to improve, was free from pain, had a good appetite and digestion; was confined to bed, practically because of the swelling of the limb.

On the night of the 5th of April, he had a sudden, severe attack of dyspnea, pain and distress in the region of the heart, and presented the symptoms of violent interference with the circulation which was relieved only by a hypodermic medication, and suggested to my mind that the trouble arose from the phlebitis, embolism, or thrombus. This passed off, however, the disturbance diminishing in severity for several days. His general condition improved, he was up and about the house, and by April 27 rode out about town considerably. The right leg remained swollen exceedingly, but with no other trouble to the patient than the inconvenience of its being so large and not easily handled.

About June 1 he had a second attack, practically the same as the one in March. Chills, fever, general condition, same extension of the cellulitis except that at this time it extended up to the left shoulder and down the arm to the elbow; also affected the left leg some. During this attack, he had one spell of dyspnea and heart failure. This attack did not last as long or seem as severe, and in a short time he was up and round the house again. Later he rode out and seemed to be doing well. Dr. S. B. Woodward saw him during this second attack.

About July 20 he had the third attack, and while it was not nearly as severe as the others, he grew worse, — the edema became general, his appetite

began to fail, he did not sit up much and was obliged to lie in one position. Dr. Homer Gage saw him in this attack.

He became more and more bloated, very uncomfortable, had hard nights, finally his breathing became very labored, the abdominal dropsy so extensive that I tapped him August 18, and to my surprise instead of the usual serous fluid that we expect to find, it seemed to be pure chyle, about seven quarts in amount.

I left the opening so that it might drain, which it did very freely, the nurse estimating that in this manner about four quarts escaped in the twenty-four hours. This discharged up to the time of his death, four weeks later, Sept. 14. Dr. Woodward saw him after the tapping.

During his illness, the urine was analyzed several times, but always proved normal, although the twenty-four amount was greatly diminished. A blood count was made with negative result. The chylous fluid drawn from the abdomen was thoroughly analyzed by Dr. McKibben. The patient died Sept. 14, having been ill six months. A postmortem was performed by Dr. McKibben; Dr. S. B. Woodward, Dr. Homer Gage and myself present. The result of the analysis of the fluid drawn from the abdomen, also the report of the autopsy, follows.

POSTMORTEM EXAMINATION.

Body that of a male of sixty-one years of age, with slender development of skeleton and poor general nutrition; skin sallow, elastic in places, edematous in other places, pitting markedly on pressure. This edema, with enlargement, was especially marked on the right leg and left arm; less so on the left leg. The right arm was greatly atrophied. Sero-sanguinous fluid was exuding from a small puncture below the umbilicus.

There was no hypostasis of blood nor diffusion of blood coloring matter; nor was there any greenish discoloration of abdomen. Postmortem rigidity very marked in the legs; less so in the other muscles; condition of the pupils and color of sclera normal.

The thorax presented nothing striking in size and shape. The abdomen was distended, and pitted on pressure. The penis showed no scar. The scrotum was glossy, edematous and enlarged.

On opening the abdominal cavity, it was found to be about half full of bloody fluid, through which gas freely escaped from nicks in the bowels, made by the undertaker in drawing off the ascitic fluid. A half-dozen nicks were seen on the small intestine. Following the course of the intestinal tract up from the rectum, no evidence of malignant disease presented itself in the intestine, stomach or esophagus.

The renal and peritoneal lymph plexuses were enlarged, those of the intestines (including both large and small) being flexuous in their courses, constricted at intervals, and presenting a beaded or varicose appearance.

The appendix appeared normal, but contained four or five hard fecal concretions. The mesenteric lymph nodes were not enlarged. The diaphragm was pressed down by pleuritic fluid on the left to the sixth rib.

On opening the pleural cavity, the left was found

¹ Read before the Massachusetts Medical Society, Worcester District, Dec. 10, 1902.

completely filled with straw-colored fluid, and no lung could be seen. The lung was found collapsed and bound tightly to the upper and posterior wall by firm fibrous bands of adhesions, which could not be torn, but had to be cut.

The right lung was normally distended with air, and was adherent by small adhesions at both apex and base. This pleural cavity contained about a pint of straw-colored fluid. Cut sections of both lungs showed marked edema, frothy serum oozing freely.

The left lung also showed hypostatic congestion, while at its apex were about a half-dozen small nodules with centers of white powdered material and walls of denser fibrous tissue, mixed with lime salts (calcareous).

On opening the pericardium, it was found to be normal in color, smooth, and showed no adhesions. The sac contained about 75 cc. of clear, light-colored fluid.

The position, size and shape of the heart were normal. The right ventricle and both auricles were distended with blood clots. The left ventricle was contracted and empty. Each valve, examined in turn, showed nothing abnormal, nor did the coronary arteries. There was no abnormal deposit of adipose tissue.

Spleen.—Capsule, trabeculae, blood vessels, lymph nodules showed nothing abnormal. The pulp was soft and easily scraped off with a knife. The size was somewhat increased.

There was no distention nor contraction nor ulceration of the intestines; no injection of the blood vessels nor thickening of the wall; no adhesions nor exudations.

Cross sections of the pancreas showed nothing abnormal.

The liver weighed about 1,800 grms., was tawny yellow in color; the consistency was markedly increased. In sectioning, the knife met resistance, and gave a grating sensation. The cut surface showed multitudinous granules, the size of a pin head.

The kidneys were of about normal size and consistency. On section they were of a dull bluish red, with relative proportion of cortex to pyramids, and thickness of each, normal. On stripping off the capsules there was no adhesion. The surface showed two or three cysts, the size of a pea.

The adrenals appeared normal. The renal lymph plexuses were enlarged.

The thoracic duct was much enlarged, which made its discovery much less difficult than usual. It gave a feeling of induration to the fingers. The lymph glands and vessels failed to reveal the presence of parasites. The superficial lymphatics on being cut down upon showed very little thickening of their walls and induration of the surrounding cellular tissue macroscopically.

HISTOLOGICAL REPORT.

Post-mesenteric lymph glands; bronchial lymph glands.—Even macroscopically they show a marked deviation from the normal. When opened, the gland presents a dry, brownish colored substance which has no definite structure; crumbles easily and has the odor of feces. Microscopic examination of same shows necrosis and degeneration so com-

plete that no semblance of gland substance remains, making it absolutely functionless.

Thoracic duct.—Macroscopically the wall is much thickened; will not admit probe in any part. Receptaculum chyli prominent. Microscopic sections made at many different levels, cross and longitudinal, all of which showed a marked fibrous thickening of the wall, in many places the fibrous replacing the muscular tissue, and totally occluded the duct at almost all levels. Diagnosis of thoracic duct is chronic lymphangitis.

Lung.—Microscopically shows fibrous hepatization, so much change in the structure having taken place that no alveoli remain.

Spleen.—Chronic passive congestion.

Liver.—No cirrhosis, no increase in the interstitial tissue, but chronic passive congestion, and in some places had undergone fatty degeneration in areas.

Kidneys.—Show no pathological change of note.

This case is reported because of the interesting points revealed by the postmortem examination, the little knowledge on the subject, the small amount of literature in French, German or English, and the great rarity of the case, particularly from an etiological point of view.

From 1699 up to the present time, there have been collected just 47 cases, but in only 37 of these was the fluid strictly chyle. In the other ten the fluid more resembled a morbid exudation than an effusion of chyle. In three of these the ascites was ascribed to obstructed pulmonary circulation, one of which had suffered for a long time with chronic bronchitis, with "purulent expectoration containing tubercular concretions"; another suffered for several years with scrofular affections and died of pulmonary tuberculosis; and the third died of pulmonary and peritoneal tuberculosis. The puerperal and tuberculous cases with exudation, together with a chylous cyst of the mesentery and a case of chyle retention in the lymphatics of the mesentery being excluded, the cases of chylous ascites proper number 37. The rupture of some chyle-conveying vessels is clearly established in 25 of these cases.

Etiology.—Age, sex, climate, race, occupation and circumstances of life are without influence. According to Busey, heredity and acquired tendency to disease of the lymphatic system, and especially diseases of the walls of the thoracic duct and receptaculum, which are very rare and mainly limited to tuberculous infiltration and to ossific changes, demand mention as primary conditions which may facilitate the rupture of the walls of chyle-conveying vessels; syphilis may also. Primary rupture occurred in but seven of the cases. In one, the cause was an effort to raise a burden; in two, muscular effort; one, vomiting; three, violence inflicted upon the chest. Chronic alcoholism and overwork, according to Nancrede, certainly appears to favor the graver forms of lymphangitis.

Busey asserts that chylous ascites may be the secondary result of a variety of morbid conditions, which directly or remotely obstruct the flow of chyle through the lacteals, receptaculum or thoracic duct, impedes its exit into the left subclavian vein, right side of the heart, or lesser circulation. Such obstruction may be caused by anatomical defects and anomalies of position and distribution of the chyle

vessels; by dilatation or stenosis, and such diseases of the coats of the channels as would lessen their expansibility and tensile strength; by disease of the mesentery, hypertrophy, cavernous and fibroid transformation of its adipose tissue; by indurated, degenerated and impermeable mesentery glands, embolism and deposit of bony, fibrous, chalky, gelatinous and soapy material in the channels; compression by inflammatory adhesions, or by thoracic abdominal and aneurismal tumors. In one case it was ascribed to the presence of filaria.

Dilated chyliferous lymphatics, as in Dr. Comey's case, are quite often observed in the mesentery. The usual cause, according to Zeigler, is obstruction due to inflammatory or neoplastic growths, located in the mesentery or thoracic duct. Sometimes the obstruction is due to lymph thrombosis. The dilated vessels look like straight cylindrical ridges, or convoluted, saccular or beaded cords; their contents are either white and limpid, or pulpy and caseous.

Clinical observations seem to have established the causal relation of interrupted blood current in the large veins near the heart to lymph stasis and effusion of chyle into the peritoneal cavity, and the experiments of Cooper, Morton, Dupreytren and others demonstrate that complete arrest or interruption of the current of the fluid in the thoracic duct, at or near its terminal extremity, will, if the anastomotic circulation is not speedily and sufficiently established, produce distention, dilatation and repletion sufficient to cause rupture, which most frequently takes place in the receptaculum or lacteals. Clinical and postmortem examinations are even more conclusive than experimentation, for they connect directly the process of gradual occlusion of the duct by disease with the concurrent development of the diffuse area of lymphangiectasis, which in some cases terminated in rupture and extravasation. In this connection may be cited the cases reported by Rokitansky, Ormerod, Morton, Hughes and Cayley.

According to the "American Textbook of Pathology," obstruction of the thoracic duct results from,—

(a) Pressure on the duct from without by tumors, enlarged lymph glands or aneurisms.

(b) The growth of tumors in the walls of the duct.

(c) Inflammatory stricture. We regard this as the cause of obstruction in the case at hand.

(d) The impaction of adult filaria.

(e) Thrombosis of the left innominate vein or the duct itself.

(f) The backward pressure of blood in the subclavian vein occasioned by tricuspid insufficiency.

The results of obstruction of the main lymphatic trunk are variable. In many instances, especially when the obstruction is in the lower part of the duct, the establishment of a collateral circulation averts serious consequences. If, for any reason, the latter fails to compensate, then extensive lymphangiectasis may follow or the chyle may escape either by transudation, as it did in Dr. Comey's case, or by actual rupture of the thoracic duct. The free chyle may infiltrate the tissues, or may collect in one of the serous sacs constituting, in the peritoneum, chylous ascites, or in the pleural sac, chylothorax.

In seven cases the fluid found in the peritoneal cavity was associated with tuberculosis. They were reported as cases of milky or oily ascites, and their clinical histories picture the ordinary symptomatology of either pulmonary or peritoneal tuberculosis.

Symptoms and diagnosis.—These depend upon the location and extent of the extravasation; thus, a patient of Krabbel died on the fifth day, from compression of the lung by an extensive chylothorax. Clinical reports furnish many cases which illustrate the direct relation as cause and effect which subsists between copious losses of lymph and chyle, and the marked depression, dullness and exhaustion which invariably follow abundant lymphorrhagiæ, and which likewise follow artificial occlusion of the thoracic duct, and so distinctly characterize the brief after-life of the animal, thus permanently deprived of nutritive material. With but rare exception, quoting Busey again, the cases of copious loss of lymph have been attended with great exhaustion. The latter class may by rest, arrest of the lymphorrhagiæ and proper alimentation, recuperate to suffer again, and perhaps many recurrences similar in course, duration and effect; but copious and continuous loss of chyle is inevitably fatal. It is not possible to establish any constant and direct relation between the appetite and the obliteration, perforation or rupture of the chyle-conveying vessels. It lacks uniformity, sometimes diminished, sometimes variable and again voracious, even in the same patient, but is uniformly associated with progressive emaciation, quite often with fever of the hectic type and gastro-intestinal disorder, with white and chalky stools. In the case reported by Poncy, from July 16, 1699, to March 4, 1700, the date of patient's death, 289 pints of fluid had been drawn in 22 tapplings. The evacuated fluid was always chylous, and frequently emitted the odor of articles of diet. In this patient there was progressive emaciation and waste of all the tissues of the body. In Eyer's case, 1891, where the chylous fluid flowed constantly from an abdominal fistula, there was inanition of four pounds a day, and his entire loss much exceeded one half his normal body weight. Death occurred in thirty-eight days from date of accident, of inanition, or twenty-two days from beginning of lymphorrhagia. It is estimated to take twenty to twenty-four days to starve an adult with all food withdrawn. The symptomatology of effusion of chyle into the peritoneal cavity is not sufficiently distinctive to differentiate such cases from those of ordinary ascites. Wounds of the chyle-conveying vessels might be diagnosed by the location and direction of a stab or puncture in connection with the escape of chyle into the peritoneal or pleural cavities, or externally through the aperture or its evacuation. As such effusion can only occur through transudation or solution of continuity, its escape externally or presence in either cavity must be essential for differential diagnosis. If no fluid escapes externally, then only symptoms of a fluid accumulation in the cavity are present, the character of which must be ascertained by evacuation and examination.

When there are symptoms of rapid accumulation of fluid in the peritoneal cavity, associated with sudden loss of appetite, acute emaciation and

anemia, rapid prostration, diminished secretion of urine, and the presence of such conditions as would suggest occlusion, stenosis or compression of the thoracic duct, or arrest of the exit of the chyle into the subclavian vein, then the diagnosis should be suggested. The gradual, partial and progressive compression of the thoracic duct has been frequently determined by the location of a tumor, associated with the evidence of blood impoverishment. In uncomplicated cases due to rupture the patient usually after exertion is suddenly seized with sharp localized pains followed by swelling of the abdomen, anuria, anorexia, nausea and possibly vomiting. In most cases the symptoms are complicated with those of the causative conditions, and a diagnosis is only possible by an examination of the evacuated fluid. In no instance has a diagnosis been made previous to the observation of the fluid.

Prognosis.—Of the 47 tabulated cases, 31 died, 11 recovered, and in five cases the result is not stated. There is no instance of the preservation of the life of an animal beyond a limited number of days, in which the communication of the lymphatic with the venous system had been completely and permanently obliterated.

The clinical details point to two conclusions: First, that a free and unobstructed channel of communication between the venous system and chyle-conveying vessels is essential to the proper nutrition of the body and to the preservation of life. Second, that death follows the partial or complete obliteration of this communication as the result of inanition.

Nature of the effused fluid.—In most of the cases of effusion into the pleural and peritoneal cavities the fluid was chyle, which had escaped from chyle-conveying channels. In the cases of milk-like, fatty and oily fluid, found in the peritoneal cavity, the character of the fluid was the result of co-existing degenerative processes.

The fluid may contain blood, cholesterolin, more or less of the common serous exudations, and some inflammatory products. The chylous effusions are rich in solid matter, albumen, fatty matters, sodium chloride, and sometimes contain bile, sugar, phosphoric acid, lime and other undetermined substances; also pus and blood.

Widal and Merklen in *La Presse Médicale*, 1900, say: "The particular point of this article is that leucocytes with a single nucleus is the only characteristic of lymph." These were noted in the specimens submitted by Dr. Comey, Aug. 19, and had very pronounced ameboid movement. A few oil drops could be seen on the protoplasm of the chyle corpuscles; an occasional normal blood globule was also noted. The base of this milky fluid, under the microscope, appeared as extremely minute granules, so minute that they could not be recognized as fatty globules. This granular matter could be dissolved in ether, and on evaporating the ether, drops of oil remained. No filaria were present; nor were there any present in fresh or stained specimens of blood taken at night. Blood serum, agar and bouillon inoculated with the ascitic fluid gave no growths.

A complete chemical analysis of one liter of chylous ascitic fluid:—

| <i>Reaction.</i> | <i>Neutral.</i> |
|-----------------------|-----------------|
| Specific gravity, | 1010. |
| Dry extract, | 21 grms. |
| Total albuminoids, | 9.75. |
| Fibrinogen, | Absent. |
| Mucin or nucleo alb., | Absent. |
| Peptones, | Present. |
| Sugar, | Present. |
| Uric Acid, | Absent. |
| Urea, | 1.28. |
| Total min. matter, | 8. |
| Fat, | 1.45. |

Blood examination showed no leucocytosis, but a diminution in the number of reds and in the hemoglobin. No filaria were found in the urine examined April 8, it being normal in color, acid, specific gravity 1014, no sediment, 28 grms. urea to 14 oz. urine, Diazo negative. May 10, Dr. Comey submitted another specimen: Color normal; specific gravity 1020; odor urinous; chlorine diminished, albumen and sugar absent; bile, pigment absent, sediment; calcium oxalate crystals.

Treatment of chylous ascites.—Tapping was the treatment resorted to in most of the reported cases and was sometimes repeated. Seven cases recovered. In two cases laparotomy was resorted to, with recovery of both patients. One was a case of an intact retention cyst, and the other was probably a ruptured cyst. In the case of congenital cyst, recovery took place after several tapplings. In one of the cases of recovery, rupture of the umbilicus occurred with spontaneous evacuation of the fluid. The frequent resort to paracentesis was manifestly due to a mistaken diagnosis. As a medical resource, Busey considers its value as questionable. He regards the peritoneum as an enormous absorbing surface, which, in cases of moderate effusion, unaccompanied with tension of the abdominal walls, might prove adequate for the reabsorption of the effused chyle and lymph. In cases of large accumulation, with its consecutive disturbances of the circulation and respiration, relief of the distention by the evacuation of the fluid would be imperative, as it was in the present case, but it does not seem wise to empty the cavity completely of the nutritive fluid absorbable through such a vast area of lymphatic apparatus. The fluid should not all be withdrawn, and the operation should be repeated only when made necessary by the distention.

The treatment has mainly been directed to the prolongation of life, and Murphy suggests that in cases due to rupture of the chyle duct, it should be rest in bed with light diet of such foods as are digested and absorbed by the stomach, given in small quantities, at short intervals, and a restricted quantity of water and other liquids, the object being to prevent distention of the ruptured ends of the lacteals and the formation of a coagulum. This, together with a general tonic plan of treatment, has apparently proved successful in at least two cases and has certainly prolonged life in other cases. In the case of cyst and benign tumors, surgical procedure might offer a prospect of cure. In filarial cases, death of the adult worm is the only hope of permanent relief; this happens occasionally, but cannot be brought about by treatment.

Résumé.—Knowing as we do that acute and

CASES OF EFFUSION AND ACCUMULATION OF CHYLE AND CHYLELIKE MILKY, FATTY AND OILY FLUIDS IN THE ABDOMINAL CAVITY.

| No. | Reporter. | Date. | Where Published. | Sex. | Age. | Causative Conditions. | Treatment. | Result. |
|-----|--------------------|--------|---|-------|--------|--|---------------------------|------------|
| 1 | Poncey, Jr. | 1699 | Savard Observations In Surgery, p. 247 | F | Girl | Obstruction of lymphatic glands and vessels | Medicines & tapping | Died |
| 2 | R. Morton | 1705 | Morton's Pthisiologia | M | 2 yrs | Compression of duct near subclavian vein by large tumor, producing rupture of lacteals | Tapping | " |
| 3 | Chomel | 1728 | Mem. de l'Académie Royale des Sciences | F | 24 yrs | Childbed, rupture at omt., 5 pts. milky fluid escaped | Counter opening | Recovery |
| 4 | J. G. Scherb | 1729 | Haller, Dissertation Abnorbom, III, p. 237 | M | 39 yrs | Calc ulus in Receptaculum Chyli | Tapping | Died |
| 5 | Donald Monroe | 1765 | Essay on Dropsy | F | Girl | Effort to raise a burden. | " | Not stated |
| 6 | Bossu | 1770 | Journ. de Med. Chir. Pharm. xxxiv, p. 283 | F | | Met. of mammary secretion during first week of puerperium | Medicines & tapping | Recovery |
| 7 | Martin | 1770 | Journ. de Med. Chir. Pharm. xxxiv, p. 555 | F | | Metrorrhagia, miscarriage, unusual exercise | Tapping | " |
| 8 | Milleret | 1774 | Journ. de Med. Chir. Pharm. xlii, p. 237 | F | 39 yrs | Arrest of secretion of milk from mammary glands and intestinal canal | Discharge at omt.; tonics | " |
| 9 | Ed. Sandifort | 1781 | Observ. Anat. Pathology, judg. Bat. iv, 1-21, 3 Pl. | F | | Premature birth of twins | Found at autopsy | Died |
| 10 | Perclval | 1788 | Essays Med. Physiol. and Exp., II, p. 177 | F | 8 yrs | Rupture of lacteal vessels, protracted illness | Tapping | Recovery |
| 11 | Weaver | 1814 | Med. Surg. & Pharm. Repos., II, p. 377 | M | | Supposed to be liver disease | Medicines | Died |
| 12 | Truman, Abell | 1833 | Bost. Med. & Surg. Journ., vii, p. 13 | F | | Abdominal tumor following pregnancy with twins | Rupture at navel | " |
| 13 | Hughes | 1841 | Guy's Hospital Reports, v, p. 297 | M | 20 yrs | Tumor of mesenteric glands, lacteals large and tortuous | Not stated | " |
| 14 | Van Camp | 1842 | Ann. Soc. de Med. de Anvers, III, 86 | M | 59 yrs | Chronic bronchitis, asthma, tuberculosis | " | " |
| 15 | J. Popham | 1854 | Dublin Quart. Journ. Med., xviii, p. 467 | F | 28 yrs | Chronic peritonitis with fat in effusion, fatty degen. liver, fat free in blood | " | " |
| 16 | M. Loraln | 1859 | Compt. Rend. Soc. de Biol., Par. 2, s. v., 162 | F | 8 yrs | Symptoms of T. B. peritonitis, numerous tubercles in lungs | " | " |
| 17 | T. Stevenson | 1860 | Guy's Hospital Reports, 3, s. xvii, p. 231 | | | Milky fluid obtained from abdomen | " | Not stated |
| 18 | Rokitauskey | 1861 | Pathological Anatomy, Bd. II, s. 388 | F | 62 yrs | Occlusion of thoracic duct with soapy material | " | Died |
| 19 | Ormerod | 1866 | Trans. Path. Society of London, xvi, p. 163 | M | 19 yrs | Partial obstruction of duct near its termination | " | " |
| 20 | W. Coyley | 1868 | Trans. Path. Society of London, xix, p. 199 | M | 24 yrs | Left subclavian vein plugged with ragged clot | Tapping | " |
| 21 | Hopper-Seyler | 1873 | Arch. Gesamte Phys., vii, p. 407 | | | Rupture of chyle vessels from pressure of a tumor | Not stated | " |
| 22 | Bergeret | 1873 | Journ. d'Anatomie, T. ix, p. 586 | F | 27 yrs | Scrofula, pulmonary tubercle, oily ascites | " | " |
| 23 | Wilhelm | 1875 | Corres. Blat. der Aerzt. Vereine Rhen., No. 14, s. 13 | | 2 mos | Abdominal tumor, causing rupture of thoracic duct | Tapping | " |
| 24 | Quincke | 1875 | Archiv. f. klin. Med., Bd. xvi, s. 128 | F | 30 yrs | Obst. of duct due to Inf. thickenings of urers, adipose changes to C. T. | " | " |
| 25 | " | 1875 | Ibid., s. 121 | M | 50 yrs | Traumatic rupture of duct, effusion into peritoneal and pleural cavities | " | " |
| 26 | Ballman | 1875 | Centralbl. f. d. Med. Wissenschaft, xiv, s. 275 | F | | Chylous fluid vomited found in peritoneal and pleural cavities | " | Recovery |
| 27 | Pelletier | 1876 | Journ. de Med. Chir. Pharm. lxxviii, p. 496 | F | 39 yrs | Peritoneum studded closely with tubercles | " | Died |
| 28 | F. Winckel | 1876 | Archiv. f. klin. Med., Bd. xvii, s. 303 | F | 39 yrs | Puncture of chyle vessels by parasites | " | Not stated |
| 29 | Winlwarter | 1877 | Jahrbuch d. Kinderheilkunde, vol. xi, Nos. 2-3 | F | Birth | Rupture of cong. chylous cyst | " | Recovery |
| 30 | H. Smedt | 1880-1 | Zeitschrift klin. Med., p. 199 | M | 11 yrs | Ascites following infectious diseases | " | Died |
| 31 | Keln | 1880-1 | Mem. Soc. de Med. de Strassburg, xix | F | 50 yrs | Rupture of mesenteric and lymphatic lacteals | " | Not stated |
| 32 | Vell | 1882 | Paris Thesis, No. 21, 1882 | F | 25 yrs | Syphilis | " | Died |
| 33 | Letulle | 1884 | Rev. de Med., iv, p. 723 | M | 8 yrs | Rheumatism in heart | " | " |
| 34 | F. Nickerson | 1884 | Mass. Med. Soc., June, 1884 | M | 55 yrs | Chylous cyst, hard labor | " | Recovery |
| 35 | Letulle | 1885 | Rev. de Med., p. 950 | M | 3 mos | Chron. peritonitis, cong. cardiopathy | " | " |
| 36 | Whitlo | 1885 | British Med. Journ., vi | M | 13 yrs | Pul. tuberculosis, tub. peritonitis | " | Died |
| 37 | M. I. Straus | 1886 | Archiv. de Physiologie, Norm. et Path., xvii, p. 367 | M | 61 yrs | General exhaustion | " | " |
| 38 | P. I. Murray | 1886 | Monograph | F | 19 yrs | Violence, long walks & dancing | Laparotomy | Recovery |
| 39 | N. B. Carson | 1888 | Med. News, iv, p. 52 | M | 39 yrs | Chylous cyst of mes. | " | " |
| 40 | Weichselbaum | 18- | Virch. Archiv., lxi, p. 145 | M | 80 yrs | Stasis caused by interposed adipose tissue | Autopsy | Died |
| 41 | M. E. Gaucher | | | M | 47 yrs | Alcoholism | " | " |
| 42 | | | | M | 39 yrs | Alcoholism, cirrhosis | Tapping | Not stated |
| 43 | | | | Child | 11 yrs | Sarcoma of omentum | " | " |
| 44 | Alvin Eyer | 1891 | N. Y. Med. Rec., xi, 122-124 | M | 28 yrs | Traumatic rupture of receptaculum chyle | Not stated Tapped | Died |
| 45 | H. Senator | 1895 | Charete Ann. Ber., xx, 263-74 | | | Carcinoma thoracic duct | " | " |
| 46 | II. Groom | 1900 | Lancet, London, June 30, March 31 | F | 39 yrs | Carcinoma of mes. glands | " | " |
| 47 | Comey and McKibben | 1903 | Boston Med. & Surg. Journ. | M | 61 yrs | Ch. lymphangitis thoracic duct | " | " |

chronic inflammations of the lymphatic vessels are almost never a primary disease but always result from inflammation of the surrounding tissues or parts drained by the affected vessels, some cause outside of the thoracic duct must be found to explain the case at hand. This cause is attributed to the old tubercular focus at the left apex, where a half dozen nodules were found which had undergone caseous and calcareous degeneration, and were surrounded by thick fibrous walls. This fibrous tissue had so developed in the surrounding pulmonary tissue that no semblance of alveoli were to be found. The process had not stopped here, but the two lobes, compressed so that together they were no larger than the two fists, were so tightly bound down to the upper and posterior pleural wall by firm fibrous adhesions that the lung could not be torn out, but had to be cut, this producing a loud grating noise. The thoracic duct winds directly around the left apex as it comes from behind the esophagus at the seventh cervical vertebra, and comes outward to empty into the left subclavian vein. What an enormous process this fibroid degeneration was can be recognized by the sections taken at a dozen different levels where it is seen that the densest fibroid deposit is in the lumen of the duct as well as in the walls themselves, where occasionally, when a few muscular fibers are left, as one section shows very prettily, the fibrous tissue is seen deposited in between these fibers.

The "American Textbook of Pathology," after describing acute lymphangitis as swelling of the intima, proliferation and desquamation of the endothelial cells and an infiltration of the walls, and often of the surrounding tissues, — perilymphangitis, — with round cells, speaks of the coagulation of lymph with a formation of a thrombus as of frequent occurrence; that slight attacks often end in resolution, but that in severe septic cases the thrombus softens, the vessel ruptures, and the neighboring parts become infiltrated with pus. Then it adds: "Occasionally the process ends in fibroid thickening of the coats of the vessel with partial or complete obliteration of its lumen. This is called chronic lymphangitis."

This condition of chronic lymphangitis involved a whole foot and a half of ductus thoracicus in Dr. Comey's case. The dozen sections show fibrous occlusion of the lumen in them all.

The German writers make mention of the fact that pulmonary tuberculosis begins at some period in life in about 50% of all individuals; in most cases without the knowledge of the individual himself. One is struck on seeing a large number of autopsies by the fact that the visceral pleura is adherent to the parietal pleura in such a large number of the cases, and without any previous history of pleurisy.

"At the present day there is no longer doubt that a tubercular process may be brought to a standstill for many years and also even completely healed by the tubercular focus being surrounded by indurated connective tissue, making the spread of the tubercle bacilli more difficult. If the disease has started in the lungs, the extension first follows in the lymph channels, and in this way after a time without exception the peribronchial lymph glands, and frequently the visceral pleura, become involved.

From the latter the costal pleura can become infected. If an eruption takes place of miliary nodules formed by reabsorption, the process is called miliary tubercular lymphangitis." — *Ziegler*.

The extension of tuberculosis from the primary focus of infection is usually affected through the lymph channel, and in some instances the vessels themselves are involved in transmitting the disease. In tubercular ulceration of the intestines, miliary tubercles are frequently found in the serous coat along the lymphatics, which run to the nearest mesenteric glands. Tubercular lesions of the skin and subcutaneous tissue are sometimes associated with tubercular lymphangitis. The invasion of the thoracic duct by tubercles may lead to a general infection.

It is an interesting fact that all the parts drained by the thoracic duct were filled with fluid, edematous, pitting markedly on pressure. This was so of both legs, abdominal cavity, left thorax and left arm, while the parts drained by the right lymphatic duct were not so affected, the right arm being greatly atrophied. It was not surprising that last spring there should have been acute lymphangitis of the lymphatics of both legs, due to backing up and disturbance of the lymphatic circulation, when lymph thrombi were formed. This acute lymphangitis very closely resembles phlebitis, according to *Widal*.

LESIONS OF THE TIBIAL TUBERCLE OCCURRING DURING ADOLESCENCE.

BY ROBERT B. OSGOOD, M.D., BOSTON.

(1) INTRODUCTION.

FRACTURES of the tubercle of the tibia have for many years been recognized and have been considered almost as curiosities. The reported cases are nearly all those of fracture and marked separation, and are undoubtedly rare. There are, however, other lesions representing less severe forms of injury to the tubercle. These are interesting because they have apparently been seldom recognized and because of their comparatively frequent occurrence; because of the old difficulty of diagnosis and our present simple and accurate means, and because of their relation to the development of the tubercle.

(2) DEVELOPMENT OF THE TUBERCLE.

The tubercle of the tibia develops ordinarily from the upper epiphysis of the tibia by the ossification of a tongue-like process extending downwards over the anterior surface of the diaphysis. Rarely there is a separate center of ossification for the tubercle which then develops as a separate epiphysis uniting with the upper epiphysis during the latter portion of adolescence.

Henke describes a cartilaginous plate, existing in the newborn and throughout early life, lying in front of the epiphysis and diaphysis of the upper end of the tibia. In a dissection of the knee of the newborn I have found this plate apparently a part of the cartilage of the upper epiphysis. Prof. Thomas Dwight of the Harvard Medical School has allowed me to study his specimens of human fetuses prepared by Dr. E. B. Young after a Ger-



FIG. 1. — Normal knee at five years. Showing shadow of cartilage from which the tubercle develops.



FIG. 2. — Tubercle developing as a separate bone center.



FIG. 3. — Tubercle developing as a tonguelike process from the epiphysis.



FIG. 4. — Complete avulsion of tibial tubercle patella is seen higher than normal on the femoral shaft.





FIG. 7. — Separation of a small fragment of the tubercle. Cf. Fig. 8.



FIG. 8. — Normal knee. Symptomless knee of case shown in Fig. 7.



FIG. 9. — Separation of a small fragment of the tubercle. Cf. Fig. 10.



FIG. 10. — Other knee of case shown in Fig. 9, causing slight typical symptoms and representing partial separation of tongue.



FIG. 11. — End result of old lesion of tubercle.



FIG. 12. — Normal knee of case showing old lesion

man method. By the action of certain chemical solutions the flesh is rendered transparent and the bone centers and cartilaginous epiphyses opaque. In these the upper epiphysis is seen to consist of a superior portion, corresponding to the contour of the future tibial head, and a tongue-like process extending downward anteriorly over the diaphysis.

It seems probable, therefore, that the ossification of the tibial tubercle usually begins about the age of puberty. Ordinarily it represents a downward extension in the cartilage, of the ossifying center for the tibial head. Sometimes the epiphysis at the upper end of the tibia has two separate centers of ossification, one in the head proper and the other in the tongue-like process which later forms the tubercle, the two uniting soon after puberty.

Fig. 1 shows the shadow of the above-mentioned plate; Fig. 2, the tubercle developing as a separate bone center, and 3 as a tongue-like prolongation from the upper epiphysis.

(3) ANATOMY OF THE TUBERCLE DURING ADOLESCENCE.

If in the light of the development, the anatomy of the tubercle of the tibia in early adolescence is studied, it will be seen that the conditions are favorable for just the form of injuries to be described.

To the tip of a tongue-like process of bone, or to a separate bone center, is attached the tendon of one of the most powerful muscle groups in the body. This tongue or bone center is at the age at which the lesions occur separated from the strong shaft of bone by a layer of cartilage, and the first strain of the contraction of the quadriceps transmitted by the patella tendon comes on the tibial tubercle.

(4) REPORT OF DISSECTIONS AND EXPERIMENTS.

Morris and several other anatomists, in describing the insertion of the quadriceps, mention two strong aponeurotic expansions of the tendon which pass down on either side of the patella tendon, are inserted into this and into the two rough oblique lines on the shaft of the tibia, extending from the tubercle obliquely upwards as far as the internal and external lateral ligaments.

To more fully understand the anatomical conditions and the transmission of the forces exerted by the sudden powerful contraction of the quadriceps extensor, dissections of two adult knees have been made.

Dissection 1. — By the ordinary crucial incisions, the skin and the subcutaneous tissues were dissected back and the deep fascia exposed. From each side of the quadriceps, just above its insertion into the patella, were found dense shining tendinous fibers arranged in several connected columns. These passed down on each side of the patella, were inserted slightly into this and the patella tendon, but for the most part were attached firmly to the oblique lines of the tibia above described for about one and one-half inches. These were freed from their attachments to the bone and periosteum. They were found to be only loosely attached to the underlying structures and of considerable thickness and great strength.

Dissection 2. — In a second knee the skin and subcutaneous tissues were dissected back in a similar manner to Dissection 1, and the same dense bands found. The dissection was then carried upwards and the quadriceps muscle isolated. Traction upon this extended the knee, and the strain appeared to be taken first by the patella tendon, almost immediately followed by a tightening of these bands of accessory tendons.

With a chisel, the tibial tubercle was then fractured, leaving the patella tendon still attached to it. The few fibers of the tendon continued below the tubercle, and the slight insertion into the tendon of the above-mentioned lateral expansions were divided; the patella tendon was now isolated well above the deep bursa.

The conditions were now analogous to a complete fracture of the tubercle, and a detachment of the patella tendon from its point of pull.

The knee was flexed, and barely a quarter of an inch separation of the tubercle from its original situation occurred. The tubercle was then replaced and held loosely in position. By traction on the isolated quadriceps it was found that the knee could be practically fully extended without any difficulty, and that about one fourth of an inch displacement of the tubercle occurred. The first pull was transmitted mainly to the patella tendon and tubercle, and when that had yielded barely one fourth of an inch, it was adequately taken by the lateral expansions of the tendon of the quadriceps. The dissection made evident the strength of these expansions and their ability to act as tendons of insertion with a detached patella tendon, and also the fact that the knee could readily be extended with the attachment of the patella tendon gone.

(5) LESIONS OF THE TUBERCLE.

We come now to lesions of the tubercle occurring during adolescence. These consist in a solution of continuity between the tubercle and the tibial shaft. They vary in severity from a complete avulsion of the tubercle to a slight separation of the epiphysis. The symptoms, often mistaken for a fractured patella, a dislocated semilunar cartilage or any of the less acute joint irritations, may represent loss of function varying from complete inability to extend the leg to a slight pain in the region of the tubercle on violent contraction of the quadriceps extensor.

(4) *Complete fracture or avulsion.* — In 1853 De Morgan and A. Shaw both reported cases of fracture of the tibial tubercle due to muscular action, but De Morgan's case was in a so-called scrofulous, poorly developed person, and Shaw's occurred in a boy whose patella was ankylosed.

In 1869 Dr. Paul Vogt reported the first case on record of typical fracture of the tibial tubercle. This case is so typical of the class of subjects and the method of production of this form of lesion that an abstract of it is given.

A thin, muscular boy, sixteen years old, exercising in the gymnasium, slipped from a jumping board and gave a sudden muscular jerk backward to prevent himself from falling. He felt immediate acute pain in the right knee, and could not step or move the leg forward.

The physical examination showed a marked effu-

sion into the joint. The right patella was drawn up higher than the left, and 6 cm. below its lower edge, in which no change could be felt, was a bony knob covered by tense skin, movable and resting 2 cm. from the tibial crest. On movement crepitus could be elicited. By strongly pushing downwards on the patella, this fragment could be made to approach the tibial crest. After the effusion had subsided under appropriate treatment, attempts to completely replace the fragment were still unsuccessful. Firm fibrous union finally occurred, and though slight lateral motion was still possible a good functional result was obtained.

The diagnosis was made of a fracture of the tibial tubercle. The inferior portion of the tubercle was supposed to have been wholly torn off, the upper part still adhering to the tibial epiphysis.

(1) *Etiology*.—There are about twelve cases reported of this injury. With one or two exceptions they have occurred in athletic youths during the adolescence and have been due to the violent contraction of the quadriceps extensor. The instinctive contraction of all those muscle groups tending to restore equilibrium in a threatened backward fall is usually associated. Fig. 4 represents this form of lesion.

This lesion may be produced more rarely by direct violence, the patient usually falling with the knee flexed on a hard surface. Paul Sandler reports such a case in the *Deutsch. Zeitschrift für Chirurgie*, 1893.

(2) *Diagnosis*.—The clinical picture with the marked swelling and effusion which usually occur may well be mistaken for a fractured patella or even a dislocated semilunar cartilage. To-day, of course, the x-ray would at once reveal the true condition. We must suppose in these cases that the lateral expansions of the quadriceps tendon were ruptured.

(3) The conservative treatment of complete immobilization for six to eight weeks has uniformly brought about a return to practically normal function in the reported cases, even though the fragment is not completely restored to its old position. Ogilvie Will, mistaking an avulsion of the tubercle for a broken patella, operated upon a boy, and, discovering the true lesion replaced the tubercle, thrust his drill through the fragment into the tibial shaft and obtained quick union. The drill was removed in three weeks. He recommends operation.

(B) *Separation of a fragment*.—It would seem from the experimental dissections that the first pull in a violent contraction of the quadriceps extensor comes on the fibers of the patella tendon, and is then taken also by the lateral expansions of the tendon of the quadriceps. In the complete avulsions and fractures, as stated above, we must suppose these accessory tendons to be torn from their attachments together with the tubercle and the patella tendon. With these still "*in situ*" the displacement would be less than is shown by the clinical and x-ray examinations.

It is possible, however, to have a partial separation of the tubercle and the interference with normal function be so slight that the condition is often unrecognized and the diagnosis made of a bursitis or a periostitis, or even a joint fringe (see Figs. 5, 6, 7, 8, 9). The x-ray evidence of this is appar-

ently indisputable and the clinical picture absolutely consistent with the true condition.

(1) *Clinical picture*.—These lesions occur in boys at or shortly after the age of puberty, when the epiphyseal growth is most rapid and a layer of cartilage intervenes between the epiphysis and the tibial shaft. In eight of the ten cases collected the boys were between fourteen and fifteen years of age; one was thirteen and the other sixteen. The boys were all active, athletic and well-developed muscularly. The histories and clinical pictures are very similar.

In the gymnasium, in running, in a football game, or in some athletic sport, the knee is "*strained*." This so-called strain is usually found on questioning to have been caused by the sudden violent extension of the leg; namely, by the strong contraction of the quadriceps. More rarely there is associated a fall on the flexed knee which would, of course, bring a sudden involuntary strain on the patella tendon, associated with trauma.

At the time of the injury there is felt acute pain in the knee referred to below the patella. There is often slight swelling, either general, or pretty definitely localized over the region of the tubercle. There is distinct tenderness at this point. The ability to use the leg is only slightly diminished, and the acute pain is soon replaced by a feeling of weakness on strong exertion. Sharp pain is present on violent extension or extreme flexion of the leg, and the patient usually consults the surgeon because of this pain, the annoying weakness and the continued localized swelling or tenderness.

The condition presents no complete loss of function, but a severe handicap to the active, athletic life which this class of patients wish to lead.

(2) *Diagnosis*.—In these cases the thing clinically which we must suppose to occur, and which the x-rays confirm, is that a violent contraction or sudden strain of the quadriceps extensor partially ruptures the cartilaginous union of the tongue-like prolongation of the upper epiphysis or the separate ossifying center. A portion of this may be torn away, as shown in Figs. 5, 7, 9, or perhaps the tongue may be simply separated to a variable extent, illustrated by Fig. 10.

Subsequent exertion of any kind, and sometimes the ordinary walking pull of the quadriceps, irritates the injured cartilage and gives rise to discomfort, until advice is sought or bony union at length takes place.

In two of the cases showing this lesion there had been no known wrench or trauma. The symptoms being the same as in the cases presenting recognized, definite trauma. A somewhat exaggerated separation, shown by the x-ray, in the symptomless leg, perhaps explained the susceptibility to the lesion. It must be very definitely borne in mind, however, that the normal adolescent tibial tubercle, when ossification is going on, often appears in the x-ray to be separated from the tibial crest. This is mentioned and illustrated by Dr. Robert Lovett in the *Philadelphia Medical Journal*, Jan. 6, 1900.

The precaution of taking both knees in exactly the same plane, and with the Crooke's tube focused over symmetrical points, must also be observed before the x-ray can be relied upon as final evidence of this injury.

Given, however, a strain of the knee, a more prominent and tender tubercle on the injured side and an x-ray taken in the same plane as the skiagraph of the normal knee, and showing a wider separation of the epiphysis, or an avulsion of a small portion, we may be reasonably sure of the diagnosis.

(3) *Treatment*.—The bursa directly above the tubercle and beneath the patella tendon in a small percentage of cases communicates directly with the joint. There may be enough bursitis set up to bring about a definite synovitis, for which complete immobilization may be necessary. Ordinarily treatment directed toward lessening the pull of the patella tendon and restricting motion is adequate for the relief of the symptoms. A tightly applied erisscross strapping of adhesive plaster extending around about two thirds of the circumference of the leg, and applied from perhaps one inch below the tubercle to one inch above the lower border of the patella, has proved a satisfactory method of accomplishing this end. This is renewed as it becomes loosened, perhaps every ten days, for about a month, and a flannel bandage worn for a few weeks after this.

(4) *Prognosis*.—The prognosis with treatment has been uniformly good as to relief of pain and restoration of function. A case in which the end result is shown in Fig. 11 had been treated unintelligently, because of failure to make the diagnosis, and the history has been one of considerable pain and annoyance, coupled with restricted exercise for a period of years.

(6) CONCLUSIONS.

The adolescent tibial tubercle, from its situation and mode of development, is susceptible to injuries, especially in athletic subjects. These lesions are usually caused by a violent contraction of the quadriceps extensor.

Fracture and complete avulsions of the tubercle are rare, cause loss of function, and are easily diagnosed, usually clinically and always by means of the x-ray.

Avulsions of a small portion and partial separation of the tubercle are more common. They do not cause complete loss of function, but without treatment, long continued serious annoyance. The diagnosis should be made by a combination of the clinical and x-ray pictures, and before the latter are accepted as evidence both knees should be skiagraphed and accurate technique observed.

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THE SIDE CHAIN THEORY.¹

BY ADDISON S. THAYER, M.D., PORTLAND, ME.

Visiting Physician, Maine General Hospital; Professor of Diseases of Children, Bowdoin College.

RECENT studies of immunity are so interesting and so full of promise of helpfulness, and yet withal so hard to get hold of, that we who are far from being masters in pathology find plenty of reason for trying to make them clear to each other.

Organotherapy was at least easy to understand. Through the work of Horsley, Murray and others, the homely, old counsel, "Eat a part to strengthen a part" becomes, to a limited extent, a therapeutic principle. In myxedema the blood lacks something which the thyroid gland fails to furnish. Sheep's thyroids supply the lack. It is blood poverty, rather than blood infection; but whatever it is, Murray applies his theory, and for a time the patient ceases to be myxedematous. By a reversal of the usual sequence, a pathological condition is made clear by therapeutic means.

There was an appearance of simplicity, also, in the theory of antitoxin, as applied to tetanus and to diphtheria. Behring had isolated an antidote which neutralized the diphtheritic poison. If our theory about it has grown more complex, certainly time has not dimmed the glory of the fact.

Tetanus and diphtheria are local first, and toxic in a general sense afterwards. Their bacilli are known and their poisons can be isolated. When, however, effort was directed toward finding antitoxins for the exanthemata, whose bacilli are as yet unknown, and for tuberculosis, whose toxin refuses to react according to predetermined rules, pathologists encountered difficulties which we, in our ignorant expectation, failed to realize. The past five years have thrown to us much that is obscure and almost discouraging. Editorial contributors have written with easy familiarity about amboceptors and alexins and haptophoric groups. Ideas which are really illuminating have been buried in Greek derivatives and in clumsiness of statement. Little by little, however, theories concerning immunity have precipitated and clarified, so that we can see through a part of them and find suggestions which bewilder, not so much because they are intricate as because they are dazzling with promise of future insight and resource.

In studying the numerous diseases which are manifestly infectious and presumably bacterial, but in which there are, as yet, no recognized bacterial causes, we may be forced to rely upon unproven theory for a long time to come. Smallpox and syphilis are conspicuous examples of this class of diseases. As Lister himself has pointed out, the limit of possible improvement in the power of the microscope may be nearly or even fully reached already. If then, the bacterium of syphilis should chance to be smaller than the bacillus of influenza to the degree in which this bacillus exceeds in smallness the bacillus anthracis, it is improbable that the hypothecated bacterium of syphilis will ever be seen. Moreover, the virus of syphilis, familiar as it is clinically, cannot be made the subject of study by animal experimentation because

¹ Read at the Lister Club, Dec. 18, 1902.

animals other than man possess a natural immunity to syphilis.

And yet we look to pathologists to solve for us problems in artificial immunity, in diseases where it is equally unreasonable to expect either a solution by accident and observation, as was the case with smallpox, or by inductive reasoning and animal experimentation, as was the case with diphtheria.

Light came with the announcement of the so-called "Pfeiffer phenomenon" in 1894. Pfeiffer immunized a guinea pig against cholera in practically the same way that horses are immunized against diphtheria for the production of antitoxic serum, — by repeated injections of cholera cultures. The guinea pig being now immune against cholera, Pfeiffer injected into its peritoneal cavity living cholera vibrios. From time to time by means of glass capillary tubes he withdrew from the peritoneal cavity a small quantity of the exudation, and examined it in the hanging drop. Almost immediately the vibrios lost their motility. In ten minutes they had swollen up and in ten minutes more they had broken into little balls resembling micrococci, which, in another twenty minutes, had been completely lost in the peritoneal exudation. The immune serum had dissolved the bacilli. Pfeiffer had discovered bacteriolysis.

A direct outcome of the Pfeiffer phenomenon was what we know as the Widal test. Gruber of Vienna first observed the agglutination of typhoid bacilli; Widal employed this reaction for diagnostic purposes.

Agglutinins are separate and specific constituents of blood. During the agglutinating reaction, agglutinin is absorbed by the bacteria. This absorption may go on until the agglutinin is entirely used up. It is then possible to dissolve out the agglutinin from the bacteria by dilute alkalies, and after centrifugation, to use the fluid again for agglutinating specific bacteria. According to Buchner, cases have been observed in which the serum has shown distinct power of agglutination, yet no specific protective power.

Still further light was thrown upon agglutinins and bacteriolysins, by the discovery of the hemolytic action, which certain serums exert upon foreign blood. Bordet treated guinea pigs with repeated injections of defibrinated rabbit's blood. This led to the appearance in the serum of the guinea pig of an antibody capable of dissolving rabbit's red blood cells. This antibody is hemolysin, and the process of hemolysis is strikingly analogous to the dissolving of bacteria which constitutes bacteriolysis.

These processes, together with others which are concerned in the various phases of immunity, are outlined in a diagrammatic sort of way by the side chain theory of Ehrlich.

Ehrlich's theory has to do with the production of antibodies. Antibodies are produced only in the living organism. Antitoxin, for instance, cannot be made in a test tube. If we inoculate a dead, sterile, nutrient medium with germs, the number of germs of one kind which we introduce makes little difference. The germs keep on multiplying and eating their food until there is no more food to eat. But in the living body, resistance is more likely to be maintained, and recovery to result, if germs are

introduced in small numbers. It is this resistance which produces an antibody.

Suppose a toxin to be introduced or produced in the organism. When brought in contact with the protoplasm of a cell, the toxin does not become bound to the functioning center of the cell, but to certain side chains or receptors of the cell. The normal function of these receptors is to receive and appropriate food. The molecule of toxin, by its so-called haptophoric group, "catches on" to the side chains of the cell, and after a time (a part of the period of incubation), by the action of its toxophoric group, produces a defect in the cell. These side chains of the cell having been diverted from their function of attracting nutriment, the cell produces new side chains, — sometimes an excess, like the callus of fractured bone. The proliferated side chains have the same affinity for toxin, after they have been cast off by the cell, which they had before; and so, when present in the blood, they constitute an antitoxin.

And now comes an important distinction between the action of a toxin, like that, for instance, of diphtheria, and the action of a bacterium or a foreign blood cell. By direct affinity a molecule of toxin is attracted to the side chains of a cell; but neither a foreign blood corpuscle nor a bacterium can become so attracted, except through the mediation of another body, which acts as a sort of fixer, or mordant, or coupler, by means of which the cell ferment, which is normally present in protoplasm, is able to take part in the production of an antibody.

Ehrlich has shown that in hemolysis the fixer must be anchored to the invading red blood corpuscle. His experiment is as follows: Goat's serum is immunized against sheep's blood, so that the red corpuscles of the sheep are dissolved by the serum of the goat. Then a mixture of the two is heated to 56° C., with the result that no solution takes place. The activity of the cell ferment in the serum of the goat has been checked by heat. Normal, unimmunized goat serum is added, and activity returns: the sheep's corpuscles are again dissolved, because cell ferments are again present. A similar mixture is centrifugalized, and the sediment, consisting of the corpuscles, and the fluid, consisting of the serum, are tested separately. To the fluid, fresh sheep's corpuscles are added, but no reaction occurs; and fresh unimmunized goat serum containing cell ferment is added, but no reaction occurs, because no fixer is present in the fluid. To the sediment, normal serum is added, and complete solution results. The fixers had become anchored to the red cells, and until fixers were present, no reaction could take place.

The fixer in this case must have a twofold affinity, — one for the cell ferment of the host and one for the invading red blood corpuscle. Accordingly Ehrlich calls it an amboceptor. The amboceptor, as already stated, can act only in the presence of the ferment-like body, which is normally present in the protoplasm of the cell, which is easily altered by heat, and which Ehrlich has called the complement.

Besides amboceptor, the following names for the fixer have been used by different writers: preparative, sensitizer, immune body, intermediary body,

desmon. The cell ferment is also known as end body, complement, cytase and alexin.

Most serums contain a variety of cell ferments, which are, as a rule, specific. Normal unimmunized goat's serum can dissolve both guinea pig's blood cells and rabbit's blood cells; but if normal goat's serum is passed through a Pukal's filter, the filtrate can still dissolve guinea pig's blood cells, but its power towards rabbit's blood cells is greatly diminished; that is, the cell ferment in goat's serum which is specifically active towards rabbit's blood is kept back in the filter, while the cell ferment specific towards guinea pig's blood passes through the filter.

The discovery of the presence of specific precipitins in the blood of each species of animal has given us a biological test of recognized medico-legal value—in the hands of experts.

Until recently it has been supposed that snake venom is a poison of the type of diphtheritic toxin, in that it consists of a single body. Venom is normally secreted in the snake by glands analogous to the parotid. The addition of venom to fresh blood of higher animals quickly dissolves the red corpuscles. Sewall Calmette and Fraser, by successive inoculations of snake venom, have produced antivenins which are both protective and curative.

It is now discovered, through the investigations of Flexner and Noguchi, that venom toxin is able to act only through the aid of both fixers and cell ferments. If venom be added to fresh corpuscles which have been washed with isotonic salt solution, so as to remove the cell ferments, the corpuscles are agglutinated but not dissolved. If now a little fresh serum which contains cell ferments is added, the corpuscles are promptly dissolved.

Venom is therefore a body of the type of hemolysins rather than simple toxins. It requires for its activity the presence of fixers which are contained in the venom, and of cell ferments which are normally present in the cells of the victim. Welch's comment upon this discovery, in his Huxley lecture delivered in London last October, is as follows: "That snake-venom should contain only one half of the complete poison, the other and really destructive half being widely distributed in the blood and cells of man and of animals, is an instance of a curious kind of adaptation, of interest from evolutionary as well as from other points of view."

It appears, moreover, that the organism is not only an unexploded potential of self-injury; it is also a mine of self-protection. Wassermann has found that the central nervous system normally contains a substance identical with tetanus antitoxin. He has made an emulsion of fresh tissue from the brain and spinal cord of a guinea pig, and has found that this emulsion is capable of neutralizing the lethal dose of tetanus toxin.

This would seem to show that the presence of antitoxin is not invariably, or at least always discernibly, due to previous introduction of toxin. A condition like this may be one of the forms of natural immunity. Another explanation of natural immunity is absence of side chains having affinity for a given toxin. In such a case, the source of production of a toxin may sometimes be checked by the development of a bacteriolysin.

Explained or unexplained, natural immunity is a

conspicuous fact. A horse, for instance, is two hundred thousand times more susceptible to tetanus than a hen, the amount of tetanus toxin per gram of body weight required to kill a horse being one unit, and to kill a hen 200,000 units. The natural immunity of special tissues finds illustration in the protective agency of skin and mucous membrane. Poisons which are virulent in sub-cutaneous tissue are harmless in the mouth.

No artificial cultivation of special side chains has yet succeeded in producing an immunity so thorough as that which is the result of a previous attack of the special disease itself. Even when immunizing sera shall have become more numerous and more efficient, protests of the anti-vaccinationist type will still be heard, and questions of expediency which are reasonable will also continue to arise. Inoculations against typhoid may be advisable for a soldier about to begin a campaign in South Africa, although inexpedient for the average citizen. The morphine fiend and the arsenic eater of Styria may justly receive a larger measure of disapprobation than is deserved by the faithful boy in his efforts to acquire immunity against tobacco.

Perhaps our ideas of artificial immunity need to be broadened all along the line. Metchnikoff, in his recent book, speaks of a psychical immunity and an immunity which consists in acquired indifference to disagreeable noises, lights and shocks.

Bacteria and red blood corpuscles are not the only foreign cells which have power to develop specialized immune sera. We hear of the employment of immunizing methods for the production of spermotoxins, neurotoxins and nephrotoxins. Within a few months Veit has published results of experiments which seem to show that albuminuria of pregnancy is produced by a lysin called into being by the presence of the placenta.

The injection of Koch's old tuberculin, which disappointed us so sorely as a therapeutic agent, resembles perhaps Act II in the Pfeiffer phenomenon, rather than Act I: the bacilli in the lung produce a half-hearted immunity; injection of tuberculin merely excites reaction.

A reaction, however, is sometimes what we want. Witness, for instance, in certain affections of the joints, the benefit from arterial hyperemia produced locally by hot air. We believe that leucocytes are healers of wounds and absorbers of catgut. Cocci have been thought to aid in checking a slow infection, as when an intercurrent erysipelas has hastened the healing of a tuberculous lung. Even normal salt solution is believed to assist the forces of resistance. Wassermann has recently shown the value of diluting immune serum by the addition of normal serum. Cultures which produced death when combated with immune sera alone were resisted successfully when these same immune sera were fortified by normal serum. Wassermann ascribes this power to excess of normal cell ferments.

The affinities which side chains exhibit are something more than the ordinary positive and negative physico-chemical attractions, such as commonly appear among inorganic bodies. Ehrlich contends that every toxin, every parasitic bacterium and every variety of animal cell has its own specific affinity in side chains of the corporeal protoplasm; or, to state the same thing conversely, that the cells

of the animal body are endowed with separate, specific receptors, having affinities for every kind of invading cell or poison.

If this be granted, it is conceivable that under favoring conditions immunity may be established against anything. One has only to irritate the cell in the proper way, and it will furnish specific side chains for every irritant.

A conception like this is not only striking, it is refreshing. In our therapeutic routine we see so little action we can call specific that it seems good to find in nature such inflexible discrimination.

THE OPEN-AIR TREATMENT OF SYPHILIS.

BY E. H. DOUTY, M.A., M.D. (CAMBRIDGE), M.D. (LAUSANNE),
DAVOS-PLATZ, SWITZERLAND,

Formerly Lecturer in Cambridge University, England.

I NEVER remember having once seen the open-air treatment of syphilis advocated in any of the many journals of our own country or of other countries; and yet there is, I venture to think, no argument brought forward in favor of the open-air treatment of tuberculosis that is not equally to the point with regard to early syphilis. I suppose that there are a great many, medical men and others, who, because they have not thought about it, have an idea that the open air has some direct influence on the lung tissue in consumptives, just as, I find, there are very many who believe that the cold of these Alpine heights has direct effect on the lung tissue, and on the bacilli in it.

But a little thought will show them that it is not the influence of open air on the lungs which brings about the cure of pulmonary tuberculosis, but that it is the influence of the pure air and sunlight on the blood, and through it on all the other tissues of the body, and chiefly the nervous tissues, that the good results are obtained. Fresh air heightens metabolism in every way, and raises all the tissues to their highest point of resistance, so that they do not succumb to the persistent attacks of the poisons constantly carried hither and thither by the circulating blood.

The nervous system responds the most readily to the purer and richer pabulum brought to its inmost recesses by the blood, and as its cells are better nourished, so its trophic influence is maintained, and the metabolism and growth of all tissues, including the all-important hemapoietic, is ensured and maintained at its highest, and they are thus enabled either actively to beat off, or passively to refuse to succumb to, the specific poisons of any disease.

Open-air life improves the appetite, and again the additional food ingested improves the blood pabulum with the results referred to above. Carefully graduated exercise again increases the appetite and stimulates the emunctories, and helps the elimination of their excreta. Rest, much rest, carefully prescribed at suitable times and under correct conditions, again helps much. And if this can all be done away from home surroundings and worries, in a high, dry, bracing climate, with the purest possible air, with pleasant companions and environment, the greater will be the efficacy and permanency of the whole treatment.

Open air, then, rest, high feeding, graduated exercise and if possible a bright, dry, bracing climate, are our means for enabling an individual to escape the eventual horrors of consumption. But all and each of these are, in my opinion, as important in enabling the individual to escape the eventual horrors of syphilis (with the help of small doses of mercury maintained for many years).

The parallel is strict. The poison, — whether it be a bacillus or a ferment, an enzyme, a toxic-albumose, or we know not what, is there, — in the individual. It is somewhere in the system. It may be weak; it may be strong. Or the resisting power of the individual's tissues may be weak; or may be strong. Or the idiosyncrasy of the individual may be such as to render him well-nigh immune or particularly susceptible. The poison may be causing actual physical signs and symptoms, or it may be apparently latent, but powerful for evil, and perhaps gaining strength wherewith to strike with thuglike precision and force when long forgotten and least expected, and when inadvertently the unwary victim has laid himself open to attack by being run down through worry, overwork, or neglected ill-health.

It matters not whether the poison be the syphilitic or tubercular, — it may suddenly seize upon the lungs, larynx, nervous system or connective tissues. Surely if the open-air treatment is called for at the beginning for the one, it is equally so for the other, to avert the staggering consequences of the original infection. And yet I have never seen it advocated equally for both.

In syphilis, mercury undoubtedly does good. Probably until the last thirty years it has, I think, done more harm than good. It is not an antidote to the syphilitic poison any more than iodide of potassium is. It probably helps the tissues of the syphilitic, much as I find that arsenic sometimes seems to help the tissues of the tuberculous. I do not feel that it is a "specific," and Diday, whose work on the subject seems to me to carry much weight and conviction, certainly seems to teach the same.

During ten years in a busy practice in the university town of Cambridge, I saw many young men with early syphilis, and I often kept in touch with them for many years after they had gone down from the university. And one thing impressed me much; that whereas a poor, under-fed scholar, if infected, was hit painfully hard, the well-to-do hunting or athletic undergraduate generally suffered lightly. The latter led an open-air life, he ate meat three times a day, his tissues were well nourished, and therefore at a high resistance pitch. But the scholar, often poor, trying, because of the *res angustæ domi*, to live on his scholarship, who generally had porridge for breakfast, bread and jam for lunch, and a poor dinner in the hall, sometimes at a dreadful time of day, badly served and hastily eaten or left, he, I noticed, often suffered badly. And this, too, in spite of the fact that the sporting undergraduate was often very casual about taking his mercury. He very often, however, got off cheap, had but slight secondaries, and heard no more of his trouble. For, later on, he continued to live a well-fed, open-air life, often as a country gentleman, or in some other easy-going position in life.

I remember some ten years ago remarking on my observations to Sir George Humphry, before the "open-air treatment" had come to stay, and he said that throughout the enormous experience of fifty years' practice in Cambridge, he had always noticed the same thing, — that the well-fed sportsman, in spite of his being casual about his mercury, did not bear much of his trouble in the afterwards, and I remember his adding, "Ah! I used in the old days to salivate them to *pints* a day! — but they would n't stand it, and they seemed to do very well without." He remarked, too, how heavily the poor student often suffered, although he was conscientious and regular in taking his mercury. Perhaps he was given too much and became miserably ill with his throat and rash and aches and fever and early skin affections and horrible melancholia. I can think of four such now. One has spastic paraplegia and is living; another is dead of general paralysis of the insane; the third has locomotor ataxy, and the fourth is insane, also with ataxia, and I hope by this time dead. Three out of the four became fellows of their college.

If the athlete chronically poisons himself with alcohol, and leads a dissolute life (I mean when syphilitic), he comes to grief — but later on. I have seen six such cases within the last three years, — magnificently developed men and with grand records as athletes. One died of phthisis, the second of appendicitis (tubercular), the third of cerebral hemorrhage, the fourth of arterio-capillary sclerosis and kidneys, the fifth is just alive, and has phthisis, the sixth died of phthisis and chronic Bright's disease. They had all drunk hard, and had lead unhealthy, town-loafing and dissolute lives. All the five died here in Davos, at or near forty years of age.

During five years' observation of patients in these high Alpine altitudes, I have come to the conclusion that 30% of the men patients here who have phthisis are syphilitics — and perhaps more. They are, as a rule, men of the upper middle class, who have led hard-working business lives. They are a type of case that clinically one can recognize, and their want of healthy carmine color, and their thin hair or baldness, lead one to suspect them. It is wonderful how this class of case improves here, if not too far gone. Mercury gently given certainly does them good. I notice that they are specially liable to ischiorectal abscess and fistula in ano, and to ear trouble and deafness, more so than other phthysical patients. They are generally between thirty and forty years of age, and though they yield quickly to treatment and improve much, they seldom are quite cured. *If only they had undergone a long open-air cure directly the character of their syphilitic infection was recognized, I believe they would not have had to come here for the open-air cure of their phthisis.*

I have asked many directors and assistants of sanatoria and hospitals on the Continent, and they have put the proportion of the syphilitics among the phthysical men as 30 and 40%, and twice lately I have been told 50%.

Dr. Klause, assistant to Professor Koch, and chief of the phthysical wards at the Charité at Berlin, told me last month that fully 50% of the men were syphilitic. He also told me that when in charge

of the venereal diseases department he noticed that more than 50% of the patients *showed physical signs of lung disease.*

The German mutual benefit and insurance societies find it pays to establish open-air sanatoria for their phthysical members. I think they would do well to do the same for their early syphilitic cases.

But the trouble is that the man who finds he has contracted syphilis is only too anxious to conceal the fact that there is anything the matter with him. He is depressed, he loses his spirits and mopes indoors, loses his appetite, pins his faith on the mercury, takes much of it, and then when the ill feeling of the secondaries comes he goes from bad to worse, and is for months in the worst possible condition for resisting the invading poison at the most critical time. He is sent, it may be, to Aix-la-Chapelle or Wiesbaden, where he leads an unhealthy hotel life. Far better if he were sent at once to an open-air sanatorium, to lead the same life as is laid down for a patient with slight tuberculosis. Or better still, if he were sent to a high, dry, bracing climate, such as the African veldt or the high Alpine plains of Central Europe, where he can amuse himself gently out of doors for six months or a year, under supervision, and then take to sport to keep him happy and healthy, amongst numbers of other people all busy in the pursuit of health or pleasure. For I notice that early syphilitics do extraordinarily well in these Alpine heights. Blood changes here are rapid; metabolism throughout is heightened, and the patients rapidly regain health, their throat symptoms and rash disappear very quickly, and their pains and fever rapidly go, when they have acquired the appetite which the dry, cold air seems to force on them. And I find that very little mercury goes a long way.

He should devote certainly one year to an open-air life, and, if he can afford it, two years. I believe that then we should not have the 30% of men syphilitic-phthysical patients, and the million of lives per annum which tuberculosis at present costs Europe would also be very much reduced.

Of course, with the laboring classes, it is probably useless to dream of their getting a year or two. But they might get, as they do for tuberculosis, three or four months, though very few of them would take it if they could get it, I feel sure. But how about compulsion? We use compulsion in case of smallpox, — why not for great pox?

This leads me to the question whether our national and international associations and leagues against tuberculosis should not, in considering the prevention of tuberculosis, attack this great source of it, namely, syphilis. And should they not advocate the open-air treatment of syphilis? And should they not agitate ceaselessly for rational legislation on the point? I see great authorities speaking sanguinely of "stamping out this scourge (tuberculosis) of the human race." I believe there is no hope of stamping out "this scourge" without also taking means to stamp out the other even greater scourge, — syphilis. We should consider the soil, not the seed. The tubercle bacillus will always be amongst the flora of damp, dark countries, and while syphilis is plentiful, ever providing a suitable soil, tuberculosis also will flourish.

I do not believe that our National Association

against Tuberculosis will ever start a crusade against syphilis, unless the king, or some other strong, sensible man, or some independent members of a committee, were to take a strong line on the subject.

Many, I know, will say that my estimate of syphilis among phthisical men is too high. I feel confident that when they have made as full inquiries and observations as I have made, they will not be of that opinion. I refrain from offering the usual meretricious attempt at proof by plastic statistics. The last five years have sickened me with their rich supply of lying half-truths.

I only hope that the open-air treatment for early syphilis may become more usual, and I only hope that the National Association against Tuberculosis may advocate it. It need not be known whether the patient has tuberculosis or early syphilis, let the treatment be the same. By helping him to live down his syphilitic poison, we can prevent the chronic inflammatory processes which undoubtedly afterwards provide the soil for the tubercle bacillus. Surely this is not only a wise, but a very necessary policy. I firmly believe that half a million deaths a year in Europe would be prevented by this policy.

But I fear that by taking a strong line and striking at the root of much of the evil, the National Association would run the risk of alienating much valuable sympathy, for there are many worthy people whose firm convictions lead them to entertain the "*pox populi, pox Dei*" theory.

I do not remember having seen the open-air treatment of syphilis advocated in our journals. And yet it has long been clear to me that it is absolutely as loudly called for as the open-air treatment of tuberculosis. When a patient who comes to us is proved to have early tuberculosis we say to him: "This is serious. If you can afford it, you must give up your work, and go away for six months and be over-fed and live in the open air in the best possible climate. After that, if you can afford it, you had better live for another year or two in the open air." I contend that we should do well if we did *exactly* the same with an early case of syphilis.

Clinical Department.

A REPORT OF ELEVEN CASES OF MORBUS COXÆ SENILIS.

BY W. E. BLODGETT, M.D., BOSTON.

From the Orthopedic Department of the Carney Hospital.

ELEVEN cases of morbus coxæ senilis have been studied for this report. Of these eleven cases, six are men. Family history of two cases points to osteo-arthritis of the spine in parents; family history of a third case points to a general deforming joint disease (rheumatoid arthritis?); family history of a fourth case, to chronic knee trouble in a sister; of a fifth, to hip disease (?) in a brother; in all, there is family history of joint disease in five of the eleven cases. Age at onset of disease varies from twenty-six up; two under thirty; two, thirty to forty; three, forty to fifty; three, fifty to sixty; one, unknown. In six of the cases there is history of trauma, which was apparently a factor in deter-

mining the onset of the disease, as follows: Working treadle in making shoe strings, excessive walking, fall (two cases), laborious life of digging, and a period of being rattled about on a dump cart. In each of these cases, the relation of the trauma and the onset of the process at the hip is so intimate as to suggest its being causal. In five cases no etiology was discovered. History of trauma is not more common in the younger than in the older of the eleven cases. Pain is referred, in order of frequency, to the thigh (back or front), knee, hip, groin and lower leg; pain worse usually during use of hip; in two cases, worse at night; frequently affected by changes in the weather.

In four cases, both hips are more or less involved. Joints involved other than the hip are as follows: Knee (two cases), shoulder (one case), other joints normal (six cases), no record (one case).

There is permanent flexion of from 10° to 45° in all but one of the cases examined; the one case without permanent flexion was flexed at the beginning of treatment. In all the cases, motion in all directions was more or less limited, especially in rotation, abduction and adduction. Flexion, the motion most commonly used, is most frequently spared. In two cases the hips are practically ankylosed. Atrophy of the thigh is proportionately much greater than of calf in all the cases recorded, except one in which there is one-half inch atrophy of calf and none of thigh. There is shortening in all the unilateral cases but one; maximum, one inch; average, five-eighths inch. In several cases mild muscular spasm is present, probably due to recent strain; in one case spasm and sensitiveness were very marked, and there were all signs of acute coxitis. Five of the eleven cases have been studied by skiagraphs; these all show bony thickening about head and neck of femur; in one case the bony deposit is as large as an orange.

Treatment of these cases has been general and local.

The general treatment has been, forced feeding, mild catharsis and the copious ingestion of water; elixir of the triple phosphates has been the medication commonly used, if any. This has been prescribed because of its value as a tonic.

Local treatment has been protection, immobilization, and, in picked cases of ankylosis or very deficient mobility, excision. One case has not come under treatment. A second case, in which ankylosis greatly disabled the patient whose means and youth — thirty years — made it imperative for him to get about, was excised several months ago; the symptoms, which had been extraordinarily acute, were immediately relieved, and the patient is now freely walking with crutches and convalescent hip splint. A third case has been excised recently. It is too soon to judge the value of this operative treatment.

Of the eight remaining cases, one case, treated one month by flannel spica and cane, is much relieved. Three cases have been treated two to three months each by plaster spica and cane or crutches. Of these, one is considerably better, one is slightly better, and one, a large woman difficult to immobilize, is practically no better as yet. The fifth case, treated three months by plaster, followed by leather, spica and cane, is unques-

tionably improved, even when spica is removed temporarily. The sixth patient lives too far away to be under supervision and has followed treatment imperfectly, — she used flannel spica and crutches one month, and the last four months has, without advice, used crutches only. This patient gets relief only when using crutches or not bearing the weight on limb. The seventh patient has been two years under leather spica and crutch treatment, and has had almost unbroken relief from pain, night as well as day, and free mobility of the hip, although without the support the limb feels weak and she fears the pain will return. The last case of the series has faithfully followed leather spica and crutch treatment one year; crutches only six months; and inside convalescent hip splint without crutches, the last six months. Pain has been entirely relieved, although hard work may still give a sense of fatigue in hip; mobility has conspicuously increased; limb is losing former atrophy. Improvement has not been steady, as the patient has had two temporary relapses due to slight traumatism, but she is now beginning to omit all apparatus without pain or discomfort.

Of the eight cases treated by partial immobilization and protection during the day, six have already improved, and one has nearly recovered, thus emphasizing the benefit of immobilization and protection in this troublesome and sometimes neglected class of cases.

Medical Progress.

REPORT OF PROGRESS IN OBSTETRICS.

BY FRANK A. HIGGINS, M. D., BOSTON.

THE USE OF POTASSIUM CHLORATE IN THE TREATMENT OF CASES OF HABITUAL DEATH OF THE FETUS IN THE LATER MONTHS OF PREGNANCY.

ROBERT JARDINE¹ reports five successful cases of labor after the use of chlorate of potassium in patients who were previously subjected to repeated abortions, and says that upwards of half a century ago Sir James Y. Simpson introduced the use of potassium chlorate in the treatment of cases of habitual death of the fetus in the later months of pregnancy in non-syphilitic cases. In these cases the placenta is markedly degenerated and the purification of the fetal blood is interfered with. Simpson's idea was that the chlorate would give up its oxygen to the maternal blood, and oxygenation of the fetal blood, even with a badly degenerated placenta, would thus be possible. As a matter of fact, the chlorate does not give up its oxygen, but it certainly has a beneficial action on the endometrium.

At the present day there is a tendency to discard the use of what may be termed old-fashioned drugs in favor of newer, untried ones with long chemical formulæ. As he has had considerable experience with potassium chlorate, he gives short notes of a few cases treated in this way. In a clinical lecture on abortion published some years ago he incidentally referred to the use of potassium chlorate in the treatment of cases of habitual death of the fetus in

the later months of pregnancy. In reviewing his paper a writer in a journal of therapeutics took him severely to task, and warned his readers that this method of treatment was a most dangerous one, as the continued use of potassium chlorate for several months would most assuredly have a bad effect upon the patient's blood.

He was quite aware of that theory, but practical experience had shown him that, in regard to these cases, it was entirely fallacious.

His five cases are sufficiently illustrative. The drug was given, in all, continuously from the time the patients came under treatment until delivery was effected. Ten grains were given three times daily after food. The treatment should begin about the end of the third month.

The induction of labor before the usual time of the death of the fetus he has had experience with in one case of his own, and has also seen a case in consultation. In both of these cases the children were born alive but died within a few days. He therefore does not think that induction of labor is nearly so useful a method of treatment as the administration of potassium chlorate.

THE BLOOD OF PREGNANCY AND THE PUERPERIUM.

Pray² says that in the study of the literature one is impressed by the lack of uniformity concerning the condition of the blood during pregnancy. Prior to the perfection of instruments of precision for estimating blood states it was the prevalent opinion that the blood was changed during pregnancy. The pregnant woman was thought to have a much increased blood production, giving rise to a plethoric condition. More recently it has been believed that during pregnancy the salts and the specific gravity were diminished while the water and fibrin were increased. Investigations showed the condition of the blood to be one more of anemia than of plethora. The increase of fibrin in the blood is greatest near labor, and clinically is shown by the increased coagulability at that time. It has been shown that the source of the fibrin is a nucleoproteid due to the disintegration of white blood cells and blood plates.

Pray's observations were made on twelve patients and include 104 examinations and counts, 55 before and 49 after labor. From a detailed study of the individual cases, Pray is led to believe that the blood is only slightly altered as regards the value of red blood cells and hemoglobin in the average pregnancy. In the woman of low vitality, unable to supply the demand for increased nourishment and keep up with the increased metabolism, the generation of these two blood constituents is not rapid enough to keep pace with the increase of the vascular area, and a subsequent decrease in these blood constituents takes place. In a woman of good vitality, free from constipation (a potent cause of anemia in pregnancy), taking sufficient nourishment and assimilating the same, the stimulus caused by the constantly increased metabolism may result in a relatively high value of these blood constituents.

There would appear to be some variation in women³ of different nationalities, as he says that

¹ Brit. Med. Journ., vol. II, 1902, p. 1137.

² Am. Gyn., Oct., 1902, p. 337.

German women in general are "fuller blooded" than American is a matter of common observation. This might account for different results, to a certain extent, by different observers. There appears to be a certain amount of leucocytosis in pregnancy but there is no particular difference, in his cases, between the number of leucocytes in primiparous and multiparous cases; and he has not been able to confirm the statement that leucocytosis is absent in a large proportion of multiparous patients.

The conclusions reached by Pray are:

(1) Where blood generation fails to keep pace with the increased vascular area, a serous dilution of the blood takes place.

(2) In the majority of cases this is not serious and can be overcome by simple hygienic measures,—fresh air, good food and the overcoming of constipation. Cases in which the vitality is overtaxed by the increased demand for nutrition may call for iron or other hematinic treatment.

(3) The regeneration of the blood is partly effected by the lessening of the vascular area after labor and subsequent transudation of fluids of the blood into the tissues.

(4) The leucocytosis is due to increased action of enlarged lymph glands of the pelvis, and in part to increased metabolism, which causes a somewhat toxic condition. Its decrease is caused by the lochial discharge. Its persistence is accounted for by the fact that the involution of the hypertrophied pelvic organs and breasts is accomplished in a great measure by the leucocytes.

(5) A study of the blood of a woman delivered by the Cæsarean operation shows the same general behavior of the blood constituents as that of women after normal labors.

QUININE IN PREGNANCY.

Many of the popular beliefs which amount in many cases almost to superstition in regard to what it is possible for a pregnant woman to do or not to do are fast being cleared up. It was formerly believed that it was unsafe to give a pregnant woman ether even for so small a trouble as the extraction of a tooth, but it has been proven possible to perform all sorts of operations during pregnancy even upon the uterus itself.

Maggi, in *La Clinica Ostetrica* for April, 1902, publishes twenty cases in which quinine was administered freely to pregnant women without in any instance producing abortion. He dwells on the danger of not giving quinine in such cases as it is necessary, and cites one instance in which fetal death and abortion occurred presumably from malaria, the medical attendant being afraid to use quinine. In the cases where quinine was given, the infants were healthy and robust.

Betti, in the same journal for June, 1902, gives further clinical evidence where quinine can be safely given to pregnant women, and says that the risk of prematurely ending the pregnancy is less than that produced by the malarial cachexia. He records six cases in all of which quinine was given with the best results. Moreover, in an extensive epidemic of influenza he gave quinine freely to pregnant women. All of these women went safely to full term. Different preparations were given,

valerianate of quinine, salicylate of quinine, bichloride subcutaneously, and in a case of typhoid fever, sulphate of quinine was administered freely for three weeks. The writer³ concludes, therefore, that when pregnant women are affected by maladies that are usually treated with quinine, the drug may be used without the fear of its injuring the pregnancy.

RAPID DILATATION OF THE CERVIX BY BOSSI'S DILATOR IN "ACCOUCHEMENT FORCÉ."

Bossi of Genoa has recently devised the most efficient instrument yet invented for rapid dilatation of the cervix uteri, in eclampsia and other conditions demanding rapid delivery, or in cases where the cervix is rigid and the first stage very slow. The instrument is of metal, with four arms made to expand by means of a series of levers controlled by a single screw.

Several men have reported a considerable number of cases in which they have used Bossi's dilator, all with uniform success. From ten to thirty minutes are required for complete dilatation without laceration in a primipara, depending upon the rigidity of the cervix. Leopold of Dresden has become greatly impressed with the value of the dilator and has recently published twelve cases in which he used it, seven of eclampsia, one of advanced phthisis, one of pregnancy with uterine cramps, one of labor with high fever, and two of contracted pelvis. In eclampsia its use was especially successful, the convulsions ceased in two cases after dilatation, while all the cases recovered.

Leopold⁴ states regarding this instrument: (1) that in all cases the cervix can be fully dilated within half an hour, allowing of turning or application of forceps; (2) there is no danger of tearing the cervix; (3) uterine contractions come on very soon after the introduction of the instrument. For cases of eclampsia it is specially of value, and will probably exclude Cæsarean section in the treatment of this condition when associated with closed and rigid cervix.

Other cases have been reported by Macnaughton-Jones, Simpson and Frost of England, by Lirola and Paoli of Genoa, by Kaiser and Knapp of Germany, all with apparently uniform success.

The reporter has recently used Bossi's dilator in a uterus where only partial dilatation was required. The instrument is undoubtedly a powerful one and able to accomplish the object for which it was designed. The chief criticism which he would offer, but this unquestionably is a potent one, is that the mechanism of the dilator is very complicated, and the instrument is so constructed, with its numerous parts (many levers and screws), that it is practically impossible to take it apart for cleaning. This feature renders strict asepsis impossible, and is of course a *sine qua non* in any surgical instrument at the present time. The instrument is of metal and may be boiled, but its many slots and crevices will harbor surgical dirt, so that in a short time mere boiling would be inefficient. It is surprising that this very objectionable feature of the instrument has not elicited criticism before this.

³ Journ. of Obstet. and Gyn. of the Brit. Emp., p. 291.

⁴ Leopold: Arch., f. Gyn., vol. lxvi, p. 198.

GANGRENE OF THE NIPPLES IN THE PUERPERIUM AFTER THE USE OF ORTHOFORM.

Four years ago in this department there were reported some instances in which orthoform was used for fissures and cracks of the nipples in nursing women. At that time orthoform was recommended as an antiseptic powder and also as a local anesthetic. Orthoform was declared to be perfectly harmless for external use and absolutely non-toxic for the baby.

A case has been recently reported by Vincent⁵ in which orthoform was used for excoriated nipples, being powdered for several days freely upon the excoriated nipples, and the nipples also protected by rubber shields. Some days after its use the whole front of the breast became covered by a dark red rash, the skin infiltrated, edematous and very tender, and the question of erysipelas was raised as there was a slight resemblance to this disease. The patient's general condition, however, there being no constitutional symptoms except local pain and slight headache, quite excluded erysipelas. The nipples became grayish black in color with absence of sensation, and soon became definitely gangrenous. The rash extended to the chest, the back and also to the buttocks. Both nipples sloughed, and healing occurred slowly by granulation. The author says it is impossible to prove the cause of the gangrene, but he believes it to have been due to the orthoform, as such a rash is well known to those who use orthoform in general surgery. In a letter to the *Lancet* of April 12, 1902, the writer, George Pernet, in referring to Vincent's case, believes there is no doubt that orthoform was the cause of both the rash and the gangrene, as several instances of the latter complication have been recorded.

The reporter has used orthoform a considerable number of times for fissures of the nipples since its introduction, and has known of its use in many other cases and without any harmful effect. He has usually used it in alcoholic solution however. It would seem, therefore, that its use in powder form at least is not without danger.

RESUSCITATION BY INFUSION THROUGH THE UMBILICAL VEIN.

Shücking⁶ has been induced by studying the emptying of the placenta and its blood into the umbilical vein by intra-uterine pressure to attempt the infusion of saline solution into the umbilical vein as a means of resuscitation when the more common means fail. He reports one case where the infant was born in an exhausted condition after a prolonged labor. After failure of other means of resuscitation, and the heart sounds were scarcely distinguishable, he immediately cut the cord and injected about 50 grms. saline solution into the umbilical vein. This reinforced by Sylvester's artificial respiration revived the child successfully.

NEW METHOD OF RESUSCITATION IN ASPHYXIA NEONATORUM.

Mankovitch⁷ says the most energetic method of resuscitating asphyxiated newly born infants is that

⁵ *Lancet*, April 5, 1902, p. 962.

⁶ *Med. News*, Aug. 23, 1902, p. 358.

⁷ *N. Y. Med. Journ.*, Nov. 15, 1902, p. 870; *Vratch*, Oct. 15, 1902.

of Schultze, which is described in all the textbooks. At the same time, his method, though very popular, is one which in inexperienced hands may become quite dangerous, and in any case it is a rough, brutal procedure. In the beginning, when the author employed it, he was often afraid that the slimy, slipping body of the infant would slip through his fingers, and that he would injure some of the child's internal organs by the manipulation of throwing it up feet foremost. Cases are on record in which this method was followed by hemorrhage into the cavity of the stomach and into other organs, and even by rupture of the pleura. For the past two years, therefore, the author has used another method which avoids the dangers of Schultze. The principle of greatest possible compression followed by dilatation of the child's thorax is the same in this method as in that of Schultze, with the exception that the body of the infant is given a firm point of support. In asphyxia neonatorum the author first cleanses the child's mouth, holding it with the head downward, suspended by the feet. The cord is then tied and cut, and the infant immediately seated upon its buttocks on a table or bed, with its legs spread and extended, the back being towards the operator. The body is grasped from behind with both hands in the axillæ, the fingers on the thorax, the thumbs on the scapulæ, and then the whole body is bent forward, with the head foremost and downward toward the feet, the hands at the same time compressing the body. The body is then raised from its bent position and brought into the horizontal plane, the chest thus being expanded by the fingers in front letting their grip relax and the thumbs pressing from behind slightly raising the trunk. A small roll of blanket may be placed under the child's back for convenience. The method thus outlined has many advantages. It is easy of execution, enables one to watch the child's condition, and does not involve any injury. There is no need of special speed in performing the motions of this method. Respirations begin to show themselves even after a few movements such as have been described. The method is simple enough to be taught to nurses and to be applied by them in case of emergency.

(To be continued.)

Reports of Societies.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE TWELFTH ANNUAL MEETING, HELD AT ST. JOSEPH, MO., DEC. 29 AND 30, 1902.

[Continued from No. 4, p. 102.]

GUNSHOT WOUNDS OF THE STOMACH.

In commenting on this and other cases of gunshot wounds of the stomach, the essayist stated that since surgeons of international reputation do not agree as to an immediate operation, he prefers to accept that which may seem less conservative, namely, an immediate operation in all cases where it is reasonably certain that the stomach has been perforated.

DR. VAN BUREN KNOTT of Sioux City, Iowa, contributed a paper on

FOWLER'S POSITION IN ABDOMINAL SURGERY.

Since it was brought to his notice, he has employed this position in the treatment of cases of septic peritonitis, and he reported five recoveries from diffuse septic peritonitis. These successes were not consecutive, however, no two of them having occurred without an intervening failure. Brief histories of the five successful cases were given, as they are the only cases of diffuse septic peritonitis that have been operated upon by the author successfully. The Fowler position was maintained for twenty-four hours, unless some special reason for continuing it was present. He says that the head of the bed should be raised from eighteen to twenty inches from the floor. He hoped that those present who had neglected to employ the Fowler position would be induced to do so, for he believes that it can do no harm, and in many cases will prove of much value.

DR. A. F. JONAS of Omaha, Neb., read a paper entitled

OLD IRREDUCIBLE DISLOCATIONS OF THE SHOULDER JOINT.

The author referred at length to the literature of such cases, and reported seven in his own practice. His method of dealing with these cases consisted chiefly of (1) manipulation, using the forearm as a lever, rotating outward and inward; abduction and adduction, never forgetting for a moment a possible accident to the axillary vessels and nerves, and the possibility of fracturing the humerus. (2) If this plan fails, the capsule is incised, and all cicatricial tissue is extirpated. All muscular attachments that offer restraint are severed, the axillary vessels are protected with a broad, flat retractor, and the head of the bone is brought into place by means of an elevator, assisted by manipulation and traction. To avoid infecting the wound in this last maneuver, it is advisable to wrap firmly the entire arm and hand with wet sublimate towels. Dry towels are liable to slip and become displaced, making it possible for the operator's hand to become infected. If the head cannot be replaced, then (3) the head of the humerus should be resected, an operation to be avoided when possible, on account of the resultant flail-like condition of the arm, and yet must be done (a) when the humeral head and neck become too extensively stripped of their attachments, experience having shown that necrosis may occur in 16% of the cases; (b) when osseous union has occurred between the head and the ribs; (c) when, after a division of all restraining soft parts, the head rests against the point of the acromion process.

DR. ALEXANDER HUGH FERGUSON of Chicago reported a

CASE OF END-TO-END ANASTOMOSIS OF THE POPLITEAL ARTERY FOR GUNSHOT INJURY.

He gave a history of the injury, described the physical findings, and the operation which he did.

DR. WILLIAM E. GROUND of West Superior, Wis., contributed a paper on

NATURAL AND LOGICAL TREATMENT OF INJURIES OF THE PELVIC FLOOR OCCURRING DURING PARTURITION.

His conclusions were that almost every woman during her confinement suffers injuries from which she does not recover unless she is subjected to a secondary operation for repair of lacerations of the pelvic floor; that immediate suture of apparent lacerations does not restore pelvic support in the vast majority of instances; that from one to two months after labor the woman should be subjected to a thorough examination, and any relaxation corrected before it has had time to impair her health.

DR. B. MERRILL RICKETTS of Cincinnati, Ohio, presented a paper on

LUNG SURGERY; HISTORICAL AND EXPERIMENTAL, which was illustrated by lantern slides. The author's conclusions were:

(1) Severing one or more of the larger pulmonary blood vessels results in instant death.

(2) If death does not result within a few minutes, bleeding will be slow and gradual.

(3) If bleeding is slow and gradual, it may require hours or days to cause fatal exhaustion.

(4) If death does not occur until after the end of the second day following severe bleeding, infection is its cause.

(5) All or a part of the escaped blood may pass through the opening in the chest into the bronchus or alimentary tract.

(6) The blood may escape into the pleural cavity or cavities, pericardial or peritoneal cavity, or all, and thereby become concealed.

(7) Pneumonotomy. More definite knowledge of conditions and symptomatology is necessary that surgery of the lung may be perfected and made more aggressive in general.

(8) Abnormalities, congenital or acquired, must always be considered in dealing surgically with the lungs.

(9) Atelectasis and apneumotosis should be cared for by relieving the compression by removing the cause.

(10) The same surgical principles can be applied to the lung as other organs of the living body.

(11) The bony chest may be opened for exploration of the lung with as little danger as opening the abdomen, cranium, articulating capsule, kidney, liver, pancreas, spleen, stomach, gut, or hepatic duct.

(12) Hermetically closing the chest is irrational, unscientific and dangerous.

(13) Closing the chest wound by any means does not prevent the escape of blood from injured pulmonary vessels into the pleural cavity.

(14) All wounds of the chest wall, whether penetrating or non-penetrating, should be treated aseptically, and with reference to drainage.

(15) No instrument or needle should be made to enter the lung tissue for exploration, or the removal of fluid, unless the bony chest has previously been opened.

(16) Foreign bodies in the bronchi or parenchyma of the lung may be detected with a fine exploratory needle through an open chest, with the lung contracted.

(17) Foreign bodies in the lung and bronchi, when causing serious symptoms, should be removed.

(18) Some small, foreign bodies become encysted and remain harmless.

(19) The position of a foreign body in the lung changes with expansion and contraction of the lung.

(20) Hemorrhage, when due to pulmonary tuberculosis, should not be allowed to become fatal without opening the bony chest, and the application of pressure by forceps, gauze or otherwise.

(21) Bleeding of the lung from any cause will, in many cases, cease when the lung is allowed to contract upon itself, with an open chest.

(22) Blood clots within the pleural cavity should be removed at the time they are discovered, whether infected or not.

(23) Blood clots in the pleural cavity may become organized with or without adhesions of the parietal and visceral pleura, or they may become infected and cause more serious consequences.

(To be continued.)

SUFFOLK DISTRICT MEDICAL SOCIETY.

F. J. COTTON, M. D., SECRETARY.

STATED meeting, Oct. 25, 1902, Dr. T. M. ROTCH presiding.

DR. ROBERT B. OSGOOD read a paper on

LESIONS OF THE TIBIAL TUBERCLE OCCURRING IN ADOLESCENCE.

DISCUSSION.

DR. E. G. BRACKETT: The subject presented by Dr. Osgood is one of very marked importance as well as one of interest. Since it is one of those in which the x-ray is beginning to show new light, both on the local condition and on the diagnosis, and we need to have all the information possible while we are learning about the true position to be given to this kind of evidence, I think that Dr. Osgood has presented this subject, which is new, in a particularly wise manner. We should be critical in the interpretation of the conditions shown by the x-ray, which are as yet not thoroughly understood. He has, in addition, given us control observations, and has used the conditions found by his x-ray to substantiate only the clinical features. The value of this kind of work lies largely in its application to allied conditions, particularly such as have been in the past considered as sprains, which have shown an unusual amount of clinical persistency. These are undoubtedly more than the usual rupture of ligaments, and it explains why many of these have shown such definite local symptoms from the number of injuries following sprains of unusual force, in which the prominence of the clinical symptoms are out of proportion to the physical signs. These symptoms are confined to a closely defined area and to disability in the impairment of the special function presided over by the part. Many of these conditions are shown now to be injuries of the bone from complete fractures or a tearing off of a prominent part of the bone, and due to the severe muscle actions. These cases are beginning to be reported, a large variety of them are seen, and a

careful work on cases like those of which we have just heard has a wide general importance.

DR. GOLDTHWAIT: It seems to me Dr. Osgood has made a distinct contribution to our surgical knowledge, and all the observations which he has made, and the details and the care with which they have been worked out, is entirely due to his own effort. He has personally been a great help to me. We had worked for some time, recognizing these cases and devising methods of treatment, but the exact nature was not revealed until Dr. Osgood made these studies. It seems to me a particularly opportune time to have this brought before this society, just at the football season.

DR. CODMAN: I think that most of us have seen these injuries before, but have not known what was the cause of them. I know of two doctors in Boston who still have evidences of such lesions from playing football, and I have no doubt that the injury occurred in the way Dr. Osgood tells us. The importance of the communication he has made lies in his explanation of the injury. Many of us have recognized the injury, but supposed that it came from direct violence, perhaps a bruise starting periostitis, which caused new bone formation, and formed a little addition to the bone, a small osteophyte. The fact that in youth the insertion of the patella tendon is more apt to yield to strain than other portions of the quadriceps is suggestive.

We all know that in some people muscular contraction of the quadriceps will rupture the patella. In my own experience the only cases of ruptured patella I have seen have been in people past the age in which the epiphyses have united. They may sometimes occur in boys of the age at which lesion of the tibial tubercle occurs, but I have not seen them. Occasionally sudden contraction of the quadriceps causes tearing of the capsule above the patella. I have personally seen only three cases of this, and these cases have been in men past sixty. Perhaps it may be, then, that the point most likely to yield to excessive strain of the quadriceps varies with the age of the patient.

Another point that strikes me is the fact that little bodies of bone similar to these fragments torn from the patellar tubercle are often seen in x-rays of the tendons in other places, for example, in the insertion of the triceps in the point of the olecranon, or in the insertion of the tendo Achillis in the upper part of the os calcis. I have several times taken x-rays of people with such conditions. I have brought down three plates which I can only mention because it would be impossible to show them to so large an audience. One is of a man who plays golf a great deal, and who one day in driving had a sudden sharp pain at the point of the elbow. The x-ray shows at that point a little hook of bone apparently growing up into the tendon of the triceps. It was my supposition at that time that the effort of making the drive had caused a fracture of an osteophyte. The more he used it the more it became inflamed. Another x-ray is exactly similar in a laboring man, which occurred from lifting or hammering. I had supposed before Dr. Osgood's paper that these injuries were more a periostitis or a new bone formation than direct tearing away by violence of the insertion of the tendon. I think he is to be congratulated for having pointed this out so clearly in the tibia.

Recent Literature.

A Compend of Human Physiology. By A. P. BRUBAKER. Eleventh edition, pp. 270. P. Blakiston's Son & Co. 1902.

In the eleventh edition of a textbook intended for medical students, one would expect to find the work done systematically and with few or no errors.

When noticing the tenth edition, the reviewer called attention to the indiscriminate use of the metric and the English systems of weights and measures. This vicious practice has not been improved upon in the present edition, and it is apt to confuse rather than help the average student.

The reader is told that *cupric hydroxide* is reduced to a condition of a cuprous oxide by dextrose, but that levulose "has a reducing action on *cupric oxide*," (p. 19). Also, "stimulation of a sensory nerve, if sufficiently strong, results in the sensation of pain; of the optic nerve in the sensation of light," etc. Here, as in most other portions of the book, the term *sensory* is used as an equivalent of *pain* and *tactile*, but the student may be confused when he reads (p. 217) that under "sensory" may be included sight, auditory, gustatory and olfactory impression effects.

The following extracts will illustrate the opinion of the author upon some interesting topics: "Experimentally, it has been determined that the anterior or ventral roots contain all the efferent fibers, the posterior or dorsal roots all the afferent fibers" (p. 77).

"Irritation of the cerebellum is not followed by any evidence either of pain or convulsive movements; it is, therefore, *insensible and inexcitable*" (p. 206).

"In congenital idiocy not only is the brain of small size, but it is wanting in proper chemic composition *phosphorus*, a characteristic ingredient of nervous tissue, being largely diminished in amount" (p. 213).

"As to the manner in which the objective stimuli — light and color, so called — are transformed into nerve impulses, but little is known. It is probable that the ethereal vibrations are transformed into heat which excites the rods and cones" (p. 236).

"Division of the *depressor nerve* and galvanization of the central end retard and even arrest the pulsation of the heart, and, by depressing the vasomotor center, diminish the pressure of blood in the large vessels by causing dilatation of the intestinal vessels through the splanchnic nerves" (p. 194).

Oxygen "in all probability unites with the sulphur hydrogen of the food to form water" (p. 141).

"Fibrinogen can be obtained by *strongly diluting* serum and passing carbonic acid through it for a long time, when it is precipitated as a viscous deposit" (p. 120).

"Peptones . . . pass through the wall of the capillary blood vessel" (p. 116).

"When subjected to the action of super-heated steam, a neutral fat is saponified, that is, decomposed into glycerine and the particular acid indicated by the name of the fat used" (p. 22).

To the reviewers the work seems rather badly done, aside from the difficulty of writing such a compend. It is doubtful whether or not the insertion of so much histological material is advisable. It makes

the book too large to be called a "compend" — there are 270 pages of rather small type as compared with 640 pages of rather large type in a standard work on physiology — and these facts of histology should have a place outside a physiological compend.

Binding, paper and letter press are the same as in former editions.

Therapeutics of Dry Hot Air. By CLARENCE EDWARD SKINNER, M.D., LL.D. New York: A. L. Chatterton & Co.

A discussion of the therapeutic uses to which hot air may be applied and of its value in different affections is not undeserving of a monograph, but the extent and importance of the subject hardly warrant its being carried over 200 good-sized pages, as is the case in the volume before us. The enthusiasm of the author seems to have carried him beyond a judicial consideration of the subject, and he has failed to resist the temptation of vaunting, in a manner hardly warranted by the facts adduced, the curative value of hot air in many conditions in which the judgment of the profession at large places it in a position of secondary or doubtful importance.

The chief value of Dr. Skinner's book lies in some good suggestions about the technique of applying hot air, and in the precautions necessary in giving a "body treatment," arising from its physiological results. He calls attention to the profound stimulation of the deep nervous centers, evidenced by the rise of pulse and temperature, which is caused by the application to the entire body of heat of 300° to 350° for half an hour, and he likens it to the results produced by hydrotherapy. This deep reflex response is the aim of his "body treatments."

He claims that hot air alone will cure many cases of arthritis deformans, but does not recommend reliance upon it to the exclusion of other measures. In connection with this disease he states that in a patient whom he treated for three months with hot-air baths, he observed at the end of this time a complete disappearance of the atheroma which had previously existed, as shown by thickening of the radial arteries. He believes that absorption of the lime salts, deposited in the vessel walls, takes place under the influence of hot-air baths, but advises "less than 350° of heat until the arteries have softened some." He finds no contraindication to these treatments in atheroma or valvular heart disease.

He discusses at considerable length the use of hot air in pneumonia, and believes that, "thoroughly and judiciously applied, it is one of the most efficient means now known for combating the disease."

We should hesitate to recommend widely the use of hot air in even "ordinarily severe blood-poisoning," and we agree that "hot air must not be expected to remove pus." Nor can we agree that hot air "would seem to be an ideal measure for the removal of nerve debility of any degree."

Dr. Skinner apparently does not consider that ether can be used to advantage in an attack of hepatic colic, and the case cited of a woman who passed gall-stones in the feces after a severe seizure of this sort does not convince us that the occurrence might not have taken place if she had never received hot-air therapeutics. The author has applied

hot air with varying degrees of benefit in a large number of conditions. In one case in particular, he states that he saved the life of a patient in *extremis* with typhoid fever, by the timely use of five hot-air treatments.

The book impresses the reader as being full of the suggestions of an enthusiastic "hot-air expert" for the employment of dry heat in conditions where it is often impractical or runs the chance of doing considerable harm for the sake of very problematical good. It cannot be called a judicial statement of the uses and limitations of this mode of treatment.

Diseases of the Pancreas and Their Surgical Treatment. By A. W. MAYO ROBSON, F.R.C.S., Senior Surgeon, Leeds General Infirmary; Emeritus Professor of Surgery, Yorkshire College, Victoria University, England; and B. G. A. MOYNIHAN, M.S. (Lond.), F.R.C.S., Assistant Surgeon, Leeds General Infirmary; Consulting Surgeon to the Skipton and to the Mirfield Memorial Hospitals, England. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1902.

The attention which has been directed to the pancreas within the past few years has made it apparent that hopeful treatment for remediable diseases of this organ must be offered by the surgeon, not by the physician. It must be the function of the latter, however, to facilitate the diagnosis of these affections, although unfortunately at present most of the diagnoses are made by the surgeon after an exploratory operation or by the pathologist at an autopsy.

Mayo Robson has made one of the most important practical contributions to the diagnosis and treatment of diseases of the pancreas by having demonstrated that in a considerable number of cases of chronic jaundice the condition present was chronic pancreatitis, not cancer, the cause was an incarcerated gall-stone in the ampulla of Vater, and the removal of the cause accomplished a cure.

In the volume now under consideration the authors have informed the reader how this result was brought about. They have produced also an interesting and concise work on the various diseases of the pancreas.

Hope is expressed that chemical examinations of the urine, or urine, blood and feces, may aid in the diagnosis of deficient pancreatic secretion in the bowels. This hope, it appears, is based upon the observations of Mr. Cammidge, who boiled urine for a short time with an oxidizing agent and then applied the phenyl-hydrazin test. Abundant crystals were found in a case of chronic pancreatitis, while the results were negative when there was no pancreatitis.

The writers dedicate the volume "to the surgeons of America," and also show appreciation of the work of the latter by numerous references to and quotations from their publications. Both physicians and surgeons will acknowledge their indebtedness to the authors for an admirable essay upon the subjects concerned.

A word of commendation may be added for the publishers, who have issued a volume of handy size and weight, agreeably illustrated and clearly printed.

Studies in Neurological Diagnosis. By JAMES J. PITNAM, M.D., and GEORGE A. WATERMAN, M.D. 12mo. pp. x 214, with 33 plates and eight illustrations. Boston: Geo. H. Ellis Co., Printers. 1902.

The present volume is a direct outgrowth of the "case system" method of instruction, which has been in vogue for the last two or three years. It is a record of 170 cases of nervous disease, taken largely from the neurological clinic of the Massachusetts General Hospital. The cases have been selected not as illustrative of the commoner types of disease, but as affording problems for study. Often, too, the cases are given in incomplete form. Nevertheless, the series of cases as given includes nearly all the familiar types of nervous disease, and affords a tolerably complete picture of clinical neurology. So far as we know, it is the first attempt to present a series of cases suitable for instruction by means of the "case" method, and it attains the object admirably in the clearness of its clinical descriptions and the abundance of its clinical material. In a few instances, however, it is stated that certain points of much importance in the given case will be brought out later in the discussion, which is a disadvantage to others who may wish to use the work in their own teaching. The book is interleaved for convenience in note taking.

The Treatment of Tabetic Ataxia by Means of Systematic Exercise. By Dr. H. S. FRENKEL. Translated and edited by L. FREYBERGER, M.D. 8vo. pp. xiv, 185, with 132 illustrations. Philadelphia: P. Blakiston's Son & Co. 1902.

It is about thirteen years since Frenkel first began to teach that re-education of the muscles, especially by the aid of the sight, might be of substantial benefit by aiding the ataxic patient to re-acquire the power of co-ordinated movements. Since that time the methods taught by him have won such general acceptance by all who have been called upon to treat tabid patients for ataxia that it is safe to say that to Frenkel we owe the one definite advance in the treatment of tabes that has been made during the last fifteen years. Two years ago Frenkel published a volume incorporating the latest details in his method of treatment. The first part of it is devoted to a study of the true nature of tabetic ataxia, which he believes is due primarily to the diminution of sensibility, especially of the muscles and joints, but which may be exaggerated by the great muscular hypotonicity so often met with. This portion of the book is especially to be commended to all students of neurology, for the question of muscular tonicity and the tests for some of the forms of sensibility are described much more fully than in the ordinary textbooks. The latter half of the book is devoted to the description of the various forms of exercise adapted for the re-education of the muscles in cases of ataxia. This section is so profusely illustrated that the whole process is made perfectly intelligible to every one, and is indispensable to all who would undertake to treat a patient with ataxia. The volume before us condenses the original somewhat, omitting some of the more theoretical portion, but it reproduces all the illustrations. The translation is intelligible but by no means elegant.

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THE EXPANSION OF SURGERY.

THE tendency toward specialism which has characterized the recent development of medicine has unquestionably brought with it many advantages, not the least of which is the growing recognition of the close inter-relationships of the fundamental branches of medical science with medical practice. The student of a special subject must now look far beyond the immediate range of its practical application to the principles upon which all thorough special study must rest. The disadvantages of specialism are to some minds manifold and threatening, but it must at least be given the credit of making us better anatomists and pathologists and physiologists. It requires no very keen insight to appreciate the fact that these fundamental branches are being studied and applied in the practical work of the physician as never before.

A most striking example of this tendency may be seen in that most practical of all the departments of medicine, — surgery. At a recent largely attended medical meeting in Boston, on the general subject, "Consideration of Blood Pressure," the chairman, Dr. W. T. Councilman, in introducing the readers of the evening, who were both surgeons, remarked on the fact that in its early differentiation from general medicine, surgery had quickly adopted and made use of the teachings of pathological anatomy as an aid and incentive to its best work. He spoke further of a new tendency which was becoming evident among progressive students of surgery, namely, a closer application of physiology and the methods of the physiological laboratory to the problems of surgery. The papers which followed were certainly a striking exemplification of this point of view. Dr. George W. Crile of Cleveland, a surgeon widely trained in physiological methods, read a highly original paper on "Some Observations on the

Methods of Control in the Blood Pressure," on the basis of a large series of experiments with the end in view of determining the nature of collapse and shock, and methods for their rational treatment. The detailed and somewhat radical conclusions reached by this investigation of an eminently practical sort derive their interest and importance from the fact that they were reached wholly by physiological experimentation.

Dr. Harvey Cushing of Baltimore read at the same meeting a suggestive paper on the "Clinical Value of Blood Pressure Observations," with particular reference to various instruments and the clinical value of such observations. In the discussion of these papers Dr. W. T. Porter spoke on the importance of introducing accurate methods of physiological experimentation into clinical work, and the necessity on the part of clinicians of recognizing the value of such methods of investigation.

The point upon which we wish to lay stress is that a meeting of this sort, in which the communications were from surgeons on physiological topics, is worthy of more than passing mention as an indication of an evident and valuable tendency. It must be apparent to all who have gone below the surface in any line of clinical work that questions of practical import are continually presenting themselves, which can only be answered by an appeal to an entirely different department of medical research. The student of disorders of gastric or renal function must continually appeal to underlying principles which chemistry, apparently, can alone answer; the neurologist requires a continually increasing store of anatomical and pathological knowledge if he is to make the diagnoses required of him; the surgeon sees in his practical work, for example, the phenomena of shock and its consequences, and seeks for its cause and its remedy through the medium of physiological, not of surgical, investigation. Men of surgical training are undoubtedly coming more and more to a realization of this principle of the complicated interrelations of their work, regarded from the broad point of view. The overcrowding of the operative field adds a certain stimulus to this collateral investigation, and we are finding surgeons more and more departing from the narrow range of their original work into alien but related fields, to the definite advantage of general medicine.

In spite of the fact of the manifest tendency to exclude men working in clinical fields from positions of responsibility in the so-called theoretical and fundamental departments of medicine, anatomy, chemistry, pathology and physiology, it is evident that clinicians are coming more and more to feel their

dependence upon these fundamental branches, and are attempting with success to work out many of their problems by recourse to laboratory methods. Anything which will tend to make closer the bond between conditions of disease as clinically observed and the laboratory branches of medicine should be encouraged to the last degree. The work of surgeons in pathological and physiological lines is doing a large share toward this consummation.

INTRAVASCULAR ANTISEPSIS.

RENEWED interest has lately been drawn to the subject of intravascular antiseptic by the reported successful treatment in New York of a case of puerperal septicemia by injections of a formalin solution. If the report, which at first reached us largely from newspaper sources and has apparently since been confirmed, be true, there can be no question that at least in this case a cure of an otherwise fatal condition was effected by this somewhat radical form of treatment. General discussion of the matter which followed the report of this case has brought out a renewed enthusiasm for this method of combating septic conditions, and has also revived a healthy skepticism as to the extent to which it may be safely and successfully employed.

The principle of intravascular injections of various antiseptic solutions for the relief of septic conditions is not new, although it appears that comparatively few attempts have been made to test its efficiency on man. In the edition of the *Lancet* for Jan. 10, an interesting and timely review of the general subject is given by J. M. Fortesque-Brickdale from the Bacteriological Department of the Jenner Institute of Preventive Medicine. From the historical retrospect given in this paper it seems that as long ago as 1656 Sir Christopher Wren suggested the idea that drugs might advantageously be introduced into the circulation by direct injection. Many observers since that time have attempted this method of treating conditions of disease, among whom Baccelli may be mentioned, particularly in relation to the treatment of disease caused by bacteria. Baccelli introduced the intravenous injection of a salt of mercury in the treatment of syphilis, a procedure which after considerable trial has been abandoned as offering no special advantages over other methods. He was more successful in his treatment of aphtha epizootica in cattle, a success which was not, however, attained by other experimenters.

Experiments have been made by Maguire and Ewart to render the lungs aseptic by injecting solutions of formalin and protargol into the circula-

tion. A large number of tuberculous patients have been treated by this method with, on the whole, encouraging results. A very large number of experiments of a varied character, with the same general end in view, have been done by Continental and English observers but with somewhat unsatisfactory results. Among the latest of these experiments are those which form the basis of the paper to which we have alluded. Rabbits were used as the experimental animals, and the attempt was more to determine how far injection of various substances into the circulation was capable of counteracting the effects of bacteria or bacterial poisons previously introduced. From these experiments the following conclusions are drawn :

“That rabbits injected daily with non-toxic doses of oxycyanide of mercury, formic aldehyde, chinisol, protargol or taurocholate of sodium are not thereby protected from the usual effects of a previous inoculation of virulent anthrax ; and that chinisol and formic aldehyde in large doses (toxic) so depress rabbits infected with the pneumococcus that they die sooner than an untreated animal.”

From this work it is claimed that the experimental evidence is not sufficient to warrant the assumption that septicemia in animals can be favorably influenced by intravenous antiseptic injections. It is maintained, therefore, that the method probably has no future as a therapeutic measure.

It need hardly be said that the whole subject, so far as the treatment of human beings is concerned, is in a far too uncertain state to permit of any dogmatic assertion. The experience in New York would, however, seem to show that the danger of intravenous injections sufficiently large to produce a decided amelioration of symptoms is not in itself necessarily prohibitive. We have already heard of several other cases in which this treatment has since been tried. In at least one of these there was at first a decidedly encouraging improvement, but death subsequently supervened. This was a streptococcus septicemia. We shall look forward with much interest to further experience on the subject, which no doubt will be forthcoming now that one case at least seems to have been saved by this radical method of treatment.

MEDICAL LIBRARY AND HISTORICAL JOURNAL.

THE first number of this journal, the publication of which has already been announced in these columns, has appeared. It will be issued quarterly under the editorship of Albert T. Huntington and John S. Brownne. The object of this new journal, as stated in an editorial comment, is to supply medical historians, medical librarians and medical

bibliophiles with an exclusive medium of intercommunication. The fact is pointed out that there is an awakening interest in medical history, that medical bibliography is a subject of great importance, and that the recent development of medical libraries should all have recognition in a journal devoted to this end.

It is desired to publish original articles on subjects coming within the scope of the journal, to discuss practical methods of library administration, care of books, the construction and use of medical libraries, etc. In addition to this an index of every current medical book will be published. The Association of Medical Librarians, which was founded in 1898, has adopted the journal as the official organ for the publication of its transactions. Under these auspices and supported by the medical profession in general, we have no doubt the periodical will fill a place of permanent usefulness. This first number contains a variety of articles, largely of an historical sort, in addition to many facts and suggestions which should be of use in the encouragement and development of the literary side of the profession. The journal certainly infringes on no one's territory, and should receive a general and cordial support.

MEDICAL NOTES.

GIFT TO THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—Through the instrumentality of Dr. S. Weir Mitchell, Mr. Andrew Carnegie has been led to offer to the College of Physicians in Philadelphia \$50,000, on the condition that the college raises \$50,000 more. Of this sum, \$10,000 is said to have already been subscribed by Mr. F. W. Vanderbilt, and \$5,000 by Mr. Clement A. Griscom. It is intended to expend this \$100,000, which it is hoped will be raised, on improvements in the library of the college, which in importance already stands next to that of the Surgeon-General's office in Washington.

HOSPITAL FOR MANILA.—It is reported that Bishop Brent of the Philippines, late of Boston, is at the head of a movement to establish a large non-sectarian general hospital in Manila, which is to be modeled after the Boston City Hospital. The government has been petitioned to aid in this undertaking, which, under present conditions, could not be supported by private effort.

BURNING OF THE COLNEY HATCH ASYLUM.—Occurring almost coincidently with the hospital fires referred to under Boston and New England notes, there was serious loss of life in the burning of a wing of the Colney Hatch Asylum, the county insane hospital, near London. Five wooden buildings were de-

stroyed, and over fifty lunatics, all women, were burned to death, some of them as they lay in their beds. The patients were panic-stricken, but nearly six hundred of them were removed safely, though with the utmost difficulty, to the main building. Some of them escaped from the attendants and remain at large.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Jan. 28, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 57, scarlatina 37, measles 10, typhoid fever 11, smallpox 4.

OFFICERS OF BOSTON LYING-IN HOSPITAL.—At the annual meeting of the Boston Lying-in Hospital the following-named officers were reelected: President, Nathaniel Thayer; vice-president, Henry H. Sprague; treasurer, Charles S. Hamlin; secretary, William D. Sohler; trustees, William H. Baldwin, Thomas F. Edmunds, Oliver Ames, Charles W. Hubbard, Samuel Wells and Wallace L. Pierce. Two trustees, Dr. J. Collins Warren and Dr. George B. Shattuck, are appointed from the Massachusetts Humane Society, and two, George G. Crocker and James G. Freeman, from the Massachusetts Charitable Fire Society.

FUNDS NEEDED TO REBUILD CONVALESCENT HOME.—The Board of Managers of the Convalescent Home of the Children's Hospital has made a strong appeal for money to rebuild the Convalescent Home at Wellesley, recently destroyed by fire. It is pointed out that the home must be immediately rebuilt if the work of the hospital is not to be seriously hampered; hence immediate gifts are desired. The insurance on the former building will by no means cover the expense of a new one.

HOSPITAL FIRES.—A slight fire occurred on the evening of Jan. 23 in one of the out-lying wards of the Boston City Hospital. By the prompt and efficient action of those in charge, all the patients were removed safely, and three days later the ward was again in use. Damage to the extent of about \$1,500 is said to have been done. On Jan. 25 the smallpox hospital at Biddeford, Me., was almost completely destroyed by fire. Thirty-six patients, scantily clad, were turned out into the snow, where they were obliged to remain some minutes before being removed to a place of shelter half a mile away. All suffered severely from the exposure, and it is said that one woman will not live. The alarm is said to have been given at the police station by one of the smallpox patients in person.

BAPTIST HOSPITAL. — At the recent annual meeting of the New England Baptist Hospital Association it was pointed out that the hospital had outgrown its present quarters. The hospital had treated 317 patients during the past year.

NEW YORK.

INTRAVENOUS USE OF FORMALIN. — The intravenous injection of formalin would appear to be best adapted to cases of puerperal sepsis. In a case of septicemia recently treated at St. Vincent's Hospital, which is stated to have resulted from a wound of the scalp, and which was complicated with pneumonia, the remedy was proved ineffectual in saving the patient's life.

HEALTH IN STATE PRISONS. — In the annual report of the superintendent of state prisons for the year ending Sept. 30, 1902, which has just been made public, it is stated that the health of the convicts was excellent and the mortality low, and that in one of the oldest of the prisons the death-rate was the smallest in its history. The death-rate at Sing Sing was .58, at Auburn .85, and at Dannemora (at Clinton), 1.60. The high rate at the latter institution is due to the fact that convicts suffering from tuberculosis are transferred thither from other prisons on account of its Adirondack climate. The improvement in the health conditions and the reduction in mortality effected in the prisons is shown by comparison with the deaths reported in former years. At random, the report of 1888 is taken up, when 59 deaths occurred during the year in a prison population of approximately 3,260; while in 1902 there were only 31 deaths. On the subject of tuberculosis, which is so markedly prevalent in prisons, it is stated that the last five years, as compared with the preceding five, have shown a decrease of 71% in the total number of deaths from this disease in the three prisons named. The report then goes on to say: "This is largely due to the practice of transferring from Auburn and Sing Sing to Clinton Prison prisoners suffering from this disease in its earlier stages. It is the excellent result of practical effort on the part of prison officials, and especially on the part of Dr. Ransom of Clinton Prison, to utilize the limited facilities at their command for the benefit of humanity by the reduction of tubercular disease in the prisons, and thus diminish the danger of contagion from prisoners after their discharge."

DRUG SUBSTITUTION. — At a largely attended meeting of the College of Pharmacy of the city of New York, held Jan. 20, the practice of drug substitution was condemned in a set of resolutions, the pre-

amble of which states that such practice appears to be increasing at a rate which threatens serious professional and commercial difficulties. The condemnation includes substitution in prescription work as well as in ordinary trade, and the members of the college pledge themselves both as individuals and in their corporate capacity to suppress the practice as an act of deception and abuse of confidence of both physician and patient.

HOOK WORM DISEASE. — At the January meeting of the Medical Society of the County of Kings, Brooklyn, Dr. Charles W. Stiles of the U. S. Marine Hospital Service read a paper on "Hook Worm Disease, a Newly Recognized Factor in American Anemia." He said that the disease produced by the "laziness germ" was more common and severe among persons of blonde complexion than among brunettes, and was confined principally to those who in their daily life came in contact with earth, such as miners, farmers, brick-makers and children. The affection is more prevalent in summer than in winter, and is principally met with in the South. In the course of his remarks Dr. Stiles said: "It is our duty to wipe this out of the Southern States. If the people must eat dirt, let us take care that they eat clean dirt. Those suffering from the disease cannot compete with well men. There is not the slightest doubt in my mind that it is the most important factor in the present condition of the poor whites of the South. I do not believe that the disease will ever develop to any extent in the North, but it is a serious question whether the excavations now going on in New York City may not give it an opportunity to become epidemic. I do not believe there is a great danger, but it is a question worth considering."

DEMONSTRATION OF INJURIES BEFORE A JURY. — The Brooklyn Appellate Division of the New York Supreme Court has rendered a decision approving the action of a trial justice of the Supreme Court in allowing the plaintiff in an accident suit against the Brooklyn Heights Railroad Company to attempt to drink a glass of water and also to attempt to write his name, for the purpose of showing the results of his injuries. It was contended that it was an error to permit these physical demonstrations before the jury. "We are referred," said Justice Willard Bartlett, speaking for the court, "to no direct authority on this question in any appellate court of this state, but I am inclined to think that such evidence was admissible within the fair discretion of the trial court. The injured person could certainly be allowed to testify that since the injury

he had not been able to write without experiencing a tremor of the hand, or to drink a glass of water without similar inconvenience. I am unable to perceive any good reason why he may not be allowed to illustrate the extent of this incapacity as well as to state it in words. Deception, of course, is possible in such an illustration, but it is equally possible in the oral statement. In either case the jury is to judge of the credibility of the witness."

THE INSANE OF NEW YORK STATE. — The annual report of the State Commission in Lunacy for the past year states that the number of insane in the State hospitals was 24,061, and in the private asylums in the State, 931. The net increase in all institutions during the year was 678. The new cases committed to the State hospitals numbered 4,566; cases discharged as cured, 1,125; discharged as improved, 1,358; discharged as unimproved, 2,655; deaths, 1,808. Fifty-seven patients were discharged as not insane, these including cases of alcoholism, drug habit, etc. The percentage of recoveries, based on the original commitments in the State hospitals, was 24.6, a proportion somewhat below that of 1901, but higher than that of the three preceding years. The percentage of deaths was 39.6, a marked decrease as compared with the previous year. The commission recommends the establishment of a reception psychopathic hospital in a quiet neighborhood readily accessible from all parts of Manhattan, so as to suit the convenience of patients and consulting physicians, as well as of the students of the various medical schools, who may there have the opportunity for obtaining a practical knowledge of insanity and its treatment. It urges the necessity of the immediate establishment of a new State hospital to which insane patients belonging to Albany, Rensselaer and contiguous counties may be sent. The purchase of one thousand acres of land and the erection of buildings to accommodate from two to three thousand inmates are recommended, and in connection with this hospital the establishment of a pavilion for patients suffering from tuberculosis. It is pointed out that a self-supporting industrial colony might gradually be put in operation here. Among the other recommendations of the commission are five-day commitments of emergency cases to the State hospitals without the formality of legal commitment pending a determination of sanity, and the extension of the system of voluntary patients to the State hospitals. Since 1898 private licensed institutions have been permitted to receive such cases at will, and the number of these on Oct. 1, 1902, was 155. The number of private licensed asylums in the State is now 23.

Miscellany.

A MEDICAL PRESIDENT.

M. ADOLF DEUCHER, who was recently elected President of the Swiss Republic for the third time, is a member of the medical profession. He was born at Steckborn, in the Thurgovia Canton, in 1831, and early began to take an active part in local politics. It is said by those who have watched his career that the devotion and self-sacrifice with which he practised his profession won for him the hearts of the people, and paved his way to the distinguished position which he now holds. He became a member of the National Council in 1867. In 1883 he became a member of the Federal Council, and almost at once was elected President of the republic. He has also served as head of nearly all the departments of state, but his principal work has been accomplished as chief of the Department of Commerce, Industries and Agriculture. President Deucher has always taken a special interest in labor questions, and by his method of dealing with them he has gained the full confidence of the working classes. It may be added, as showing the true Republican simplicity with which Switzerland manages its affairs, that M. Deucher's official salary as President is £720. Another noteworthy point is that that very comprehensive catalogue of persons of note, *Who's Who?* omits his name altogether. It is doubtless sufficient for Dr. Deucher that he has the rare distinction of being most honored by those who know him best. — *British Medical Journal*.

REPORT OF THE ADVISORY STAFF OF THE SOUTH DEPARTMENT, BOSTON CITY HOSPITAL.

THE following report of the Advisory Staff of the Department for Contagious Diseases of the Boston City Hospital, presented to the senior staff of the hospital at its annual meeting held on Jan. 12, has been sent to the *JOURNAL* for publication:

There has been a marked diminution, both in mortality and morbidity, from diphtheria in recent years, as shown by the following statistics: In 1894, mortality per 10,000, 18.03%; 1902, mortality, 3.83% per 10,000. In 1902, the morbidity, 34.72% per 10,000; in 1895 (which year is taken because the bacteriological examination first commenced then), the morbidity was 81% per 10,000. In the South Department the general mortality from diphtheria has diminished to 11%, including all cases. It is interesting, also, to find that the various paralyzes and other post-diphtheritic complications have diminished. In 1902 these complications were found to a greater or less extent in 20%. Before the use of antitoxin they were found in 33% of the cases. Ehrlich discovered these complications to be due to the presence of a modified toxin, which he calls toxone, which is much slower in action and has less affinity both to cells and antitoxin than the essential toxin has. This is rather a confirmation of Ehrlich's views, as showing that there has not been

as great relative reduction in this complication of diphtheria as there has been in the results due to the true toxin.

Thirty-eight cases of diphtheria, six of measles and nine of scarlet fever appeared in the Boston City Hospital, and were brought from there to the South Department. These were chiefly single cases. There was no ward epidemic except in Ward O. Eight cases appeared in the ward. Examination of the internes in charge showed three positive cultures in their throats. All cases seemed to have arisen from one interne, who three days before had nasal discharge and slight sore throat. He was an etherizer and dresser, and was brought into intimate contact with patients. There was also a boy in Ward E who was attended by this interne, and he was also infected. Immunization by antitoxin was carried into the entire ward. There was no extension of the disease in the ward after the discovery of these cases. The committee would recommend the immediate bacteriological examination of any house officer or attendant with sore throat or nasal discharge. There have been no cases of diphtheria infection of wounds in the hospital.

Smallpox.—Thirty-five cases of smallpox were sent from the City Hospital to the Smallpox Hospital. Most of these were applications for admission appearing with initial fever or in the eruptive stage. Eleven cases appeared in the wards. All persons who were in contact in any way with the smallpox cases were revaccinated, with 30% of takes. No infection followed. There are now two huts, with one bed in each, where suspected cases can be watched. These are inadequate for the purpose, and there are no means of thorough disinfection. It is not possible to prevent the admission of persons into a general hospital who either have or will develop smallpox in cases of epidemics of the disease.

One case of smallpox appeared in the South Department. During the year there were six applications for scarlet fever admission to the South Department, which turned out on examination to be cases of initial rash of smallpox.

W. T. COUNCILMAN, M.D.
JOHN G. BLAKE, M.D.
GEO. W. GAY, M.D.
A. L. MASON, M.D.

Correspondence.

ADULTERATION, SUBSTITUTION OR CARELESSNESS?

OFFICE OF THE MASSACHUSETTS STATE
BOARD OF HEALTH, STATE HOUSE.

BOSTON, Jan. 27, 1903.

MR. EDITOR: In the course of the usual examination of drugs made by the State Board of Health, analyses were recently made of two packages labeled Potassii Iodidum Gran. which had been purchased for the use of the Boston Dispensary.

These samples were found to contain no iodide of potassium, but consisted of a mixture of potassium bromide and sodium bromide. The unbroken packages bore the name of Lehn & Fink of New York City.

SAMUEL W. ABBOTT,
Secretary of State Board of Health.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 17, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|-------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid fever. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,430 | 440 | 21.47 | 15.59 | 2.29 | .69 | 1.11 | |
| Chicago . . . | 1,385,270 | 626 | 184 | 21.92 | 20.96 | 1.14 | 3.52 | 1.14 | |
| Philadelphia . | 1,378,527 | 498 | 122 | 16.06 | 19.47 | 1.40 | 3.50 | .40 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 230 | 72 | 24.78 | 18.26 | 2.60 | .87 | .43 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 154 | 48 | 29.22 | 20.12 | 3.24 | 7.14 | 1.95 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 77 | 27 | 19.50 | 26.00 | — | — | — | |
| Boston . . . | 603,163 | 202 | 80 | 20.29 | 18.81 | 1.98 | 1.48 | .50 | |
| Worcester . . | 132,044 | 48 | 14 | 12.50 | 10.41 | — | — | 2.08 | |
| Fall River . . | 115,549 | 52 | 22 | 13.46 | 21.15 | 1.92 | 1.92 | 1.92 | |
| Lowell . . . | 101,959 | 49 | 14 | 8.16 | 32.64 | 4.08 | — | — | |
| Cambridge . . | 98,639 | 25 | 8 | 32.00 | 32.00 | — | 4.00 | 4.00 | |
| Lynn | 72,497 | 33 | 8 | 18.18 | — | — | 3.03 | — | |
| Lawrence . . | 69,766 | 32 | 19 | 40.62 | 25.00 | — | 9.37 | — | |
| Springfield . | 69,389 | 11 | 3 | 9.09 | 27.27 | — | — | — | |
| Somerville . . | 68,110 | 16 | 1 | 37.50 | — | 6.25 | — | 12.50 | |
| New Bedford . | 67,198 | 20 | 8 | 10.00 | 25.00 | 5.00 | — | — | |
| Holyoke . . . | 49,286 | 16 | 7 | 25.00 | — | — | — | — | |
| Brookton . . | 44,873 | 12 | 1 | 16.67 | — | — | 8.33 | — | |
| Haverhill . . | 42,104 | 14 | 4 | 14.28 | 21.42 | — | — | — | |
| Newton . . . | 37,794 | 9 | 2 | — | 11.11 | — | — | — | |
| Salem | 36,876 | 13 | 6 | 7.70 | 7.70 | — | — | — | |
| Malden . . . | 36,286 | 9 | 1 | 22.22 | — | — | — | — | |
| Chelsea . . . | 35,876 | 13 | 4 | — | 23.10 | — | — | — | |
| Fitchburg . . | 35,069 | 9 | 3 | 22.22 | 22.22 | — | — | — | |
| Taunton . . . | 33,656 | — | — | — | — | — | — | — | |
| Everett . . . | 28,620 | 4 | — | 25.00 | — | — | — | — | |
| North Adams . | 27,862 | 6 | 1 | — | 16.67 | — | — | — | |
| Gloucester . . | 26,121 | 10 | 4 | 10.00 | — | — | — | — | |
| Quincy . . . | 26,042 | 6 | 1 | 16.67 | — | — | — | — | |
| Waltham . . . | 25,198 | 11 | — | — | — | — | — | — | |
| Brookline . . | 22,608 | 2 | 0 | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 6 | 2 | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 7 | 4 | — | 28.60 | — | — | — | |
| Medford . . . | 20,962 | 5 | — | 20.00 | 40.00 | — | 20.00 | — | |
| Northampton . | 19,883 | 2 | 0 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 6 | 1 | — | 16.67 | — | — | — | |
| Clinton . . . | 15,161 | 2 | 1 | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 8 | 0 | 12.50 | 12.50 | — | — | — | |
| Woburn . . . | 14,300 | 4 | 0 | — | — | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 2 | 0 | 50.00 | — | — | — | — | |
| Melrose . . . | 13,600 | 7 | 3 | 14.30 | — | — | — | — | |
| Westfield . . | 13,418 | 3 | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 4 | 1 | — | 25.00 | — | — | — | |
| Framingham . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | 3 | — | — | — | — | — | |
| Weymouth . . | 11,344 | 3 | — | 33.33 | 33.33 | — | — | — | |
| Southbridge . | 11,268 | 4 | — | — | 50.00 | — | — | — | |
| Watertown . . | 11,077 | 4 | 1 | — | 50.00 | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,711; under five years of age, 1,120; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 756, acute lung diseases 661, consumption 396, scarlet fever 37, whooping cough 45, cerebrospinal meningitis 9, smallpox 9, erysipelas 4, measles 30, typhoid fever 75, diarrheal diseases 60, diphtheria and croup 83.


From whooping cough, New York 14, Chicago 9, Philadelphia 2, Baltimore 2, Pittsburg 5, Providence 2, Boston 5, Cambridge 2, Worcester, Lynn, Lawrence and Haverhill 1 each. From erysipelas, Chicago, Baltimore, Pittsburg and Providence 1 each. From smallpox, New York 1, Philadelphia 2, Pittsburg 3, Boston 3.


In the seventy-six great towns of England and Wales, with an estimated population of 14,862,880, for the week ending Jan. 3, the death-rate was 20.0. Deaths reported, 5,705; acute diseases of the respiratory organs (London) 415, whooping cough 123, diphtheria 98, measles 174, smallpox 12, scarlet fever 57.

The death-rate ranged from 8.3 in Hornsey to 39.4 in Newport (Mon.); London 20.9, West Ham 18.9, Brighton 17.6, Portsmouth 17.9, Southampton 16.5, Plymouth 16.6, Bristol 22.0, Birmingham 21.2, Leicester 15.2, Nottingham 17.2, Bolton 17.1, Manchester 21.4, Salford 24.4, Bradford 17.4, Leeds 18.6, Hull 25.5, New Castle-on-Tyne 21.7, Cardiff 19.4, Rhondda 14.3, Liverpool 22.8, Wallasey 15.8.

METEOROLOGICAL RECORD

For the week ending Jan. 17, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| S. . 11 | 29.78 | 26 | 38 | 15 | 66 | 100 | 83 | SW | SE | 5 | 5 | C. | R. | .34 |
| M. . 12 | 29.64 | 28 | 40 | 15 | 54 | 55 | 54 | W | W | 30 | 21 | C. | C. | .32 |
| T. . 13 | 30.07 | 19 | 26 | 12 | 61 | 55 | 58 | W | W | 17 | 12 | C. | C. | 0 |
| W. . 14 | 30.19 | 20 | 26 | 15 | 71 | 59 | 65 | W | SW | 14 | 12 | C. | O. | 0 |
| T. . 15 | 29.79 | 29 | 35 | 23 | 82 | 58 | 70 | SW | W | 16 | 21 | C. | O. | 0 |
| F. . 16 | 29.90 | 36 | 39 | 34 | 71 | 58 | 64 | SW | SW | 16 | 10 | C. | F. | 0 |
| S. . 17 | 29.56 | 41 | 47 | 35 | 69 | 65 | 67 | SW | W | 16 | 12 | O. | C. | 0 |
|  | 29.85 | | 36 | 21 | | | 66 | | | | | | | .56 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow. † Indicates trace of rainfall.
 Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JAN. 22, 1903.

BAILHACHE, PRESTON H., surgeon. Leave of absence for thirty days from Jan. 6, 1903, amended so that it shall be for twelve days. Jan. 22, 1903.

AUSTIN, H. W., surgeon. Leave of absence for three days under paragraph 179 of the regulations.

GUITERAS, G. M., passed assistant surgeon. Granted leave of absence for seven days, under paragraph 181 of the regulations, from Jan. 19, 1903.

OAKLEY, J. H., passed assistant surgeon. Leave of absence for two days granted by bureau letter of Jan. 13, 1903, revoked. Jan. 20, 1903.

KORN, W. A., assistant surgeon. To proceed to Delaware Breakwater Quarantine, and assume temporary charge of the station during the absence, on leave, of Passed Assistant Surgeon C. H. Lavinder. Jan. 17, 1903.

BOGGESE, J. S., assistant surgeon. Granted leave of absence for four days from Jan. 21. Jan. 16, 1903.

SAMS, F. E., acting assistant surgeon. Leave of absence for thirty days from Jan. 1, 1903, granted by department letter of Jan. 5, amended to read thirty days from Jan. 5. Jan. 14, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR WEEK OF JAN. 24.

G. H. HART, A. W. KAINES, T. C. FOSTER, W. H. BLOCK and J. R. DYKES, doctors. Appointed acting assistant surgeons.

W. F. ARNOLD, surgeon. Detached from Cavite Naval Station and ordered to Port Isabela, P. I.

C. M. OMAN, assistant surgeon. Detached from Port Isabela, and ordered to the "Frolic."

A. G. GRUNWELL, passed assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the Naval Hospital, Washington, D. C.

E. O. HUNTINGTON, passed assistant surgeon. Detached from the Navy Yard, New York, and ordered to the "Maine."

D. B. KERR, passed assistant surgeon. Detached from recruiting duty, and ordered to the "Wabash."

R. G. HOLCOMB, passed assistant surgeon. Commissioned passed assistant surgeon.

C. H. DELANCY, assistant surgeon. Detached from recruiting duty, and ordered to Naval Hospital, Norfolk, Va.

F. M. BOGAN, assistant surgeon. Detached from Naval Hospital, Washington, D. C., and ordered to the Navy Yard, Washington.

J. P. DEBRULER, doctor. Appointed assistant surgeon. Jan. 3, 1903.

R. A. CAMPBELL, acting assistant surgeon. Ordered to duty with recruiting party.

W. F. KEENE, acting assistant surgeon. Ordered to duty with recruiting party.

R. B. CHAPMAN, acting assistant surgeon. Ordered to duty with recruiting party.

R. W. PLUMMER, passed assistant surgeon. Detached from recruiting duty and ordered to the "Prairie."

F. M. FURLONG, passed assistant surgeon. Detached from recruiting duty and ordered to the Navy Yard, New York.

J. T. MILLER, acting assistant surgeon. Ordered to recruiting duty.

W. H. JANNEY, acting assistant surgeon. Ordered to the Naval Hospital, Port Royal, S. C.

A. M. MOORE, surgeon, retired. Appointed member of Board of Examiners for Civil Engineers, Chicago, Ill.

J. C. BYRNES, surgeon. Additional duty as member of Board of Examiners for Civil Engineers, New York.

E. H. BLACKWELL, assistant surgeon. Additional duty as a member of Board of Examiners for Civil Engineers, New York.

EXAMINATIONS FOR MEDICAL CORPS OF THE ARMY.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE, WASHINGTON, Jan. 22, 1903.

Examinations of candidates for appointment in the medical corps of the army will be resumed by the Army Medical Board in this city on April 20 next. Classes will be invited to appear on April 20 and each Monday thereafter so long as is necessary. Full information as to method of application, nature and scope of examination, etc., will be furnished by this office upon request of those interested. Applicants from civil life are restricted in age to twenty-nine years, and hospital training or professional experience in private practice is expected of all candidates. There are at present thirty-five vacancies to be filled.

R. M. O'REILLY,
Surgeon-General U. S. Army.

SOCIETY NOTICES.

WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION.—The eighth annual meeting of the Western Ophthalmologic and Oto-Laryngologic Association will be held in Indianapolis, Ind., April 9, 10, 11, 1903.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The American Medico-Psychological Association having become affiliated with the Congress of American Physicians and Surgeons it is obligatory under the constitution and by-laws of the congress that the association hold its meeting in 1903 and every third year in Washington. The council has therefore changed the place of meeting from Providence to Washington, and fixed the dates, May 12, 13, 14 and 15, 1903.

C. B. BURR, M.D., Secretary.

FLINT, MICH., Jan. 22, 1903.

BOOKS AND PAMPHLETS RECEIVED.

The Mental Status of Czolgosz, the Assassin of President McKinley. By Walter Channing, M.D., of Brookline, Mass. Seven plates. Reprint. 1902.

Transactions of the Chicago Pathological Society, containing an article by Dr. Edwin O. Jordan, On the Nature of Pyocyanolysin, and an article by Dr. Howard T. Ricketts on Lymphatotoxic Serum. Chicago. 1902.

Transactions of the American Gynecological Society. Vol. xxvii. For the year 1902. Illustrated. Philadelphia: William J. Dornan.

A Textbook of Pharmacology and Therapeutics or the Action of Drugs in Health and Disease. By Arthur R. Cushny, M.A., M.D. (Aberd.). Third edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Biographic Clinics. The Origin of the Ill-Health of DeQuincey, Carlyle, Darwin, Huxley and Browning. By George M. Gould, M.D. Philadelphia: P. Blakiston's Son & Co. 1903.

A New Sign of Pleuritic Effusion in Children. By Samuel W. Kelley, M.D., of Cleveland, Ohio. Reprint. 1902.

A Specimen of Diphtheritic Membrane. By Samuel W. Kelley, M.D., of Cleveland, Ohio. Reprint. 1902.

Lea's Series of Pocket Textbooks. Anatomy, a Manual for Students and Practitioners. By William H. Rockwell, Jr., M.D. Series, edited by Bern B. Galland, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

A Manual of Materia Medica and Pharmacology. Comprising all Organic and Inorganic Drugs which are or have been Official in the United States Pharmacopoeia, together with Important Allied Species and Useful Synthetics. Especially designed for Students of Pharmacy and Medicine as well as for Druggists, Pharmacists and Physicians. By David M. R. Culbreth, Ph.G., M.D. Third edition, enlarged and thoroughly revised. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Original Articles.

ON PARATYPHOID FEVER AND ITS COMPLICATIONS.¹

BY JOSEPH H. PRATT, M.D., BOSTON,

Assistant in the Theory and Practice of Physic, Harvard Medical School.

As is well known, certain typical cases of typhoid fever have occurred in which the Grünbaum-Widal reaction has been persistently absent. In 1897 Gwyn¹ studied such a case in Osler's clinic. The classical features of typhoid fever were present. There was continued pyrexia, enlarged spleen, rose-spots, delirium, diazo reaction and intestinal hemorrhage, but the serum test was persistently negative. From the blood, however, a bacillus was obtained intermediate in type between the typhoid and colon bacilli. It was agglutinated by the blood of the patient in as high a dilution as 1:200.

BACTERIOLOGY.

The paratyphoid bacilli, of which Gwyn's microorganism is a type, are members of a much larger group which includes the meat-poisoning bacilli, *Bacillus psittacosis* and the hog cholera bacillus. This intermediate group has been the subject of elaborate comparative studies by Harvey Cushing,² Durham³ and Buxton.⁴ Members of this group ferment glucose with the formation of gas and thereby resemble *Bacillus coli*, but like the typhoid they do not form indol nor do they produce gas in lactose media.

The paratyphoid bacilli may be defined as those members of the intermediate group which produce typhoidal symptoms in man.

The name paracolon was given by Gilbert⁵ in 1895 to bacteria intermediate in type between the typhoid and colon bacilli. Gwyn, following Widal,⁶ called his microorganism a paracolon bacillus and some bacteriologists today prefer this name. But the term paratyphoid used first by Archard and Bensaude⁷ in 1896 and reintroduced by Schottmüller⁸ in 1901 seems the preferable designation, as these microorganisms produce typhoidal symptoms and are more closely related to *Bacillus typhosus* than to *Bacillus coli*.

There are two species of paratyphoid bacilli. Buxton⁴ calls them the α and β paratyphoids, which correspond to groups A and B of Schottmüller's⁸ classification. The former species or group produces less gas in glucose media and resembles the typhoid bacillus in its action on milk. Both paratyphoids produce an initial acidity in milk and in Petruschky's litmus whey. With the α paratyphoid the acidity persists and in litmus whey becomes quite marked; with the β paratyphoid the acidity changes to a terminal alkalinity.

Both species reduce neutral red to yellow, therein resembling *Bacillus coli*. Buxton has shown that with *Bacillus paratyphosus* β the yellow color is permanent, while with *Bacillus paratyphosus* α the red color slowly returns, until within three weeks or less the yellow is entirely replaced by red.

NOTES ON THREE UNRECORDED CASES.

Archard and Bensaude⁷ reported the first two cases of paratyphoid infection in 1896. A year

later Widal⁶ isolated a paratyphoid bacillus from an abscess in the neighborhood of the thyroid gland and esophagus. In 1898 Gwyn¹ reported his case. No others had been recorded when our first case came under observation.

CASE I. *Suppurative orchitis following a supposed attack of typhoid fever; Bacillus paratyphosus* β isolated from pus. C. B., aged twenty-three, a soldier invalided home from Cuba, was admitted to Dr. R. W. Lovett's service at the Boston City Hospital complaining of swelling of the testicle. Two weeks previously, while convalescing from typhoid fever, the right testicle began to swell. It became red and tender, and was incised four days before admission by Dr. Nicholas Senn of Chicago, at Montauk Point. On examination the right half of the scrotum is found red and swollen and the testicle is enlarged. Epididymis not clearly defined on account of extreme tenderness. There are two incisions discharging pus. Temperature, 99.2°. On Sept. 21 there was a sudden rise of temperature to 104°. Examination of the blood for malarial parasites negative. On the following day an abscess, which had formed between the two incisions, broke externally and pus escaped through three openings. Two days later the temperature reached normal. Convalescence was uneventful and the patient was discharged Sept. 30.

Bacteriological examination.—Sept. 21. From the pus and broken-down tissue expressed through the incisions an abundant growth was obtained on blood serum of a bacillus identical morphologically with the typhoid bacillus and decolorizing by Gram's method.

Sept. 22: Agar plates made from the serum culture. After twenty-four hours' growth circular colonies have formed. They are about 1 mm. in diameter, semi-transparent and of bluish white color. The centers are denser and more opaque. The margin under low power is seen to be slightly wavy.

Sept. 24: The microorganism is actively motile in a twenty-four-hour bouillon culture, and is not agglutinated by the serum of a typhoid patient, which clumps the typhoid bacillus in high dilutions. This microorganism was called *Bacillus* 48. Its biochemical properties were as follows:

In 1% glucose bouillon in a Smith fermentation tube 4.9 cm. of gas were produced in forty-eight hours. At the end of ten days the column of gas was 4.4 cm. high. A white flocculent sediment had formed in the connecting arm. The reaction of the fluid in the open bulb was 2.7% acid. In 1% saccharose bouillon no gas formation. In ten days an abundant sediment had collected in the connecting arm. In 1% lactose no gas formation; some sediment; reaction 0.35% alkaline. Initial acidity of all media 1.5% acid to phenolphthalein.

Litmus milk faintly acid on third day. On eleventh day alkaline. No coagulation even on boiling.

No indol produced in glucose-free bouillon prepared by Theobald Smith's method.

Animal experiments.—On Oct. 5, 1898, a rabbit was inoculated subcutaneously with 1 cc. of a twenty-four-hour bouillon culture of *Bacillus* 48.

Oct. 27: Serum from rabbit in dilution 1:400 agglutinates *Bacillus* 48. It does not agglutinate the typhoid bacillus in dilution 1:10. Time limit one hour.

Oct. 28: Large subcutaneous abscess about 4 cm. in diameter which has formed at point of inoculation was opened today. No organisms in cover-slip preparations. *Bacillus* 48 recovered in pure culture.

Nov. 5: Rabbit No. 2 inoculated with 1 cc. of a twenty-four-hour bouillon culture of *Bacillus* 48.

Nov. 16: Deep abscess 3 cm. in diameter opened. *Bacillus* recovered in pure culture.

June 13, 1899: Guinea pig inoculated subcutaneously with 1 cc. of a twenty-four-hour bouillon culture.

June 15: Swelling 2 cm. in size at point of injection. Weight 455 grams.

June 18: Pig appears sick; apathetic; remains quietly in one spot. Swelling has increased to nearly the size of a hen's egg. It is indurated; central portion red. Weight 405 grams.

June 24: Found dead. Rigor mortis present. Large abscess in subcutaneous tissue of abdomen with pockets

¹Read in part at the Boston Medical Library, Dec. 15, 1902.

extending in all directions. It has ruptured externally, but does not communicate with the peritoneal cavity. Spleen greatly swollen. Axillary and inguinal lymph nodes swollen and hyperemic and thickly beset with opaque white areas ranging from a minute point to 2 and 3 mm. in size. Similar nodules disseminated throughout the abdominal muscles. Gall-bladder contracted into a cord. On a serum tube inoculated with a drop of the heart's blood 78 colonies appeared. Examination showed *Bacillus* 48 in pure culture. It was also recovered from the axillary glands, peritoneum and spleen.

Orchitis is a rare but well-recognized complication of typhoid fever. Kinnicutt⁹ in 1901 collected 53 cases in the literature. One fourth of the cases terminated in suppuration. No other case of orchitis due to the paratyphoid bacillus has been recorded.

The animal experiments show the marked pyogenic properties possessed by this strain of the β paratyphoid. After cultivation for eight months on artificial media it produced a large abscess in a guinea pig. Libman's monograph contains the protocol of a similar experiment with the same amount of bouillon culture. His strain of β paratyphoid bacillus produced at the site of inoculation nothing more than an indurated area not extending to the muscles.

Through the kindness of Dr. Mark Richardson I am permitted to report the following case:

CASE II. *Cholelithiasis due to Bacillus paratyphosus β ; typhoid fever four years previously; recovery.* M. K., female, aged eighteen years. Private patient of Dr. J. W. Elliot. First seen by him in October, 1899. History of severe pain in right hypochondrium for two years. Typhoid fever in 1895.

On Nov. 1, 1899, Dr. Elliot operated. The gall-bladder was thickened and contracted about four white faceted calculi, each the size of a chestnut, apparently consisting of pure cholesterolin.

Bacteriological examination by Dr. Mark Richardson.—Cultures were made from the centers of four stones and from the fluid contained in the gall-bladder. Cover-slip preparations from center of gall-stone show forms which look like bacilli but can scarcely be differentiated from surrounding debris.

Nov. 14: Both fluid and stones show pure cultures of a bacillus with rounded ends; very motile, resembling typhoid.

Bouillon.—Abundant growth in twenty-four hours; general cloudiness.

Potato.—Moist, yellowish gray growth.

Glucose agar.—Gas production.

Litmus milk.—No coagulation, but alkaline rather than acid production.

Gelatine.—Abundant, moist, grayish white, glistening, irregular growth. No liquefaction. No reaction, with typhoid serum in dilution 1:10.

Agglutination tests with patient's blood:

Bacillus from gall-stone: dilution 1:40; good reaction in five minutes.

Bacillus from gall-bladder: dilution 1:40; reaction fair.

Bacillus *icteroides*: dilution 1:10; reaction, slight clumping and loss of motility.

Bacillus *typhosus*: dilution 1:10; reaction negative.

Bacillus *coli*: dilution 1:10; reaction negative.

A further study of this microorganism, called for convenience *Bacillus* Kay, has been made by Professor Theobald Smith, who kindly furnished me with cultures. He found that it did not produce gas in lactose or saccharose media, nor indol in glucose-free bouillon. It formed alkali in milk.

Clinical and experimental evidence seems to show that the typhoid bacillus produces gall-stones, but this case of cholelithiasis due to the paratyphoid bacillus is unique. Gilbert and Fournier,¹⁰ Mark

Richardson¹¹ and Harvey Cushing¹² have produced biliary calculi experimentally by inoculating animals with typhoid bacilli. Many times has the typhoid bacillus been obtained from the nuclei of gall-stones. I reported a case which seems to indicate not only that the typhoid bacillus produces gall-stones, but that it produces them quickly.¹³ During the third week of typhoid fever symptoms of cholecystitis developed. At operation seven small, round, soft and friable biliary concretions, 1 to 3 mm. in size, were found in the gall-bladder. Cultures from their centers yielded a pure growth of *Bacillus typhosus*.

In the present case there was probably an attack of paratyphoid rather than typhoid fever in 1895, and the gall-bladder harbored the paratyphoid bacilli for four years. I have studied a case of typhoid cholecystitis in which it appeared probable that the typhoid bacilli had been in the gall-bladder for seven years. Droba¹⁴ reported a case in which the typhoid bacillus was obtained seventeen years subsequent to primary infection.

Professor Theobald Smith has told me that at first there was a minor cultural difference between the bacillus from the gall-stones and the one from the gall-bladder, in that the former produced a film on bouillon while the latter did not. This seems to prove that the bacilli had not simply penetrated pre-formed porous gall-stones, but that they were imprisoned within the stones which had formed about them, and in four years the property of film formation had been acquired. Bacilli from both sources possessed the same agglutinating power.

Only the salient features of the third case will be given, as it is to be reported in detail by Dr. Henry Jackson and the writer in another place.

CASE III. *Paratyphoid fever; mild course; saphenous phlebitis; recovery.* D. B., male, aged thirty-eight years. Private patient of Dr. Henry Jackson. On Oct. 28, 1902, seized with sharp pain over the umbilicus and region of appendix. He came to Boston Oct. 30. That morning the temperature was 102°, the pulse 80. There was slight abdominal tenderness; spleen not palpable, but enlarged on percussion. No rose-spots developed. The temperature gradually fell but there was some fever for over two weeks. There was slight tendency to constipation. The pulse was not accelerated. The Widal test was negative. There was no leucocytosis. During the third week saphenous phlebitis of the left leg developed.

Bacteriological examination.—On Nov. 19, 8 cc. of blood were withdrawn from the left median basilic vein and distributed among three Erlenmeyer flasks, each containing 150 cc. of bouillon. The flasks remained sterile.

Nov. 20: The blood serum in 1:10 dilution shows some clumping of typhoid bacilli without entire loss of motility in one hour. No clumping in 1:20 dilution.

Nov. 29: Serum agglutinated *Bacillus* Kay (gall-stone), obtained from Case II, completely, with absolute cessation of motility in dilution 1:100. Cultures from the urine were negative. From the feces a typical *Bacillus coli* only obtained. It was not agglutinated by the patient's serum in 1:10 dilution.

Nov. 30: The action of the serum toward various strains of paratyphoid bacilli was test. The results are given in the table on opposite page.

These results can be summed up in the statement that the serum agglutinated the α paratyphoids in high dilutions and failed to agglutinate the β paratyphoids and the typhoid bacillus even in a very low dilution. The importance for diagnosis of testing the blood with both groups of paratyphoids is strikingly shown.

| SPECIES OF ORGANISM. | STRAIN. | DILUTIONS OF SERUM. | | | | |
|---|---|---------------------|-------|-------|--------|--------|
| | | 1:10 | 1:100 | 1:500 | 1:1000 | 1:3000 |
| B. paratyphosus α | Gwyn | — | | | | |
| | Schottmüller's | — | | | | |
| | Müller | — | | | | |
| | Buxton's Case 7 | — | | | | |
| B. paratyphosus (intermediate between α and β) | Buxton's Bacillus from Normal Feces | — | | | | |
| | Cushing's Bacillus O | — | | | | |
| B. paratyphosus β | Bacillus Kay (gall-stone) | + | + | + | — | |
| | Bacillus Kay (gall-bladder) | + | + | + | — | |
| | Kurth | + | + | + | + | — |
| | Hünemann | + | + | + | + | — |

ETIOLOGY.

During the past year, especially during the last six months, numerous instances of paratyphoid infection have been recorded, until now this rapidly growing group numbers 84 cases.

The disease has a wide geographical distribution. Cases have occurred in France, Germany, Holland, Roumania, England, the Philippine Islands and on this continent in Baltimore, Philadelphia, New York and Cleveland. The three cases here reported originated in Cuba, Massachusetts, and Rhode Island.

V. Sion and V. Negel¹⁵ found the microörganism in a well from which the infected individuals obtained their drinking water. Likewise in the cases reported by De Feyfer and Kayser¹⁶ infection was through the water-supply. Hünemann¹⁷ showed conclusively that the disease was spread through the barracks at Saarbrück by an infected musketeer. In none of the other recorded cases was the source of the disease known, except in the case of Schottmüller's assistant, who apparently contracted the disease in the laboratory from the paratyphoid cultures with which he had been working.

Epidemics occur. A small one in four families was studied by De Feyfer and Kayser. Hünemann reported an epidemic of 38 cases.

The disease affects chiefly young adults, although children and older people are not exempt. Like typhoid fever, it prevails most extensively in the autumn.

Bacillus paratyphosus α was the causative micro-organism in 12 of the cases, Bacillus paratyphosus β in 69; in the remaining three the species was not determined. In two instances there was a mixed infection with Bacillus typhosus. Although Meltzer¹⁸ thinks a mixed infection with Bacillus paratyphosus is not uncommon in typhoid fever, little evidence can be adduced in support of this view.

The observation has been made repeatedly that recovery from one attack of typhoid fever confers relative protection against a subsequent attack. Many instances, however, of two attacks in one person have been recorded. Curschmann¹⁹ states that in his experience two attacks have been by no means rare, and Eichhorst,²⁰ who has made a careful study of the subject, found among 666 cases of typhoid fever 28—4.2%—in whom a second attack had occurred. The interval between the attacks may be short, only nine months in two of

Curschmann's cases and three months in one reported by Eichhorst. This marked difference from the complete immunity which exists for some time after recovery from the acute exanthemata has led some to deny that any immunity is acquired from an attack of typhoid fever.

In the recorded cases, as Coleman²¹ suggests, it is quite possible that one of the attacks was typhoid, the other paratyphoid. Brill²² reported a case of two attacks of typhoidal fever within a year. During the first illness the Grünbaum-Widal reaction was present but not during the second. The latter was probably paratyphoid, as it occurred during an epidemic of 17 cases which he regards as paratyphoid, although the evidence is not complete.²³

PATHOLOGY.

The disease is a general infection in which localizing lesions may be absent. Only four of the cases were fatal and one of these was a secondary infection in a case of typhoid fever. In the remaining three cases there were no ulcers in the intestine and the Peyer's patches and solitary follicles were normal. The fact that there was intestinal hemorrhage in five of the cases would seem to indicate that lesions of the intestine do sometimes occur.

The spleen was enlarged. In Strong's case²⁴ alone were the mesenteric lymph glands swollen, and he admits that the paratyphoid bacillus, which he isolated from the spleen, may have been a post-mortem invader. In the two fatal cases of undoubted paratyphoid fever the bacillus was not found in the mesenteric lymph nodes, but it was present in the heart's blood, liver, lungs and spleen. V. Sion and V. Negel¹⁵ recovered it also from the adrenal, cerebral cortex, an area of cerebral softening, pericardial and pleuritic fluids and a cardiac thrombus.

In Longcope's²⁵ case a histological study was made and the characteristic endothelial proliferation of the lymphoid tissue described by Mallory²⁶ in typhoid fever was absent.

The fatal cases were all instances of infection with the β paratyphoid.

Possibly some of the reported cases of typhoid fever without intestinal lesions were examples of paratyphoid infection. Ophüls²⁷ has pointed out that in very few of the cases was the bacteriological examination sufficient to differentiate clearly the typhoid bacillus from its allies.

SYMPTOMATOLOGY.

Paratyphoid infection may present all the clinical aspects of typhoid fever. Although the fever may be severe, and fatal cases have occurred, it is usually mild. Kurth²⁸ proposed to revive the term "gastric fever" for this disease. Doubtless some of the cases of gastric fever and febricula of the older writers were examples of paratyphoid. An afebrile case has been reported by De Feyfer and Kayser.¹⁶ Johnston²⁹ analyzed the clinical features of the cases recorded up to June, 1902. He concluded that diarrhea and a termination of the fever by crises were apparently of more frequent occurrence than in typhoid fever. The duration of the disease has been from twelve to eighty-four days. There have been chills at onset. An initial

bronchitis has not been uncommon. Epistaxis has been noted in a number of instances. First and second relapses have occurred. Rose-spots and a palpable spleen have been present in about half the cases. Labial herpes was observed in two cases. The pulse was usually slow and regular. In uncomplicated cases the blood showed no leucocytosis. The urine frequently contained albumin.

COMPLICATIONS.

The number and frequency of the complications is a striking feature of paratyphoid fever. All three of our cases presented them: orchitis in the first, gall-stone formation in the second and phlebitis in the third. Excluding Hünemann's 38 cases, the clinical details of which have not yet been published, 40% of the remaining 46 reported cases exhibited complications. This proportion is doubtless too high. It is not probable that 40% of all the cases of paratyphoid fever that occur present complications. It should be remembered that many of the cases would have been regarded as examples of typhoid fever had not the complications occurred. Then the bacteriological examinations revealed the true nature of the infection.

LIST OF COMPLICATIONS IN PARATYPHOID FEVER.

Infection with Bacillus paratyphosus β.

| | |
|-----------------------------|----------|
| Bronchitis, | 4 cases |
| Hypostatic pneumonia, | 1 case |
| Lobar pneumonia, | 1 case |
| Pleuritis, | 2 cases |
| Acute mural endocarditis, | 1 case |
| Thrombosis of femoral vein, | 1 case |
| Embolie softening of brain, | 1 case |
| Saphenous phlebitis, | 1 case |
| Meningitis, | 1 case |
| Peritonitis, | 1 case |
| Intestinal hemorrhage, | 5 cases |
| Suppurative cholecystitis, | 1 case |
| Chronic cholecystitis, | 1 case |
| Cholelithiasis, | 1 case |
| Nephritis, | 1 case |
| Suppurative orchitis, | 1 case |
| Cystitis, | 2 cases |
| Decubitus, | 1 case |
| Furunculosis, | 1 case |
| Osteomyelitis. | 1 case |
| Total, | 29 cases |

Infection with Bacillus paratyphosus α.

| | |
|-----------------------------|---------|
| Bronchitis, | 1 case |
| Broncho-pneumonia, | 1 case |
| Cystitis, | 1 case |
| Thrombosis of femoral vein, | 1 case |
| Intestinal hemorrhage, | 2 cases |
| Total, | 6 cases |

Infection with paratyphoid bacillus; species not determined.

| | |
|-----------------------------|---------|
| Bronchitis, | 1 case |
| Femoral phlebitis, | 1 case |
| Myositis, | 1 case |
| Suppurative arthritis, | 1 case |
| Cystitis or pyelonephritis, | 1 case |
| Abscess of neck, | 1 case |
| Total, | 6 cases |

DIAGNOSIS.

Our knowledge of paratyphoid fever is largely due to the introduction of the practice of making cul-

tures from the blood during life. This procedure is now known to be a valuable means of early diagnosis in typhoid fever at a time when the clinical picture may not be clear and the serum reaction has not developed. The typhoid bacillus is present in the blood very early in the disease and at the onset of the relapse. Hewlett³⁰ pointed this out in 1901, and his observations have been confirmed by Schottmüller³¹ and others. Kerr and Harris³² state that in 37% of their cases blood cultures were positive before the Widal test. The paratyphoid bacillus, likewise, can be recovered from the blood early in paratyphoid fever. Blood withdrawn late in the disease is usually sterile.

In quite a number of instances the diagnosis has been made by cultivating the bacillus from the urine or feces and demonstrating that it was agglutinated by the individual's blood. In the case reported by Brion and Kayser³³ the microorganism was isolated from the vagina and rose-spots as well as from the blood, urine and feces. V. Sion and V. Negel obtained it from the sputum in one of their cases.

The surest way of making the diagnosis is to cultivate the paratyphoid bacillus from the blood of the suspected case. But if the organism cannot be recovered from the blood, urine, feces or some localized lesion the diagnosis is justified, in the light of our present knowledge, if the blood agglutinates a paratyphoid bacillus in high dilution and fails to agglutinate the typhoid bacillus or agglutinates it only in very low dilutions. The blood should be tested with both species of paratyphoid bacilli. The necessity of this is shown in our Case III, in which the serum gave a negative reaction with the α paratyphoid in 1:10 dilution, but completely clumped the β paratyphoids in as high a dilution as 1:500.

Our experience shows that a positive reaction in low dilutions cannot be accepted as evidence of paratyphoid infection. I recently studied a case of influenza simulating typhoid fever in which the blood quickly clumped B. paratyphosus β (Kay), with absolute cessation of motility in dilution 1:10. Tests in higher dilutions, 1:20 and 1:30, were negative. Bouillon flasks inoculated with blood from the median basilic vein remained sterile. In a week the agglutinative power was lost.

Bain, working in Dr. F. C. Shattuck's wards at the Massachusetts Hospital, found a case of typhoid fever, the blood of which agglutinated B. paratyphosus β (Kay) immediately and completely in dilution 1:10. In higher dilutions, up to 1:200, there was clumping without loss of motility. There was no reaction with the typhoid bacillus in dilution 1:10. A culture from the blood, however, yielded a pure, abundant growth of B. typhosus. The case died. Unfortunately no autopsy was obtained.

Cases of paratyphoid fever have without doubt been mistaken for true typhoid fever because the Grünbaum-Widal reaction in as low a dilution as 1:10 has been accepted as conclusive evidence of typhoid infection. Stern³⁴ showed several years ago that a reaction in dilutions of less than 1:30 is unreliable.

When serum agglutinates one species in very high dilution it frequently is able to agglutinate closely related species in low dilution. This has

been proved by animal experiments and it is shown by the following observations*:

Serum from a typhoid fever patient agglutinated our stock typhoid bacillus in a dilution of 1:8000, another strain of typhoid bacillus 1:3000, an atypical typhoid bacillus 1:250, the β paratyphoid bacillus obtained from the case of typhoid orchitis, Bacillus 48, 1:50. It failed to agglutinate a race of *Bacillus coli* obtained from normal feces in a dilution of 1:5.

These results show clearly that the serum reaction is a special, not a specific test. In reporting the result of the serum-test the simple assertion that the Widal reaction is positive does not suffice. Little weight can be attached to such a report in distinguishing typhoid from paratyphoid fever. The dilution, the extent of clumping, the presence or absence of motility and the time-limit should be recorded.

PROGNOSIS.

The death rate is low. It is apparently much lower than in typhoid fever, although broad conclusions cannot be drawn from a limited number of cases. Only three deaths—3.6%—have occurred among the 83 undoubted cases of paratyphoid infection and one of these was a mixed infection with *Bacillus typhosus*.

TABULATION OF RECORDED CASES.

1896. Archard and Bensaude,⁷ Paris.

CASE I. Female, aged twenty-four years. Continued fever. Complications: myositis; double femoral phlebitis, pyelonephritis or cystitis. Paratyphoid bacillus from urine.

CASE II. Female, aged seven months. Continued fever. Complications: bronchitis; purulent arthritis of right sternoclavicular joint. Paratyphoid bacillus from pus in joint.

1897. Widal and Nobécourt,⁶ Paris.

CASE III. Male, aged thirty-one years. Abscess in neighborhood of thyroid. Paratyphoid bacillus from pus.

1898. Gwyn,¹ Baltimore.

CASE IV. Male, aged twenty-eight years. Continued fever; severe course. Complication: intestinal hemorrhages. B. paratyphosus α from blood.

1900. Cushing,² Baltimore.

CASE V. Male, aged twenty-seven years. Costochondral abscess following supposed attack of typhoid fever. B. paratyphosus (intermediate in type between α and β) from pus.

1900. Schottmüller,³⁵ Hamburg.

CASE VI. Male, aged twenty-six years. Continued fever. B. paratyphosus α from blood.

1901. Schottmüller,⁸ Hamburg.

CASE VII. Male, aged sixty years. Continued fever. Complication: hypostatic pneumonia. B. paratyphosus β from blood.

CASE VIII. Male, aged eighteen years. Continued fever; severe course. Complications: bronchitis; slight nephritis. B. paratyphosus β from blood.

CASE IX. Male, aged nineteen years. Continued fever. B. paratyphosus β from blood.

*The serum I used possessed greater agglutinative power than any other I have tested. No reaction was accepted as positive unless the bacilli were aggregated into large clumps and there was absolute cessation of motility. The time limit was one hour, but the positive reactions were almost always obtained within the first fifteen minutes. All the tests were made the same day.

CASE X. Male, aged forty-six years. Continued fever. B. paratyphosus α from blood.

CASE XI. Male, aged fifteen years. Continued fever; severe course. Complications: bronchitis; decubitus. B. paratyphosus β from blood.

CASE XII. Male, aged twenty-five years. Continued fever. Serum agglutinated B. paratyphosus β , dilution 1:100.

1901. Kurth,²⁸ Bremen.

CASE XIII. Female, aged thirty years. Continued fever. B. paratyphosus β from urine.

CASE XIV. Male, aged twenty-nine years. Continued fever. B. paratyphosus from feces.

CASE XV. Male, aged twenty-five years. Continued fever. Serum agglutinated B. paratyphosus β , dilution 1:500.

CASE XVI. Male, aged eighteen years. Continued fever. Serum agglutinated B. paratyphosus β , dilution 1:500.

CASE XVII. Female, aged twenty-three years. Evening febrile temperature. Serum agglutinated B. paratyphosus β ; dilution 1:250.

1902. Brion and Kayser,³³ Strasburg.

CASE XVIII. Female, aged sixteen years. Continued fever; two relapses; venous thrombosis, left leg. B. paratyphosus from blood, urine, feces, vagina and rose-spots.

Strong,²⁴ Santa Cruz, Philippines.

CASE XIX. Male. Continued fever. Intestinal hemorrhage. Death. Autopsy. B. paratyphosus β from spleen.

Coleman and Buxton,³⁷ New York.

CASE XX. Female, aged twenty-eight years. Continued fever. B. paratyphosus α from blood.

Berg and Libman,³⁸ New York.

CASE XXI. Male, aged thirty-three years. Typhoid fever; secondary paratyphoid infection. Complications: pleuritis and peritonitis. Death. B. paratyphosus β isolated from gall-bladder, blood and urine during life; agglutinated in dilution of 1:20 only. B. typhosus 1:250.

Hume,³⁹ Liverpool.

CASE XXII. Male, aged twenty-nine years. Continued fever; relapse. Complications: intestinal hemorrhage; cystitis. B. paratyphosus α from urine and feces.

Johnston,²⁹ Baltimore.

CASE XXIII. Male, aged twenty-eight years. Continued fever. B. paratyphosus α from blood.

CASE XXIV. Male, aged twenty-three years. Continued fever. B. paratyphosus α from blood.

CASE XXV. Female, aged twenty-three years. Serum agglutinates B. paratyphosus α , dilution 1:50.

CASE XXVI. Male, aged twenty years. Continued fever. Serum agglutinated B. paratyphosus α , dilution 1:400.

Hewlett,³⁶ New York.

CASE XXVII. Male, aged thirty-four years. Continued fever; relapse. Complication: bronchopneumonia. B. paratyphosus α from blood.

Longcope,²⁵ Philadelphia.

CASE XXIX. Male, aged twenty-two years. Continued fever; severe course. Death. B. paratyphosus β from blood during life, and at autopsy from heart's blood, lung, liver and spleen.

CASE XXX. Male, aged thirty-five years. Continued fever; relapse. B. paratyphosus α from blood.

Hünemann,¹⁷ Saarbrück, Germany.

CASES XXXI to LXVII. Epidemic of continued fever. A bacteriological study. Clinical aspects to be described in another paper. B. paratyphosus β isolated from stools of one patient and urine of another.

De Feyder and Kayser,¹⁶ Erbergen, Holland.

The following six cases occurred in an epidemic of fourteen cases affecting four families. As bacteriological tests were not made in the other eight cases, they are not included.

CASE LXVIII. Female, aged nine years. Continued fever; severe course. Serum agglutinated *B. paratyphosus* β , dilution 1:360.

CASE LXIX. Male, aged six years. Continued fever; glandular swelling. Blood agglutinated *B. paratyphosus* β , dilution 1:720.

CASE LXX. Male, aged forty years. Continued fever. Complication: intestinal hemorrhage. Blood agglutinated *B. paratyphosus* β , dilution 1:1440.

CASE LXXI. Male, aged forty-four years. Continued fever. Complication: intestinal hemorrhage. Blood agglutinated *B. paratyphosus* β , dilution 1:7200.

CASE LXXII. Female, aged fifty-four years. Apyrexia; rapid pulse, rose-spots, diazo reaction, diarrhea. Mixed infection. Blood agglutinated *B. typhosus*, dilution 1:720; *B. paratyphosus* β , dilution 1:1440.

CASE LXXIII. Male, aged fifteen years. Continued fever. Blood agglutinated *B. paratyphosus* β , dilution 1:720.

V. Sion and V. Negel,¹⁵ Jassy, Roumania.

CASE LXXIV. Male, aged twenty-four years. Continued fever. Death. Complications: acute mural endocarditis; sero-fibrinous pleuritis; bronchopneumonia; diphtheritic enteritis; meningitis; embolic softening of brain. *B. paratyphosus* β at autopsy, from cerebral cortex, area of cerebral softening, heart's blood, cardiac thrombus, pericardial and pleuritic fluids, liver, spleen, adrenal and bronchi.

CASE LXXV. Male, aged forty years. Continued fever. *B. paratyphosus* β from blood.

CASE LXXVI. Child, aged four years. Continued fever; severe course. Complication: bronchitis. *B. paratyphosus* β from blood.

CASE LXXVII. Child, aged six years. Continued fever. Complication: bronchitis. *B. paratyphosus* β from blood.

CASE LXXVIII. Child, aged eight years. Continued fever. *B. paratyphosus* β from blood and sputum.

1903. Allen,⁴¹ Cleveland.

CASE LXXIX. Male, aged thirty years. Continued fever. Complications: suppurative cholecystitis, lobar pneumonia. *B. paratyphosus* β from pus in gall-bladder.

CASE LXXX. Male, aged twenty-six years. Continued fever. Complication: cystitis, thrombosis of left femoral vein. *B. paratyphosus* β from blood and urine.

CASE LXXXI. Male, aged thirty-five years. Continued fever. Serum agglutinated *B. paratyphosus* β in dilution 1:50.

Pratt, Boston.

CASE LXXXII. Male, aged twenty-three years. Suppurative orchitis following attack of supposed typhoid fever. *B. paratyphosus* β from pus.

CASE LXXXIII. Female, aged eighteen years. Chronic cholecystitis and cholelithiasis. Supposed attack of typhoid fever four years before. *B. paratyphosus* β from gall-stones and fluid in gall-bladder.

CASE LXXXIV. Male, aged thirty-eight years. Continued fever; saphenous phlebitis.

I am greatly indebted to Professor Theobald Smith of Harvard University, Dr. B. H. Buxton of Cornell University, and Dr. N. MacL. Harris of the Johns Hopkins University for furnishing me with cultures of paratyphoid bacilli, and to Dr. Mark Richardson for notes on his case.

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TYPHOID FEVER AT THE BOSTON CITY HOSPITAL IN 1902.¹

BY GEORGE G. SEARS, M.D., BOSTON.

Visiting Physician, Boston City Hospital; Assistant Professor of Clinical Medicine, Harvard Medical School.

IN reply to the request of your committee to speak to-night of our experience at the City Hospital with typhoid fever during the current epidemic, it will be impossible within the limited time assigned me to give full statistics of the symptoms and complications. The subject can be presented only along the broadest lines, though special consideration will be given to some of the more important and interesting features of the disease.

From the 1st of June to the 15th of November 203 cases have been admitted to the medical side of the hospital. A few still remain in the wards and have not yet passed the period when accidents are impossible, so that a slight modification of some of the figures presented may be required later.

One hundred and thirty-nine of these patients were males, 64 females, about 2 to 1, a disproportion attributable more to the fact that women with this disease seek hospital treatment less often than men, than to their greater immunity.

Although children form a very small part of the City Hospital clinic, there being but 19 among these cases under sixteen years of age, 136 (nearly 70 %) were found within the first three decades, and only 11 were over forty. The oldest patient was sixty; the youngest nine.

Previous attacks were recorded in six instances, but as the diagnosis rests on the authority of the patient it must be accepted with caution.

While a great majority of cases began insidiously, there seemed to be an unusual number in which the attack was stated to have been suddenly ushered in by severe headache, a chill, or an attack of diarrhea. This could be only partially attributed to the occasional neglect of hospital patients to take

¹ Read at the Boston Medical Library, Dec. 15, 1902.

notice of symptoms which did not interfere with their daily occupation. Two began with pneumonia and conformed to the type described by the French as pneumo-typhoid; another started with a general erythema, and raised the question of scarlet fever. Diarrhea and constipation were present in almost exactly the same number of cases. Epistaxis was noted 37 times; chills occurred in 41 instances. Abdominal pain was so frequent that it should be classed as one of the important symptoms, being recorded in 65 cases, in many of which, however, it amounted to little more than discomfort or an attack of cramps, yet in a few it more or less dominated the situation and led to considerable difficulty in diagnosis, especially when it was located in the right lower quadrant.

A study of the temperature charts showed little which might differ from any similar collection of cases, but the occurrence of defervescence by crisis in two instances is worthy of mention. Hyperpyrexia, represented by a temperature of 107° or even 108° just before death, was occasionally recorded, yet 107.5° was reached in one instance without discoverable cause and without interrupting the patient's progress toward recovery. Hemorrhage occurred in 14 cases, 4 of which ended fatally, and perforation in 3. All of the latter were transferred to the surgical side, and all died. A detailed report of these is out of place, as the subject has been assigned to Dr. Munro.

The great difficulty at times encountered in making a positive diagnosis of this condition was well illustrated in one patient, who was in the beginning of the third week and critically ill. He had suffered for two evenings from considerable abdominal pain, with some rigidity and tenderness and moderate distension, which was relieved by external applications. At 9 o'clock on the morning of the third day he was suddenly seized by intense cutting pain in the left hypochondrium, accompanied by a chill. The abdomen became very rigid and tender. He was somewhat cyanotic, with a rapid and feeble pulse. Later he became more comfortable, and while considerable tenderness persisted the spasm relaxed. An hourly white count begun at the time of the chill showed 3,400, 3,200, 5,000 and 5,200. One of the surgeons who saw him diagnosed perforation and advised operation.

While recovery from perforation may be possible with purely medical means, it is so exceptional that it may be ignored in discussing its treatment. Operation alone holds out any practical hope of cure, and the earlier the condition is recognized the better for the patient. The criticism of our surgical colleagues, that by waiting for a positive diagnosis they are often called so late that a general infection of the peritoneum has already taken place, is unfortunately just, but the burden of proof still rests with them to show that more lives would be saved by a hasty resort to abdominal section in doubtful cases, than by delaying until the situation has declared itself. Surgical technique may be so perfect that an exploratory laparotomy is practically devoid of danger under ordinary circumstances; but a typhoid patient who has been ill so long as to make perforation probable has necessarily lost much of his resisting power, and very persuasive arguments are needed before a conviction can be

reached that the chances of these doubtful cases are improved by operation.

A notable feature, which was observed in some cases where a chart was kept of the daily amount of urine, was the marked increase in the quantity as convalescence set in, which might begin before either the pulse or temperature had begun to fall, and at times proved a valuable aid in prognosis. Desquamation was not uncommon, but was infrequently noted in the records.

The complications covered a wide range. The most frequent were otitis media (11 cases), phlebitis (12), inflammation of the pharynx, including the tonsils and larynx (5), pneumonia (12), pleurisy (6), and furunculosis (6). Periostitis (1), perichondritis (1), parotitis (1), adenitis (3), meningitis (1), neuritis of the legs (1), perirectal abscess (1) and inflammation of the cornea, with loss of the eye (1), comprised the rarer ones. Cholecystitis was suspected in three cases, from the presence of pain and tenderness in the region of the gall bladder. The latter seemed somewhat distended in one, and in one there was slight jaundice. The following infectious diseases were co-incident: pulmonary tuberculosis (4), syphilis (2), tertian malaria (2) and erysipelas (1). Three women were pregnant, but recovered without aborting.

Six cases of psychical disturbance coming on late in the disease or during convalescence formed an interesting group, some of which were slight and attributable to the persistence of a vivid typhoid dream, which had left so deep an impression as to become a motive for action, while others were more serious, and were accompanied by various hallucinations, depression, mental confusion or even acute mania.

The former condition is undoubtedly more common than these figures indicate, but does not attract attention because it does not lead to any striking peculiarity of behavior; but the embarrassing or even serious complications, which might follow failure to recognize it, were illustrated in one case where the patient's mental state was supposed to be normal, until some checks which he had made out, one of which was in payment of his hospital bill, were returned for lack of funds. It then came out that he had dreamed during the fever that a deposit of \$10,000 had been placed to his credit at the bank, and he was drawing against it. All were improving when last heard from, with one exception, a case of dementia precox, for which her typhoid could not be held responsible, though it appeared to be the occasion for a lighting up of the symptoms.

The prevalence of relapse depends more or less on the interpretation of the recrudescences of fever, which are not unusual during convalescence, as a result of a variety of causes beside a reinfection. The distinction may be difficult if not impossible. The characteristic step-like elevation of temperature may be seen in other conditions, while the diagnostic value of an enlarged spleen may be lost if it has never diminished, and rose spots may not reappear if the elevation of temperature lasts but a week. A conservative estimate places the number of cases with relapse at twenty, of which six were intercurrent, the afternoon temperature never hav-

ing reached normal. The largest number of relapses was three. Some of the cases, however, are still in the hospital, and have not yet reached the point where the process may not be again relighted. They followed the usual course, and as a rule were less serious than the original attack, but exceptions were found, in one of which a severe hemorrhage put the patient's life in considerable jeopardy. None of these cases died.

The Widal test was positive in 168 cases (83.5%) and negative in 33. In two it was not tried. This is a smaller proportion than has previously been obtained at the hospital, or should be expected. Its absence was undoubtedly due in some to failure to seek the reaction over a sufficiently long period. An interesting group, small in number, remains in which the diagnosis of typhoid was made, though with some reservation, because they conformed more closely to that than to any other disease. They suggest the possibility that the infecting agent was not Eberth's bacillus, but one of the same family, and show the necessity of closer clinical and laboratory study.

The failure of the test as an aid in the early diagnosis was not infrequently exemplified, for it was not found in eight fatal cases, one of which was verified by autopsy, and was often first obtained so late that the nature of the disease was already evident, or even after convalescence was fully established, yet it proved at times of great value in doubtful cases, especially in those where some special feature had become so prominent as to be misleading. This has been well illustrated during the past year in cases which began suddenly with an attack of pleurisy or pneumonia. Its earliest appearance was the third day after the onset of the first symptoms; its latest, the sixtieth day. In the first instance the patient was a girl of thirteen, in whom the disease began suddenly with chills, nausea and headache.

Leucocyte counts were made in almost every case, usually during the first few days after admission, more rarely later unless some complication was suspected. The results are in line with the recognized fact that typhoid fever is not associated with a leucocytosis, since in 177, when no complication was suspected at the time, they numbered less than 8,000 in 145, and in 21 they were below 4,000; in 29 they were between 8,000 and 10,000, and in only 9 did they exceed the latter figure. The largest number was 15,000, but cases with leucocytosis are so infrequent that it seems probable that when it exists some complication is present, but unrecognized. They are of special clinical interest in showing that typhoid fever as a possible diagnosis cannot be excluded by a moderately high white count.

Twenty-six deaths (12.8%) occurred, for three of which perforation was responsible. Pneumonia was a distinct factor in nine, pulmonary tuberculosis in two, and meningitis in one. The others were due to the severity of the infection, with hemorrhage a contributing cause in four and alcoholism in one. Three entered moribund and died within forty-eight hours. Though the number of males was double that of females, the number of deaths in both sexes was almost the same, 14 and 12 respectively, giving a mortality of 10% among

the former to 18.7 among the latter. No conclusions can be drawn as to the influence of age on the death-rate, owing to the small number of cases in each decade, but the fact that four of the eleven who were over forty died is worth mentioning. Four only came to autopsy, in two of which the bacillus typhosus was found in the heart's blood; in the others it did not appear in the cultures from any of the organs. The process had invaded the colon in two and the cecum in three, in one of which the latter was transformed into an ulcerated pouch. The appendix was affected in two, an anatomical condition which may account in some instances for the abdominal pain of which so many of the patients complained, especially where it was located in the right iliac fossa, and where, when accompanied by local tenderness, a diagnosis between typhoid and appendicitis is difficult.

Two epidemics, apparently arising from a common source of infection, were represented in these patients. One occurred among the young people of a colored church, who went down the harbor on an excursion. Six cases came under the care of Dr. S. F. Courtney and three were sent to the hospital. One of the amusements indulged in was digging clams, which were afterwards eaten, and to them suspicion points as the cause of the disease. The other epidemic broke out among the boarders in a South End restaurant, and some 30 were affected, of whom 12 entered the hospital. The dissemination of the disease was traced to two of the maids who kept at work during the early stage of the disease, and whose uncleanly habits led to infection of the food.

The treatment employed may be dismissed in a few words; with several men in charge of the wards, it naturally varied somewhat in details, but on the whole was purely symptomatic. Cold sponges, occasionally a fan bath, were ordered when the temperature reached 102.5°. Tubs were not used. Intestinal antiseptics were given when indicated, and cardiac stimulants were freely ordered in the more serious cases, but less alcohol was used than several years ago. Milk formed the staple article of food, but considerable latitude in diet was permitted in some of the services. It is noteworthy as showing the change in medical opinion which has occurred during a comparatively few years, that no mention of the surreptitious banana or other baleful article of food as the cause of relapse was noticed.

TYPHOID FEVER AT THE MASSACHUSETTS GENERAL HOSPITAL.¹

BY HERMAN F. VICKERY, M.D., BOSTON,
Visiting Physician, Massachusetts General Hospital.

DURING my service at the Massachusetts General Hospital from July 1 to Nov. 1, 1902, there were under my care 49 cases of typhoid fever, of which three proved fatal, making a fatality of 6%. Of these, 32 ran an uncomplicated course. Among the other 17 there were six cases of relapse; two of phlebitis; two of suppurative otitis media; four with abscesses; three with hemorrhages, of

¹ Read at the Boston Medical Library, Dec. 15, 1902.

which one was fatal; one with mania; one with typhoid spine; one with pneumonia, proving fatal.

In general, the cases were characterized by mildness and a successful termination. Five cases came from a group of about 30, who boarded in one house on Columbus Avenue. The etiology of these last cases is still under investigation, and will doubtless be reported later.

In the observation of my 49 cases, the possibility of paratyphoid infection was borne in mind, but in no case was the diagnosis of this condition possible, because our pathological department had not yet in its possession cultures of the paratyphoid bacillus.

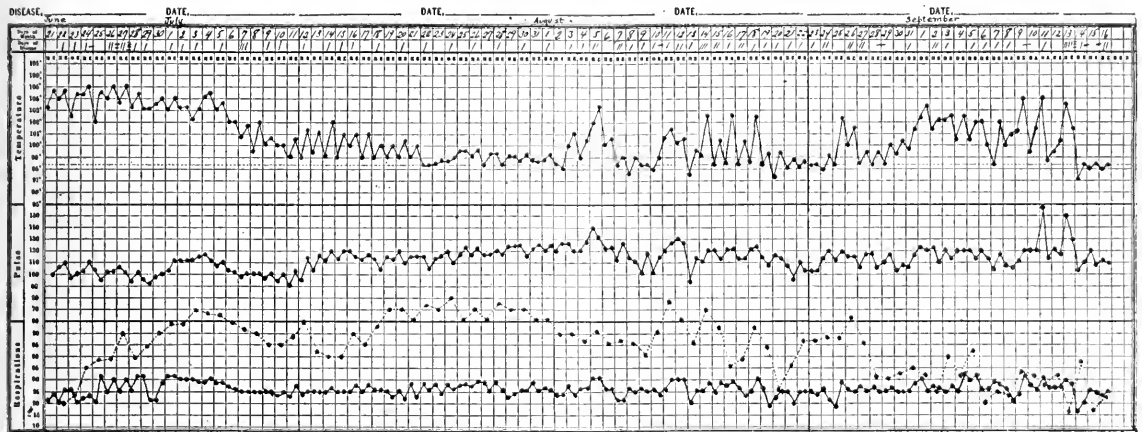
Forty-one cases gave a positive Widal reaction. In one case of probable typhoid no thorough examination was possible, because the patient insisted on leaving the hospital within twenty-four hours of his entrance, against advice. In the other seven there were repeated unsuccessful attempts to obtain a Widal reaction.

A diazo test was invariably made as a matter of

The youngest patient in the series was a girl of three years, with a positive Widal reaction, suppuration in both ears, and a white count of 8,800; later deep abscesses developed and the number of leucocytes increased to 13,000, 20,000 and 31,800, with final recovery.

Another girl of nine years was surreptitiously given an apple by her mother at a time when her temperature was 104.5°. She soon had stomach-ache, and the next day passed five ounces of blood by the rectum, and had two other smaller hemorrhages, but recovered.

The mildest case was that of a student whose family history, previous health and habits had been excellent. He was one of the Columbus Avenue cases. Entering on the fourth day, he received ten grains of calomel, followed by a Seidlitz powder. The fever did not last over eight days; and sixteen days after his attack began he was discharged, feeling, as he said, "better than for years." In his case the Widal was negative on the fourth and eighth days, but positive on the tenth.



TYPHOID SPINE.

routine. For purposes of comparison I have tabulated the results in 26 cases. In these the Widal and diazo were both positive 8 times; the Widal was positive but the diazo negative 13 times; the Widal was negative but the diazo positive in 1 case, and in 4 neither the Widal nor the diazo reaction was observed. In one case the diazo was present on the tenth day of illness, while the Widal did not appear until the twenty-fourth.

The diazo was observed in five cases, respectively, on the fifth, sixth, seventh, ninth and tenth days, and in two cases on the fifteenth day. When present it disappeared, as a rule, within a week of its first appearance, and in general it seemed to be of little assistance in making a diagnosis of typhoid fever.

One case had a peculiar onset. The patient was a teamster who had a cough for three days, but kept at work. On the fourth day while lifting a steel shaft, he felt his back give way, stopped work and went to bed. When he entered, three days later, he had a positive Widal and diazo reaction.

One patient with positive Widal and diazo reactions had a well-compensated aortic regurgitation, and ran a most satisfactory course, his pulse never reaching 100 till convalescence began.

One young woman had a mild attack, became delirious and announced that she was dead, and very consistently refused to take food, but a brief experience with forced feeding through a nasal tube induced her to swallow naturally, and she made a good recovery.

Another woman, whose husband had been insane and finally committed suicide, developed well-marked mania, and had to be fed by means of a tube for nineteen days; but she became convalescent, and was in a nearly normal condition when discharged.

One of the severest cases was that of a young servant girl who was profoundly toxic, and took nourishment very badly. No drugs seemed to have any beneficial effect upon her, except that negatively. I thought there was improvement when I omitted the strychnine which she had been receiving. Brandy, in a dose of two ounces, did not seem to

influence her in any way. She did, however, exhibit striking improvement upon the subcutaneous administration of normal salt solution, of which a pint was administered twice a day for thirteen days. Its effect was to diminish the toxic condition of her blood, so that her mind became clearer, her complexion more normal and her pulse stronger. In this case we endeavored for several days to measure the total amount of fluid ingested and excreted. On the average she received one hundred and fifty ounces in twenty-four hours, of which about ninety were returned, so that about two quarts were dissipated in the breath and perspiration. This patient, although apparently out of danger, was still very ill when my term of service expired. She has since become completely convalescent under the care of Dr. F. C. Shattuck.

The case with spinal complication was a recent graduate of the Institute of Technology, whose sister had exophthalmic goitre. He entered June 21, on the eighth day of his illness, under the care of Dr. E. G. Cutler, and pursued the ordinary course of a severe typhoid fever. I found him July 1 with nothing distinctive, except that his pulse was very dicrotic and rapid, one hundred and ten beats per minute. He became afebrile on the thirty-seventh day of his illness; thirteen days later his temperature arose in the manner of an acute infection, as shown by the accompanying chart, which is similar to that seen in many cases of typhoid spine, but it was not until eight days after the rise in temperature that he complained of a dull pain in the lumbar region. There was at no time any deformity of the spinal column. At the height of the process the knee jerk on the right side was absent; on the left it was exaggerated. There was no ankle clonus and no Babinski reaction. There was a small area of tactile anesthesia on the dorsum of the left big toe and just back of the toe, towards the dorsum of the foot; otherwise sensation was intact. He suffered very much from pain on the least motion of his trunk, and also from an involuntary twitching of his thighs. Dr. J. E. Goldthwait saw this patient in consultation and very kindly fitted him with a leather jacket, which, however, did not give the relief expected. He seemed somewhat benefited by raising the foot of the bed and fastening weights to his feet, so as to establish counter extension. After the comparatively short period of seven weeks he became convalescent, and when he left the hospital he suffered merely from a slight stiffness of the back.

Of the fatal cases one was a female nurse who had been taking care of a case of typhoid. She seemed exhausted and toxic upon entrance, with a pulse gradually increasing in rapidity, when she had repeated hemorrhages, discharging over two quarts of blood, and dying from exhaustion after the hemorrhage had apparently ceased. The autopsy showed unusually extensive ulcers in the ileum and cæcum. There was one small stone in the gall bladder. Typhoid bacilli were found in the heart-blood, the liver, spleen, gall bladder and gall stone.

A second fatal case showed typhoid bacilli in the heart-blood, spleen, a supernumerary spleen, the liver and the gall bladder, and also a pneumonia due to pneumococcus infection, involving the lower lobe of the left lung.

The third fatal case was a laborer, forty-six years old, who drank whiskey habitually in large amounts. He entered nine days after ceasing work, with dyspnea, cyanosis, *à bruit de galop*, and some consolidation at the right base. He was profoundly toxic, and developed alcoholic delirium. No autopsy was obtained.

THE CLINICAL DIAGNOSIS OF TYPHOID PERFORATION.¹

BY JOHN C. MUNRO, M.D., BOSTON,

Assistant Visiting Surgeon, Boston City Hospital; Instructor in Surgery, Harvard Medical School.

Of the twenty-six cases reported in this paper all but one suffered from typhoid. Twenty-one of these I have seen in consultation at the Boston City Hospital in the last four years, the greater number in the last two years. I have added five recent cases through the courtesy of members of the staff, because, of late, the observations and records are more carefully made than during the earlier years of operation for perforation.

I have purposely utilized personal cases because my private records in many instances are more detailed than those kept by the clinical clerks of the hospital, and because I have emphasized the surgical rather than the medical point of view.

There are fifteen operations in cases with perforation, with one recovery. In two fatal cases the cause of the abdominal symptoms and of death could not be determined at operation. Two cases died and three cases recovered without operation. One case of peritonitis from a ruptured mesenteric gland died, one case of cholecystitis recovered and another of supposed cholecystitis died. One case exhibiting a Widal reaction died from pyelitis and cystitis.

In reporting the cases I have intentionally included those of supposed perforation in order to show all sides of the clinical picture.

Until we operate earlier than in these cases reported, and are willing to explore, unnecessarily perchance, where symptoms of perforation exist, we are still going to have our high mortality from general peritonitis. I believe a rapid exploration through a muscle-splitting incision in a typhoid patient without peritoneal infection or serious organic lesion is practically harmless. We must make an exploratory investigation occasionally in order to save the larger number of genuine perforations by timely interference. The decision as to the ability of the patient to withstand a possible needless exploration should be decided by the surgeon and not by the physician. To quote from Osler in this respect, he says: "To leave the diagnosis of perforation to the attending physician is in too many cases to sacrifice the life of the patient."

In each of the seventeen cases of perforation, the symptoms early in the course of the fever varied a good deal. Some cases had no signs indicating abdominal disturbance; others had nausea and vomiting, slight and severe, abdominal tenderness with and without spasm, and distention with and without other signs. In other words, a combination of one or two symptoms suggesting peritoneal lesions might

¹ Read at the Boston Medical Library, Dec. 15, 1902.

or might not exist early in the disease and might or might not persist. The gauge of each individual patient must be learned. Any variation from that gauge for the worse should suggest the possibility of peritoneal infection and should not be dismissed without careful investigation.

The appearance of additional signs of peritoneal infection, along with the individual symptoms already exhibited, warrants early operation. A patient complaining of tenderness and distention suddenly developing spasm and vomiting, or chill with spasm, or any similar combination of symptoms, is probably developing a surgical lesion.

Sudden fulminating symptoms, due probably to a wholesale outpouring of feces through a large opening, were found in several of these cases. No one can be criticized for not foreseeing such an accident. There were a number of other cases, however, in which a careful cross-examination of the patient, the attendants and physicians clearly showed that there had been a number of hours' warning which had not been rightly interpreted. After-knowledge is more easily obtained than fore-knowledge, but if we assume that there is a perforation in cases with erratic symptoms and investigate our earlier history with that in view we are more likely to make a timely diagnosis.

In some cases the house physician was not notified by the night nurse for several hours after the onset of new symptoms. This lapse strongly emphasizes the lack of a sufficient nursing force at night in our hospitals, a condition that many surgeons keenly recognize.

Some cases with distention more or less habitual would be relieved by turpentine stupes or enemata. Then some additional symptoms like pain or spasm would appear and persist, even though the distention could be relieved as usual. Such a combination is a pointed one and yet it was overlooked more than once.

Some patients suddenly complaining of pain would later develop symptoms more suggestive of perforation, whereat the pain would lessen. This false sign of security was given greater weight than the case warranted.

Permission for operation, even when advised within a few hours of perforation, could not be obtained for several hours, long enough to rob the patient of practically all hope from interference. I can only suggest that in typhoid or any disease liable to be complicated by a grave surgical lesion, a full consent for operation should be obtained provisionally in each and every case at the outset, if advised by the attending physician and the consulting surgeon. Until we can bring some such rule to bear, it is inevitable that many lives must be sacrificed to the obstructive hesitation and ignorance of the patients and friends. In some of our cases operation was blocked from four to eighteen hours by delay.

We are apt to expect an immediate response in pulse and temperature with the outpouring of intestinal contents into the abdominal cavity. Theoretically, the temperature should drop and the pulse should rise at once, but as a matter of fact this does not take place by any means in all cases, and the failure to find this index where there are other equally valuable indices must not throw one off the

scent. One case, for instance, had a persistent pulse of 80 with a board-like abdomen, a symptom sufficient to overrule all contrary signs.

Spasm is a term so loosely used and so difficult of apprehension that it is not easy to reconcile many recorded statements. Personally, I believe that spasm as understood by the surgeon differs from that as interpreted by the physician, and I do not believe that the experience of the average house officer is sufficient to enable him to determine and interpret this most important sign. I frankly confess that I am by no means able to properly estimate its significance in many cases, but I believe my judgment is of more value than that of the house officer of a year's experience. And yet this one sign, rightly interpreted, is the keynote to the early detection of a perforation in a large proportion of cases. The ideal method would be that adopted at the Johns Hopkins Hospital, where the surgeon sees and studies regularly in conjunction with the physician all cases of typhoid, day by day; a difficult task if added to all our other duties, I will admit.

A leucocyte count has proven of very little value at the time when most needed. As in other abdominal infections, it is valuable when corroborative of the clinical signs.

Cases with hemorrhage were the most perplexing in my experience, and I do not know how to differentiate the symptoms of a hemorrhage from those of perforation in the early stages. That the two may coexist is only too evident, and naturally the presence of hemorrhage makes the prognosis more grave. In at least four of my cases the symptoms from hemorrhage obscured the diagnosis.

Most of the cases were explored under ether. In none of my own cases could I persuade myself that the risk of a rapid and satisfactory exploration under ether, occupying not over ten minutes, was more dangerous than operating with local anesthesia on a struggling, frightened patient.

So far as could be determined, the operations were done in one case forty-eight hours after perforation, in two cases twenty-four hours, in one case eighteen hours and in two cases twelve hours. In the case of operation within four hours there was probably a sudden, profuse gush of intestinal contents. In Thorndike's case of recovery the abdomen was opened within six hours after perforation.

Otitis and pulmonary symptoms tended to obscure the abdominal symptoms in the same way as is not infrequently observed by abdominal surgeons in other diseases.

The absence of liver dullness and the presence of flank dullness are late signs and are of little corresponding value.

The facies is not noted in the records of the hospital to any extent. In my own experience it is commonly diagnostic where there is peritonitis; less so in the early period of perforation except as influenced by pain.

A short consideration of the cases where perforation was suspected but not found, or at least not proven, may be worth while. The patient with ruptured mesenteric glands gave typical symptoms of perforation. In two cases where no perforation was found at operation nor in a partial autopsy, no definite cause of death was discovered. One of

them strongly suggested pancreatitis. Both gave typical symptoms of peritonitis from some cause.

One case with typhoid bacilli in the gall-bladder was very similar to the last cases. In the case of typical cholecystitis with operation followed by recovery, perforation was considered only as a remote possibility.

The renal case could speak no English, was very ill, and a diagnosis was made on the association of abdominal symptoms with a Widal reaction.

In two of the cases that recovered without operation I am inclined to believe that there was a perforation that healed spontaneously. It was fortunate that no operation was done in these cases, although I believe the risk of delay in a series of patients with similar symptoms would be greater than the risk of an early operation.

CASE I. Male, twenty-three years old. Perforation in fourth week. Early abdominal symptoms; slight general tenderness; no spasm. Eight days before operation, epigastric pain. Three days before operation he was grunting and groaning as though suffering from abdominal pain, but no tenderness nor spasm was found. On day of perforation, at 3.30 A.M., he had a chill with rigor, but the house physician was not notified for several hours. At 8.45 A.M. he complained of abdominal pain. Considerable resistance with general spasm was found. At 9.15 A.M. chills for three quarters of an hour with marked tenderness. At 11.30 A.M. I saw him in consultation and found evidence of a general peritonitis. Permission for operation could not be obtained until 8.30 P.M., when his condition was critical, the heart sounds being scarcely audible and the respiration rapid and superficial. There was distention with general spasm and tenderness.

Operation.—Ether. Right iliac incision. Cloudy fluid in excess. Perforation in ileum close to cecum closed with silk. Cavity containing pockets of pus in the pelvis and right iliac region flushed out thoroughly and the abdomen closed. Condition no worse at close of operation. He was somewhat better for two days. Then spasm and vomiting appeared, and he died on the fifth day. A partial autopsy showed a general peritonitis; a necrosis of the ulcer, so that the stitches had cut and there was again perforation.

This is the only case in which I have closed the abdomen, and it was tried in this case to determine if the irritation of the usual drainage might play any part in the after history. It was a mistake; the abdomen should have been drained.

CASE II. Typhoid. Perforation. Male, twenty-five years old. Perforation in sixth week. Early abdominal symptoms; some nausea and vomiting; slight iliac tenderness. Later he developed distention, relieved by turpentine stupes. Ten days before operation he developed spastic rigidity of the arms, but without abdominal symptoms. On the day of perforation at 4 P.M. the pulse became rapid and weaker, the delirium increased, and at 5 P.M. there was sudden severe abdominal pain with marked tenderness. At 6 P.M. the pulse was 160 and the temperature 104°, the abdomen being slightly distended and rigid with very marked tenderness, but he complained less of pain. I then saw him in consultation, but permission for operation could not be obtained until 10.30 P.M.

Operation.—Ether. Right iliac incision. Feces and cloudy serum in cavity. Perforation about six inches from the valve, in the ileum, closed with silk. Adhesions about appendix probably from old attacks of appendicitis. Patient, in collapse before operation, died on the table. Cultures from the cavity showed streptococci, staphylococci and bacilli of typhoid.

CASE III. Typhoid. Perforation. Male, twenty-four years old. Perforation in seventh week. An ambulatory case until the fourth week of the disease. Seventeen days before operation the abdomen was tense and tender; he had a hemorrhage and was very nervous. Thirteen days before operation he had three hemorrhages.

Four days later the abdomen was soft and free from tenderness. One day before perforation there was considerable abdominal discomfort after several loose stools containing blood, but he complained of no pain. During the night the house physician found a soft abdomen, but with rigidity, as had been habitual. Turpentine stupes gave relief, and he slept all night. On the morning of perforation the house physician found no rigidity, pain or distress. At 11.30 A.M. there was general abdominal pain, and the visiting physician found slight tenderness and discomfort, relieved by catheterizing the bladder. At 3 P.M. he complained of pain without change in pulse or temperature, and considerable relief was afforded by the use of the catheter, though a slight rigidity still persisted. At 4 P.M., without change in pulse or temperature, the pain persisted, though not sharp. At 5 P.M. the temperature rose three and one half degrees, to 105½°. At 6.30 P.M. I saw him and found marked spasm, tenderness and nausea and a poor pulse of 125.

Operation.—Ether. Iliac incision. Cloudy serum and feces in cavity. Three complete perforations in the ileum, three inches, two feet and three feet from the valve respectively, closed with silk. Intervening gut and the cecum thickened and brittle. Drained. Condition no worse for operation. For two days he was restless and complained of nausea; relieved by lavage. Then he became delirious, and died on the third day, evidently from peritonitis, the pulse rising to 160 and the temperature to 106°. No autopsy.

CASE IV. Typhoid. Perforation. Male, eighteen years old. Perforation in the fourth week. Early abdominal symptoms; some nausea and vomiting; distention, but no tenderness. Two days before perforation he had a hemorrhage followed by general abdominal pain, slight distention and rigidity, but without especial tenderness. On the following day there was nausea, considerable distention with discomfort, the temperature falling from 102° to 99° in eight hours. On the day of perforation at 8 A.M. he began to vomit a good deal; at 9 A.M. there was sharp pain in the right iliac fossa, becoming general, with tenderness and increased distress. I saw him in consultation about noon and advised immediate operation.

Operation.—Ether. Rigid, cyanotic abdomen with intense tenderness; rapid, dicrotic pulse; cold extremities. Right iliac incision. Lower abdomen and pelvis filled with feces, pus and lymph. Small perforation in ileum, one foot from valve, closed with silk. Drainage. Much shock. Frequent regurgitation. Operation in head-down position. Death within six hours. Culture from cavity showed streptococci rapidly dividing. No autopsy.

CASE V. Typhoid. Perforation. Male, thirty years old. Perforation in third week. Early abdominal symptoms; severe attack of vomiting; distention and general soreness of abdomen, but no tenderness. One day before perforation there was slight pain and distention, the temperature rising from 100° to 103°. During the night the temperature dropped to 98° and the pulse remained at 80, but there was general pain and tenderness, and the abdomen became boardlike and dusky. No marked collapse. I saw him in consultation and found all the symptoms of a general peritonitis, the abdomen being generally distended, with marked spasm throughout, tympanites and tenderness.

Operation.—Ether. Right iliac incision. Cloudy fluid, pus and feces in cavity. Eighteen inches from the valve, in the ileum, a beginning perforation was closed with silk. One foot from the valve the gut was rotten and friable for about six inches and could not be sutured, and the patient's condition did not warrant an excision, so the loop was brought outside the abdomen and sutured there after the cavity had been well flushed out. A second incision was made in the median line for drainage. Patient in fairly good condition at close. After operation he improved considerably at first, and took nourishment well, but on the fourth day he began vomiting and died on the fifth day, probably from peritonitis. No autopsy. The prolapsed gut showed no sign of strangulation and discharged freely.

CASE VI. Typhoid. Perforation. Male, thirty years old. Perforation in third week. Early in the disease he had slight tenderness in the iliac regions. No further signs

developed until the morning of the day of perforation, when he complained of abdominal pain, but of no special tenderness or spasm. Nothing suggestive was found by the visiting physician. At 1.30 p.m. there was sudden abdominal pain, the temperature fell to 98° and the pulse rose to 100. Collapse and chill. Abdomen became hard and rigid, tender and painful. I saw him in consultation at 2.30 p.m., and operated at 5.30 p.m., as soon as permission could be obtained, when the temperature had risen to 105°; the abdomen distended and tympanitic, with marked spasm, and the general condition had become precarious.

Operation.—Ether. Incision along edge of rectus where spasm persisted under ether. Lymph on coils. Small perforation in ileum closed with silk. Irrigation. Drainage. Condition poor throughout. On following day his condition was excellent, the pulse and temperature having fallen practically to normal. No distress nor nausea. Early on the following morning he had a sudden collapse without nausea or distention, the pulse rose rapidly and he died during the afternoon. A partial autopsy showed a mild peritonitis in region of the wound. No hemorrhage. No fresh perforation. No leakage. Nothing intra-abdominal to account for death. Head and chest not examined.

CASE VII. Female, twenty-six years old. Perforation in seventh week. No record of abdominal symptoms in the early course of the disease. Hemorrhage six and five days before perforation. On day of perforation she complained of abdominal discomfort. At noon the abdomen was distended and markedly painful to pressure. No change in pulse. The temperature fell to normal, followed by a chill. The face became pinched and there was profuse sweating. The pulse, temperature and respiration, however, had been steadily rising for two days. I saw her in consultation and advised operation as a last resort, as her condition was very critical, there being general abdominal spasm, cyanosis and sweating. The patient was practically moribund.

Operation.—Ether. Right iliac incision. Cloudy fluid. Perforation in ileum closed with silk. Patient then vomited into the trachea, collapsed and died. Had I operated in the head-down position as I am accustomed to do in similar cases this need not have happened. Examination of the peritoneum was made, and the appearance suggested that the perforation had existed longer than five hours. No autopsy.

CASE VIII. Typhoid. Probably two perforations at different times with spontaneous recovery in one. Male, adult. First probable perforation in fourth week; second perforation in tenth week. No early abdominal signs. One day before the first perforation he had vomited, followed the next day by a sudden drop in temperature and pulse, and extensive tympanites without local or general pain. Two hours later the pulse and temperature rose, the tympanites increased and his condition became critical. Dr. Thorndike saw him in consultation and advised operation, to which the patient refused consent. On the following day, after passage of gas and feces through a rectal tube, he improved to a fairly satisfactory condition, though very ill nevertheless. Five and a half weeks later and one day before perforation he had sharp pain in the left hypochondrium, disappearing by night. On the day of perforation, at 3 p.m., he vomited and soon complained of sharp pain, referred principally to the left epigastrium, increasing with a drop in temperature to subnormal and a rise in pulse to 128. A few hours later I saw him in consultation.

Operation.—Ether. Median incision. Slight excess of cloudy fluid. Two perforations in the ileum near the valve were closed with silk, the cavity drained through the median wound and a second opening made in the right iliac region. Examination of the ileum showed a scar-like area suggesting a healed perforation. In good condition at close of operation. Two days later he was holding his own, but that night he vomited and was apparently dying, but rallied and his condition became fairly good. Five days after operation he vomited considerably, but on the next day the wicks were removed and his general condition seemed distinctly better. Eight days after operation he began to fail, with coughing and vomiting, and died the following day. No autopsy.

CASE IX. Typhoid. Perforation. Male, twenty-four years old. Perforation in fourth week. No early abdominal signs. No tenderness. One day before perforation he had a hemorrhage and chill followed by a second hemorrhage and collapse. On the day of perforation, at 9 a.m., he had severe abdominal pain and tenderness with spasm and distention. No nausea nor vomiting. Pulse better than preceding night. I saw him within a few hours and found distention, general tenderness, more marked on the right, and some general spasm.

Operation.—Ether. Incision in right iliac region. Cloudy fluid. Ileum held down by adhesions surrounding a pocket of pus, feces and dark blood. Ragged hole in ileum closed with silk. Pelvis full of pus. Irrigation. Drainage. Much shock towards close, but patient quickly rallied under stimulation. Condition fair during the night. On the following day he had two hemorrhages without chills. He then grew restless, had four hemorrhages, and died on the second day after operation. No autopsy. Cultures from the abdomen showed the typhoid bacillus and the coli communis.

CASE X. Patient of Dr. J. B. Blake. Typhoid. Perforation. Male, thirty-nine years old. History too indefinite to determine in which week the perforation took place. No early abdominal signs, no tenderness. Six days before perforation there was delirium and distention, increasing for four days but without tenderness. On the morning of the day, he had a chill followed by rise in temperature. No increase in distention but tenderness in left flank. Delirium, distention and tenderness increased during the day, and he vomited twice. The temperature rose to 104°, the pulse to 140. Dr. Blake and I saw him in consultation in the evening, but consent for operation could not be obtained for several hours.

Operation by Dr. Blake.—Cocaine. Median incision. Free gas, fibrin and pus in pelvic portion of cavity. Perforation in sigmoid sutured. Drainage. No shock. On the following day he was mentally the same, but his distention was not relieved by enemata or the rectal tube and he died in the afternoon. Culture from the cavity showed streptococci. No autopsy.

CASE XI. Dr. H. A. Lothrop's patient. Male, twenty-nine years old. Perforation in the fourth week. Ambulatory case entering the hospital for immediate operation. Fourteen hours before he had sudden, sharp, cutting abdominal pain without a chill. Vomited several times. Slight distention, tympanites and general spasm, more marked on the right.

Operation by Dr. Lothrop.—Ether. Median incision. Chicken-broth fluid in the general cavity. Two perforations in the ileum three inches from the valve closed with silk. Thorough irrigation. Wound closed. On the following day in fair condition. Abdominal cramps, not localized. Stool. Slight distention, no vomiting. He improved without nausea or vomiting, then became restless and comatose and died five days after operation, probably from the typhoid, as there were no abdominal signs pointing to infection of the peritoneum. No autopsy. Cultures from the abdomen at time of operation showed the colon bacillus.

CASE XII. Patient of Dr. E. H. Nichols. Typhoid. Perforation. Male, thirty-three years old. Perforation in second week. Early in the disease he had general abdominal pain. Two days before operation he had repeated vomiting and severe chills and entered the hospital for immediate operation.

Operation by Dr. Nichols.—Ether. Right iliac incision. Large amount of foul fluid and intestinal contents in the cavity. Adhesions about the appendix, which was removed. Perforation in the ileum, eight inches from the valve, closed with silk. Second incision in the left iliac region and cavity flushed out and drained. Patient failed during the operation and died in about six hours.

CASE XIII. Patient of Dr. P. Thorndike. Typhoid. Perforation. Recovery. Male, twenty-seven years old. Perforation in ninth week of the disease, or about the second week of a relapse. Early in the disease he had nausea and irregular chills. At noon of the day of perforation he had abdominal spasm and slight pain relieved by stupes. At 1.30 p.m., very severe chill without rise of temperature. Then pain, spasmodic and colicky in character, in lower abdomen. At 2.10 p.m. he looked

haggard, but the pulse had not increased. He was moderately tender over the lower abdomen with marked spasm in the right iliac fossa. There was no distention, but he vomited during the examination. Marked relief followed an enema. Dr. Thorndike saw him in consultation at 3.30 P.M., when the pain had nearly subsided, but there was more tenderness, especially on the right, with well-marked spasm. The general condition was good, with a pulse rising to 160.

Operation at once by Dr. Thorndike.—Ether. Incision along outer edge of rectus. Flakes of fibrin on coils. Perforation about eight inches from the valve, in the ileum, closed with silk. Large quantity of thin pus in the pelvis. Drainage. Stood operation well.

Convalescence was satisfactory, and he was discharged in six weeks. A month later he was shown at a meeting of the City Hospital Clinical Society.

CASE XIV. Patient of Dr. Post. Typhoid. Perforation. Male, forty-eight years old. Perforation in fifth week of disease. Ambulatory case entering as an emergency. Twenty-four hours before operation he had a sudden onset of pain in the abdomen, with a constant desire to defecate. Temperature subnormal and pulse 140, with general tympanites, spasm and tenderness.

Operation by Dr. Post.—Ether. Incision through outer edge of rectus. Intestinal contents flowed from the wound. Four perforations along the ascending colon closed with silk. Drainage. In the afternoon of the same day he had no pain nor discomfort and the pulse fell from 140 to 110, but delirium began during the night and he died the next day. No autopsy.

CASE XV. Patient of Dr. G. H. Monks. Male, thirty years old. Perforation in fifth week. Ambulatory case entering as an emergency. Twenty-four hours before operation he had a sudden sharp pain in the lower abdomen with vomiting. This became less severe in the course of an hour and was roughly localized in the right iliac region. The vomiting persisted and the general condition grew worse. No chills.

Operation by Dr. Monks.—Ether. Incision along edge of rectus. Two perforations in the ileum, two inches and twelve inches from the valve, were closed with silk. Second incision in the left iliac region, the pelvis being wiped out and drained. A loop of small gut was sutured to the parietes and opened, with escape of much gas and feces. Under vigorous stimulation the condition was as good as at the beginning of the operation, but he gradually failed and died eleven hours later. No autopsy.

CASE XVI. Typhoid. Perforation. No operation. Male, twenty-one years old. Perforation in third week. Ambulatory case. Early in the morning of the day of perforation he had sharp abdominal pain, persistent, with general tenderness, increasing with spasm. I saw him twenty-four hours after the first signs, when the temperature had fallen from 103° to 100°; the pulse was rising and there were signs of consolidation in the chest. I saw him again in a few hours, when he had rapidly failed, and advised against interference, the patient dying shortly afterwards of perforation and pneumonia.

CASE XVII. Typhoid. Perforation. No operation. Male, fifteen years old. Perforation in second week. There were no early abdominal symptoms, no tenderness. On the day of perforation, at 6 A.M., he had a sharp general abdominal pain without nausea. At 7 A.M. chill with rigor for two hours. At 8.45 A.M. slight general distention and slight spasm more marked in the right iliac region. Temperature subnormal. At 9 A.M. Dr. Lund and I saw him in consultation and advised operation, but consent could not be obtained and the patient died two days later of general peritonitis.

CASE XVIII. Typhoid. Operation. No perforation found. Male, nineteen years old. In the fourth week the temperature jumped many degrees, but the patient complained of no pain. In the sixth week he developed an otitis and pulmonary symptoms. A week later, after being kept awake by a cough, the abdomen became distended and tympanitic. No pain was complained of, but in the afternoon there was spasm and rigidity somewhat more localized on the right. He vomited several times during the day. I saw him in consultation in the evening, when there was a leucocytosis of 15,000, rising shortly afterwards to 22,400. He was very ill, with

marked distention, spasm, tympanites, and dullness in the flanks.

Operation.—Ether. Right iliac incision. Intestines injected but without adhesions; much distended, necessitating puncture. Cavity flushed out and drained. Patient in poor condition, was worse towards the close, but rallied well. Death on the following day. Culture from the cavity showed no bacteria. A partial examination, postmortem, through the wound, showed no active peritonitis, no pus. A few thin flakes of fibrin on some of the coils. No perforations were found, but some areas corresponding to Peyer's patches were extremely thin. Intestines greatly distended. No leakage from the punctures that had been sutured at operation.

CASE XIX. Typhoid. Operation. No perforation. Female, twenty-eight years old. Six days before operation she had an otitis. Three days before operation vomiting began and persisted. On the night before there was slight spasm and tenderness, both increasing. No change in the temperature. I saw her then in consultation and found marked tenderness, a rising pulse, cold extremities and persistent vomiting. Leucocytosis of 21,600. Diagnosis lay between acute pancreatitis and perforation.

Operation.—Chloroform. Patient very fat. Incision in right iliac region. No evidence of peritonitis. No fat necrosis. Pancreas felt swollen and indurated. Abdomen closed. Patient stood operation badly. Death within twelve hours. No autopsy. A portion of the pancreas removed through the wound proved to be normal.

CASE XX. Typhoid. No operation. Recovery. Male, thirty-two years old, with no early abdominal symptoms. The day before I saw him in consultation he had ten to twelve hemorrhages. There was slight spasm of the abdomen, delirium and increased pulse rate. When I saw him I supposed that there was a perforation and advised a leucocyte count, which was of no value either way. He improved, had no further hemorrhages and was discharged in about two months.

CASE XXI. Typhoid. No operation. Recovery. Female, fourteen years old. No early abdominal symptoms. Two days before I saw her in consultation she had a relapse with slight distention and complained of much pain. On the following day there was slight tenderness, moderate distention and tenderness, but no pain. On the morning of my visit she had had a sudden collapse following a bath. At consultation a diagnosis of perforation could not be made, especially in the presence of a chest full of râles. Recovery later.

CASE XXII. Typhoid. No operation. Recovery. Male, about twenty-one years old. Had slight epigastric pain in the early stages. Two days before consultation he developed abdominal pain, rigidity and moderate distention with general tenderness relieved by stupes. On the day of my visit, at 9 A.M., he had intense cutting pain in the left hypochondrium, with severe rigor, cyanosis, extreme rigidity and tenderness of the abdomen. The pulse became rapid and feeble. After the chill he was comfortable but had considerable tenderness. At this time I saw him and advised exploration on the basis of a probable perforation. Shortly afterwards Dr. Post and Dr. Monks saw him and advised against present interference, as there did not then seem to be sufficient evidence of a perforation. For several days he had moderate distention and pain at times, relieved by turpentine stupes and enemata. Five days later he passed a round worm, and four days later still he developed an acute otitis, the abdominal symptoms disappearing and general improvement followed.

CASE XXIII. Typhoid. Peritonitis from ruptured mesenteric gland. Operation. Death. Male, twenty-seven years old. Early in the disease he had slight tenderness in upper abdomen, but no further signs developed until the day of operation, when mild delirium began. At 7.30 A.M. the pulse rose to 120, the face looked pinched and white and he became semi-conscious. At 8.45 A.M. he collapsed, with a rapid pulse. The left side of the abdomen became more distended than the right, but no spasm nor rigidity was noted. He grew worse and I saw him in consultation a few hours later, when I obtained the following additional history: About five

hours before operation he had collapse, with increasing pulse, tender and painful abdomen and increasing delirium. I found spasm not definitely localized, though the pain had started in the left fossa. The patient was in very poor condition and operation was advised as a last resort.

Operation.—Ether. Median incision. Slight excess of fluid. No pus. No perforation. Swollen glands. Too ill for careful examination. Death in about twelve hours. Examination, postmortem, showed two swollen glands, softened and purulent, that had ruptured and caused a local peritonitis with adhesion of the adjacent gut.

CASE XXIV. Typhoid. Cholecystitis. Operation. Recovery. Female, twenty-nine years old, entered with distention, tenderness in the sides and a tumor in the right hypochondrium. Strongly alcoholic. In a few days she became delirious. The tumor persisted with tenderness, rigidity, distention and spasm.

Operation.—Ether. Incision over gall-bladder, which was opened, emptied and closed, together with the abdominal wound. No perforation was found. Discharged; relieved in a month. Cultures from the bile showed the typhoid bacillus.

CASE XXV. Typhoid. Probable cholecystitis. Operation. Death. Italian boy, seventeen years old. Entered in fourth week with rigid abdomen without spasm, but with tympanites and splenic tenderness. Two days later there was general abdominal tenderness, slight distention, involuntary micturition and general tenderness of all limbs. Pulse rising from 120 to 160.

Operation.—Ether. Median incision. Excess of light, coffee-colored serum. No perforation. No pus. Urine drawn at operation showed bile. Second opening made and the gall-bladder drained. Condition no worse at close of operation. Death twenty-four hours later. Culture from the bile showed the typhoid bacillus and from the abdomen the staphylococcus albus.

CASE XXVI. Pyonephrosis and cystitis. Italian, thirty-nine years old, entered after an illness of two weeks, delirious, with tense, retracted abdomen, marked rigidity, a leucocytosis of 33,500 and a positive Widal reaction.

Operation.—Ether. Incision in right semilunar line. Nothing found in abdomen to account for condition. Wound closed. Death on following day. Autopsy showed no evidence of typhoid. Pyonephrosis, hydro-nephrosis and cystitis.

DIET IN TYPHOID FEVER.¹

BY FREDERICK C. SHATTUCK, M.D., BOSTON,

Jackson Professor Clinical Medicine, Harvard Medical School.

IN 1897 I had the honor of communicating to the Section on Practice of Medicine of the American Medical Association a short paper² pleading for a more liberal dietary for typhoid patients. From 1886 to 1893 my hospital patients were given an exclusive milk diet until the temperature had remained at or below 99° for a week; since 1893 I have fed my typhoid patients according to their digestive power rather than according to the name of their disease, simply avoiding anything which contains, or can reasonably leave, a residue irritating or harmful to the ulcerated surface. Under the exclusive milk diet I had a mortality of 10% in 233 cases; with the enlarged diet the mortality has been 8.45% in 246 cases. If I am rightly informed, some of my colleagues at the Massachusetts General Hospital adhere to the purely liquid diet, some to a medium diet, no one going quite so far as I do in dietary freedom. Dr. Fitz's³ analysis shows that the mortality among my cases was less than among those of my colleagues who used a more

purely liquid diet, and that relapse was 2.9% less frequent in the liberally than in the rigidly fed. Fitz' paper brings the statistics up to 1899; Dr. W. H. Smith has completed them up to 1902, studying mortality, hemorrhage, perforation and relapse in 563 cases. His research shows that neither hemorrhage, perforation nor relapse are more frequent among my patients than among those more cautiously fed.

I am familiar with and lay to heart Dr. Morton Prince's important paper⁴ showing the erroneous conclusions which may be drawn from any series of typhoid cases less than one thousand in number. My personal cases are only about one-half that number, nearly equally divided between milk-fed and generously-fed patients. I feel, however, that the evidence is sufficient to warrant further trial of a liberal dietary, inasmuch as this evidence strongly indicates that under such dietary, mortality and relapse are less rather than greater, while hemorrhage and perforation are no more frequent. The testimony of nurses and house physicians corroborates my own convictions that under the liberal dietary the patients are more comfortable and have a shorter convalescence. I shall, therefore, with a mind open to conviction, persevere in feeding my typhoid patients with reference to their digestive power, avoiding substances leaving an irritating residue, and hope that others may be encouraged to do likewise. I will not encroach upon your time by giving a list of foods which I employ. To this audience the statement of a principle is sufficient.

Of the 563 cases of typhoid at the Massachusetts General Hospital from 1899 to 1902, the mortality was 8.8%; this mortality, as contrasted with 14.3% in the 3,538 cases analyzed by Dr. Fitz, at first seems striking; but Dr. Smith suggests that this decrease may be due in part at least to the fact that a large number of patients with mild typhoid have entered late in the disease. A Widal reaction on or soon after entrance has aided in proving the existence of a mild typhoid. It will be interesting to observe if the mortality in other reported series of typhoid where a routine blood examination is made does not show a diminution.

TYPHOID FEVER IN PRIVATE PRACTICE.¹

BY J. T. G. NICHOLS, M.D., CAMBRIDGE, MASS.

HYGIENIC surroundings and good nursing are the essentials of the management of typhoid fever. In a well-ordered hospital they are provided; in private practice it is the first duty of the physician to secure them. How shall this be done?

The room best adapted to this end should be chosen, without too much regard to the convenience of the rest of the household. It should have a sunny exposure, windows on two sides and an open fireplace or the best substitute, a Franklin stove. The carpet and all unnecessary furniture should be removed.

An abundant supply of fresh air must be provided. In warm weather this can be done by open windows. They should be freely thrown open day and night. We are often met by the fear of night air, but fresh

¹ Read at the Boston Medical Library, Dec. 15, 1902.

² Journ. Amer. Med. Assn., July 10, 1897.

³ Boston Med. and Surg. Journ., 1899, ii, p. 509.

⁴ Boston Med. and Surg. Journ., ii, p. 392.

¹ Read at the Boston Medical Library, Dec. 15, 1902.

air is just as necessary as by day — and night air is the only air we can get. We need not fear a fresh breeze. If the patient objects to it, a screen will comfort him. The more closely we approach out-of-door conditions, the better. The open fireplace secures the discharge of foul air. If too warm for a fire a kerosene lamp in the fireplace will give an efficient draught up the chimney.

In cold weather fresh air can be supplied freely and safely by the use of the window board. This should be a thin board, about eight inches wide, reaching from side to side of the window frame. It can be extemporized by nailing two clapboards together by their thin edges. It should be placed near the sash, which can be raised to any desired extent, but never above the board. A strip of rubber tubing fastened to each end gives it a firm hold on the frame, so that it can be moved as on a hinge, giving the entering air the desired direction. A like board should be attached to the top of the window. In this way a free supply of fresh air can be given, without draught or chill to the patient.

If we are compelled to use an air-tight stove, by a simple and inexpensive device warm, fresh air can be supplied. The stove may be encased in sheet iron with suitable openings, cold air being brought from the window board by a tin tube to the space between the casing and the stove, the flow being controlled by a damper.

This method of ventilation is described and illustrated in a prize essay bearing the device "X Y Z," written by Dr. Morrill Wyman of Cambridge, printed in the publications of the Massachusetts Medical Society for 1871.

The bed should be a single one, preferably of iron, with wire spring, a soft hair mattress covered with rubber cloth, and a double layer of blanket over this. Sheets should be changed and the blanket aired daily, the mattress changed and aired often. If there is room, there should be two beds, that the patient may have a daily change with the least disturbance.

If cold bathing is demanded there is no difficulty in private practice in using cold sponging, spraying or sprinkling. If a more free application of water is desired, a fairly effective tub can be made on the bed with a few sandbags and a rubber sheet.

Cleanliness and the use of means to destroy the germ of the disease should be enjoined. The physician should give explicit directions on these points and see that they are faithfully carried out.

When all these things have been done, the question of drugs is of secondary importance. Conditions may arise demanding their use, and the judgment of the physician must be his guide in each case. He should always bear in mind the warning of Hippocrates, "Do no harm."

UPON THE PRESENCE OF THE TYPHOID BACILLUS IN THE URINE AND SPUTUM.¹

BY MARK W. RICHARDSON, M.D., BOSTON.

In the *Journal of Experimental Medicine* for 1898 and 1899 I published two articles: one upon the presence of the typhoid bacillus in the urine, and

the other upon the use of urotropin as a remedy for this condition. Observations upon 103 cases of typhoid fever showed that typhoid bacilli were present in the urine of 22, or 21.35% of the cases.

A review of the literature since 1887 shows that 30 observers have made bacteriological investigation of the urine in 1,291 cases of typhoid fever. Of these, 278 gave positive results: a percentage of 21.5, which approximates remarkably closely to my own percentage of 21.35.

As to the use of urotropin² — this drug has been used by 8 observers in 53 cases. All the reports have been favorable except that of Gwynn, who found that, in two cases of cystitis due to the typhoid bacillus, the organisms persisted, though in much diminished numbers, in spite of a long-continued use of urotropin. Gwynn prefers irrigation of the bladder with corrosive sublimate 1:50,000.

Very rarely the use of urotropin has been followed by painful micturition and hematuria. These symptoms have, however, ceased immediately upon omission of the drug, and no permanent injury to the kidneys has resulted.

Our present knowledge upon this subject may be summed up as follows:

(1) Typhoid bacilli are present in the urines of about 21% of individuals afflicted with typhoid fever.

(2) The bacilli, when present, are generally in pure culture, and their number is frequently enormous, — many millions in each cubic centimeter of urine.

(3) The invasion of the urine by the bacilli takes place in the later stages of the disease. Unless measures are taken to remove the organisms they persist frequently for weeks, occasionally for months, and rarely for years, and thus constitute (a) a danger to the patient himself (cystitis and possibly orchitis and epididymitis), and (b), what is much more important, a grave source of danger to the public health.

(4) The necessity for the rigid disinfection and supervision of typhoid urines is apparent.

(5) In urotropin we have a drug which will, in the vast majority of cases, remove the typhoid organisms from the urine, not only in the cases of simple bacilluria, but also in those in which a cystitis has resulted. Very rarely an obstinate cystitis may require the use of vesical irrigations. Very infrequently a case will be seen in which the use of urotropin is followed by hematuria. In such cases the drug should be omitted and irrigation of the bladder substituted.

(6) This subject in its relation to the public health is of the utmost importance. In my opinion it should be a fixed rule, and one rigorously enforced, that no typhoid convalescent be discharged as well until his urine has been proved permanently free from bacilli. In large hospitals, with their well-equipped laboratories, such supervision can be carried out with ease. Cases in private practice should be the care of the local boards of

² Dr. F. C. Shattuck stated that for several years it has been his routine practice, alike in hospital and in private, to give his typhoid fever patients 8 to 10 grains of urotropin three times a day for two days in every week, until convalescence is completed. This obviates all danger from the urine and has never produced any untoward symptom.

¹ Read at the Boston Medical Library, Dec. 15, 1902.

health. In this way only can we prevent a considerable percentage of our typhoid convalescents from becoming unsuspected foci for the further distribution of the disease.

As to the presence of the typhoid bacillus in the sputum, I was able, in 1897 (*Journal of the Boston Society of Medical Sciences*, 1897, Nov. 16), to isolate this organism on three successive days from the sputum of a case of typhoid fever complicated with pneumonia. In 15 cases with no pulmonary complications the results were negative.

Since 1897 the subject has been investigated by a few observers only. Their results show that the typhoid bacillus may be present in the sputum during typhoid fever, especially if there be a coincident bronchitis or pneumonia. The typhoid bacilli are almost invariably associated with other organisms, such as the pneumococcus or the influenza bacillus, and are to be regarded rather as secondary invaders than as the primary cause of the complication. The sputum in these cases is generally hemorrhagic, and may contain large numbers of bacilli for considerable lengths of time. Seven weeks is the longest period of persistence recorded. The subject needs much further study, but enough is known to show that in the typhoid sputum we have still another excretion which must be carefully disinfected.

Medical Progress.

REPORT OF PROGRESS IN OBSTETRICS.

BY FRANK A. HIGGINS, M. D., BOSTON.

[Continued from No. 5, p. 125.]

THYROID EXTRACT IN THE TREATMENT OF PUERPERAL ECLAMPSIA.

NICHOLSON⁸ remarks with truth that in the whole range of obstetrics the subject of puerperal eclampsia stands out prominently as the most urgent and important problem yet awaiting solution. Our view as to the causation of this mysterious complication of pregnancy has been obscured by the adoption of certain theories founded mainly upon the results of necropsies of women who have died of eclampsia. Pathological changes found in some cases in the kidney and liver have given rise formerly to a renal hypothesis, and more recently to an equally unsubstantiated hepatic hypothesis.

It is certain that in cases of genuine puerperal eclampsia the kidneys and liver commonly suffer no permanent damage, and all recent investigations point to the conclusion that the convulsions are due to an acute toxic poisoning. If there is still uncertainty in some minds as to whether a toxemia accompanies normal pregnancy, there is little if any doubt that some toxic condition of the blood is the immediate cause of eclampsia. When a pregnant woman threatens to become eclamptic, the clinical points of chief significance are: (1) Certain changes in the character of the pulse, in the condition of the arterial walls, and in the blood pressure; (2) marked diminution in the quantity of urine secreted in the twenty-four hours; (3) diminished quantity of urea in the urine. He regards the diminished secretion of urea as a most striking

and important matter for consideration. It strongly suggests that the metabolism of nitrogenous substances has not been properly carried out.

At the present day in the consideration of all questions of metabolism one naturally thinks of the thyroid gland, for there is now little doubt that the active thyroid supplies a secretion which is essential to the maintenance of the normal metabolic round. Therefore in the additional metabolic processes incident to pregnancy we should expect to find evidences of increased thyroid activity, and it is a well-established fact that the gland constantly undergoes enlargement at this time. It seems not improbable, then, that the occurrence of many cases of puerperal eclampsia is intimately connected with inadequacy of the maternal thyroid system, — thyroid and parathyroid glands. Cases of pregnancy associated with myxedema or with goiter have been recorded, and it is interesting to note that in some of them all the characteristic pre-eclamptic symptoms were present to a marked degree.

Stated in a general way, his conception of puerperal eclampsia is this: In some pregnant women — for reasons which are at present obscure — the supply of iodothyron in the tissues becomes gradually or suddenly insufficient for the needs of normal metabolism. Coincidentally, certain toxic substances (intermediate or imperfectly converted products of nitrogenous metabolism) find their way into the circulation. These toxics, by their special property of contracting the blood vessels, eventually lead to the arrest of the renal secretion. With the suppression of urine, convulsions occur, and these do not seem to differ essentially from the convulsions of ordinary uremia. A deficiency of iodothyron is the primary fault; then the functions of the important metabolic organs are deranged, and finally a "vicious circle" becomes established.

Supposing the above hypothesis to be well founded, two main principles of treatment seem to be clearly indicated. The first, which would be best applicable in the pre-eclamptic stages of the disease, would aim at the readjustment of the metabolic processes. This is commonly done by putting the patient temporarily on an absolute milk diet and keeping her in bed. The explanation of the beneficial results which follow upon a reduction of the nitrogenous intake is to be found in the fact that the demands of the thyroid secretion are thereby greatly lessened. Meat diet, besides using up more iodothyron, yields too little iodine for the manufacture of a fresh supply. This indication, however, may, perhaps, be more directly fulfilled by the use of thyroid extract in doses of 10 to 20 grs., daily, till symptoms of "thyroidism" appear. We may afterwards continue with a dose which will be sufficient to prevent the return of pre-eclamptic symptoms. When thyroid treatment is commenced, he thinks the amount of nitrogenous food should be considerably reduced for a few days, but later on a pretty full dietary may be allowed. He cannot insist too strongly on the necessity of using a thoroughly reliable and active preparation of the thyroid gland.

The other obvious indication in treatment, and the one which is especially necessary after the onset of convulsions, is to reëstablish the secretion of urine. This leads to the consideration of a most

⁸ *Lancet*, March 22, 1902.

important question,—the cause of the renal arrest. He has already expressed the opinion that this is brought about by the actions of the toxins on the blood vessels. The toxins cause contraction of the arteries, not only of the body generally, but of the kidneys in particular, and this contraction of the renal arteries ultimately becomes so extreme that the flow of blood through the kidney is prevented. Then the secretion of urine is entirely abolished. The analogy here to the action of toxic doses of digitalis is very complete; in both cases the poisons ultimately stop their own excretion by producing intense contraction of the renal vessels, and anuria results.

Thus in this kind of suppression of urine the main object of treatment is to relax the spasm of the renal arteries. The pressure in the glomeruli will then be raised, and this will be succeeded, in a variable time, by a copious secretion of urine. Thyroid extract possesses a specific action in enlarging the caliber of the vessels, and if it be given to an eclamptic patient in doses sufficient to produce symptoms of "thyroidism" the renal secretion soon becomes reestablished. In all other successful methods of treatment in eclampsia, he believes the same principle is involved, and a condition of the circulation comparable to "thyroidism" (full dilatation of the blood vessels) is produced, which is followed by diuresis.

The value of morphine in eclampsia is undoubted, and he is satisfied that its beneficial effects are to be explained by the fact that a large hypodermic dose fully dilates the vessels. Morphine thus reestablishes diuresis instead of abolishing it or causing toxic effects. But half a grain or even a grain must be used; the smaller doses do not produce sufficient vaso-dilatation, and might give rise to alarming symptoms. In eclampsia excellent results have followed the use of large saline infusions. The *rationale* of their action is the same as in the thyroid or morphine treatment—relaxation of the renal vessels resulting in diuresis. After such an infusion there is a distinct enlargement of the radial caliber, and the sphygmogram clearly indicates diminished peripheral resistance.

Thyroid extract, from its specific action on the blood vessels, is a very valuable remedy in some cases of eclampsia, if only used for the purpose of reestablishing the secretion of urine. It is highly probable, however, that it has also the power of readjusting the processes of metabolism; for after its use the nitrogen excretion in the urine is increased, chiefly in the form of urea. This brings the urine of the eclamptic nearer to the normal condition again. Thyroid extract is a powerful diuretic both in health and disease; the increased quantity of urine secreted may possibly be related to the simultaneous rise in the urea excretion. Urea is a substance possessed of remarkable diuretic properties. Thyroid extract may be advantageously used (by the mouth or hypodermically) in all cases of eclampsia, but when convulsions are frequent and severe, at least one large dose of morphine should be given. Besides these measures, saline infusions may be employed with the object of accelerating the reestablishment of diuresis. In cases where the patient is dying from coma, or with a rapidly rising temperature, the additional treat-

ment by the cold or tepid bath, recommended by Herman, seems to afford the best chance of recovery. In the comatose type one would not use morphine. In conclusion, he makes the suggestion that thyroid extract should be tried in some of those rare cases of suppression of urine occurring after labor and miscarriage.

In a later communication⁹ he reports details of the administration of thyroid extract in four recent cases. The first case was a primipara, who was in the eighth month of pregnancy, suffering from severe headache, insomnia, scanty urine, and swelling of the hands, face and body. Two fits occurred and were treated with morphia. After the stupor passed off, ten grains of thyroid extract were given, and five grains repeated every four hours. The urine was solid on boiling. Premature labor set in, and a still-born child was born forty hours afterward. The patient recovered rapidly.

The second patient had suffered from eclampsia in three previous pregnancies. The last had been treated with thyroid extract, and she had been told to place herself under treatment early in any subsequent pregnancy. In her fourth pregnancy she began taking thyroid extract on her own initiative at the third month. She had felt altogether different in this pregnancy, had had no sickness, no swelling of the face or body, and no giddiness, blindness or headache. The urine was normal. He said that he believed that thyroid extract acted as a specific in favoring metabolism.

THE FETAL THEORY AS THE CAUSE OF ECLAMPSIA.

Moulton¹⁰ declares that the fetal theory of the pathogenesis of eclampsia is a product of our own time, and that two investigators have, independently, reached virtually the same conclusion. It has been learned from autopsies that there are changes in the organs of both mother and child which can only be explained through the presence of an abnormal amount of toxins in the blood. The secretory organs of the mother undergo anatomic and functional changes during pregnancy which interfere with their powers of assimilation and secretion. If in this impaired state they can do the increased work required by the pregnant condition, the woman continues healthy. If not, a surplus of toxins remains in the system, vitiates the circulation, and may produce eclampsia. One support of this theory is the frequent occurrence of eclampsia in twin pregnancy, which gives rise to a greater amount of toxins than ordinary pregnancy; another is the diminution of the symptoms of threatened eclampsia when the fetus dies in utero, that is, when the increased production of toxins ceases. The appearance of post-partum eclampsia is thought by some to refute the fetal theory, but it does not, since although after delivery the increased production of toxins ceases, the changes in the maternal organs causing the toxemia still remain.

PUERPERAL APHASIA.

Sinclair¹¹ remarks that "puerperal aphasia" is a term which has not yet, so far as he knows, found

⁹ Brit. Med. Journ., 1902, vol. ii, p. 1138.

¹⁰ Am. Med., Feb., 1902, p. 910; Cent. f. Gyn., Oct. 18, 1902.

¹¹ Lancet, 1902, vol. ii, p. 204.

its way into medical nomenclature, although one paper by Poupon on the subject has given it a distinctive significance. Sinclair includes under the term not only cases of loss of speech occurring during the strictly puerperal period, but also cases occurring during the later months of pregnancy. He follows this arrangement because he says underlying it there is a pathological factor which he believes must be taken into account in all cases of aphasia occurring at this time. This factor is the altered condition of the maternal blood for a certain period before and after delivery, and the greater tendency of the blood at this time to undergo clotting within the vessels. The last is especially emphasized at this point since it has not been noticed before in the discussion of the etiology of the disease and the occurrence of cerebral thrombosis as a factor in the causation of puerperal aphasia.

Sinclair reports one case occurring in his own practice, and has collected seventeen others from medical literature. He says it is possible that he has overlooked some of the literature of the subject, but that his search has convinced him of the rarity of the disease.

The cases are considered under two broad classes: (1) Those due to nervous origin, and (2) those due to vascular origin. He admits the occurrence of cases due to a nervous dyscrasia, such as hysteria or reflex disturbance, and it must be borne in mind that during pregnancy the whole mental attitude of a woman often undergoes a profound change, and in many cases she may become fretful, capricious and have little control of the emotional faculties.

The occurrence of a puerperal aphasia of neurotic origin, therefore, would not be surprising when we remember that a similar loss of speech may occur apart from pregnancy. Sinclair says that an occasional case of aphasia may follow delivery where pyogenic infection has unfortunately taken place. Under the vascular group there may occur certain transitory cases which possibly owe their origin to cerebral "congestive attacks," but the severe cases of loss of speech are due to cerebral thrombosis, embolism or hemorrhage. The possibility of cerebral hemorrhage may be considered rather remote except in the presence of albuminuric complications, as the child-bearing woman is apt to be at an age when the blood vessels are usually intact. It is also clear that in a case of a woman with cardiac disease, an embolus might become detached. With regard to the larger number of cases of puerperal aphasia in which the blood vessels show no signs of degeneration, there is no cardiac disease, no albuminuria, and no neurotic condition. He believes the key of the situation lies in the composition of the blood itself, and the greater tendency which puerperal women have to the formation of clots within the vessels. All the cases of aphasia, with one exception, developed during the four later months of pregnancy, or during the period immediately following delivery, which period exactly corresponds with that in which numerous analyses of the blood have shown it to be most profoundly altered, characterized by a remarkable diminution in the number of red corpuscles and a considerable increase in fibrin. He says there is a further argument in favor of cerebral thrombosis as against

embolism — the occurrence of the aphasia in subsequent pregnancy, as it is contrary to all laws of chance that an embolism should be carried to the same spot on the same side of the brain in succeeding pregnancies.

He adds that the nature of the labor has no necessary relation to the loss of speech, as in many cases the labor has been distinctly stated to have been natural and easy, although it is evident that in pyogenic cases, and in those accompanied by severe hemorrhage, with subsequent anemia, the nature of the labor may contribute indirectly to the occurrence of the aphasia.

In considering the prognosis of puerperal aphasia one has to consider several facts — the nature of the lesion, whether functional or organic, nervous or vascular. But looking in a general way at the cases summarized, one cannot help being struck with the large proportion of recoveries from a primary attack of puerperal aphasia. In some the loss of speech was of a very transitory type, in others complete or partial recovery ensued in the course of a few days, weeks or months. A primary attack of puerperal aphasia, therefore, will often lend itself to a more or less favorable outlook. At the same time the liability to recurrence, in a subsequent pregnancy, is emphasized, and the second attack is often of a more serious nature and the prognosis grave — indeed, so bad that the question must be considered whether it ought to be allowed to occur. In fact, he goes so far as to say that in event of a patient again becoming pregnant, the only justifiable course, according to present knowledge, is to terminate pregnancy at the earliest possible moment. This was actually carried out in his own case.

THE TRANSPORTATION OF CHORIONIC VILLI.

Poten¹² says the discovery of chorionic elements in secondary malignant growths raises the question whether in ordinary pregnancy fetal structures do not enter the maternal circulation. A number of observers have previously noted the occurrence of syncytial elements within maternal blood vessels, and a few have also described complete villi as having been seen in maternal veins. After recapitulating the previous work, the writer describes in detail seven pregnant uteri which he has examined microscopically. Two of these were removed during the early months, the remainder towards the end of pregnancy; all were prepared with the placenta *in situ*. The writer found that broken villi, or portions of them, had in each case entered the maternal vessels. The early specimens showed the migration of syncytial buds, such as are seen upon young villi, and also of whole villi. In the older specimens, adult villi were found in the veins of the uterine walls. The writer remarks that the villous structures found in the prepared uteri could only be those which were lying in the uterine veins just at the time of death, all others having been previously swept away into the maternal circulation. They are not emboli, inasmuch as they do not block the veins, but are carried on from the smaller to the larger until, after passing through the heart, they are arrested in the capillaries of the lungs. They appear to have no coagulating action upon the ma-

¹² Journ. of Obstet. and Gyn. of the Brit. Emp., Sept., 1902, p. 302; Arch. f. Gyn., vol. lxxvi, no. 3.

ternal blood, nor do they have any injurious effect upon the walls of the vessels. No special examination has been made of the lungs of healthy females dying during pregnancy, or, the writer thinks, the presence of fragments of villi would have been demonstrated in their capillaries. In the uterine wall the fragments found are fresh and well preserved, but these are portions only just broken off from the living placenta. Those which have passed on with the maternal blood stream probably break up after necrotic changes have occurred in them, and gradually disappear without leaving any trace in the blood.

The etiological factors which induce these conditions remain as yet a matter of doubt. The villi in certain cases may be more brittle, or the placental attachment insecure, but the author inclines to the theory that changes in the blood pressure constitute the principal cause.

The author believes that their entrance into the maternal circulation is a regular occurrence, and is without special pathological importance, except that under certain circumstances he believes that syphilitic infection of either mother or child may be induced in this way. The villi have been observed to contain fetal blood, which would naturally be set free in the maternal circulation. If the fetus is syphilitic, the virus could thus be readily transmitted. In the same way the blood of the mother who has become syphilitic during pregnancy could infect the fetus by contact at the points where the villi have been torn away.

BACTERIA AND THE VAGINAL SECRETION IN PREGNANCY.

The bacteriology of the vagina under normal conditions in pregnancy is of importance and has not yet been fully determined to the complete satisfaction of all observers. Bergholm¹³ has made examinations in forty cases in the latter part of pregnancy, none of whom had been examined or douched. He attempted to determine if the streptococcus, the staphylococcus and the colon bacillus are found in the vagina, and what bacteria are commonly found in the vaginal secretions. He finds the reaction of the vaginal secretion of pregnant women to be acid in general, the degree of acidity varying considerably. The cellular elements present are squamous epithelial cells, leucocytes and micro-organisms. Although in certain cases the color, consistence and reaction of the secretion indicate whether epithelial cells or leucocytes predominate, these physical characters give no information as to the micro-organisms present, and therefore do not enable the observer to characterize any specimen as normal or pathological. The organisms found were, as a rule, those which vary little, and the majority preferred anaërobic conditions. Most of the organisms found were bacilli, cocci being comparatively few. Those generally found were not pathogenic for animals; staphylococcus pyogenes albus and aureus, streptococcus pyogenes, and bacterium coli do not occur in vaginal secretions. These and other aërobic forms abound, however, in the alkaline vulvar secretion.

¹³ Archiv f. Gynak., vol. lxvi, book 3.

FETAL MORTALITY IN INDUCED LABOR.

Gilman¹⁴ reports nine cases of induced premature labor in contracted pelves with a fetal mortality of 55%. One case he reports in full, in which he himself advised Cesarean section, which was refused by the parents. What he states is undoubtedly true, that for many years the only treatment of the cases of marked pelvic deformity which offered any hope for the child was the induction of premature labor, and that many children were saved in this way, and as the procedure was much more successful than any operation at full term it acquired a well-merited reputation.

Gilman believes that the true fetal mortality in induced labor cannot be under 40% at least. He reports these cases to show the high fetal mortality in induced labor, with the hope that the results of more cases of induction of labor may be reported, as he is evidently a firm believer in Cesarean section at full term for contracted pelves.

Reports of Societies.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE TWELFTH ANNUAL MEETING HELD AT ST. JOSEPH, MO., DEC. 29 AND 30, 1902.

[Continued from No. 5, p. 127.]

LUNG SURGERY (*Continued*)

(24) Hemoptysis may be absent in the most severe lacerations of the lung.

(25) If bleeding from larger pulmonary vessels results, forceps should be applied; if not, gauze should be securely packed in the cavity.

(26) Drainage of pulmonary cysts of any character can be effected with the same success as in any other organ.

(27) Incision for drainage should be done with or without the presence of adhesions. If without adhesions, the opening in the chest should be at the lowest point of the pleural cavity for drainage by gravity.

(28) Many incisions of the lung may and should be made with and without even local anesthesia.

(29) It is probably but a few that will necessitate the use of general anesthesia.

(30) Abscess of any character and of any location in the lung should be found and opened.

(31) Gangrene of the lung demands most radical surgical measures, such as opening the chest, drainage and the removal of all necrotic tissue.

(32) Polypi of bronchia seldom necessitate removal, but they may cause conditions which may require surgical intervention.

Pneumonorrhaphy. — (1) Silk, silkworm gut and animal tendons are the most desirable materials for lung surgery.

(2) Absorbable sutures and ligatures, as a rule, are not to be relied upon as to strength and durability.

(3) Silk and silkworm gut may become encysted in the lung and remain harmless.

¹⁴ Am. Journ. of Obstet., Sept. 17, 1902, p. 351.

(4) The tug and a combination of the tug and tobacco pouch sutures constitute the most desirable ones for use in the lung.

(5) Ligatures and sutures may be dislodged by sudden expansion of the lung due to sudden closure of the opening in the chest wall.

(6) The blood vessels, bronchia and lung tissue should be ligated separately, great care being used not to include too much tissue of any kind in one ligature.

(7) Needles to be employed in lung tissue should be round, with a rounded point. They should never have a sharp point or sharp edges.

(8) Not all ruptures, punctures or lacerations of the lung require sutures, or any surgical intervention whatever.

(9) Many lacerations of the lung without fracture of the bony chest can and should be treated by suture, compression with gauze or forceps.

(10) Puncture of the lung from any cause, such as stab and gunshot, resulting in hemorrhage, should be treated by opening the chest and applying ligature or compression.

(11) Rupture of the lung should be treated as a laceration.

Pneumonectomy. — (1) A portion or all of one lobe, or the entire right or left lung, may be removed without causing death.

(2) For complete or partial lacerated portions of the lung, when severe, pneumonectomy is necessary, and should be done.

(3) Gangrene of the lung requires in many cases the removal of all necrotic tissue.

(4) Hernia of the lung, when sudden and of but few hours' duration, should, as a rule, be amputated, and the stump fixed in the chest wall, as there is no sac.

(5) Hernia of the lung coming on gradually has a sac, and should be returned to the pleural cavity, if possible, without amputation.

Pneumonopexy. — (1) This is the safest and most rapid way of dealing with the stump of lung tissue in the majority of cases necessitating excision for any cause.

(2) Adhesions of the parietal and visceral pleura have, without exception, taken place, whether there have been lacerated or incised wounds, with or without suture.

(3) The degree of adhesion corresponds with the degree of injury.

(4) Cysts of the lung of any character can best be drained through visceroparietal adhesions. In the absence of adhesions the wall of the cyst may be sutured to the edges of the opening in the chest wall, drainage to be at once accomplished, or at some subsequent time.

SECOND DAY. — MORNING SESSION.

THE PATHOLOGY THAT REMAINS AFTER THE NON-SURGICAL TREATMENT OF PERITONITIS.

DR. H. D. NILES, of Salt Lake City, Utah, read a paper with this title. The author states that 95% of all the survivors of the non-surgical treatment of peritonitis are left with infection without the peritoneal cavity and adhesions within the peritoneal cavity. Well-known anatomical peculiarities of the gall bladder, appendix and Fallopian tubes

favor the reception and imprisonment of infection from the alimentary canal and endometrium and its extension to the peritoneum. It is about one of these organs that the surgeon usually finds the pathology, unless it has been mechanically removed. The greatest amount of infection comes from a sudden rupture of an appendiceal or tubal abscess, or a perforation of the stomach, an intestine, or the gall bladder. The most virulent infection is either appendiceal or from a pyosalpinx, following a puerperal endometritis; the mildest is from a cholangitis, or a gonorrheal salpingitis.

The author's experience leads him to believe that about 40% of the possessors of infection and adhesions suffer from recurrent attacks of acute and subacute peritonitis, and less than one per cent from mechanical obstruction of the bowels. It is to the remaining 59% that he invited particular attention, for while it has been customary to point to these cases as sufficient proof of the efficiency of the drug treatment of peritonitis, he believes that all fair-minded, thoughtful observers are learning to regard the pathology these patients carry within their abdomens as responsible for much distress and many deaths that were formerly attributed to other causes, or physicians were unable to trace to any well-defined cause.

DR. D. S. FAIRCHILD, of Clinton, Iowa, followed with a paper on

SURGICAL TREATMENT OF TUBERCULAR PERITONITIS.

The conclusions reached by the author are:

(1) If an intra-abdominal focus of tuberculosis is diagnosed or is suspected, an abdominal section should be made with the view of a more efficient treatment.

(2) If a chronic tuberculosis of the peritoneum with ascites is diagnosed, or believed to exist, a laparotomy is indicated as soon as it is found that medical and hygienic treatment has failed.

(3) In fibrous tuberculosis of the peritoneum the same course should be pursued, and if cheesy degeneration has not commenced, or progressed too far, a certain percentage of recoveries will follow.

(4) In acute tuberculous peritonitis, with ascites and high temperature, laparotomy is useless.

(5) In extensive adhesive tuberculosis, with matting of the intestines, laparotomy is useless, and the attempt to separate the adhesions is dangerous in its immediate results.

INJURY TO NERVES FOLLOWING FRACTURES.

DR. A. L. WRIGHT, of Carroll, Iowa, read a paper on this subject, in which he reported a fracture of the humerus through the middle third, with injury to the musculo-spiral nerve, or, rather, the incorporation of this nerve between the ends of the bone, or to its being caught and pressed upon by the callus thrown out during the reparative process.

He said that the literature is replete with cases reported where various nerves, especially the ulnar and median nerves, have been severed by a stab or the falling of glass. The case he presented had the typical clinical picture of injury to a nerve found at the end of a siege with a fractured bone, and taught a very valuable lesson regarding the prognosis and treatment.

DR. JOHN P. LORD of Omaha, Neb., read a paper on

TREATMENT OF NEVI.

He discussed the varieties of nevus, their etiology and pathology, and reported several interesting cases.

He said the hot water treatment of cavernous angiomas, as suggested by Wyeth, is under trial, and will doubtless have a place in the treatment of selected cases. The treatment of port wine marks by electrolysis is too tedious and painful for large areas. The results are not perfect, in that they are seldom complete, and leave some scarring. The x-ray promises better, and hot air would seem to have possibilities. Electrolysis occupies first place in hairy nevi, and will probably continue to do so unless the x-ray will produce permanent atrophy of the hair follicles. The operation of excision of very large tumors will probably never be supplanted by anything less radical; and hitherto inoperable tumors are rapidly yielding to the control of the operators of the new century.

DR. M. L. HARRIS of Chicago read a paper entitled

HYPERNEPHROMA.

It is only during the last few years that knowledge of tumors of the suprarenal capsule has made any material progress. Previous to this period tumors were variously described as adenomata, sarcomata, carcinomata, mixed sarcoma and carcinoma, endotheliomata, etc. The essayist referred to the literature of this subject, and after reporting a very interesting and instructive case presented the following conclusions:

(1) The hypernephromata are tumors of adrenal tissue, and therefore probably neither sarcomatous nor carcinomatous.

(2) Such tumors may or may not form metastases. When they do, they are distinctly malignant.

(3) When they are within the kidney capsule, or have perforated it by extension, the kidney should be removed.

(4) When they originate in the adrenal proper, they are usually separated from the kidney tissue by a connective tissue capsule, and however much the kidney may be flattened, or fixed, to the tumor, a line of cleavage may usually be found which will allow of the kidney being separated from the tumor and saved to the patient.

In the discussion DR. C. W. OVIATT of Oshkosh, Wis., reported a case of hypernephroma of the kidney which came under his observation about four years ago, but at that time a diagnosis was made of sarcoma of the kidney.

DR. VAN BUREN KNOTT described a case of hypernephroma in a young woman thirty-eight years of age. This case came under his observation about eighteen months ago, a diagnosis having been made by mistake of semi-solid tumor of the ovary.

DR. A. C. BERNAYS of St. Louis, Mo., has had six cases of hypernephroma, which he described.

SECOND DAY — AFTERNOON SESSION.

DR. J. E. SUMMERS, JR., of Omaha, Neb., reported

TWO CASES OF ACUTE INTESTINAL OBSTRUCTION FOLLOWING CONTUSION OF THE ABDOMINAL WALLS.

In the first case there was traumatic paresis of the lower part of the small intestine following kicks upon the abdomen. The patient was a young man twenty-six years of age, and of good physical development.

The second case was one of retroperitoneal hemorrhage following a contusion of the abdomen, resulting in a hematoma which compressed the descending and transverse portions of the duodenum from behind, so as to cause intestinal obstruction. The patient was a rugged young man, twenty years of age, and a farmer by occupation.

DR. HENRY T. BYFORD of Chicago described

A NEW METHOD OF SHORTENING THE ROUND LIGAMENTS INTRAPERITONEALLY FOR RETROVERSION OF THE UTERUS.

It consists in folding the ligaments anteriorly, according to Dudley, but in stitching the loop to the abdominal parietes, about opposite or behind and a trifle above the internal inguinal ring. The ligament is grasped with hemostatic forceps, and pulled out of the abdominal incision until it is drawn as far out of the inguinal ring as possible, without doing violence to the tissues. Then a medium-sized catgut suture is passed through the center of the ligament about a quarter of an inch from the uterine end, and the same suture is passed through the ligament about half an inch from the internal inguinal ring. The suture is then drawn tight and tied like an ordinary ligature, except that it includes only half of the ligament in its grasp. The inner edges of the loop thus formed should now be touched with a chemical irritant, such as Monsell's solution or 1-5000 mercuric bichloride, in order to destroy the endothelium and secure firm adhesions. The irritant is then wiped off and the edges sewn together by fine catgut, which entirely closes in and covers up the irritated peritoneal surfaces. The end of this fold is then touched with the chemical irritant, and stitched forward beside the bladder, about opposite and a little above the level of the external inguinal ring. This, of course, will be only a peritoneal attachment, and should be rather high, because the peritoneum is held in place here rather loosely. Thus there are practically two round ligaments on either side, one going from the uterus partly through the first catgut ligature to the attachment behind the external inguinal ring, and the other from the uterus to the ligature and from there to the internal inguinal ring, etc. The uterine half or quarter inch, or inch, according to the place where the ligament is transfixed, is common to both of the newly formed, round ligaments.

Where there is a tendency to uterine prolapse, he sutures the whole side of the fold of the ligament to the peritoneum beside the bladder, or even sutures the portions of the round ligaments external to the folds to the parietal peritoneum in front.

When there is decided prolapse he also stitches the infundibulo-pelvic ligament forward, the fundus uteri itself, and even takes folds in the sacro-uterine ligaments. When there is cystocele he separates the remains of the urachus with a narrow strip of peritoneum, and after loosely twisting the flap thus

obtained, and drawing up the bladder, attaches the flap into the abdominal wound. A complete description of this method was given in his paper on "Pro-lapse and Procidencia of the Uterus," read before the Third Pan-American Medical Congress, in Havana, in February, 1901.

DERMOID CYSTS OF THE INTESTINAL TRACT.

DR. WILLIAM JEPSON, of Sioux City, Iowa, presented a paper on this subject, and reported an interesting case. The cyst occupied the anterior internal wall of the colon about three quarters of an inch above the ileo-cecal valve. It was covered by peritoneum, through which the cyst wall was plainly manifest. It was removed by making an elliptical incision through the serosa, and dissecting out the growth. Recovery was uneventful.

In explanation of the development of congenital cysts in the intestinal tract, the following theories have been advanced: (1) Imperfect obliteration of the omphalo-mesenteric duct; (2) torsion of a portion of the intestinal wall by the products of a previous peritonitis, etc.; (3) by sequestration or implantation of epiblastic or hypoblastic structure, leading to the later development of an ento- or ectodermoid.

The points of interest which these cysts have for surgeons are: (1) That in a large per cent of the cases the cysts, although innocent in themselves, ultimately lead to a fatal issue, either through obstruction of the intestinal lumen, or because of their contents becoming infected from the intestinal canal, terminating in peritonitis. (2) If their removal is undertaken before such complications have resulted, a favorable termination may be looked for.

DR. A. C. BERNAYS of St. Louis, Mo., read a paper entitled

APPENDICITIS—OPERATION AND INDICATIONS.

The author laid stress on the fact that we can know nothing definite about the pathological process which would warrant delay in operating. We cannot know enough before opening the abdomen to warrant us in following an expectant plan. He believes many lives are lost because the physician is lulled into hopeful security by an amelioration of symptoms. The amelioration cannot be depended upon to last, it may change without a moment's notice into a sad picture of collapse and sepsis, and the favorable time for operation be missed.

In so-called intermediate cases a waiting policy is justified, because the system is immunizing and fortifying itself against the toxins. An operation after the body has been immunized, which means that the pus has been made less virulent, is less dangerous. Dr. Bernays thinks that an operation is likely to be less dangerous on the seventh or eighth day than on the third or fourth, but pleads strenuously for operation on the first or second day of the attack, and claims that 98% of all cases operated on at that early period will be saved. Operations done the first day or second day of the attack are as safe as interval operations. The most brilliant and satisfactory results are the prompt operations in cases of severe appendiceal peritonitis.

DR. C. G. GEIGER of St. Joseph, Mo., followed with a paper on

HYPERPLASIA OF THE UTERUS.

The author stated that the frequent occurrence of enlargement of the uterus has been a great stimulant to the study of its underlying pathological conditions. The most frequent causes of hyperemia are puerperal subinvolution of the uterus, which may be caused by too early getting up after child-birth, small or large lacerations of the cervix, and uterine trouble. Anything which interferes with normal involution predisposes to this condition. He mentioned three distinct stages of hyperplasia, namely, hyperemia, hypertrophy and sclerosis.

It is impossible to determine at the bedside exactly when the state of subinvolution commences to merge into that of hyperplasia, as it is a slow and insidious development. The two affections in clinical appearance resemble each other, and apart from the history, differentiation is difficult. Chronic hyperemia and hyperplasia may involve any portion of the uterus, neck or body, or certain portions thereof. For manifest reasons the neck of the uterus is the favorite focus of disease.

The treatment of the various conditions of enlargement is so dependent on their causation that each individual case demands a separate investigation. The ideal way of approaching this subject lies in the direction of prevention, which in a great many cases the attending physician is able to do. But gynecologists must meet the disease already developed and devise methods which, if not curative, are palliative. Iodine and caustics in the hands of the essayist have not been of much service. He believes that caustics do more harm than good. In neurotic patients nothing is better than a change of climate and scenery. In some cases a change in the surroundings accomplishes much good. To sum up the treatment briefly, the patient should be given rest, the cause removed, the diseased organ depleted, and, if possible, the patient's general health improved.

DR. J. N. WARREN of Sioux City, Iowa, contributed a paper entitled

SOME QUESTIONS IN ABDOMINAL SURGERY.

The following officers were elected for the ensuing year: president, Dr. Alexander Hugh Ferguson, Chicago, Ill.; first vice-president, Dr. C. H. Wallace, St. Joseph, Mo.; second vice-president, Dr. C. W. Oviatt, Oskosh, Wis.; secretary and treasurer, Dr. George H. Simmons, Chicago, Ill. Members of the Executive Council: Dr. James E. Moore, Minneapolis, Minn., chairman; Dr. A. F. Jonas, Omaha, Neb.; Dr. O. B. Campbell, St. Joseph, Mo.; Dr. C. H. Mayo, Rochester, Minn.; and Dr. J. R. Hollowbush, Rock Island, Ill.

Denver, Colo., was selected as the place for holding the next annual meeting; time, Dec. 28 and 29, 1903.

CRETINISM IN FRANCE.—The number of cretins and idiots in France is estimated at 125,000; in the eastern provinces the number reaches 32 in 1,000.—*Medical News.*

Recent Literature.

Saunders' Medical Hand Atlases. Atlas and Epitome of Human Histology and Microscopic Anatomy. By PRIVATDOCENT DR. J. SOBOTTA of Würzburg. Edited, with additions, by G. CARL HUBER, M.D., Junior Professor of Anatomy and Histology and Director of the Histological Laboratory, University of Michigan, Ann Arbor. With 214 colored figures on 80 plates, 68 text illustrations and 248 pages of text. Philadelphia and London: W. B. Saunders & Co. 1903.

This handy and compact volume is essentially a collection of colored histological drawings made under low magnification. In color and proportion they are characterized by gratifying accuracy and lithographic beauty. A few similar plates form an appendix to the last American edition of Stöhr's Histology, and several more elaborate ones are scattered through the recent book by Szymonowicz and MacCallum. The popularity of such figures is apparent. From the scientific standpoint, however, the utility of these colored plates is questionable. For the student with microscope and actual sections at hand, figures in black and white are quite sufficient. Even these are found in excess in many of the current books. More essential in the histological textbook is the descriptive part; and this in Dr. Sobotta's work has been made subordinate. The descriptions, though brief, are generally well expressed and clear, creditably translated and improved by Prof. Huber's revision. Occasionally, as in the account of cell division, excessive brevity has produced obscurity. The ideas advanced are, with rare exceptions, those most generally accepted. The term "endothelium" is applied only to the tissue lining the blood and lymph vessels, the anterior chamber of the eye and the synovial cavities. This tissue is sharply separated from the mesothelial *epithelium* lining the body cavities, and is classed with the connecting and supporting tissues. The mesenchymal origin of the vascular endothelium has been recently confirmed by Dr. Sobotta as a result of his own work on trout embryos. Further embryological study is needed in order to end the confusion between endo-, meso- and epithelium. In Dr. Sobotta's book many debatable and yet most interesting features of histology have been neglected in order to include the entire subject in a small volume, and the usual chapter on technique has been omitted. Even with all these omissions the publishers have produced a rather thick octavo, $7\frac{1}{2}$ by 5 inches. It is printed in clear type and handsomely bound. The large pictorial portion of the book is its best part, and may be highly recommended to those who are without access to histological collections. Its place is in the library and not the laboratory.

A Manual of Instruction in the Principles of Prompt Aid to the Injured. By ALVAN H. DOTY, Health Officer of the Port of New York, Late Major and Surgeon Ninth Regiment, N.G.S.N.Y., etc. Fourth edition, revised and enlarged. New York: D. Appleton & Co. 1902.

The first edition of this work was published in 1889. The fact that it now reappears for the

fourth time would seem to indicate a desire by the medical reading public to possess it. In size and general appearance this last edition resembles closely the first. From 224 pages it has increased to 302. The object of the book is still "to instruct those who are desirous of knowing what course to pursue in emergencies, in order that sick or injured may be temporarily relieved." Special effort has been made to so arrange the subject matter and introduce such points as will be of service to the ambulance corps connected with the different military organizations. For this purpose the Manual of Transportation of the United States Army has been introduced.

The writer also considers necessary a certain amount of knowledge of human anatomy and physiology, and has devoted about one fifth of the entire book to this subject. He also, apparently, still considers it important that one called upon to aid the injured promptly should know that there are three kinds of "sweet breads," and that the function of the spleen is not definitely determined. The chapter on Bandaging deals mainly with the "major" triangle and cravat system. The chapter on Disinfection gives to sulphur a greater disinfectant value than is usually accredited to it at the present time. The recommendation to use solutions of corrosive sublimate to disinfect dejecta also attracts attention. The increased number of pages in this edition seems to be mainly due to the introduction of the chapter on Hygiene and the article on Transportation of the Wounded. The book is well classified, and contains the data and information usually found in manuals of this class. The illustrations are, as a rule, excellent.

Contributions to Practical Medicine. By SIR JAMES SAWYER, Knt., M.D. (Lon.), F.R.C.P. (Lon.), F.R.S. (Edin.), F.S.A., Senior Consulting Physician to the Queen's Hospital, formerly a Professor of Medicine, Professor of Materia Medica and Therapeutics and Professor of Pathology in the Queen's College, Physician to the Birmingham and Midland Hospital for Sick Children, President of the Midland Medical Society, Vice-President of the New Sydenham Society, and President of the Clinical Board of the General and Queen's Hospitals, etc. Third edition. Birmingham: Cornish Brothers. 1902.

Among the many textbooks and manuals published in the present day, it is rather pleasant to meet with one of the character of this small volume by Sir James Sawyer. On a number of important conditions, occurring frequently in general practice, it gives, readably and in small space, some of the results of the observation and experience of a general practitioner, seemingly of rather the old school. Written somewhat after the manner of James Jackson's Letters to a Young Physician, each chapter considers some point of value in diagnosis or therapeutics. Without the scientific atmosphere which characterizes most medical books to-day, this little volume has a value, especially for the young practitioner, in its tone, its conservatism and its suggestions arising from many years' experience.

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THE VALUE OF SIMPLE CLINICAL TESTS.

WITH the advances which modern science has wrought in medical diagnosis, the burden which rests on the shoulders of the practitioner today has both grown in weight and changed in character. Apart from any aptitude for dealing with the sick which may lead the young man to choose medicine as his profession, he needs nowadays that quality of mind which enables him instinctively to appreciate scientific methods and investigations, and to grasp in a scientific attitude the situations he meets. The scientific procedures which make so exact our recognition of pathological conditions grow so rapidly that an increasing number of them can only be put into practice by an expert whose life is spent in the laboratory. Certain of them, however, of a sufficiently simple nature, and indispensable from the frequent occurrence of the diseases to which they refer, must be used by the practitioner himself, either at the bedside or in the office. The existence of certain diseases which formerly required time or some therapeutic test to diagnosticate, such as malaria, phthisis, influenza of the respiratory tract, typhoid and others, may now be definitely and usually speedily settled by some comparatively simple bacteriological test. Among the more specialized practitioners of the larger cities, work of this sort can be assigned to the young assistant, but among country doctors, whose individual importance in the community is greater than that of the doctor in the large city, where skilled advice is always quickly attainable by the sick, these means of diagnosis must usually be used by the practitioner in person.

Every procedure, therefore, which tends to simplify or shorten the technique of a clinical test, and to bring it within the field of the average practi-

tioner, is of very considerable importance. The goal of scientific medicine is essentially a very practical one, and workers in the fields which lie on the border between abstract scientific problems and clinical medicine should not lose sight of the importance of simplifying tests and bringing them as far as possible within the scope of the ordinary practitioner.

In this connection an interest lies in such suggestions as that given in the *Lancet* of Jan. 10 for examining blood for malaria. By using a very large drop of blood on the cover glass instead of the usual thin smear, and then staining it, without fixation, with eosin and methylene blue, the writer finds that the hemoglobin is wholly washed away; the field which remains consists only of the leucocytes, blood-plates and the colorless transparent rings of the red cells, in which the plasmodia are imbedded and stained after the usual manner of coloring by eosin and methylene blue. A slightly longer time is required in staining in this way, but it is more than compensated for by the vastly greater speed and certainty of finding the organisms when present. By using 20 cc. of blood instead of the usual smear, the chances of finding the plasmodia are increased about twenty times, and the time required in the search is twenty times less. If the organisms are present at all in the peripheral circulation they are found definitely and almost instantly by this procedure, and a waste of time in prolonged and uncertain search is avoided. Under many conditions, especially when it is impossible or inconvenient to examine a fresh specimen of blood, or when the organisms are not seen at once in such a preparation, this procedure has a definite practical value.

PRACTICE IN SMALLER PLACES.

A CORRESPONDENT whose communication will be found in another column of this number of the JOURNAL takes issue with our recently expressed views on the "Advantages of Medical Practice in Smaller Cities and Towns." From his point of view, and he apparently speaks from experience, the smaller cities and towns are veritable graveyards of ambition, in which attainment inevitably sinks to mediocrity, and a man's reputation becomes proportionate to the size of the place in which he happens to practice. "Small man, small place." This is certainly not an encouraging prospect for our young medical men who are looking beyond the confines of the large cities to possible places of professional usefulness and prominence in smaller places. Our correspondent writes feelingly, and his arguments have weight, but he must admit that

if the "air is thin" and the "atmosphere" insufficient to support specialists in the smaller cities, it is at least not vitiated by overbreathing. What is lost in stimulus is gained in lessening of competition. There are times when the struggling city practitioner longs for the pure if rarified air of the smaller place — of this there can be no doubt.

We had no intention, however, of maintaining that the conditions as they now are in smaller places are desirable or encouraging to young practitioners. We were speaking rather of the immediate future in contrast to present conditions. We still, therefore, maintain that the largest cities are overcrowded with physicians and that there is a growing opportunity for the right sort of men in smaller places. But such men must, of course, be leaders and not followers; they must take something from their recent training to their new field of work which is wanted and which has not already been provided. If some men have gone to smaller places only to find their "former reputations dwindling to a past glory," we could forthwith name many others whose work has brought reputation in abundance to themselves and to the cities in which they have located, and done much to offset the "withering influence" of the neighboring great city.

That the difficulties which our correspondent mentions, and which we fully appreciate, are not inherent in the small city as such, is shown by the conditions in Germany, where the town is measured by the man and not the man by the town. A distinguished professor at Heidelberg is said to have refused a professorship both in Berlin and Vienna, because he preferred to remain in the small place of his adoption, where he had gained his medical prestige. A somewhat similar case in America also comes to mind. The conditions in Germany will never be exactly paralleled in this country, but it is time that an attempt should be made to equalize, on the intellectual side, the medical knowledge, which is apparently concentrating itself in the largest cities. We are quite sure that our correspondent does not voice the sentiment of all his colleagues, and if he does there is all the more reason for the crusade which we have mildly urged.

ADRENALIN IN SHOCK.

THE practical importance of a means of successfully combating shock and collapse in anesthesia and after surgical operations lends special interest to the reports of experiments with adrenalin, to which attention has been directed of late. Valuable work on this subject has been recently done in Cleveland. It may be noted incidentally that some of it has been the work of a surgeon; with such a

man these investigations have a practical bearing which is not likely to be so constantly in the mind of an exclusively laboratory experimenter, and by emphasizing the close relationship between the fundamental medical sciences and the applicability of their laws in the treatment of disease, they direct attention to the value of careful experimental work in similar fields by medical and surgical practitioners.

The *Cleveland Medical Journal* recently published the report of some animal experiments on the action of adrenalin in shock.¹ The conclusions arrived at are very suggestive and make this use of adrenalin for human beings an important consideration. The writers draw attention to the fact that death from collapse is due as a rule not to a faulty heart, but to vasomotor paralysis, which by extreme relaxation of the arterioles produces a great fall in blood pressure. The various cardiac drugs, strychnia, digitalis and whiskey, stimulate the vasomotor system directly, but under such circumstances often insufficiently; saline infusions to some extent compensate for the lack of tone in the arterioles by mechanical action. Adrenalin stimulates directly the heart and blood vessels, acting almost as well when they are isolated from their nervous connections as when the latter are intact, and when used in full strength causes a prompt and powerful, though not prolonged, rise in blood pressure. The most advantageous action was observed when a small quantity of a greatly diluted (1-10,000) solution was injected subcutaneously, and the injected part strongly massaged. The dilution of the drug renders the stimulation less sudden and powerful; the massage makes its absorption gradual and its action prolonged. In rabbits, in collapse, this treatment produced a well-sustained blood pressure for over an hour and a half, without signs of failing. No bad after effects were observed, though, as the writers remark, the danger of secondary hemorrhage must be borne in mind.

The value of these experiments for the treatment of human beings remains to be investigated, but they have suggested the possibility of a means of treatment for certain surgical complications which may have important results.

In regard to the toxicity of epinephrin (adrenalin) Dr. Samuel Amberg, in the *Proceedings of the American Physiological Society*, reports experiments in which he found that the drug influences the heart by an initial stimulation of the vagus, followed by a paralysis. It has also a direct injurious effect on the heart and respiration. Hemorrhages are produced in various organs by over-administration of the drug.

¹ An Experimental Research into the Value of Adrenalin as a Stimulant. By May S. Miles, M.D., and William Muhlberg, M.D. December, 1902.

MEDICAL NOTES.

CARNEGIE INSTITUTION.—The first year book of the Carnegie Institution at Washington announces the plans for scientific investigations, with the appropriations made for them. Over \$175,000 is to be distributed for the uses of original investigation in different fields of literature, science and art. It is the purpose of the advisory committee of the Institution to substitute organized for unorganized effort wherever such organization of effort promises the best results and prevents needless duplication of work. The grants at first are to be made to individuals, working under proper guidance and supervision, for specific purposes, rather than to institutions for general purposes. The books, apparatus and materials purchased for these investigations are to be the property of the Institution and subject to its control. Money will also be appropriated for the publication of approved papers.

FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.—With the expectation that a considerable number of physicians will desire to attend the International Medical Congress at Madrid, April 23–30, it has been arranged that a party will sail from New York City, April 11, in the steamer "*Princess Irene*" of the North German Lloyd Line, direct to Gibraltar. Tickets for the round trip, including hotel and sight-seeing, are placed at \$265, \$375 and \$550, according to the tour selected when in Europe. Among those who endorse the plan we note the names of Drs. V. W. Keen, Walter Wyman, Nicholas Senn and C. A. L. Reed.

THE DANGERS OF SHELLFISH IN ENGLAND.—Dr. Collingridge, chief medical officer of London, announces in an official report that all the Thames fisheries are contaminated with the bacilli of typhoid fever. He includes the Whitstable oyster beds, where 20% of the oysters examined were found to be infected. Whitebait, shrimps, smelts and cockles are condemned. At other points on the coast supplying the London market with shellfish, even worse conditions, due to sewage contamination, are said to exist.

A BILL TO PROTECT NURSES.—A bill has been presented by the Illinois State Association of Graduate Nurses to the State legislature, looking to the licensing and protection of professional nurses. It is proposed to submit all nurses to a State test, thereby preventing all untrained persons from assuming and working under the title of "graduate" or "trained" nurse.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Feb. 4, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 48, scarlatina 35, typhoid fever 11, measles 11, smallpox 6.

DECISION IN MALPRACTICE SUIT IN FAVOR OF DR. S. J. MIXTER.—A malpractice suit recently brought against Dr. S. J. Mixter of the Massachusetts General Hospital Staff, by a dissatisfied patient treated at the hospital, has been decided by Judge Brown in favor of Dr. Mixter. The decision was handed down without comment.

SCHOOL FOR CRIPPLED AND DEFORMED CHILDREN.—The building committee of the Boston Industrial School for Crippled and Deformed Children has decided to delay the erection of the new building until their fund has reached \$150,000. A more adequate equipment is needed than can be obtained by the \$100,000 which was originally deemed sufficient; \$98,000 has been already raised, and since the work of the school is hampered by its present cramped quarters, it is hoped that the additional sum will be quickly subscribed.

SMALLPOX IN BIDDEFORD, ME.—It is reported that smallpox is on the increase in Biddeford, Me. Fifty-six cases are at present under quarantine, and compulsory vaccination has been begun by the board of health. Owing to the prevalence of the disease, the city opera house has been closed.

RECEPTION TO DR. C. B. PORTER.—Dr. Charles B. Porter completed his last service as senior surgeon at the Massachusetts General Hospital on Jan. 31. He was appointed to the out-patient staff of the hospital in 1868. In 1875 he became visiting surgeon, and for the past seventeen years he has been the senior visiting surgeon. A dinner at the University Club was given to him by about forty former house officers, and later the same evening the visiting surgeons of the hospital held in his honor a reception at the "Tuileries," at which over two hundred physicians and surgeons were present.

THE OUTBREAK OF FOOT-AND-MOUTH DISEASE.—At a recent meeting of the Massachusetts Association of Boards of Health, Dr. Daniel E. Salmon, chief of the United States Bureau of Animal Industry, spoke on the outbreak of foot and mouth disease, which has been epidemic in New England since last August. In defending his radical plan of slaughtering all diseased herds, he referred to the extreme virulence of the present outbreak and

to the great financial loss, both from the death of cattle and from the interference of quarantine with commerce, which would result if the disease got beyond control; he also remarked that suffering among the poor might easily result from the shortage of the meat and milk supply if the disease spread much beyond its present limits.

Killing most of the infected animals has arrested the epidemic in New Hampshire, Vermont, Rhode Island and in all but a small section of Massachusetts. Since the disease appeared, 3,466 cattle have been affected and 2,787 slaughtered, not including several hundred sheep, goats and swine.

"ADULTERATION, SUBSTITUTION, OR CARELESSNESS."—We have received a letter from Messrs. Lehn & Fink of New York, in which they protest against the use of the first two words in the above caption of a letter from the secretary of the Massachusetts Board of Health, published on page 135 of the JOURNAL, of Jan. 29 last, but admit the accuracy of the statements in the body of Dr. Abbott's communication.

NEW YORK.

MOUNT SINAI HOSPITAL.—The annual meeting of the directors of the Mount Sinai Hospital was held on Jan. 25, and the fiftieth annual report, read by the president, stated that during the fiscal year ending Nov. 30, 1902, 34,879 patients had been treated, making a total of 75,569 since the founding of the hospital. The gifts to the hospital for the year amounted to \$85,890, making the total donations \$1,366,000. In addition, \$250,000 had been subscribed for the completion of the buildings now in process of construction. It is estimated that the new Mount Sinai Hospital will require about \$225,000 per year for its support.

A NEW POSITION.—At a meeting of the Board of Education, held Jan. 28, Dr. Luther H. Gulick was appointed director of physical training for the public schools in the city of New York. For several months the board has had under discussion the advisability of establishing such a position, and when this was determined upon Dr. Gulick was the unanimous choice of the members. He was graduated from the medical department of the University of the City of New York in 1886, and since that time has made physical education his life work. For fifteen years he has been in charge of the physical training department of the Young Men's Christian Association of New York, and in 1900 was elected president of the American Association for the Advancement of Physical Education. He is said to have invented the game of basket ball, and he has edited the rules of the game each year since it was originated.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.—On the last day (Jan. 29) of the annual meeting of the Medical Society of the State of New York, at Albany, the following officers were elected for the ensuing year: President, Dr. Algernon T. Bristow of Brooklyn; vice-president, Dr. Edward B. Angell of Rochester; secretary, Dr. F. C. Curtis of Albany; treasurer, Dr. O. D. Ball of Albany; committee on legislation, Drs. Frank Van Fleet of New York, Arthur G. Root of Albany, and Ernest Wende of Buffalo. The committee appointed to confer with a similar committee from the New York State Medical Association, with reference to the uniting of the two societies, made a report, but no action was taken in the matter, and the committee was continued.

Obituary.

MORRILL WYMAN, M.D.

DR. MORRILL WYMAN died at Cambridge on Jan. 30, in the ninety-first year of his age. He was confined to his bed less than a week, and till that time had apparently lost nothing of the bodily vigor and mental alertness which had characterized his active life.

He was the second son of Dr. Rufus Wyman, Harvard College, 1804, who, in 1817, became the first superintendent of the recently established McLean Asylum, and began there the more humane treatment of the insane, which has given this institution so prominent a place among hospitals of this sort. So great was his devotion to his task that for the first twelve years of his service he spent but one night outside of the asylum. His strong qualities of mind were inherited by his sons, Morrill and Jeffries, who, entering Harvard College in the class of 1833, were graduated in that year, began the study of medicine, and both received the degree of doctor of medicine in 1837 and entered on the practice of their profession. Morrill settled in Cambridge, and his success was immediate. Jeffries soon turned his attention to comparative anatomy, made for himself a great place in his science, and, dying in 1894, left with those who knew him the memory of a character without a fault. Lowell's sonnet and Holmes' obituary notice of him are memorials of loving admiration which few men earn.

It was not easy to think of the two brothers as apart, and they never really were, for one of the last acts of Morrill Wyman's life was the preparation of a reprint of one of his brother's scientific papers.

The same qualities that kept Rufus Wyman at his work in the asylum until age made his great task a burden to him kept the son an active practitioner of medicine until well past his eightieth year and left him a student of his beloved science to the very end.

Dr. Wyman's professional life was wholly spent in Cambridge,—during the course of it the small village grew to be a large city,—and he was the leading practitioner there through the whole period.

His relations to his fellow-practitioners were always marked by a desire to assist and support. He gained and kept the love and admiration of his fellows by his own devoted service to them.

During the active years of his life,—and it would not be correct to say that these ever ended,—he had a very large, probably one of the largest, medical practices in the State. He was a good citizen, interested in all good causes, willing to be right in a minority, no matter how small; but these interests if they required time were not allowed to interfere with the declared object of his life,—the care of the sick. He only took another hour from the time which men ordinarily give to rest or recreation, and he seemed to prosper in bodily health under an amount of work which to his associates seemed excessive, but of which he never complained.

He was extremely well read in the classics of medicine, and was always ready for the newest ideas in any of the sciences allied to medicine, and in his conceptions it was hardly possible to set the bounds too wide.

In 1846 he published in a volume of 400 pages a treatise on ventilation, founded upon a careful review of existing investigations upon the subject, to which were added many new and valuable experiments of his own making. The book is still an authoritative statement upon the subject treated.

Before 1850 the idea had occurred to him that the large accumulations of fluid in the pleural cavity could be more safely removed than by the very serious operation of thoracentesis, which had been in vogue from the days of Hippocrates, — an operation so serious that it was rarely used. Accordingly on Feb. 23, 1850, by means of an exploring needle and canula attached to a stomach pump, he removed a large quantity of fluid from the chest of a patient in much distress; a few days later the operation was repeated, the patient was relieved, and made a good recovery. On April 17 of the same year his friend Dr. H. I. Bowditch, whose thoughts had moved independently but in the same direction with Dr. Wyman's, asked the latter to perform his operation upon a patient of Dr. Bowditch's in the town of Woburn. The result convinced Dr. Bowditch that the operation was a good one, and he adopted it and fully described it in the paper on the subject published in the April number of *American Journal of the Medical Sciences*, 1852. Full credit was given to Dr. Wyman for his priority in an operation, which, it is only fair to say, was published to the world so effectually by Dr. Bowditch's frequent use and effective writing, that it is to-day a simple and practically safe means of relief in a distressing malady.

In 1863 he delivered the annual address before The Massachusetts Medical Society upon the reality and certainty of medicine. Following closely upon the brilliant exposition of the state of medicine given by Dr. Holmes in the address of 1860, so epigrammatically expressed that the public, at least, often misunderstood it, Dr. Wyman's sober statement is still one of the best defenses in our literature of the essential strength of the science and art of medicine.

Suffering himself from autumnal catarrh, he had carefully studied the malady in his own case and among his patients, and in 1872 published the result of his studies in a volume of 195 pages, in which he described the two forms prevalent here, the June or rose cold and the autumnal form, which begins in the last third of August.

The need of a hospital for Cambridge became a subject of much concern for him after 1880, and largely through his influence an interest was created in procuring a satisfactory building for a hospital already in existence, but without funds; he supervised every stage of the building operations and every detail of the internal arrangements. The ventilation of the wards was naturally a special object of his studies.

Sir John Simon once remarked that a hospital could not be said to be properly ventilated until each bed in it had a ventilation system of its own. This apparently insoluble problem was answered by Dr. Wyman with a piece of apparatus which did give an individual ventilation to each bed, and in so simple a fashion that the only wonder was that it had not been earlier suggested.

The motto on the hospital seal: "Man tends, God mends," was prepared by him, and was his translation of the words of one of his admired masters in medicine, Ambroise Paré, and fittingly represents his own reverent feeling for his chosen calling.

Correspondence.

DISADVANTAGES OF MEDICAL PRACTICE IN SMALLER CITIES AND TOWNS.

A NEW ENGLAND CITY OF TWENTY THOUSAND INHABITANTS,

January, 1903.

MR. EDITOR: In a recent number of your esteemed JOURNAL (Dec. 18, 1902) appeared an editorial having the

following caption, "Advantages of Medical Practice in Smaller Cities and Towns." The following quotations from it contain the gist of the whole article:

"It is evident to the most casual observer that the largest cities are overstocked with practitioners of medicine."

"The result is apparent. Men of ability are spending their lives in the struggle to obtain a competence, working against competition and difficulties which are often never overcome, under dwarfing conditions of incessant discomfort and anxiety. This applies to the average man of moderate ability; the exceptional man will, of course, succeed under any circumstances. In contrast to such a life stand the possibilities of a medical career in smaller places, where specialism is developing and where a competence with professional prominence is relatively easily attained. It is a source of increasing wonder why men of special attainments cannot realize these facts earlier in their career, before their enthusiasm has been sapped by the often hopeless struggle of a city practice."

Being one of those fellows of moderate ability, located in a small city where specialism is developing, I feel in a position to enter into a friendly controversy with you upon this subject.

The contrast you have drawn between the largest cities and the smaller cities and towns is like sunshine and shadow, — so difficult in the large and so easy to succeed in the small place. It is strange that the small places are not the ones to be overcrowded.

From the standpoint of one living in the small city the view is entirely different. The disadvantages of the small place in which to practice a specialty are numerous, the chief one being that the specialist in such a place finds his greatest competition to be, not the men of the same place, but the men and institutions of the large city. With easy railroad service and Boston within three or fewer hours, no city or town within this distance escapes the withering influence of this large city. A specialist in such a small place cannot hold a patient for treatment if the pathological condition is increasing and danger becoming more apparent. The case quickly goes to the large place. All that is left for the specialist of the small place is to handle the insignificant conditions, and remain a "boy" in the work.

Another disadvantage of the small place for a thoroughly equipped specialist is the lack of clinical work, dispensary work, there being in these places not the class of inhabitants from which to form a clinic. To apply laboratory and dispensary methods to private practice is impossible if one has to depend upon the favor of the public for support.

Again, a disadvantage of the small place is the lack of "atmosphere" to sustain a specialist. One who is interested in any special line of work and needs the contact of kindred minds, is apt to find the small place a vacuum in which he pants for men, societies and inspirations.

Again, the reputation that a thoroughly equipped specialist enjoys is as small as the place itself. A man cannot have a reputation exceeding the reputation of the place he lives in. A large city lends the influence of its size to the reputation of its professional men, no matter how small they are themselves. The reverse is true. I have known men of ability and great reputations to come from the large cities and locate in the small place only to find their reputations dwindle to the size of the place and become a past glory. Small place, small man. Big place, big man. This is the way the public estimates the ability of any man.

No, Mr. Editor, the small place has not all the advantages. The large place has not all the disadvantages. You have written earnestly from your point of view. From my point of view I have this to say to the young physician who is still Chauvinistic and desirous for high attainment: Stay in the place where there is professional contact — the clinic, laboratory, progressive ideas and growth in knowledge, even if you have to starve for it. Don't come into the small place, isolated, breathing thin air, feeding off your own mind and heart, and always being a man of small professional reputation. Don't!

X.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 24, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|-------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid fever. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,406 | 401 | 20.91 | 13.58 | 3.37 | .35 | 1.21 |
| Chicago . . . | 1,885,000 | 351 | 149 | 26.32 | 19.24 | 1.53 | 4.90 | 1.27 |
| Philadelphia . . | 1,378,527 | 615 | 154 | 18.54 | 20.49 | 1.30 | 5.69 | .65 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 249 | 78 | 18.47 | 20.08 | .40 | .80 | .40 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 357,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 131 | 34 | 25.95 | 16.79 | 2.29 | 6.10 | 2.29 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 92 | 36 | 25.00 | 23.91 | 1.08 | 1.08 | — |
| Boston . . . | 603,163 | 230 | 60 | 19.56 | 24.78 | 1.30 | .43 | — |
| Worcester . . . | 132,044 | 40 | 9 | 10.00 | 15.00 | — | — | — |
| Fall River . . . | 115,549 | 47 | 24 | 17.02 | 14.89 | 2.12 | — | — |
| Lowell . . . | 101,959 | 30 | 5 | 16.67 | 23.33 | 3.33 | 3.33 | — |
| Cambridge . . . | 98,639 | 25 | 6 | 24.00 | 12.00 | — | 4.00 | — |
| Lynn . . . | 72,497 | 20 | 5 | 15.00 | 5.00 | — | — | — |
| Lawrence . . . | 69,766 | 24 | 12 | 25.00 | 29.16 | 4.16 | 4.16 | — |
| Springfield . . | 69,389 | 36 | 8 | 13.88 | 22.21 | — | 2.78 | 5.55 |
| Somerville . . . | 68,110 | 20 | 3 | 5.00 | 20.00 | — | — | — |
| New Bedford . . | 67,198 | 41 | 14 | 19.51 | 41.46 | 2.44 | 2.44 | 9.75 |
| Holyoke . . . | 49,286 | 21 | 8 | 19.05 | 33.33 | — | — | — |
| Brockton . . . | 44,873 | 11 | 1 | — | — | — | — | — |
| Haverhill . . . | 42,104 | 18 | 4 | 16.67 | 33.33 | — | — | — |
| Newton . . . | 37,794 | 10 | 5 | — | 30.00 | — | — | — |
| Salem . . . | 36,876 | 20 | 7 | 10.00 | 10.00 | — | — | — |
| Malden . . . | 36,286 | 5 | 1 | 40.00 | — | — | — | 20.00 |
| Chelsea . . . | 35,876 | 12 | — | — | 25.00 | — | — | — |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | — | — | — | — | — | — | — |
| Everett . . . | 25,620 | 12 | — | 25.00 | — | — | — | 8.33 |
| North Adams . . | 27,862 | 2 | 1 | — | — | — | — | — |
| Gloucester . . . | 26,121 | 10 | 1 | 20.00 | — | 10.00 | — | — |
| Quincy . . . | 26,043 | 3 | 1 | — | — | — | — | — |
| Waltham . . . | 25,198 | 9 | 2 | 33.33 | 22.22 | — | — | — |
| Brookline . . . | 22,608 | 8 | 1 | 37.50 | 12.50 | 12.50 | — | — |
| Pittsfield . . . | 22,589 | 3 | 1 | 33.33 | 33.33 | — | — | — |
| Chicopee . . . | 21,031 | 9 | 5 | 11.11 | 11.11 | 11.11 | — | — |
| Medford . . . | 20,962 | 3 | 1 | — | 100.00 | — | — | — |
| Northampton . . | 19,883 | 9 | 1 | — | — | — | — | — |
| Beverly . . . | 15,302 | 3 | — | — | — | — | — | — |
| Clinton . . . | 15,161 | 6 | 1 | 33.33 | — | — | 16.67 | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 4 | 2 | — | 25.00 | — | — | — |
| Woburn . . . | 14,300 | 4 | 1 | 50.00 | — | — | — | — |
| Hyde Park . . . | 14,175 | 5 | 1 | 20.00 | — | — | — | — |
| Adams . . . | 13,745 | — | — | — | — | — | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 7 | 2 | 14.30 | 28.60 | — | — | — |
| Melrose . . . | 13,600 | 5 | — | 20.00 | 40.00 | — | — | — |
| Westfield . . . | 13,418 | 2 | 1 | — | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 3 | — | — | — | — | — | — |
| Framlingham . . | 12,534 | 4 | 2 | 25.00 | 25.00 | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,844 | 5 | 0 | — | 60.00 | — | — | — |
| Southbridge . . | 11,268 | 1 | — | — | 100.00 | — | — | — |
| Watertown . . . | 11,077 | 1 | — | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,772; under five years of age, 1,048; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 779, acute lung diseases 673, consumption 405, scarlet fever 40, whooping cough 36, cerebrospinal meningitis 4, smallpox 10, erysipelas 7, measles 33, typhoid fever 85, diarrheal diseases 73, diphtheria and croup 78.


From whooping cough, New York 5, Chicago 7, Philadelphia 3, Baltimore 1, Pittsburg 2, Providence 6, Boston 6, Cambridge, Lynn, Lawrence, Somerville, Haverhill and Everett 1 each. From erysipelas, Chicago 1, Philadelphia 4, Baltimore 1, Pittsburg 1. From smallpox, Chicago 1, Philadelphia 2, Pittsburg 4 and Boston 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,023, for the week ending Jan. 10, the death-rate was 18.5. Deaths reported, 5,350; acute diseases of the respiratory organs (London) 354, whooping cough 132, diphtheria 73, measles 136, smallpox 10, scarlet fever 63.

The death-rate ranged from 10.0 in Hornsey to 28.2 in Great Yarmouth; London 18.8, West Ham 20.9, Brighton 15.4, Portsmouth 17.7, Southampton 12.3, Plymouth 20.5, Bristol 16.0, Birmingham 20.2, Leicester 14.2, Nottingham 19.3, Bolton 18.9, Manchester 21.7, Salford 20.3, Bradford 15.6, Leeds 19.3, Hull 18.2, New Castle-on-Tyne 16.7, Cardiff 21.4, Rhondda 24.4, Liverpool 23.7, Newport (Mon.) 20.0.

METEOROLOGICAL RECORD

For the week ending Jan. 24, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|--------------|----|---------------------|------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. 18 | 29.96 | 20 | 36 | 3 | 30 | 68 | 49 | W | W | 18 | 18 | C. | C. | 0 |
| M. 19 | 20.54 | 7 | 15 | — | 52 | 55 | 54 | NW | W | 8 | 8 | C. | C. | 0 |
| T. 20 | 30.57 | 20 | 33 | 8 | 53 | 76 | 64 | W | SE | 8 | 8 | C. | C. | 0 |
| W. 21 | 29.57 | 38 | 47 | 30 | 96 | 84 | 90 | SE | W | 14 | 17 | R. | O. | 1.14 |
| T. 22 | 29.90 | 36 | 40 | 33 | 76 | 64 | 70 | W | W | 7 | 10 | C. | C. | 0 |
| F. 23 | 30.04 | 24 | 38 | 9 | 61 | 60 | 60 | SW | NW | 10 | 18 | O. | C. | 0 |
| S. 24 | 30.47 | 11 | 17 | 5 | 58 | 65 | 62 | NW | N | 12 | 8 | F. | C. | 0 |
|  | 30.16 | | 32 | 13 | | | 64 | | | | | | | 1.14 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

MARINE HOSPITAL SERVICE.

BOARDS CONVENED.

Board convened to meet at Washington, D. C., for the physical examination of an applicant for position in Revenue Cutter Service. Detail for the Board: Assistant Surgeon-General W. J. Pettus, chairman; Assistant Surgeon B. S. Warren, recorder.

Board convened to meet at the Marine Hospital, San Francisco, Cal., Feb. 16, 1903, for the examination of Assistant Surgeons M. H. Foster and L. L. Lumsden to determine their fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Passed Assistant Surgeon W. G. Stimpson, chairman; Passed Assistant Surgeon C. H. Gardner, Passed Assistant Surgeon H. S. Cumming, recorder.

RECENT DEATHS.

MORRILL WYMAN, M.D., M.M.S.S., died in Cambridge, Jan. 30, 1903, aged ninety years.

LUCIAN H. SHEPHERD, M.D., a well-known practitioner of Oswego, N. Y., died on Jan. 24 of typhoid fever, at the age of thirty-seven years.

HENRY ADDISON MANDEVILLE, M.D., of South Orange, N. J., died suddenly on Jan. 31. He was born in Newburgh on the Hudson, Dec. 16, 1858, and received his collegiate education in the University of the City of New York. He was graduated in medicine from the College of Physicians and Surgeons, New York, and afterwards served as interne at the Presbyterian Hospital in that city. For several years he was associated in practice with the late Dr. Thomas H. Burchard in New York, and about fifteen years ago removed to South Orange, where he took a prominent position in the affairs of the community.

SOCIETY NOTICES.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.—The spring meeting was held on Wednesday, Feb. 4, at one o'clock, P.M., at the new building of the Boston Medical Library, 8 The Fenway.

The following paper will be read: "Death from a Single Vaginal Donche." Report of two cases by Dr. G. deN. Hough. Informal report of cases.

FRED E. JONES, M.D., Secretary.

QUINCY, Jan. 27, 1903.

MEDICAL SOCIETY OF THE MISSOURI VALLEY.—The spring meeting of this association will be held in Council Bluffs, Iowa, on Thursday and Friday, March 19 and 20. The membership of this society includes the representative men of Iowa, Nebraska, Missouri, Kansas, North and South Dakota.

J. M. BARTOW, president, Council Bluffs, Iowa.
CHAS. WOOD FASSETT, secretary, St. Joseph, Mo.

APPOINTMENTS.

DR. GEORGE F. JELLY has been appointed by the trustees of the Massachusetts General Hospital consulting physician for mental disease at that institution.

DR. A. H. HARRINGTON has resigned the superintendency of the Danvers Insane Hospital, and Dr. C. W. Page of the Middleton Asylum has recently been appointed to his place.

Original Articles.

IRRIGATION IN ACUTE URETHRITIS.

BY ARTHUR L. CHUTE, M.D., BOSTON.

It is not my purpose to take up in detail the whole question of irrigation in acute urethritis, but to give general conclusions drawn from my own experience with this method of treatment; also to correct, if possible, some of the misapprehensions which commonly exist regarding it.

To begin with the misapprehensions: Of these, probably the most widely held is the idea that irrigation is an attempt at aborting the disease. If true, this would offer a considerable objection to the procedure, for it is self-evident that the application, to the urethra, of any antiseptic solution strong enough to kill the gonococci buried in its walls, must kill, or at least greatly injure, the cells themselves. For this reason attempts at aborting the disease are usually looked upon with a well-merited suspicion.

In the irrigation treatment of urethritis no attempt is made at a real bactericidal action. The irrigation acts by mechanically washing away the products of the disease, thus cleansing the urethra and placing the membrane in as favorable a condition as possible to resist the spread of the trouble; the heat and slight irritative action of the solution brings about an increased blood supply and phagocytosis, by which means the deeper layers of the urethra are freed of their organisms; the mildly antiseptic character of the irrigating fluid probably has a somewhat inhibitory action on the growth of the organisms and the spreading of the process. This action is not that seen in attempts at aborting the disease, where a solution is applied strong enough to, and for the express purpose of, destroying the organisms, situated as they are, in the cells of the urethral walls.

A second objection offered against irrigation in acute urethritis is that it increases the probability of infection of the posterior urethra. It is true, especially in clinics, that a slight grade of posterior urethritis is common in cases treated by irrigation; a careful investigation, however, of cases treated expectantly will show that a posterior urethritis is very common here as well, much more common than is usually supposed. My feeling is that as regards posterior urethritis the irrigated cases have it somewhat less frequently and have far less discomfort from it than do the cases treated expectantly. Their greater comfort in this respect is due to the fact that in the posterior urethra, as in the anterior, irrigation tends to make the process a superficial one.

Another common misapprehension is as to the time when irrigations should be begun. Some suppose that irrigation should not be started until the disease has passed its most acute stage. On the contrary, one should begin irrigations as soon as the diagnosis is made, for it is during the acute stage that they add most to the patient's comfort; also, the sooner they are begun the more limited the disease should be.

Some of the advantages which, in my opinion, the irrigation treatment offers to the patient with acute urethritis are: A great increase in comfort;

in the vast majority of cases a speedier recovery; a somewhat lessened liability to the complications which attend the acute stage; probably a very considerably decreased liability to the late complications.

The most striking contrast between patients treated by irrigation and other methods is the great difference in the amount of urethral discharge. This diminution is usually noticed after a single irrigation, although it may not occur until several have been given. From having a profuse discharge which requires constant attention, the amount is cut down to so small a quantity as to be hardly noticeable. One or two irrigations usually decrease the ardor to such an extent that passing urine is not attended with any particular discomfort. If irrigations are begun when the patient first notices the disease, it is unusual to have chordee, showing, perhaps, as conclusively as anything, the lessened infiltration of the urethra which takes place. If chordee is already a troublesome symptom, it is usual to have it diminish in frequency and intensity. The practical absence, or the presence in a much less degree than usual, of the discharge, ardor and chordee add very greatly to a patient's comfort.

I have stated that in my opinion patients make a speedier recovery in the great majority of instances. My definition of "recovery" would be absolute disappearance of the discharge, and in first attacks either a shredless urine or a urine with only one or two fine, non-infectious shreds. When the attack is not the first, and there are urethral lesions of long standing, shredless urine may be more than can be attained, but before one can consider a patient well the shreds must be very few and without gonococci. This condition, I believe, is brought about by irrigation more speedily than by any other treatment.

As to the time requisite for this, it is very common to be unable, even after a careful search, to find gonococci after a week to ten days' treatment. I have seen instances where, the day after a patient's first irrigation, a discharge which previously was loaded with gonococci contained so few that they were rather hard to find. The post-gonorrheal urethritis often persists to the full limit of six weeks, which has been for so long a time the period set down as the duration of an ordinary urethritis. By the end of that time most patients who have been treated faithfully will be practically shred free. One sees instances where they are not; others where the urine is shredless in four weeks, occasionally earlier. While one sees instances where the course of the disease is a much longer one, these cases are rather exceptional when the patient has been faithful as regards treatment. The stage of shred formation does not persist so interminably as in a large percentage of cases treated expectantly. This is probably due to the fact that the infection is much more superficial and the urethral glands less deeply diseased.

To the fact that under irrigation the disease remains more superficial is to be ascribed the relative infrequency of the complications of the acute stage. Cowperitis, epididymitis, prostatitis, vesiculitis — all occur, especially in clinics, but they are rarer than in patients treated by the expectant plan. I have never seen a folliculitis develop in an irrigated pa-

tient. In two instances, at least, patients who have had a good deal of joint pain in previous attacks have presented themselves with a new attack accompanied by joint pain; in both instances the pain cleared up and did not return during an attack treated by irrigation.

I have stated that the probability of late complications is decreased by irrigations during the acute urethritis.

It yet remains to be seen whether stricture of the urethra is really going to be less common in patients who are so treated. The fact that the urethral involvement is more superficial and therefore clears up more readily and definitely would point to the probability of this. If true, and if by irrigation, one can decrease the frequency of stricture, especially that of the deep urethra, it is a matter of no small importance.

In carrying out this treatment, the irrigations should be begun at the earliest possible moment.

The method is applicable to nearly all patients; occasionally, however, one will be found who cannot bear it; such a patient is made less comfortable rather than more so; both his ardor and discharge are increased rather than diminished. With such patients, and they are rare, irrigations should be given up, and the treatment by internal medication carried out.

The technique of irrigation is simple, especially irrigation of the anterior urethra. While a reservoir made for the purpose, which can be easily raised and lowered, is most convenient, a rubber douche bag serves very well. This reservoir should ordinarily be about three or four feet above the patient's pelvis, whether he is sitting on a chair or lying down. One needs beside this reservoir only a soft catheter, a glass nozzle to join the tubing from the reservoir to the catheter and some soluble lubricant. If one is to irrigate the anterior urethra, the patient, after passing urine, sits on the edge of a chair, his trousers stripped down below his knees; his knees should be well separated. A sterile catheter coated with some soluble lubricant is introduced a short distance into the urethra, the tubing from the reservoir is attached and the fluid allowed to flow into the urethra and return along the catheter. As the fluid comes from the meatus it is caught in a basin, which the patient holds between his knees. The catheter is worked slowly and gently down to the cut-off muscle, and the full quantity of the irrigation run through the urethra. Soft rubber catheters, 12-15 inclusive of the French scale, are the sizes which answer this purpose best. As vaseline gives to the urethra a coating more or less impermeable to the irrigating fluid, a soluble lubricant should be used, such, for instance, as glycerine, mico-lubricans or lubricichondrin. If the meatus is a very narrow one, or if there are narrowed places in the anterior urethra, the irrigation is best carried out by filling and emptying the urethra by means of a blunt glass or soft rubber nozzle. This nozzle is alternately crowded into and then removed from the meatus. The Valentine nozzle or some one of its modifications is desirable for this purpose. This method is not so clean, nor do I think it so accurate, as irrigation by means of a catheter. A considerable number of men, however, prefer it as a means of irrigating the anterior urethra.

When we wish to irrigate the posterior urethra the patient should, as a rule, lie down. His bladder being empty, a catheter is introduced to just behind the cut-off muscle, and the fluid allowed to run over the posterior urethra and collect in the bladder, until that viscus is comfortably full. The fluid may then be drawn off through the catheter, and the process repeated once or twice, or the bladder being full, the catheter may be withdrawn to just anterior to the cut-off muscle and the rest of the solution allowed to run over the anterior urethra. The fluid which is left in the bladder the patient urinates later.

If in instances where we wish to irrigate the posterior urethra the patient has an extremely sensitive urethra or a tight meatus, so that a catheter is not easily passed, we can carry out the irrigation by means of Janet's method. The patient should be recumbent for this. A conical nozzle is introduced into the meatus snugly enough so that there is no leaking around it; the patient is instructed to take deep breaths or to make an attempt to pass urine. With a column of fluid of about four feet the resistance of the cut-off muscle is usually overcome, and the fluid flows into the bladder. If the patient is apprehensive and holds his muscles rigid, it may require considerable patience to overcome the cut-off muscle. The reservoir may have to be raised even to a height of six feet. Once, however, the cut-off muscle has been forced successfully, it is unusual to have a repetition of this trouble. As soon as the bladder is comfortably full the patient is allowed to empty it. This filling and emptying of the bladder may be repeated several times. A large number of men consider this the method of choice in irrigating the posterior urethra.

The solution which has given the best results, and which I on the whole prefer for irrigation, is permanganate of potash; a solution of 1-8000 or 1-10000 is usually so mild as to give but little discomfort, even in patients with very acute urethritis. As the urethra becomes accustomed to the irrigation and the disease less acute, the strength may be gradually increased to 1-3000 or even 1-2000. Protargol 1-2000 or 1-1000 gives good results. I cannot see, however, that it has any advantages over permanganate. Nitrate of silver acts well, but must be used in weak solutions, 1-15000 to 1-10000, and gradually increased. The nitrate solution seems to me better adapted to the treatment of the chronic than of the acute stage.

The temperature of the solution used should be a little over 100° F. It should be used in quantities varying from one to two quarts. Some patients who do not do well on small irrigations improve as soon as large quantities are used. When it is possible, two irrigations a day should be given for the first week, then a daily irrigation for a week, and later irrigations at intervals of two days or twice a week.

It is my custom to be guided very largely by the microscopic findings in the treatment of acute urethritis. As long as there are gonococci to be found in the discharge, I use frequent rather copious irrigations of the milder solutions of permanganate or protargol. The anterior urethra only is irrigated when the disease is confined to that part of the canal; the whole canal if there is posterior infection.

When the gonococci have disappeared and the relatively large number of urethral cells in the discharge points to the post-gonorrheal stage, irrigations of nitrate of silver or of stronger permanganate may be used. This post-gonorrheal stage is where nitrate of silver gives us its best results. The urethra is less tender, so that the nitrate may be used in solutions of 1-4000, 1-3000, or sometimes stronger without more than slight discomfort. It will often exert a most rapid action in clearing up the post-infectious stage of a gonorrhea. Copper sulphate in solutions of 1-2000 to 1-500 may occasionally be used with advantage in this stage, more especially if the disease is confined to the anterior urethra. I have found even weak solutions of sulphate of copper rather painful when used as irrigations for the posterior urethra.

Irrigations can be used with advantage, at more or less frequent intervals, as long as either the first or second urine is turbid; a considerable proportion, particularly of first attacks, will recover without the use of any other treatment. When the only signs of the disease are shreds in a clear first or second urine, irrigations are of less value, and should these shreds persist, irrigation should give way to, or be used in conjunction with, the various recognized means of treating chronic urethral lesions.

Of the list of drugs recommended for internal use, I believe the best is sandalwood oil, given in capsules containing 10 drops; when it causes unpleasant gastric symptoms or renal pain it should be given up. It should be the natural oil. Copaiba is also of use, but is less efficient than sandalwood oil and more likely to upset digestion, an erythema from its use is common. It may be taken in from 10- to 20-drop doses, either in capsules or in a mixture.

The regulation of diet, work, exercise and amusement so as to avoid all that is exciting or stimulating is a valuable adjuvant to irrigations, and one that should not be lost sight of.

To appreciate to the full the advantages which irrigation offers patients during their acute urethritis one should have under simultaneous observation parallel series of cases. This is possible in large clinics, as many patients are unwilling to take the time for careful treatment. I have had the opportunity of watching a large number of clinic cases under the various methods of treatment. In the foregoing I have purposely not attempted a careful statistical analysis of cases, but have given, as being on the whole quite as accurate, the general impression which I have received from watching the progress of these patients.

To summarize, these conclusions are :

That while irrigation is at times and in occasional instances disappointing, it gives in acute urethritis the best individual results, the best general results :

That it offers the patient the greatest immediate comfort, the greatest immediate safety :

That as prompt if not more prompt recovery takes place than by any other means :

That there is a more certain recovery, and with less probability of late complications.

A REPORT OF A CASE OF MULTIPLE NEURITIS OF QUESTIONABLE ORIGIN.¹

BY ARTHUR W. MARSH, M.D., WORCESTER, MASS., WITH REMARKS BY GEORGE C. SMITH, M.D., BOSTON.

The case to be reported occurred in a female fifty-two years of age, about five feet five inches tall, and weighing 170 pounds. She was married and had five children, all of whom are living.

In her family history there is only one fact of importance; namely, a strong neurotic constitution throughout. The mother died of an obscure disease, having been insane part of the time.

Only two things in her past history need be considered as having any possible bearing on her final sickness :

First, after the birth of her first child, she had what she called puerperal mania. She may have been right, but, from what I could gather from the statements of her husband and relatives, I am inclined to believe that she had puerperal fever with delirium. At any rate, in about two months after the birth of the child she assumed her usual duties and was able to travel for a day and a half to her old home. Subsequently she had four other children without a return of the former trouble.

Second, a few years ago, on account of excessive flowing at menstruation, it was deemed advisable to curette the uterus. No abnormal growth was found in the pelvis, and a microscopical examination of the scrapings revealed no sign of malignant disease. After curettage menstruation occurred nearly regularly until the last month of her life, with no return of excessive flowing. My reason for mentioning this is to exclude cancer from having anything to do with the sickness to be described. There being no evidence of cancer elsewhere, it need not be referred to again.

No other sickness of any importance occurred during her life up to this past winter. On the whole, she was a woman who looked as though she was always well. There has been, however, a great deal of sickness in her family, and her children cannot be considered strong. When, however, you search for a reason for this you find a family history very free from any constitutional disease like tuberculosis, cancer, etc. The only thing marked is the nervous element which takes the hysterical rather than the neurasthenic type. So much sickness occurring in her family was naturally a source of great anxiety to her.

Another important matter, perhaps having a connection with the case, was the condition of the drainage in the house. In summer when the family are out of doors more, and away from their city home nearly all the time, they are seldom sick. In fact, they live under very favorable hygienic surroundings. Yet, during the past three winters, I have been called in to treat every member of the family more than once for various complaints, including tonsillitis, enteritis, a fever running four weeks and looking like typhoid but in which the Widal and diazo reactions were absent, several attacks of diarrhea, and, in the husband's case, a hard cold every winter which left him with a very

¹ Read before the District Medical Society at Worcester, Mass., Nov. 12, 1902.

persistent cough, often lasting the greater part of the season. Last winter a son was taken sick with otitis media, and after recovery was operated upon for the removal of adenoid tissue. Following this operation he was taken sick with what I thought was a slight septic infection, and due to some germs reaching the naso-pharynx from the Eustachian tubes. He was too slow in recovering, however, to satisfactorily explain it on this ground alone.

While the boy was convalescing, the mother went away for a few days' visit. On her return, while riding home, she felt chilly. That night her temperature was 102°. There was no headache, backache or pain anywhere. The pharynx looked congested, and she complained of its feeling rough. In two days the temperature came down to normal, but in spite of the lack of pain and the insignificance of this sickness, she did not gain her strength. The weakness resembled that following a severe attack of influenza.

It was at this time that an expert examined the plumbing in the house and found a faulty pipe under the basement that allowed sewer gas to permeate the whole house. This probably explains the cause of so much sickness in the family during the winter with freedom from it summers. At least it may have rendered them more vulnerable to invasion by germs without being the actual cause of so much sickness.

Returning to the history of our case—in the beginning the urine showed neither albumen nor sugar. The sediment was not examined. On account of the general weakness displayed she was given strychnine, a generous diet and general massage.

It was not long, however, before she complained of feeling more tired after the massage than before, and thought it hurt her, so it was discontinued. At this time I was seeing her three times a week, and found her morning temperature normal. The evening temperature was not taken, there being no nurse at that time, but as soon as she began to complain of pain the evening temperature was taken, and found to be either normal or slightly raised to 99.5°. Along with the advent of pain came increased nervousness, manifested in fits of crying and irritability. Owing to her excitable condition, together with the lack of tenderness in the muscles and joints, I, with members of the family, was inclined to regard the case as one of hysteria. To favor this diagnosis were sensitive points over the spine and ovarian regions, with lively knee jerks, dilated pupils that reacted perfectly to light and distance, and the passage of enormous quantities of pale urine with a low specific gravity. Against it was the continued run of fever gradually rising, now having reached 100° to 101° in the evening.

A consultation with Dr. Smith of Boston was held, and it was decided to remove her to the country to get rid of the noise of the city, and to eliminate sewer gas poisoning as a cause of the fever. We hoped to secure by this move a drop nearer to normal in the temperature and a decrease in pain, which by this time had become quite severe. Before she could be removed, however, the right leg began to swell and, soon after removal, it became sensitive to the touch. The temperature, instead of

dropping, rose higher, and, since pain in the arms and other leg had appeared, the diagnosis of multiple neuritis was established. From the last of February to the first week in April all four extremities became involved in the following order: right leg and arm, left arm and leg. Each limb, in turn, became intensively sensitive to the touch and swollen below the elbow or knee. The pain was intense, requiring continuous use of drugs, and very difficult of control even then. Antipyrine and phenacetin, with bromide of sodium and cannabis Indica, were tried, but they relieved only partially, and soon seemed to lose their effect. Later we were compelled to resort to morphine, and even with this drug large doses were required.

The pain in this case was the important symptom. It never let up, but was more intense at times than others. It was felt most in the ends of the extremities, that is, the hands and feet, and these parts, too, were the most swollen. Pain began as a dull ache, such as is felt in muscular rheumatism, but it gradually grew more intense until I think I can honestly say that I have never seen such continuous and intense suffering in any person. Along with the pain and swelling came local sweating as each limb became involved. Slight touches upon the skin showed hyperesthesia, but firm pressure or any attempt to move the limb was not endured for an instant. Tactile sensation was good. Numbness and tingling in the extremities was one of the earliest symptoms. During the progress of the disease through the limbs there was also complaint of shooting pains along the course of some intercostals and cervical nerves. Pain on deep respiration, with sighing, suggested the involvement of the phrenic nerve.

Motor symptoms were not marked. As the pain and swelling subsided, atrophy of the interossei of the hands and feet was noticeable, with some atrophy of the muscles of the calf. But there was only partial loss of power, evidenced in weakness of the grip of the hand and ability to extend the fingers against resistance. Soon after the pain left her entirely she was able to move herself, raising herself in bed easily and walking from the bed to a sofa near by.

This case, then, was one of the sensory type in which the motor involvement was slight. It is in this class of cases that a favorable prognosis is made unless some complication occurs. The duration of the neuritis was about six weeks, extending to the 1st of April.

The appetite was good and the bowels fairly regular. In fact, it was not difficult to secure a good evacuation from the bowels either by a laxative or enema until the last of the sickness. Even then feces seemed to reach the rectum normally, but were not expelled readily. This I believe was due to the condition of the patient's mind, an enema being expelled almost as soon as given. Involuntary defecation did not occur until towards the last, then, too, only occasionally, and was not the result of paralysis of the sphincter, but was due to her mental condition. The sphincter of the bladder was not involved. Superficial reflexes were normal, the knee jerk lively, but ankle clonus was not present. The pupils, which were somewhat dilated at the start, became more widely dilated as the disease

progressed, but were always round, equal and never lost the power of reacting to light and distance perfectly. The absence of any sign of paralysis of the sphincters of the rectum and bladder, with no other reflex abnormally present or absent, suggests no involvement of the spinal cord.

A cystitis did occur towards the end of the polyneuritis, the urine becoming alkaline and the sediment loaded with bladder cells and polynuclear leucocytes with a very few red blood cells. In a week's time this had all cleared up, and the urine resumed its former state. This condition was evidently a true neuritis of the bladder. There was frequent micturition accompanied by pain, with tenderness over the pubic region. Aside from this temporary condition of the urine, early in the sickness there appeared the slightest possible trace of albumen and a few hyaline casts. At other times fine and coarse granular casts, and occasionally epithelial casts, were found in the sediment, together with some epithelium. This continued throughout the sickness, but with the exception of this week of cystitis no other abnormal elements appeared. A low specific gravity, 1008 to 1012, was noted most of the time. The daily amount was excessive, reaching one day 102 oz. Urea was excreted in normal or very nearly normal amounts, so, also, were the total solids. Toward the end of the sickness the daily quantity decreased, but was usually above 25 oz., and the specific gravity rose to more nearly normal, 1016 to 1020.

The temperature curve rose rapidly after the pain began, and continued elevated throughout the sickness. As each limb became involved, the temperature would rise a little higher and subside as that limb got better, only to rise again as a new limb was affected. When the pain ceased, the temperature approached normal, and ran between 99° and 100°, with an occasional rise for a day or two. This went on until about five days before death, when it rose over 104°, and stayed there most of the time.

The pulse in the beginning was not much elevated, running between 80 and 90. It did not vary much from day to day until the latter part of the course of the neuritis, when it began to run between 90 and 100. After the 1st of April, at which time the neuritis had run its course, and the temperature had begun to drop, the pulse rose higher. A glance at the chart shows that after this there was gradual ascent in the pulse curve, until it became the usual thing to find it between 120 and 130. It was so seldom irregular that that characteristic can be disregarded. The heart showed no sign of disease until the end of the neuritis, when a systolic murmur was heard in the axilla pretty constantly until the end. Owing to hyper-resonance in the chest, no enlargement could be made out.

As tuberculosis is a common complication of polyneuritis, and as in the beginning the temperature was running higher than we expected for an ordinary polyneuritis, we were constantly on the watch for some evidence of tubercular infection. There had been a slight cough without expectoration from the beginning, but repeated examinations revealed nothing abnormal in the lungs. On the 17th of March, five weeks after the neuritis began, and while it was still progressing, she coughed up a mass of broken-down tissue about the size of a

marble. There was some odor to this sputum. During the day she raised some mucus, but none the next day, nor after that for a period of ten days or more, when she again coughed up another such mass of tissue. Three hours after the expectoration of the first mass an examination of the chest revealed the signs of a bronchitis localized to the right of the sternum on a level with the second interspace and third rib. The rest of the lungs showed no sign of disease. The next day these signs were gone, and after that I did not find a râle in the chest. An examination of this sputum revealed a few rods which took the fuchsin stain for tubercle bacilli, and retained it after decolorization. They were, undoubtedly, tubercle bacilli.

I have referred several times to the patient's mental condition, and I will now attempt to describe it although it is not easy. Just previous to the onset of this sickness she had been under a severe nervous strain owing to the sickness of her son. But aside from that, several members of the family had noticed certain things that she had said or done as unlike her. Then in the first of her sickness, before any tenderness or swelling had appeared in the limbs, and while she was complaining mostly of weakness without much pain, she was in a very excitable and rather irritable state. So much so that I, with members of the family, was inclined to regard the case as one of hysteria and to attribute the pain to her imagination. This did not satisfactorily explain the continued rising temperature, and soon we were obliged to give up that idea.

With the advent of such intense pain it was not surprising that she should be nervous, excitable and even irritable, too. But it was not long before the element of fear entered, and she became suspicious that we were going to do something to her. This impression became so firmly fixed that she would cry out on my entering the room and beg me not to do anything to her. Later she became solicitous for the welfare of different members of the family. At one time it was an explosion that was going to injure some one. At another time she was riding on a train and fearing an accident. Soon it became evident that added to the impression of fear was that of noise. She heard various things that were not real. One day when the wind was blowing especially hard she was particularly disturbed because a railroad train was coming through the house, and she wanted every one to get out of the way.

The next hallucination was that of imagining herself in various places. One time it was New York, another, some place in New Jersey, then finally came the idea that she was in a sanatorium, but just where she could not tell. She seldom spoke of herself as being where she really was.

Then came an idea that she was pregnant, and in the course of a week she went through all the events of giving birth to a child. After its birth she kept alluding to it as beside her under the bed clothes, and she was anxious that it should be cared for properly. Later the baby became sick and was taken from her, and this fact distressed her. Finally she concluded that the baby was dead.

I do not mean to imply that as fast as one new delusion appeared the old ones disappeared. Each new one was simply added to those already

existing. It was the last of January when she was first taken sick and the middle of February before she was in much pain. It was the 27th of February that she was moved to her country home, and up to the 20th of March there was no stupidity or inability to understand what was said to her. On the contrary, she was quick to reply, and gave the impression of being on the alert all the time. As the pain increased her suffering of course increased, and she was quiet only when under the influence of large doses of medicine. When the pain had been relieved she often would be extremely nervous, consequently she did not get more than five hours' sleep in the twenty-four, and sometimes less. Morphine was the only drug that could be relied upon to relieve pain, and even then sulphonal, trional, or chloral were given to produce sleep.

Along in the last of March there began to be periods when her crying and distress would become an incoherent muttering. This change was insidious and slow in progressing, but became more marked as the disease in the limbs was subsiding. Her temperature, too, was falling, but the pulse rate was showing a gradual increase. Then, too, she was becoming more noisy. Earlier than this even, she had begun to show that there were some members of the family whom she did not know. Her husband, whom she saw daily, the nurses and me also, she seemed to know. Others, whom she saw less frequently, she often did not know. But even as the mind became more and more cloudy there would be moments when it would be perceptibly clear, and she would talk more intelligently, although still nervous and noisy. Two instances in particular I recall. One was the last time that Dr. Smith saw her. He had seen her several times before, but this last time, when he entered the room, she recognized him immediately and called him by name. This surprised one of the nurses so that she exclaimed, "Why! she knows you." Then, only ten days previous to her death, one morning, as I entered the room, she said, "Good morning, doctor," in the most natural tone that I had heard for a month or more, but before night of that day she was worse than ever.

Looking back on this sickness, one can see how gradually and insidiously this mental trouble progressed from excitability and irritability to hallucinations, to noisy delirium with long periods of comparatively good intelligence, and then to short but increasing periods of stupidity with incoherent mutterings, and finally to almost complete derangement. By the first of April she seemed to be free from pain, or at least pain became an unimportant factor. We felt sure of this because she could be moved about without complaint, and she could move herself also without suffering. Then, too, we were able to dispense with the use of morphine. Bromide had very little effect in quieting her. Hyoscine hydrobromate and duboisine were the most effective, but they had to be repeated frequently. The fever also subsided, as I have already mentioned. Except when under the influence of hyoscine or duboisine she kept up a continuous crying, and at times seemed very wild. The pulse had kept regular and of good strength until the last of the sickness, when it showed signs of irregularity and later,

weakness. An axillary systolic murmur of the heart was also heard. The bowels, which previously had been comfortably moved, now became constipated. Another sign which we considered of bad prognostic significance was the increase in the superficial fat, particularly about the face, neck and chest. She was strong, however, and only a week or ten days before death walked with assistance from her bed to the sofa. The termination of the sickness began by a pretty sharp rise in temperature to 104 and 106. For a few days cold baths and packs with ice caps may have prevented the temperature from rising higher, but they had almost no effect in lowering it. Finally, after four or five days of this continued high temperature, she collapsed, becoming pulseless about two hours before death, while the temperature rose higher until just before she stopped breathing it registered 108.8 and ten minutes after death registered 110. Death came with some profound disturbance of the heat centers. If a meningitis was present there was absolutely no physical sign of it.

RECAPITULATION.

Our attention was first called to the patient by a slight attack of pharyngitis. This was followed by a period of ten days to two weeks of general weakness with freedom from pain, during which time there was also great nervousness. Then came seven weeks of pain, with swelling and tenderness in all four extremities. During this time hallucinations of sight, sound, location and fright were present. This period was followed by a month of freedom from pain, but by steadily increasing cloudiness of the mental faculties. Finally, a period of four to five days of very high fever, terminating in death.

Since the causes of multiple neuritis are many, and, as it would take so much time to eliminate them all, I choose to devote my time to a discussion of several possible causes in this case, merely mentioning some of the others. In a general way it can be said that multiple neuritis is the result of a poison known or unknown. In most of those cases considered neuropathic in origin, there is undoubtedly some other cause associated but not discovered, and it is perhaps safe to assume that the more we search for a cause in individual cases the fewer the number of neuropathic cases will become.

In our case a very large number of causes can be eliminated. Lead and arsenic were not found in the urine, and the course of the disease was not like that commonly seen resulting from those poisons. There was no history of alcoholism in this case, no craving for liquor while sick, and from what we know of her habits we can exclude this as a possible cause. Syphilis also can be excluded, because of the lack of such a history and evidence of the disease in her. The urine did not contain sugar, and there were no other symptoms of diabetes. Exposure to cold acts by itself or in conjunction with some poison like alcohol or rheumatism. It is often the exciting cause in persons who are alcoholic and have been lying out in the cold. If cold alone were the cause it should have been much more intense than anything that entered into my patient's history.

Of the infectious diseases many can be absolutely excluded, not having preceded this neuritis, that is, smallpox, typhoid, beriberi. Malarial history of any definiteness is wanting. The attack at the beginning of this sickness, with a few days' temperature but with no pain, headache or sore throat, is not like the onset of diphtheria, tonsillitis or influenza. The weakness following resembled that after influenza, but there being no sputum to detect bacilli by we must rely on the clinical symptoms for a guide, and I shall exclude influenza on the absence of pain. A culture from the throat was not taken, but diphtheria can be excluded on the absence of membrane in the throat or enlarged glands in the neck. I wish to discuss four possible causes for the polyneuritis in this case, namely, sewer-gas poisoning, rheumatism or gout, a general nervous breakdown and tuberculosis.

SEWER GAS.

Sewer gas certainly was in the house, and no doubt contributed to the very general ill health of the family. It may have contributed also as an exciting cause of the polyneuritis. The temperature, pulse, general nervousness and, in fact, the whole course of the disease was not altered in the least by the removal to her country home, where we knew sewer gas was not present. Gowers says that as soon as the cause of the disease, is removed there is an amelioration of the symptoms. If sewer gas were the sole cause, after removal the temperature would have approached normal and should have stayed there in the absence of a complication. Such was not the case in this instance after it was eliminated as a cause. Finally, in the progress of the disease there developed other symptoms that pointed more strongly to another cause, and I incline to the belief that the sewer gas had very little to do with the case, except in the way of lowering the resistance of the body to attacks of other infectious agents.

RHEUMATISM AND GOUT.

To go into a detailed discussion of what the poisons in these diseases are would require more time than I have at my disposal, and not be profitable to you. A faulty metabolism is probably at the bottom and productive of the irritant that so often leads in these cases to attacks of sciatica, migraine and neuralgias of various sorts. That some of these neuralgias are regarded by some authorities as true inflammations of the nerves or nerve sheaths you all know. Aside from these manifestations the poisons of these diseases are either deposited about the joints or are productive of an increase of fibrous tissue about the joints. Rheumatism more frequently leaves the heart diseased or weakened and gout, the kidney.

If gout had been acquired, or there had been a history of repeated attacks of rheumatism, a person of the age of my patient would be very likely to show some marks of the disease. As regards rheumatism, not while I have been acquainted with her did she ever complain of rheumatism, except to show me the joints of her fingers and say that they sometimes pained her. From neuralgia or headache she was quite free. In fact I believe she had

these symptoms no more than a vast number of people who never have had any suggestion of rheumatism presented to them. There were in the urine, however, signs of a chronic interstitial nephritis. The absence of blood in the sediment, with the increased quantity and low specific gravity, argue against the active congestion of febrile cases, and there were no signs of *passive congestion* in the body. We do not, however, know whether the urine showed any sign of interstitial changes previous to this sickness. Her manner of life had been such that one would not find a cause for kidney changes, unless her first pregnancy could have been a possible originator of a renal inflammation that resulted in the increase of fibrous tissue in the kidney. In her personal history, then, we have a rather indefinite history of neuralgic pain not localized, changes in the joints of her fingers, and a possible chronic interstitial nephritis.

Turning to the family history, I have learned from her father's family physician that there is no history of rheumatism, gout or nephritis in her family. Therefore, while these two diseases cannot be excluded with certainty from the etiology of the polyneuritis, if we can find some other cause for it a much more satisfactory conclusion can be drawn.

Before leaving this subject let me renew my former statement that during most of the sickness the daily amount of urine was above normal and later seldom fell below 25 oz. Estimation of urea and total solids showed a normal, or very nearly normal, elimination of these products of metabolism. Neither were there any convulsions, headache or muscular twitchings to suggest uremia.

Was the polyneuritis a part of a general breakdown of the nervous system, or was there any evidence that this patient was becoming insane and that the polyneuritis developed and hastened that condition?

If this question could be answered in the affirmative then alienation itself would not explain the polyneuritis. Some toxemia must be assured. That the two conditions might develop simultaneously, and that the neuritis might have a decided effect on the mental state, should be accepted. Previous to this illness there had been much sickness in her family for several years which caused her anxiety and worry; and in one coming from a neurotic family it might be argued that *there* was a cause for the development of insanity. If there had been any change in her mental condition previous to this sickness it was in the nature of excitability and irritability, such as might be expected in one of her temperament when subjected to anxiety. That members of the family noticed such changes is certain. We have then a condition that might be precipitated into mental derangement under the proper influence. Such an influence would certainly be presented by the onset of a multiple neuritis.

Have we any evidence during the course of the neuritis which would suggest insanity? I do not feel qualified to decide the question of whether or not the hallucinations accompanying the disease were due wholly to toxemia. Her delirium was not like any delirium I have ever seen as an accompaniment of infectious fevers. And yet there are plenty of instances of the delirium of such fevers

being mistaken for insanity. The important point it seems to me is this: That the mental symptoms persisted and even grew worse after it was plainly evident that the neuritis had run its course. Now mania and dementia are recognized as accompaniments and sequels of polyneuritis and so are chronic meningeal changes. It may be true that such changes are seen more frequently where there is an alcoholic history, but might they not develop from some other condition than alcoholism? Chronic meningeal changes are seen after senile dementia, dementia paralytica and hereditary chorea.

There are, however, certain symptoms in my case that present another side of this question.

TUBERCULOSIS.

The family history is free from this disease. In fact I have never seen many families more completely free from this trouble. During my acquaintance with my patient she had lived under perfect hygienic conditions in the summer, and, had it not been for the sewer gas in the house, her winter life also would have been all that could be desired. There had been no sign of tuberculosis in her previous life, and at the onset of the polyneuritis there was none in the lungs, abdomen, osseous or glandular system, so far as we could detect. That tuberculous might be the cause of the polyneuritis, while thought of in considering all the causes of this disease was discarded as not at all probable.

But all of a sudden one morning she raised some sputum in a single mass, in which were found tubercle bacilli. This was our first evidence that anything of that nature was complicating the disease. Again within ten days this performance was repeated, and again tubercle bacilli were found. From this time on there was a gradual rise in the pulse rate until 120 or 130 became the usual thing. The irregular temperature still continued and was not characteristic and her mental state became more stupid. A constant watch for signs in the chest elicited nothing but hyper-resonance. There was a slight cyanotic look to the skin when crying and moaning, times when the breath would be held, but when asleep and breathing regularly this cyanosis disappeared. General perspiration too was common.

In the absence of an autopsy upon this case we must agree that we shall never know with any certainty just what did cause death, but the longer I think about this case the more I am inclined to the view that the disease was of tubercular origin from the start.

I feel convinced that the polyneuritis was only a symptom of her disease, and that if it had been the only trouble she ought to have recovered. Everything pointed to a favorable termination so far as the neuritis was concerned.

From the very start we were not satisfied with the high temperature, and removed her from her home to eliminate sewer-gas poisoning. Still the temperature kept up. When the expectoration occurred it is probable that a bronchial gland ruptured into a bronchus and was largely thrown off. With the coughing up of this cheesy mass containing tubercle bacilli there came a change in the case.

Delirium, which previous to this had been transient and alert, gradually deepened to stupidity and almost complete lack of intelligence except at short intervals. To be sure, morphine may have influenced the delirium some, but morphine was scarcely used at all during the last four weeks of her life, the time when the stupidity was most marked. Then, too, the pulse rate gradually increased until it was not unusual for it to be above 120. Sweating, which had been local previously, now became general. The temperature continued, though not running as high as during the neuritis. In the "Twentieth Century Practice" is this statement: "Occasionally, too, cases of general miliary tuberculosis run an apyretic course. In such cases, as a rule, the diagnosis is made at the autopsy, the chief symptoms having been of a cerebral character and the patient having been supposed to suffer from mania."

The two most important symptoms lacking against the theory of acute miliary tuberculosis are the preservation of flesh and strength and no dyspnea.

Absence of signs in the lungs which occurred in this case is not uncommon. An examination of the fundus of the eye should have been made, and might have aided in the diagnosis.

In conclusion let me repeat that this patient would have recovered had it not been for a complication like acute mania or because of a fundamental disease. If the latter condition obtained, it is probable that the basal affection was tuberculosis, and that from it was derived the toxine which produced the neuritis. If not tubercular the cause of the neuritis remains undiscovered. Much more might be written upon this case, but I have endeavored to confine myself to as brief a history as possible of a quite protracted illness and to the presentation of a few of the problems that puzzled us during its course.

REMARKS BY DR. GEORGE C. SMITH.

In the light of the foregoing it is very evident that this patient had a multiple neuritis, and that it was merely an expression of, or sequel to, an acute infection of some kind which had existed some time before peripheral neuritis manifested itself. The question of uremic intoxication on the basis of a chronic interstitial nephritis, evidenced thirty years ago, perhaps, in a puerperal fever and lighted up quite recently by some unknown toxine can, I think, be dismissed by virtue of the following facts: Our patient never suffered from headache, nausea, vertigo or neuralgia; she had no hypertrophy of the left ventricle and high tension pulse with accentuation of the aortic 2d; there was no arterio-sclerosis. The polyuria could be accounted for on a nervous basis, hence, although a sclerosis of the kidneys could not be absolutely ruled out, the symptoms referable to the same were so slight as to need no further consideration in this discussion.

The two acute infections which occurred to us in this case as the most probable were influenza and tuberculosis.

In favor of influenza it may be stated that we noted, the season of the year, coupled with the depressing influence of a recent sewer-gas poison-

ing, as a predisposing cause; the mode of onset—a pharyngitis of two days' duration, with chilly sensations accompanied with a slight rise of temperature; the onset of the peripheral neuritis some two weeks after the pharyngitis began, as we so often see it when following an infection, and beginning in the proximal at the same time as the distal parts of the limbs—seemed to accord with a toxemia. Again, the course of the multiple neuritis was not unlike that seen with influenza. The fever and pulse might tally with this affection, and the marked insomnia throughout the disease recalls to mind several other cases of influenza in which this was an obstinate symptom.

Psychoses-euphoria and depression alternated early in our patient, but later gloom and melancholy predominated, with temporary lapses of memory, hallucinations, delusions and even momentary maniacal excitement.

Weber, Pelmann and Kraepelin report such symptoms following an attack of influenza, and we have met with two such cases. However, these mental symptoms are not pathognomonic of influenza, but are just as pertinent to the psychoses of other acute infections. The absence of backache and headache in our patient, the long duration of the affection as well as her death, are strong arguments against influenza.

Opposed to acute miliary tuberculosis were her facies, preservation of flesh and strength, the slow pulse and respiration till the last few days, absence of cyanosis, extreme pallor, roseola and enlargement of superficial lymphatic glands, failure of signs of tuberculosis elsewhere in the body, except for a brief period during two days, to be alluded to later.

Leube says that two thirds of the cases of acute miliary tuberculosis affect the cerebral meninges. Our patient had no headache, vomiting or involvement of cranial nerves except that which has been referred to elsewhere.

In favor of acute miliary tuberculosis were the remittent character of the fever; the two slight attacks of cough, which lasted for only about one hour and in both instances were accompanied by the expectoration of cheesy material containing tubercle bacilli, and followed by the crepitant râle, audible over the right bronchus about two inches from the sternum. (No râles were ever heard over the chest before or after this.)

Now when we recall the fact that in pulmonary tuberculosis the right lung is oftener affected than the left, and that the point mentioned—the junction of the right bronchus with a posterior branch—corresponds with the location of a peribronchial gland, the question naturally arises, Was this cheesy focus the origin of the toxine that our patient had suffered with from the first, and was this eruption of caseous material the exciting cause of an acute miliary tuberculosis which rapidly terminated her life, or was it an accident which happened in the course of her disease? For the tubercular theory must also be conceded the obscure and long duration as well as the termination of the affection.

It might be well to state that she never was examined for the only two pathognomonic symptoms of acute miliary tuberculosis; namely, choroid tubercle and blood bacilli.

SUB-DURAL CERVICAL CARCINOMA, SECONDARY TO CARCINOMA OF THE BREAST.

BY E. W. TAYLOR, M.D., AND G. A. WATERMAN, M.D., BOSTON.

From the Department of Neurology, Long Island Hospital.

CARCINOMA of the vertebrae, with subsequent involvement of the cord, is a somewhat frequent complication of cancer of the breast or stomach. The following case derives its interest from the very exceptional mode of invasion of the spinal canal, probably by way of nerve roots, and from the unusual symptoms produced by a growth lying wholly within the dura, and only slightly involving the cord.

M. D., age forty-eight, a widow, by occupation a cook, was admitted to the Long Island Hospital, June 3, 1901. Her father was said to have died at eighty-two with a right-sided hemiplegia; her mother at fifty-five, of renal disease. She had no living children, but had had two miscarriages, each at three months, said to have been from accidental causes. She had had erysipelas five years ago and denied venereal disease.

About two years previous to entrance she began to notice weakness of the left arm, which went on to what she regarded as a paralysis. She had previously noticed prickling sensations in the finger tips. She was, however, able to assist in the house work until three months before entrance, when her left arm became completely helpless. Two weeks before entrance she noticed numbness in the left leg and foot, and soon became unable to walk. Two days before, while making an attempt to walk, she fell and had been in bed since. A ptosis of the left eye was thought to be at least two years old. At no time had there been any definite symptoms of cerebral disorder. Six months previous to coming to the hospital she had noticed that her head was bent forward and that a marked deformity of the chest was developing. These deformities rapidly increased. A "sore" had existed on the left breast for about one year.

Examination on entrance showed the pupils reacting to light and with accommodation, with no paralysis of the ocular muscles beyond a slight ptosis of the left lid and a slight inequality of the pupils, the left being smaller than the right. The knee jerks were lively, more so on the left; there was ankle clonus on the left and a Babinski phenomenon. There was a partial paralysis of the left arm and leg. Sensation was said, at that time, to be good throughout. The tongue was protruded toward the left side. The heart showed no murmurs, but its area could not be marked out, owing to the following deformity of the chest: When standing or sitting in the erect posture, the head and cervical portion of the spine were bent practically at right angles to the lower spine, the curvature being at about the level of the fifth thoracic vertebra; the left shoulder was markedly higher than the right, and there was a decided curvature of the spine to the left at the level of the spine of the scapula; the chest showed a very marked depression with deformity of the sternum; a hard tumor mass involved most of the left breast anteriorly. The heart could be seen pulsating through the chest wall. No râles were heard in the lungs. The areas of the liver and spleen were normal; there was no tenderness nor edema. Glands were easily felt in both axillae, and the epitrochlear glands were also involved.

While in the hospital the patient had retention of urine, necessitating catheterization. Her appetite was poor; the bowels were irregular, with involuntary movements; sleep was poor, and she grew rapidly worse. The depression at the sternum increased; the right hand became partially paralyzed, the patient being able to make only slight movements with the fingers, but the ability to raise the arm was retained.

On June 27 the following notes were made: Loss of pain sensation in the left arm up to the axilla, with considerable wasting of the muscles of the forearm and hand; general blunting of sensation in both legs, with inability to move them, the left being the more affected.

When stimulated with the prick of a pin, the legs were moved involuntarily. She thought she had had diplopia occasionally, but no disturbance of the ocular muscles was found. There was occasional regurgitation of food, which was probably due to mechanical obstruction. This, as well as difficulty in breathing, was increased while sitting up. There was considerable motor weakness of the right arm, with a fair preservation of sensation. In this condition the patient died the following day, June 28.

Autopsy by Dr. G. B. Magrath, June 29, 1901, eighteen hours after death. There was a marked depression at about the level of the fourth rib in the median line. A large tumor mass extending from the median line to the left nipple showed a scar of 5 cm. in diameter, with a certain amount of excoriation. At the fourth and fifth thoracic vertebræ there was a very marked kyphosis, with erosion of one vertebra and involvements of others, with alterations in the intervertebral discs. The left forearm and hand showed a certain amount of muscular atrophy. The brain weighed 1,260 gms., and was apparently normal, with normal vessels at the base. The internal organs in general showed nothing of significance beyond a certain amount of atelectasis of the lungs from chronic bronchitis. The spinal cord showed macroscopically a thickening of the dura in the region of the cervical enlargement, but appeared otherwise normal.

The autopsy confirmed the diagnosis made during life of cancer of the breast with erosion of the sternum and vertebræ and involvement of the spinal cord in the cervical region, although the character of the cord involvement was wholly unsuspected.

Microscopic examination.—Examination of the breast tumor showed it to be a carcinoma of the scirrhous type. Sections were made from the spinal cord in several regions, and stained by Weigert's myeline sheath method, Van Gieson's hematoxylin-picric-acid fuchsin, by hematein-eosin, and by Nissl's method. In the upper thoracic and lower cervical region the dura on the dorsal aspect of the cord was very markedly thickened (Fig. 1), and at certain points continuous with the pia. This thickening was due to an actual invasion of the membranes by the



FIG. 1. Cervical cord, showing sub-dural thickening due to infiltration with carcinoma cells.

proliferating epithelial cells of the carcinoma; the condition might properly be called a cervical carcinomatous pachymeningitis in the same sense that that term is used of syphilis. The carcinoma cells showed a perfectly typical arrangement in nests, the connective tissue of the dura forming in great part the stroma. Ventrally and laterally the dura showed a similar involvement, but somewhat less in degree. The nerve-roots, both dorsal and ventral, were involved in the carcinomatous growth. This was especially marked in the dorsal roots, the individual nerve bundles of which were in some instances

invaded by the proliferating cells (Fig. 2). At various



FIG. 2. Dorsal nerve root; deeply staining nuclei belong to carcinoma cells; general infiltration of nerve-root; destruction of myeline sheaths and axones.

levels studied a similar invasion of the dorsolateral portion of the cord was apparent. This invasion of the cancer cells appeared to follow the neuroglia septa, and frequently was definitely associated with the perivascular spaces (Fig. 3). These strands of cells extended inward

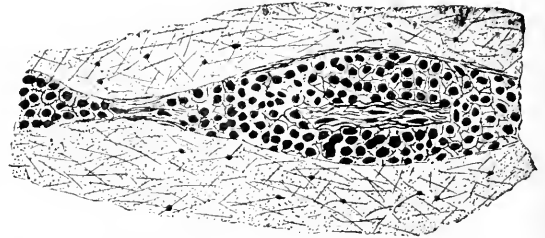


FIG. 3. Mode of infiltration of carcinoma cells about blood vessel in the cord. Semi-diagrammatic.

at places about half way to the gray matter, and were made up of cells wholly similar to the cancer cells found in the dura. At the point where these septa extended into the cord, the dura, pia and substance of the cord were continuous. At the level of the lesion, the nerve-roots, stained by Weigert, showed an extreme degree of degeneration, somewhat more marked dorsally than ventrally. There was a slight descending degeneration of the pyramidal tracts, visible in the lumbar region. Ventral horn cells showed no pathological alteration. No other lesions of the cord were noted. It is worthy of remark that the tumor of the cord was very much more cellular than that of the breast, to be classified as the so-called medullary type.

The *clinical history* of this case in the light of the autopsy is of much interest. About two years before her death the patient had observed both sensory and motor disturbances in the left arm, which in the course of twenty-one months progressed to a practically complete motor paralysis. This was later followed by similar disturbances in the left leg, with a final involvement of the right arm and leg, but to a much less marked degree. The beginning of these cord symptoms antedated the discovery of the breast tumor one year, though it is not to be supposed that the tumor of the breast was actually

of so recent growth. It is altogether probable that the carcinomatous thickening of the dura was secondary to the growth in the breast. The condition found in the dura, which has been already described, was certainly of long standing and slow growth, as shown by the motor and sensory cord symptoms which had existed, in some measure, upwards of two years. The destruction of nerve-roots by the invasion of cancer cells (Fig. 1) was quite sufficient to explain the very marked disorder of function beginning in the left arm. The actual invasion of the lateral tracts of the cord by the cancer no doubt explains the degeneration of the pyramidal tracts, which was extremely slight, and the consequent increase of the knee reflexes with a Babinski phenomenon on the left. The severity of the cord symptoms, and particularly the final paralysis of the legs with involvement of the sphincters, are, however, out of proportion to the lesions discovered in and about the cord. It is possible that a constriction of the cord by the kyphosis which escaped observation post-mortem may have been causative of the almost complete motor and sensory disability shortly preceding death. Clinically the appearance was of a high transverse lesion of the cord, which the autopsy proved to be a wholly erroneous assumption.

A more probable explanation of the loss of power in the legs is that the pressure exerted by the new growth, although largely external to the cord, was sufficient to lead to the symptoms observed shortly before death. There is sufficient analogy for such a loss of function below a point of pressure in certain meningeal affections of the cord, of which Pott's disease is an example, in which, when conditions of pressure are removed, a resumption of function on the part of the cord demonstrates no permanent destructive lesion. It is also worth noting in this case that the flow of cerebrospinal fluid in the subdural space of the cord must have been, in great measure, interrupted by the encircling tumor.

The occurrence of cancer of the spinal canal as an internal pachymeningitis, if that term may be allowed, is of much pathological interest. The dura externally, both ventrally and dorsally, presented a perfectly smooth and normal surface. External to the dura there was no evidence of a gross destructive or proliferative lesion, such as tuberculosis presents, for example. The thickening brought about by the extensive invasion of cancer cells in the cervical region was wholly internal, and in gross appearance was strongly suggestive of the conditions seen in syphilis or other recognized forms of cervical pachymeningitis. In view of the fact that carcinoma invading the cord is usually a highly destructive lesion, leading to symptoms of transverse lesion, the findings in this case are noteworthy. In a patient, for example, recently observed by one of us, symptoms of almost total transverse lesion of the cord, secondary to a breast cancer, developed in a period of a few weeks. This must be regarded as the ordinary course of events. In the case here reported, on the other hand, symptoms persisted for upwards of two years of a character which could not in themselves have led to a correct diagnosis of the cord affection.

It is also worth mention that the patient at no time suffered from the excruciating pains which are

supposed to accompany involvement of the nerve-roots by a tumor. In this case the sensory disorders were of the nature of somewhat mild preliminary paresthesia with final anesthesia. This is difficult of explanation, but the fact is of value as showing that the absence of pain should not preclude the diagnosis of subdural cord tumor.

The points of importance in this case are:—

(1) A growth of long standing in the immediate neighborhood, but with slight involvement of the cord.

(2) Limitation of the new growth essentially to the sub-dural space.

(3) Extensive motor and sensory paralyses from involvement of nerve-roots alone.

(4) Absence of pain attributable to invasion of sensory roots.

Clinical Department.

A CASE OF PNEUMONIA WITH RELAPSE.

BY A. LAWRENCE MASON, M.D.,

Visiting Physician, Boston City Hospital.

C. M. F., a young woman of good family history, entered the City Hospital, Oct. 30, 1902, with pneumonia. It was stated that she had had measles with pneumonia eight months before, losing twenty pounds in weight. Three months later a child had been born at term, and she had not been strong since.

Present illness.—Two days before entrance she had prolonged chill, headache, dyspnea, pain in the right side, cough, vomiting and diarrhea. Sputa dark and adhesive.

At the time of admission the signs of pneumonia were well developed in the right lower and middle lobes; namely, dullness, bronchial respiration and bronchophony, increased tactile fremitus, abundant high-pitched râles and a friction rub.

The heart was weak, with a blowing systolic murmur at the apex and a soft diastolic murmur at the base. Cyanosis was marked. Pneumococci were present in the sputa. The blood showed 28,000 whites.

Urine, 1,025; albumen; a few hyaline and granular casts and renal cells. Diazo reaction present on sixth day, absent seventeenth day.

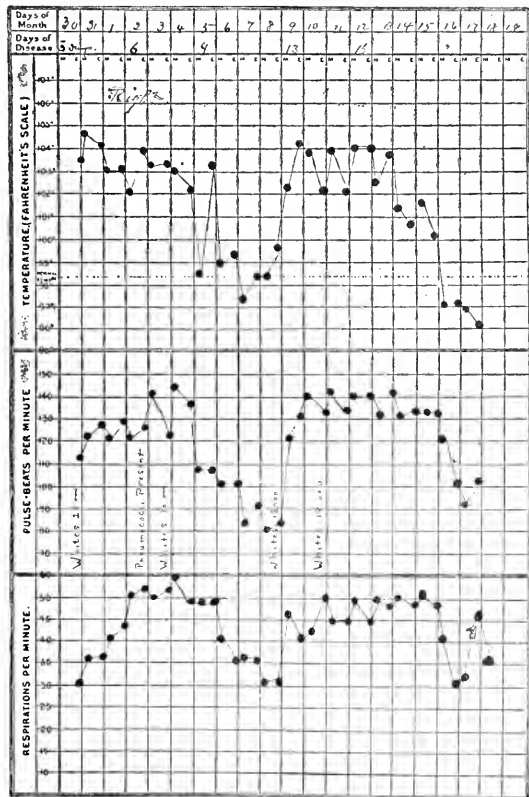
The disease ran a severe and dangerous course until the ninth day; when there was a pseudo-crisis followed by crisis on the tenth day.

On the tenth, eleventh and twelfth days she became hungry, slept well and presented all the signs of convalescence, the pulse and temperature remaining normal for two days. This interval enabled her to regain enough strength to carry her through the relapse to follow.

Relapse.—On the thirteenth day the symptoms and physical signs of pneumonia developed in the opposite lung, the left upper lobe being the seat of a new inflammatory process, while the right lung was resolving favorably. This relapse was also characterized by great severity, as the chart shows, and convalescence did not begin until the twentieth day. Resolution progressed rather slowly after the second crisis; there was a good deal of

vital depression for some days with a sub-normal temperature, but recovery was uneventful; twenty-eighth day, 14,000 whites.

Remarks.—Ordinarily a completed crisis in pneumonia appears to convey immunity for the time being at least, although subsequent attacks not infrequently may occur after a longer or shorter



interval. In typhoid fever, on the other hand, relapses are common, second attacks few.

Regarding the frequency of relapse in pneumonia there is considerable variance between the statements of different writers, and many of the best authors pass over this subject with little or no reference. Although rather technical, still it has interest from the clinical point of view, and was investigated by Grissolle and Briquet among the earlier writers, later by Wunderlich, Ziemssen, Flint, Wilson Fox, Osler and others.

From the small number of cases mentioned, however, it may be inferred that this incident has been found to be a rare one when proper discriminations have been made between true relapse and those other not uncommon conditions which delay convalescence in pneumonia. Often the process extends to a second or a third lobe during the active stage of the disease. Delayed resolution is a frequent source of recrudescence. Secondary pleurisy, pericarditis or empyema may add new dangers. But these conditions are quite apart from the one now under consideration.

In my own experience I can recall but two or three instances of relapse in pneumonia, and the one

now reported is the most typical and striking. All recovered.

For many years I regarded the dictum of Flint as absolutely correct. He says: "A relapse never takes place." This is so far true that the exceptions may be considered to prove the rule.

The records of the Boston City Hospital show that relapse is an uncommon event. Sears and Larrabee,² in an analysis of 949 cases of pneumonia, admitted between 1895 and 1900, found but 8 cases, or less than one per cent. Two of these died, one from exhaustion two days after the second crisis.

A FORM OF PRESSURE ANEMIA OF THE UVULA WHICH MAY BE MISTAKEN FOR MEMBRANE.

BY W. P. COUES, M.D., BOSTON.

This condition of the uvula has come to my notice in several cases of severe throat infection when the tonsils have become greatly swollen, so that one or both impinge on the side of the uvula, almost blocking up the throat.

On gently separating the tonsil from the uvula a white spot is seen, which may, in a hasty examination, particularly if diphtheria is suspected, be mistaken for membrane.

Continued pressure of the tonsil on this spot may even cut off the circulation from that part of the uvula and lead to a superficial necrosis.

On more careful examination it will be seen (1) that the white spot is formed at exactly the point of impact of the tonsil and uvula; (2) it is not raised above the surface, and (3) it does not bleed when touched.

This condition occurs generally, I believe, in streptococcus infection of the throat, when a non-diphtheritic membrane is perfectly possible.

ANTISEPSIS OF THE CLINICAL THERMOMETER.

BY WILLIAM H. DEVINE, M.D., BOSTON, MASS.

In these days of antiseptics, when the profession is devoting so much time to the detail of antiseptic methods, it has often occurred to me that too little attention is paid to that important instrument, the clinical thermometer. It presents great opportunities for conveying germs, and while the surgeon may carry out a perfect technique for his surgical antiseptics, his results may be impaired by neglecting this germ carrier. Owing to its fragile nature it cannot be sterilized by heat, like most surgical instruments.

In hospitals, or at our offices, facilities are offered for cleansing, by immersing the thermometer in a vessel containing carbolic or other solution, immediately after using, this being the ideal treatment.

The busy general practitioner can adopt the same method, but it necessitates carrying the antiseptic agent with him and preparing it on every call, which is inconvenient and impracticable. I think the usual method employed in active practice is to thoroughly cleanse the instrument, before and after using, in cold water, preferably a running stream or in soap and water.

¹ Flint's Practice of Medicine, Fifth edition, p. 173.

² Med. and Surg. Reports, B. C. H., 1901.

When the price of thermometers has been much reduced, most of our patients will have their own thermometers; this will render the care much easier than if one be used for different patients. But even in those ideal days, the practitioner will always have his transient patients who do not possess such an article, and some practical method is necessary to keep the thermometer as near surgically clean as possible.

Not much, to my knowledge, has been written on this subject in standard text-books. Perhaps the importance of cleansing the instrument is so evident to physicians that it may be the reason why so little is written pertaining to it. In consulting several standard modern surgical works, in only one did I find mention of this subject, and then but three lines were devoted to the matter. In another work, about fifty pages were given to an admirable monograph on antiseptics, but no reference made to the thermometer; yet this instrument plays an important part in the care of the surgical as well as the medical patient.

It seems to me that the best method to keep the thermometer free from germs is to copy the hospital method of placing it, while not in use, in an antiseptic solution; this necessitates carrying the agent used.

It is not practicable to carry antiseptic solutions except in a thermometer case. I have found from experience that alcohol is the best basis for the antiseptic agent. For several months I carried the case filled with alcohol; before and after using the thermometer, it was washed in cold water, preferably running water from faucet, and after use placed in alcohol in the case.

For the past two years, I have used corrosive sublimate, and alcohol 1-5000. The only objection to alcohol is the odor, but this objection is overcome to some extent by flavoring the solution with *ol. gaultheriæ* (one drop to four ounces of solution is sufficient). If the thermometer is carefully handled, no alcohol being spilled, there will be no perceptible odor.

The bichloride solution is not as suitable for metallic cases as it is for the ordinary hard rubber, but may be used. Alcohol with some suitable antiseptic that has no effect on the metal, such as a solution of thymol, soda salicylate and alcohol of required antiseptic strength, is preferable.

The objection to plain alcohol is its doubtful efficacy as an antiseptic. I have had an ordinary cheap thermometer immersed in 1-5000 bichloride in absolute alcohol, in a hard rubber case, several weeks at a time, and found no appreciable effect on markings of the thermometer. It may in time impair the markings on glass, but as yet I have had no difficulty in this direction.

The solution has apparently no injurious effect on the hard rubber case. No doubt the strength of corrosive sublimate could be increased to 1-2000. Possibly alcohol increases the antiseptic effect of corrosive. I do not consider the other antiseptic agents, as I deem this the best for the purpose. Alcohol if spilled on the clothing dries quickly; it is so volatile that the odor rapidly disappears. It has no special injurious effect on ordinary fabrics, which cannot be said of carbolic, permanganate and other ordinary antiseptics. When convenient,

other antiseptics may be used to supplement the solution for cleansing the thermometer before and after use, and the thermometer should at least be cleansed in clear cold water before and after using. Solution in the thermometer case should be changed quite frequently.

The antiseptic effect of bichloride is so well known that we need not discuss its qualities as compared with other antiseptic agents. The "United States Dispensary," the eighteenth edition, says that "corrosive sublimate is one of the most powerful of known germicides, a solution of one part of it in twenty thousand of water being sufficient to kill micrococci and bacilli in active growth; whilst a solution of one thousand will rapidly destroy bacterial spores. According to Koch, as little as one part of corrosive sublimate in three hundred thousand of a proteid solution will prevent the generation of the spores of the bacillus of anthrax."

The temperature should never be taken by mouth in diphtheria, syphilis, pulmonary tuberculosis, typhoid and many other contagious cases unless the most rigid antiseptics be employed; in fact, I think the temperature should never be taken by mouth or rectum unless one is sure that the thermometer is practically sterile. I have never known of disease being transmitted by the thermometer, but transmission of disease from unclean thermometers is within the range of possibility. While I do not claim that the method advocated procures thorough sterilization, I think it is far safer than the ordinary method used.

To sum up, I would say that the practical methods of eliminating transmission of disease by thermometer are:

- (1) Separate instrument for each patient.
- (2) The hospital method of keeping the thermometer immersed in antiseptic solution, when not in use.
- (3) Keeping in the thermometer case a solution of bichloride and alcohol (1-5000 to 1-2000).

Medical Progress.

REPORT OF PROGRESS IN LARYNGOLOGY.

BY A. COOLIDGE, JR., M.D., BOSTON.

PARAFFIN INJECTIONS.

DURING the past year the subcutaneous injection of paraffin to correct deformities, especially of the nasal bridge, has been several times reported. Great care must be taken to secure a perfectly aseptic mixture of fats and to inject it at a proper temperature. If too fluid there is danger of fat embolism. In one case a portion of the injected fat reached the upper eyelid, and was removed with difficulty; this can be prevented by firm pressure at the root of the nose. A number of cases are reported by Harmon Smith,¹ with the suggestions and precautions which he has formulated. It is absolutely essential to have the paraffin melt at a sufficiently low temperature to ensure ready injection. A special paraffin designed for these injections melts at 110° F., and is

¹ Med. Rev. of Rev., Sept. 25.

furnished in test tubes sealed and sterilized. The possible dangers are: infection, embolism and deformity from hyper-injection, with inability to reduce the quantity of injected paraffin, or with pressure necrosis. The paraffin, in a closed tin receptacle, is placed in a hot-water boiler and boiled. It is allowed to cool to about 115° F. and drawn up into a specially devised syringe which may be sterilized in the same water bath with the paraffin; a screw force exerted on the piston rod is sufficient to force the paraffin out even at a temperature of 90° F. No expedition at all is necessary, as the paraffin may remain in the syringe at the temperature of the room and then be ejected without difficulty. When the paraffin is semi-solid it winds out from the needle in a thin cylindrical thread, but with sufficient force to uplift any tissue not held down by fibrous adhesions. In injecting in this way ample time is allowed for molding and smoothing the injected paraffin, and the danger of hyper-injection is minimized. The paraffin becomes so intimately imbedded in the meshes of the connective tissue that it is almost impossible to remove it without also removing considerable tissue. No peculiar sensation has been experienced by the patients, except that a sense of numbness immediately follows the operation. The needle is introduced away from the point of greatest deformity and its point is carried forward slightly beyond this, being gradually withdrawn as the injection is made. As the pressure is felt beneath the fingers, molding and smoothing the surface begins. This should be continued throughout the operation, thus preventing the paraffin collecting in lumps, giving rise to an irregular surface. Ice cloths are applied for twelve to twenty-four hours, according to the amount of edematous swelling and inflammation which may immediately follow.

OZENA.

Up to the present time all theories on the etiology of ozena have been more universally criticised than accepted; neither has any treatment been brought forward which has established a place for itself. Grünwald² maintains that in most cases, if not in all, the cause is to be sought in some suppurating focus. The secretion is almost always fluid to begin with, generally inoffensive when fresh, but it may become dry from mechanical causes, the more frequent of which are a stickiness due to infection by the bacillus mucosus and an abnormally large nasal cavity. The atrophy, if there is anything more than lack of development, he considers due to infection and pressure by the crusts. The odor arises from putrefaction. In a general review of the subject of ozena, Barth³ points out that suppuration, especially in the accessory cavities, is usually found in adults, ozena in youth, and in the latter condition the patient is not aware of the characteristic odor, whereas in the former the opposite holds good. Brieger and Bosworth believe ozena to be the result of purulent rhinitis. Chauveau believes it to be a neuropathic degeneration, but this is more likely to be a result than a cause. E. Fränkel, Hajek, etc., have proved that the bacillus mucosus is accidental and has no etiolog-

ical significance. Zaufal declares that the cause of ozena is a rudimentary development of the inferior turbinate; as a result there is a loss in normal secretion and a lessening of its bactericidal power. The noses of cultivated people are usually well formed and narrow; those of negroes and European children wide and flat. In the latter case the type changes towards adult age, except in cases of ozena, where we have an arrest of development.

In regard to treatment, the first indication is the cleansing of the nose. Inserting foreign bodies, the use of diphtheritic serum, thyroid gland substance and electrolysis have all been tried, with but temporary benefit. An ingenious application of paraffin has been reported by Richard Lake, who injected paraffin submucously, thus making an artificial turbinate, by which the extreme breadth of the nasal cavity was reduced. Five minims were injected at weekly intervals, leading to a marked improvement in the local appearance and subjective symptoms.

AN OPERATION FOR THE CORRECTION OF DEFLECTED SEPTUM.

The operations introduced in recent years for the correction of deflected nasal septum may be classed under the heads of crushing, flap and resection. A method under the latter head has been developed by Kyle,⁴ which consists in removing a V-shaped piece, or a number of V-shaped pieces, not only from the cartilaginous, but also from the bony septum. In this way the redundant tissue is removed and the resiliency is broken. In order not to endanger the blood supply the incisions should be parallel with each other, and the V-shaped pieces removed should not include the mucous membrane of the opposite side. In certain deflections where the redundancy is excessive, a large V-shaped piece must be removed. While in nearly all cases it is necessary to make more than one incision, it is rarely necessary to make more than two V-shaped cuts. The other incisions in the septum should be made with the thin saw merely to lessen the resiliency and permit its being easily molded into shape. The length of the cut will depend entirely upon the extent of the deflection. This is also true of the V-shaped piece to be removed. A sufficient number of incisions should be made and sufficient tissue removed to allow the septum to be placed in line and supported there by means of the nasal tube.

There should be no pressure from this tube, as it acts merely as a support.

An instrument devised by Fetterolf⁵ often simplifies and shortens the operation very much. The instrument comprises the elements of both a saw and a file. The edge is curved and consists of a series of teeth, half of which cut when the instrument is pushed and the other half when it is pulled. With a finger in the concave side to act as guide, either one or two grooves are cut through the septum as far as the perichondrium of the opposite side. After the grooves are satisfactorily made, the Adams forceps is introduced and pushed to the floor of the nose. The lower fragment of the septum is broken from its basal attachment and twisted

² Arch. f. Laryngol. u. Rhinol., xiii, 2.
³ Fortschritt. der Med., No. 33.

⁴ Laryngoscope, August, 1902.
⁵ Amer. Med., March 1.

toward the opposite side. The other segments are then pushed over, and if two cuts have been made a slight amount of pressure with the finger will be sufficient. The operation is finished by the introduction of a tube.

THE IMMUNIZATION TREATMENT OF HAY FEVER.

Two years ago the ingenious attempt to establish an immunity against the irritating pollen of ragweed by previous internal administration of a decoction of the plant was suggested by Curtis and used by him in a few cases. In order to give this method of treatment a careful trial, Ingals⁶ gave to twenty patients who were sufferers from autumnal catarrh a combination of equal portions of a fluid extract of ragweed and of golden rod. The patients were directed to take a dose of the mixture about ten minutes before each meal and one at bedtime. The first dose was two minims, each succeeding dose was two minims larger, until an adult patient had reached the maximum dose of twenty minims of the combined fluid extracts. They were directed to continue for a week or two, providing it acted favorably. Then if no symptoms of the disease were present it was to be discontinued, but it was to be taken again upon the reappearance of any symptoms. A mixture containing resorcin and adrenalin as a spray was also prescribed. Eighteen patients thus treated reported the results as they had observed them. Of these, twelve believed that they were relieved by the internal remedies. In several cases as the symptoms subsided the medicine was discontinued, whereupon the symptoms reappeared, but again speedily disappeared upon recommencing the use of the medicine. Eleven were subject to asthma during the attack, and half of these reported benefit or entire relief from the asthmatic symptoms. The preparations used were hurriedly obtained, and the best method of giving them unknown, consequently the value of the method is as yet uncertain.

NERVES OF THE MUCOUS MEMBRANE IN CASES OF NASAL NEUROSES.

In two cases of marked nasal reflex neuroses Lewy⁷ found in the mucous membrane of the lower turbinate an extraordinarily large number of rather thick nerve filaments, just under the surface. The comparison of this mucous membrane with that from the same place in normal subjects was very striking. In both these cases the mucous membrane was removed because it was swollen, and in both the reflex disturbances were much relieved by the removal.

FIBROID TUMORS OF THE NASO-PHARYNX.

A proper description and classification of these tumors is uncommon in our textbooks of laryngology as well as of surgery. They are confounded with retro-nasal mucous polypi, which grow from the nasal fossæ into the pharynx, and with sarcomata. In an excellent paper on tumors of the nasopharynx, Quinlan⁸ separates and describes these

fibroids. The tumor is generally described as originating from the basilar process of the sphenoid, the upper cervical vertebrae, or the internal plate of the pterygoid process. While histologically benign, they are clinically malignant, from the tendency to recur. They tend to afflict youthful males. Their broad area of insertion is responsible for the numerous radical operations devised for their extirpation as well as the many methods of attacking them through the natural passages.

There is another type of naso-pharyngeal fibroid which agrees with the preceding in originating from the base of the skull and affecting young males by preference, but which differs from it in becoming stationary after a certain size is attained. The use of the term angioma is to be condemned; for while differences exist in the vascularity of fibroids, a true angioma in this locality is not recognized by pathologists. The procedures for the removal of these typical growths must all be regarded as merely palliative operations until it can be shown that recurrence has not taken place over a given period. The ultimate termination of these cases with or without treatment is seldom described.

These tumors are distinguished by unusual firmness of texture and breadth of attachment and from the fact that they stand in no definite relationship with the nasal fossæ. They need not originate from the base of the skull, for they have been observed to grow from the vertical column, pterygoid fossa, and in fact from all of the osseous structures which are in proximity to the naso-pharynx, save those which make up the nasal fossæ themselves. For their removal the forceps is now often distrusted by reason of the frequency with which accidents follow its use; the same is true of the hot snare. The cold snare has stood the test of time better than any other resource. Certain growths are, of course, beyond its reach. Typical fibromata may often be removed by simple snaring, while growths which are intrinsically much less formidable are sometimes unapproachable by this means.

THE FUNCTION OF THE PHARYNGEAL TONSIL.

The belief seems to be not uncommon that a pharyngeal tonsil large enough to be felt with the finger should necessarily be removed and that the presence of an "adenoid" implies a pathological condition. This is largely due to the fact that as yet no well-defined function of the lymphatic ring of Waldeyer has been discovered and that an abnormal condition of the ring, or parts of it, is a frequent source of disturbance. Brieger,⁹ in an exhaustive article, concludes that an enlarged pharyngeal tonsil is not of itself a pathological process. We do not find other lymphatic apparatus, such as the lymphatic glands, constant in number and size; they increase and decrease with the needs of the organism. The maximum development of the pharyngeal tonsil is found at the time of life when there is the greatest need of protection against bacterial infection. On the other hand, this increase in size, which in itself may be designed for protection, is often not only a mechanical obstruction, but it may be the cause of pathological processes. The pharyngeal tonsil disappears physiologically at an age

⁶ Journ. Amer. Med. Assoc., June 28.

⁷ Archiv. f. Laryngol. u. Rhinol., xii, 1.

⁸ Laryngoscope, November, 1902.

⁹ Fränkel's Archiv., Bd. xii, Hft. 2.

in which a certain immunity from diseases of childhood is established. From a therapeutic standpoint the removal of a pharyngeal tonsil for sufficient reasons should not be abandoned, because under normal conditions it has a protective function. The rest of the lymphatic ring will carry on the function. Also, as is shown by Goerke,¹⁰ there is in time a regeneration of glandular tissue, which under certain circumstances may be considerable, even after thorough removal of the adenoid. It should be emphasized that a large pharyngeal tonsil is not in itself sufficient cause for operation but any disturbance which can justly be considered due to the enlargement may demand its removal.

KERATOSIS OF THE PHARYNX.

Until recently the direct cause of the condition known as pharyngo-mycosis was supposed to be the growth of the *leptothrix buccalis*. During the last few years there is an increasing amount of evidence that the primary condition is a keratosis occurring especially in the different parts of the glandular ring of Waldeyer. This subject has been studied and well reviewed by Richardson.¹¹

The growth is most abundant on or about the tonsils or at the base of the tongue. It occurs most frequently in young robust adults without any constitutional disorders. Usually the condition is observed by the patient or his friends in an accidental examination of the throat. There is no febrile reaction nor disturbance of the general system. An interesting feature of the disease is its tendency to undergo spontaneous resolution, which occurs at periods varying from a few months to several years. Siebenmann showed the mass to be made up of a central narrow lumen, containing bacteria, detritus and mucus, surrounded by an epithelial wall, composed partially of layers of hardened, un-nucleated epithelial cells, and partly of a homogeneous horny substance. On the other surface of the quills which projected from the crypts were bundles of *leptothrix*. He states that the process is an unusually intense cornification of the lacunar epithelium, which terminates in quill formation. Keratosis of the tonsillar crypts, in a mild form, is not an unusual but rather a common condition, the presence of the *leptothrix* is an incidental one, and bears no relation as a causative factor, as it is present in every mouth and is usually deposited where the epithelial cells are thickest. On account of the discovery of sub-epithelial buds, the absolute demonstration of the epithelial formation of the quills showing only the manifestation of the spores on the outer surface, Siebenmann considers his case clearly demonstrated and desires that the name of the condition be changed to that of hyper-keratosis lacunaris. Several observers agree that there is a keratosis of the faucial and pharyngeal mucous membrane in the condition which is commonly known as pharyngo-mycosis. It is probable that the manifest changes begin in the sub-epithelial structures. The facts so far adduced, while they clarify the atmosphere somewhat as to the condition of keratosis, have not been of much material aid as to the etiology of this condition.

THERAPEUTICS OF LARYNGEAL TUBERCULOSIS.

In a series of lectures at the London Post Graduate College, Lake¹² covers in detail the subject of laryngeal tuberculosis. Under the head of medical treatment for the local disease he describes the remedies which he has found of use. The application of cocaine previous to the use of pigments should not be continued longer than is absolutely necessary. A weak solution, such as a mixture of cocaine and eucaine, each 10%, will satisfy all requirements. The most generally known of all pigments is lactic acid, in any strength from 5% upwards. It is recommended that 20% be used for the first few days, and that the percentage be rapidly increased, — every third day an increase of 10%. The indication that one has exceeded the limit of tolerance will be shown by an increase of edema in the larynx or the presence of edema. The only other fluid remedy of value is formalin. For general purposes it is better to commence with 1% and to proceed cautiously up to 10%, the limit of tolerance being shown by the same manifestations as in the case of lactic acid. The pain is more intense but of much shorter duration than that from lactic acid, and patients who have been treated with both give the preference to formalin. A combination of formalin and lactic acid has the advantages of both, and is superior to either used separately. The formula recommended is formalin 7%, lactic acid 50%, glycerine 20%, and water to 100%. With all solutions of formalin, whether in combination or otherwise, a relatively fresh preparation is necessary, formalin vapor being rapidly given off. Insufflations of powders are useful for home treatment. Iodoform, chinosol and paraform are remedial agents, orthoform is a local anesthetic. The author prefers 50% of paraform and 50% of orthoform. If one uses iodoform or chinosol it is sufficient to add only 25% of orthoform. For tuberculous trouble below the cords, and in the majority of cases of the cords themselves, no treatment has yielded such satisfactory results as that of injections into the trachea. The temperature of the injection should be about 90° F. The amount injected is immaterial, but should not be less than $\frac{1}{2}$ oz. In a large number of cases cocaine will be required. Any coal tar oil may be used, to this may be added 3% of naphthalin and $\frac{1}{2}$ % of oil of cinnamon. When there is swelling of the arytenoids and epiglottis, with or without ulceration of the false cords and of the inter-arytenoid region, one should confine the treatment entirely to frictions of the part with one or other of the pigments suggested. But if the ulceration is deep, or if the swelling of the false cords is of that form which points to perichondritis, paints should only be used as an adjunct to operative treatment.

THE CRICO-THYROID MUSCLE.

Barth,¹³ in a treatise on the function of the crico-thyroid muscle, concludes that this muscle in contracting generally pulls upward the cricoid and trachea. This can only take place if the thyroid cartilage is fixed, and this cartilage can only be fixed by simultaneous fixation of the hyoid bone.

¹⁰ *Ibid.*

¹¹ *Trans. Amer. Laryngol. Assoc.*, 1902.

¹² *Journ. of Laryngol., Rhinol. and Otol.*, February, 1902.

¹³ *Archiv. f. Laryngol.*, xiii, 2.

If the muscles which hold the hyoid bone are relaxed the crico-thyroid draws the thyroid cartilage downwards to the anterior rim of the cricoid, and at the same time the hyoid bone is drawn forward. This movement enlarges the diameter of the hypo-pharynx and the space between the base of the tongue and the palate, and increases the volume and resonance of the voice. When the muscles holding the hyoid bone are relaxed there is less muscular effort needed for the production of sound.

B BRONCHOSCOPY.

Recent advance in this subject is to be credited to Killian and to Eicken, assistant in his clinic in Freiburg. The latter reports in detail the removal of a collar button from a point deep in the left bronchus.¹⁴

Two attempts were made through the natural passages. In the first it was found that the insertion of the bronchoscope into the left bronchus shut off the air from the right lung. In the second attempt this was avoided by fenestrating the speculum. The foreign body could be seen but could not be seized. At the third operation the trachea was opened and the button easily removed with the aid of the short tracheoscope. In this case the foreign body had been in the bronchus four and a half months, the left lung was seriously affected and the patient failing. After its removal the patient finally entirely recovered. It is improbable that this button could have been reached in any other way. After being seen it would have been very difficult to seize it without the instruments at hand, which had been suggested by practice with the manikin. This manikin or model of the air passages was designed and recommended by Killian as an important supplement to the instruments for bronchoscopy, so that the surgeon may learn the technique of the operation in advance. Bronchoscopy through the larynx is necessarily a difficult matter, and is not applicable to all cases. Through a tracheal wound the foreign body has in most reported cases been easily seen, but as it may be friable or slippery it is not always easily seized, therefore a variety of grasping instruments should be at hand. This is the first case in which bronchoscopy has been attempted through the larynx in an adult under general anesthesia, although it has been successfully done with children. In addition to general anesthesia which must be deep, cocaine must be applied to the larynx and bronchi to prevent reflex cough. For removal through a tracheal opening a general anesthetic is often not required.

Reports of Societies.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

ANNUAL MEETING, Jan. 12, 1903, the president, ANDREW H. SMITH, M.D., in the chair.

DR. WILLIAM H. THOMSON read a paper on the

TREATMENT OF UREMIA.

He began by saying that correct physiology is an essential prerequisite of correct pathology. Path-

ology may be said to be physiology under difficulties, but it is physiology still. We must understand normal processes before we can hope to deal successfully with abnormal conditions. There is no organ, he went on to say, in regard to which so many undetermined questions confront us as the kidney. There are unsolved problems not only concerning renal disease, but also as regards the actual working of the organ in health. Experimental pathology has here presented to us a curious paradox: the more you remove of the kidneys, the more, apparently, will they excrete. Bradford found in dogs that if two thirds of both kidneys were cut away the animals got on very well, and that they passed both more urine and more urea than before the operation. If, however, three fourths of the kidneys were removed, they lived for some time, though dying eventually. But as long as they survived there were marked polyuria and increased excretion of urea, the muscles disintegrating into urea, and so passing off by the kidney. It would, therefore, seem as if a small part were greater than the whole. In explanation of the polyuria it is claimed that the glomeruli of the kidney are capable of draining off the entire serum of the blood, and would do so if the fluid were not reabsorbed. In cirrhotic kidney there is almost always considerable polyuria, and this is explained by the destruction of an extensive surface for absorption.

The increased excretion of urea when only one fourth of the kidney is left presents a more difficult problem. This is supposed to point to an unknown function of the kidney, by virtue of which the organ not only excretes urea, but regulates the production of the latter. Again, it would seem as if the excretion connected with inorganic substances is a much simpler matter than as regards the organic. But scores of animals have been sacrificed to find out why it is that the chlorides disappear from the urine in pneumonia, typhoid fever and other febrile diseases. Having referred to the experiments of Cushing, Sollmann and others, Dr. Thomson said that some writers had advised that in typhoid fever a large quantity of sodium chloride should be added to the patient's milk, and others a small amount, while still others thought there was no use whatever in giving any salt at all. There is a diversity of opinion, and as physiology is at fault, pathology must be more or less uncertain.

Clinical experience, however, certainly does furnish us with considerable definite information, so that the special conditions present in different diseases of the kidney can be recognized. To illustrate: Instances occur in which persons apparently in good health suddenly find that they cannot pass a drop of urine. Here there is obstructive suppression, and the cases are peculiar and distinctive. Some time ago he was called in consultation to see a healthy-looking German who had not passed a drop of water for eight days. The man was sitting up and quite comfortable. Except that he felt weak he said he would not know that he was ill. The attending physician, when first called eight days before, had used a catheter, without result, and he stated that the only thing abnormal he noticed about the patient was that the pupils were somewhat contracted. The pulse was not espe-

¹⁴ Beiträge zur klin. Chir., xxxiv.

cially tense and there was no headache or any other of the ordinary symptoms which might have been expected in such a case. On inquiring into the previous history, it was found that thirteen years before, the patient, who had been a great drinker of beer, had been attacked with severe pain in the left flank and with high fever, which lasted for three weeks. Soon afterward he found that he could not pass his water. The pain he described as of exactly the same character as that which preceded the present suppression, the latter being situated, however, on the right side. The explanation was that this was one of the rare cases of obstructive suppression. The only hope for the patient was to operate immediately, cutting down upon the ureter, which was unquestionably choked by a calculus. From the history it was evident that the left kidney had been obliterated by an obstructive stone or stones, thirteen years before, so that he had only one kidney left. The attending physician asked why symptoms of uremia were not present, and Dr. Thomson told him that unless an operation was performed the patient would die without a symptom. Death would result from asthenia, and there might perhaps be a little twitching of the muscles, but nothing more. The operation was declined, and two days afterward the man died in the manner he had described—by his strength giving out. Here there was no clinical history of the kind attributable to uremia. In the latter the condition is wholly unlike that seen in cases where the urine has been suddenly and totally suppressed. They differ as much as morphine poisoning differs from atropine poisoning.

A careful study of uremia suggests the presence of more than one poison to produce the different symptoms noted, each having its peculiar and characteristic effects. Having referred to choline and neurine (the latter being much the more virulent of the two), he said that in the case of uremic poisoning he thought there was one toxin which could be specially recognized by certain special symptoms. To illustrate its manner of action he related the case of a lady, sixty-two years of age, whom he saw in consultation with Dr. Alexander Travis. When rising from the table on one occasion, she was seized with a faint feeling, and fell to the floor. After being placed in bed she suffered from great restlessness and from headache, and was unable to raise her head without experiencing vertigo. An examination of the urine showed a little albumin and the presence of fatty and hyaline casts. She had a high tension pulse, and the heart was extremely weak. The first sound was muffled and the second sound accentrated, while the left ventricle area of dullness was increased in size. There, then, was a dilated and much enfeebled organ. Heart stimulants of every variety were administered, and also sodium iodide in small doses, but without any beneficial results, and at the end of two months the patient seemed to be losing ground. She had a considerable amount of gastro-intestinal disturbance, and suffered from a feeling of numbness. An offensive odor was also exhaled from her body. The daily output of urea was only 120 gr. or about 8 gm.

She was then placed upon tincture of aconite, five drops every three hours continuously. At the time

that this was commenced the patient could not be turned in bed without great distress, but in a few days her improvement was very perceptible. The daily output of urea soon rose to 480 gr., and the character of the heart's action became very much better. Within a week she sat up in bed (supported by a bed-rack) for ten minutes. The aconite was kept up for six months, during which time she continued to improve; and once she drove twenty-five miles. Twice during that period the aconite was reduced, but each time there was a return of the previous symptoms. At the end of the six months the nitrites were used in place of aconite for one month, erythrol tetranitrate being selected as having a more prolonged action than nitroglycerin. She began to fail again, however, and the output of urea went down to 150 gr. Accordingly, the aconite was resumed, and again the heart action improved, while the daily amount of urea excreted increased to 450 gr. At the end of four months more the remedy was discontinued, and, under a carefully regulated mode of life, the patient has since steadily improved.

In a large number of cases of kidney disease there can scarcely be a question that there is circulating in the blood a specific poison which is identical with the natural secretion of the suprarenal glands. The result of its action is that the heart hypertrophies, then dilates and then fails. According to Dr. Thomson's observation, aconite is by far the most valuable of all remedies for dilating arterioles. For this purpose it is superior to the nitrites, whose operation (even that of erythrol tetranitrate) is very evanescent. On the other hand, aconite is certain to exert its full effect, and this generally lasts about three hours. In this case he believed the heart was dilating and failing simply from overwork against the general arterial contraction.

It was his opinion that it was a similar or identical poison with which we were confronted in some great emergency, such as puerperal convulsions. There is, however, another element; namely, violent action on the part of the heart from excessive high tension in the arteries. In health there is a beautiful mechanism by which, whenever the tension rises, the vagus is stimulated to slow the heart; but in convulsions the inhibitory function of the vagus is completely unbalanced. Should this continue, the intra-cranial pressure becomes so great that a *status epilepticus* sets in. Undoubtedly one of the best remedies for this condition of affairs is venesection. If bleeding is objected to, veratrum viride may be employed as a substitute for this, and it should be given according to the symptoms present and the effect produced, and not simply in regulation doses. In cases of this kind aconite is too slow in its action, and it does not have the desired effect on the splanchnic area. Of veratrum viride it has been remarked that it bleeds the patient into her own veins.

The pathology of puerperal convulsions has been the subject of much speculation. By some it is claimed that in normal pregnancy there is always an increased secretion of the thyroid gland, and that in the cases in which this does not occur convulsions are likely to result, as the condition which leads to the production of eclampsia is due to a deficient thyroid secretion. Dr. Thomson said he did

not incline to this view, for the reason that we have the same phenomena sometimes presented in alcoholism in males. As an instance of this he mentioned a case which he had seen in consultation with the late Dr. Pallen. The patient had taken an enormous quantity of brandy within twenty-four hours, and for ten hours had been in convulsions. When seen he was comatose. The tongue was bitten, and the status epilepticus was extreme, while the pulse was of the same character as that met with in puerperal eclampsia. Bleeding was advised, but as this was deemed objectionable, 20 drops of tincture of *viratrum viride* were given every fifteen minutes, so that in four hours $2\frac{1}{2}$ dr. had been taken. The effect of the drug was watched very carefully, however, and the case ended in recovery.

In speaking of the effects of the arterial ischemia he said that in puerperal and alcoholic convulsions, due to the presence of a toxin, one thing was very noticeable — the difference between the cyanosis met with and ordinary cyanosis. In the latter the blueness of the surface is dependent upon universal congestion of the vessels, while here it is due to enlargement of large veins. There are a number of conditions of high arterial tension in which aconite must be given with considerable caution. In arteritis obliterans no vaso-dilator can be of much use; therefore when we have senile heart with rigid arteries such agents should be given only under special circumstances. Thus, if the pulse is rapid, as well as of high tension, aconite may be administered until the pulse comes down to 80, when it should be discontinued. He alluded here to a very common class of cases which are characterized by diminution of urea elimination, and yet in which we should never think of giving aconite; cases in which the patients complain of a great variety of symptoms which are extremely puzzling.

Two illustrative cases were described. One was that of an elderly gentleman who nine months before coming under observation began to lose weight. He suffered from a tingling in the legs below the knee, vertigo and a species of hypochondriasis, and insomnia which was followed by overpowering drowsiness. The other was that of an army officer who, during the Cuban campaign, had malarial fever, with colitis. Later, in Ecuador, he had an attack of rheumatism. He had delirium and was comatose for two weeks. For six weeks afterwards he suffered from headache and a continuance of general rheumatic symptoms. Dr. Thomson's experience has taught him that when a great variety of anonymous nervous symptoms are complained of, especially in men, it may generally be safely concluded that there is present a toxemia of either gastro-intestinal or renal origin. The daily output of urea should therefore always be investigated in such cases. In one of these patients the urea excreted, instead of amounting to from 25 to 30 gm., was barely 13 gm., and in the other, only 15 gm. These cases are very common. In both the patients referred to the pulse was weak and of high tension, but in other respects their symptoms were totally unlike. Within six months both men had successfully passed an examination for life insurance. Such cases are quite common, and are nearly always of gastro-intestinal origin. They occur also in women, but in them this trouble is generally pro-

nounced to be hysteria. Yet he believed in many instances renal inadequacy was present.

In speaking of acute nephritis he said that the typical form of the affection was the scarlatinal. Here are met the same kind of anomalies as in the chronic disease. There is no relation whatever between the severity of the scarlet fever and that of the nephritis, so that the lightest cases of fever may be followed by the most grave kidney disease. Nor does the desquamation apparently have anything to do with the nephritis. There is not much that can be done in the way of prophylaxis, though the oiling of the skin may perhaps do some good. When nephritis has developed, the first danger signal is to be found in a diminution in the excretion of urea and a fall in the specific gravity of the urine. These occur before any albumin or casts make their appearance. When nephritis has once declared itself the treatment ought to be very energetic. Dr. Thomson believes that the most certain of all diuretics is the thorough douching of the rectum with three gallons or more of hot normal saline solution (at a temperature of 115° F.). For this purpose Dr. Robert C. Kemp's rectal irrigating apparatus will be found very satisfactory. There seems to be a very close association between the kidneys and the bowels, so that the evacuation of the latter is almost invariably accompanied by the voiding of urine, even if the bladder has been emptied but a short time before. In scarlatina probably the best prophylaxis against both severe fever and nephritis is a nightly dose of calomel. He did not think we need ever despair of a case of scarlatinal nephritis, and mentioned one in which recovery took place after the patient had actually been pronounced dead. The treatment was commenced by touching the skin in the region of the kidneys with table-spoons taken out of boiling water, after the method suggested by Brown-Séquard, and on the seventh application the child opened its eyes.

In chronic interstitial nephritis the occurrence of uremic convulsions is not infrequently the first announcement that the patient is the subject of Bright's disease. On the other hand, many individuals who are known to be suffering from this affection get along very comfortably for a considerable length of time, when suddenly very serious developments take place. This sudden change in the course of the disease is undoubtedly due to the introduction of a new element; namely, the invasion of the kidneys by one or more forms of bacteria, especially the colon bacillus. Having had polyuria for months, they find themselves passing but little water, and then none at all; the condition being virtually the same as in acute scarlatinal nephritis with suppression. It is on this account that Dr. Thomson always dreads attacks of so-called cholera morbus in elderly persons. In cases characterized by such symptoms as mental cloudiness, uremic asthma and Cheyne-Stokes breathing, he has often been able to ward off trouble by securing free action of the bowels, followed by diuresis. For these purposes he gives a calomel cathartic, and afterwards 10 gr. of urotropin, with 10 gr. of sodium benzoate every two or three hours. He has never seen any bad results from urotropin when thus associated with the sodium salt.

The prognosis of interstitial nephritis is always

uncertain, as we can never feel sure how much working kidney the patient has left. The diet is a matter of great importance. The quantity of highly nitrogenous food consumed, especially red meats, must be limited. In health the kidneys after a hearty meal excrete more urea than usual. There appears to be normally a balance in the system, so that an increased intake of food is offset by an increased excretion of urea. If the kidneys are diseased, however, this balance is interfered with, and thus it is that we so frequently find attacks of apoplexy following upon Christmas and Thanksgiving dinners. Another thing that must be taken into account is the different state of affairs at different hours of the day. In all cases of Graves' disease, and often in melancholia and various other affections, the patients are worse in the morning, while the first attack of gout or of peptic asthma often occurs after midnight. In regulating the mode of life of those past middle age who have rigid arteries and a high-tension pulse, it should be advised to avoid hearty meals at night.

He thought it unfortunate that two such different affections as chronic parenchymatous nephritis and chronic interstitial nephritis should go by the common name of Bright's disease, as he did not know of any two diseases affecting the same organ which differed so greatly. While the former occurs more frequently in the young than the old, and often in children, chronic interstitial nephritis is almost invariably met with in middle and advanced life. In the interstitial form of renal disease the albumin in the urine is small in quantity, and not infrequently absent, and constitutes an insignificant feature, while in the parenchymatous it is constant and abundant. In the one the patient is never waterlogged, except when the dropsy is due to cardiac complications, while in the other such a condition is a striking and marked characteristic; so that the two classes of patients present a totally different general appearance.

As diverse as the clinical phenomena observed are the pathological changes in the kidneys themselves. In the large white kidney the capsule can be stripped off as readily as the peel of an orange, while in the small, contracted kidney the capsule becomes so firmly adherent as to appear to form a part of the tissue of the organ. In parenchymatous nephritis the glomeruli are squeezed and pressed together, and the tubules are clogged with an accumulation of debris of all kinds. While we do not understand just how the dropsy accompanying this condition is produced, we readily appreciate that we have here found a blocking up which bears all the marks of a mechanical obstruction capable of neutralizing all our therapeutic endeavors. What we seem to lack in the kidney is a double blood current, such as is met with in the lungs. In this organ we have the renal artery, and that alone, and it therefore appears to be the part of the physician to invoke the aid of the surgeon to try to establish here a means, such as is provided by nature in the lungs, and is of such great practical service, for carrying away the products of inflammation. Through the method of Dr. Edebohls we seem to have a mechanical means for accomplishing this, the agency of the peripheral arteries of the kidney being by it brought to the assistance of the embarrassed circulation of

the organ. This operation would appear to be of extreme value if it proves as serviceable in its practical application as it is admirable in theory. Hitherto the treatment of chronic parenchymatous nephritis has remained one of the most disappointing in the whole realm of medicine. While we can call upon the skin and the bowels to act vicariously for the kidneys, we find, after all, that we do not make much headway. Some cases get well, it is true, but whether through our efforts or of themselves, we can hardly say. As to the production of albuminuria, one observation by Overbach is certainly very suggestive. The simple clamping of the renal arteries in dogs for forty minutes was followed by albuminuria, which lasted for twenty days. The pressure effects of an inter-cellular exudation upon the glomeruli would seem to induce virtually the same condition, an arterial ischemia, and thus explain the albuminuria which is present. In the amyloid kidney there is a mechanical interference from another source, but which acts in the same way as the inflammatory exudation. Finally, we find that however diverse the various diseases of the kidney may be in their pathological features and clinical history, in the end they tend to converge, all alike producing one common result, uremic poisoning.

Recent Literature.

A Text-Book of Anatomy. By American Authors. Edited by FREDERIC HENRY GERRISH, M.D. Professor of Anatomy in the Medical School of Maine, Bowdoin College. Second edition, thoroughly revised and enlarged. In one imperial octavo volume of 943 pages, with 1,003 engravings in black and colors. Philadelphia and New York: Lea Brothers & Co., Publishers. 1902.

This book, which at once came into popular favor, has reached a second edition in about two years. In view of the fact that there was no positive need of a new anatomical text-book of this size and general character, it is the more remarkable that this should so soon have established a place for itself as a rival of its older and eminently trustworthy companion—Gray. The reasons for its popularity apparently lie in the facts that it is written in a concise fashion, omits a quantity of details which have no practical bearing on the everyday work of the surgeon or physician, and that it is admirably printed and sumptuously illustrated. It is therefore readable, easy for purposes of reference, and makes an appeal to the reason through the eye, which is always a valuable attribute of a book of this sort. In other words, it admirably fulfils the purpose for which it is designed as an aid to elementary students of anatomy, whether undergraduates or practising physicians. It is in no sense to be regarded as a contribution to anatomical science, as such. Certain changes and additions have been made in this edition, tending toward the simplification of the study of anatomical facts, among the most noteworthy of which is the representation on the bones of muscle attach-

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233 WASHINGTON STREET, BOSTON, MASS.**PROPOSED SANITARY LEGISLATION IN
MASSACHUSETTS.**

THE annual grist of legislative bills, submitted to the General Court of Massachusetts for its consideration, culminated in the last week of January with an avalanche of new propositions, good, bad and indifferent.

In recent years almost every new legislator goes up to Beacon Hill with the notion that his mission is not accomplished until he can call himself the father of some new statute. There is also a large army of faddists, old and new, some with philanthropic and some with mercenary schemes, clamoring for legislation, some of which is of the most impracticable sort, while a few measures are of real value. To separate the wheat from the chaff will occupy the remaining months of the legislative session.

First upon the list comes House Document No. 87, to prevent cruelty to animals. This is plainly another attempt of the anti-vivisectionists to secure legislation, an additional inducement being inserted in the shape of a clause exempting the State Board of Health from the action of the law.

No. 111 is the Report of the State Board of Agriculture upon production of vaccine lymph at the Massachusetts Agricultural College. This proposition only needs full and free discussion to show its absurdity.

No. 134 is a bill to provide medical examiners for the public schools. It requires that "in every city and town there shall be one or two doctors of medicine, graduates of some reputable medical school, who shall serve as medical examiners, and shall examine the school children as often as the school committee shall direct."

This bill was drawn with good intent, but needs revision, since there are at least fifty small towns

in which there is no physician, and it is difficult to see how such a measure could be made to apply to them. It is, however, practicable to secure legislation which would make the excellent plan which Dr. Durgin inaugurated in Boston several years ago a legal requirement in all our cities and larger towns.

No. 167, introduced by a well-known Boston druggist, appears to be intended to secure "the highest comfort and safety in anesthesia." It provides that "any one giving an anesthetic in such a manner as to interfere with the uniform, natural supply of fresh air, with each inspiration of the anesthetic, shall be held responsible for any ill results attending such use."

John N. McClintock appears to be the father of a bill (No. 268) "to deprive the State Board of Health of authority to approve land for sewage disposal."

House Bill No. 316 introduces a proposed act to regulate plumbing, and give the State Board of Health power to appoint a committee to attend to the matter.

No. 329 is a bill to give power to the State Board of Health to produce and to distribute anti-toxin and vaccine lymph.

No. 332 is a bill to regulate the sale of oleomargarine and renovated butter, as if this much-abused but good and wholesome article of food was not already hedged about by a sufficiency of laws and of officials. There are already in the city of Boston four different sets of officials having power to enforce oleomargarine laws, namely, the United States Revenue officials, the inspectors of the State Board of Health, the inspectors of the Dairy Bureau and the city milk inspector. Such redundancy of legislation is inspired more by the interests of a few producers than of the multitude of consumers.

House Bill No. 425 is entitled a bill to establish a Department of Food and Drug Inspection under the State Board of Health. Reading between the lines, however, the last section appears to provide for the abolition of the Dairy Bureau.

Bill No. 485 provides for the marking of carcasses and the inspection of certain domestic animals.

No. 486 is another bill resulting from the perennial baking-powder war.

No. 487 provides for the expenses of small-pox patients in cities and towns, a subject in regard to which there has been occasion for lively discussion during the past year. It limits the expenses payable for the care of such patients to \$35 per week.

No. 514 provides for raising the age of persons

to whom the sale of cigarettes is forbidden, from sixteen to twenty-one years.

No. 695 requires the State Board of Health to investigate the dumping of garbage into the harbors and along the seacoast of the State.

No. 696 provides for the ventilation of theaters and places of execution of the law in charge of the State Police.

By the provisions of Bill No. 697, its introducer would prohibit the use of slot-machines, on account of their supposed tendency to spread disease.

Nos. 698, 699, 700 have for their object to repeal the vaccination laws, "to prevent persons from being vaccinated against their will," and to provide compensation for injury caused by vaccination.

No. 701 provides for the keeping of records in all cases of smallpox and of vaccination. Records of smallpox are already provided for, but there is no legal requirement for records of vaccination, and herein our legislation is decidedly lacking. Such records are required everywhere in civilized European countries, and constitute a fund of information which is exceedingly valuable.

No. 702 provides for the labeling of poisonous cosmetics. Bills have also been introduced in the Senate as follows: Senate No. 45, to require the removal of old wall paper in tenement houses before new paper is applied. No. 64 establishes a board of embalming examiners. No. 103 is intended to require persons intending to take ice from new sources to be licensed by the State and local boards of health.

TWO BOSTON CITY HOSPITAL PUBLICATIONS.

THE thirteenth series of the "Medical and Surgical Reports" of the Boston City Hospital has recently appeared, under the editorship of Drs. H. L. Burrell, W. T. Councilman and C. F. Withington. This publication has, no doubt, become familiar to a wide circle of readers during its existence, which is now considerably more than a decade. There has been no falling off in the character of the papers presented, and each new series offers contributions of positive theoretical and clinical value. The subject of bone anomalies has gained a new interest since the practical application of the x-ray, a fact of which Dr. F. B. Lund takes excellent advantage in his paper on "Congenital Anomalies of the Phalanges Studied by Skiagraphy." Crandon's investigation on the "Prostate" and Monk's and Blake's paper on the "Normal Appendix" should be widely read, and a large number of clinical and pathological papers

all have a more than usual interest. In general, this number of the "Reports," like many of its predecessors, is a good example of what a hospital can do through its medical staff toward making positive additions to medical knowledge as well as caring for the sick. It is always a matter of regret that contributions of this character should not be readily obtainable as a volume.

The thirty-eighth annual report of the hospital from Feb. 1, 1901, to Jan. 31, 1902, which has also recently appeared, is a volume of 216 pages, containing many facts and statistics which are of interest as indicating the extent to which this great municipal charity has grown. The report of the South Department shows that although this part of the hospital was originally intended for 240 patients, the actual number during the past year has ranged for continuous months from 146 to 318, and 209 applicants were rejected during the year because of the overcrowded condition of the wards. Measles, for example, it has at times not been possible to treat at the hospital, on account of lack of space. It is certainly desirable that further accommodation should be provided for these infectious diseases. As soon as patients with such diseases are thrown back upon the community in any number, the object for which the South Department exists is defeated. The trustees urge that an additional building for the treatment of measles be constructed.

The most notable addition to the buildings of the hospital during the year was the Relief Station in Haymarket Square, which was completed, and is now in active service. The report is, as usual, largely taken up with medical and surgical statistics, which are classified with evident care by a fixed system, and therefore are of positive though of necessity somewhat uncertain value. It is at any rate a satisfaction to see the increasing care which this and other large hospitals are taking to render their statistics practically serviceable. One method of accomplishing this result is to have a fixed system of classification, which does not admit of individual caprice. Such a classification the City Hospital has apparently adopted.

NEW YORK STATE MORTALITY STATISTICS FOR 1902.

THE mortality bulletin for 1902 of the State Department of Health, issued Feb. 1, gives some interesting statistics. The congested districts do not show such a greatly increased mortality over rural districts as is generally supposed. This may be seen in the following table:

| Districts. | Urban Death-rate. | Rural Death-rate. | Death-rate for District |
|-----------------------|----------------------|----------------------|----------------------------|
| Maritime | 18.7 | 18.5 | 18.6 |
| Hudson Valley | 18.0 | 15.0 | 16.5 |
| Adirondack & Northern | 15.0 | 12.0 | 13.5 |
| Mohawk Valley | 19.0 | 13.5 | 16.25 |
| Southern Tier | 15.0 | 13.0 | 14.01 |
| East Central | 14.0 | 14.0 | 14.0 |
| West Central | 15.5 | 13.0 | 14.25 |
| Lake Ontario & West'n | 14.6 | 13.5 | 14.0 |
| Entire State | 17.5 | 15.5 | 16.5 |

In the Maritime District, which includes the city of New York, the population is 1,728 to the square mile; in the Lake Ontario and Western, the second most populous, it is 200 to the square mile, and in the Adirondack and Northern, the least populous, 26 to the square mile. The total number of deaths was 5,753 less than in 1901, and the death-rate for the entire State 1% less. The greatest decrease was in the winter months, though the midsummer mortality was also unusually low. The number of deaths among infants and young children was 31,215, which was 4,560 less than in 1901, and 4,820 below the average for the five years previous. The old age mortality (seventy years and upward) decreased from 22,233 in 1901 to 20,700 for 1902, the average for the five years previous being 20,050. While the Maritime District is the least healthful for the infant, it shows very markedly the best results for age. In it the percentage of deaths in persons of seventy years and over was only 10, while in the eight other districts the percentage was, respectively, 22.5, 29, 26.5, 31, 30, 35.5, 22.5 and 17. The percentage of deaths under five years of age was, in the Maritime District, 34.8, and in the others, respectively, 19.5, 16.7, 21, 17, 16.5, 13.3, 23.8 and 25.3. The Maritime District naturally leads in mortality from zymotic, diarrheal and acute respiratory diseases, as well as from pulmonary tuberculosis. In the entire State the number of deaths from acute respiratory diseases (the largest from any one class of affections) was 16,986; those from diseases of the nervous system (the second largest), 12,964, and those from diseases of the circulatory system (the third largest), 12,889. The total number of deaths from pulmonary tuberculosis was 12,582. There were 7,058 deaths from accident and violence, 4,990 from cancer and 4,949 from simple old age. The latter number is 635 below the average for five years. The largest number of deaths from croup, diphtheria, diseases of the circulatory system and acute respiratory diseases occurred in the month of January; from measles, in February; from pulmonary tuberculosis and puerperal diseases, in March; from diseases of the nervous system, in April; from scarlet fever, in May; from whooping cough and from accidents and violence, in July; from diarrheal diseases, in

August; from old age, in September; from typhoid fever, in October, and from cancer, in November. The last annual report of the New York Association for Improving the Condition of the Poor shows the continued and increased success of the plan inaugurated a few years ago of providing for as many of the city's foundlings as possible, either by securing their adoption or by paying for their care in trustworthy families. The number of infants thus cared for has been gradually increased, and the figures presented are as gratifying as they are remarkable. Four years ago, it is stated, nearly six died out of every ten at the Infants' Hospital on Randall's Island, from which the children were taken. At first the infants were already weakened by institutional life, and in 1899 nearly 55.9% of those boarded in families died. During the next two years this percentage was reduced successively to 31.1 and 18.9, and in 1902 it was only 10.7, a rate actually lower for the foundlings than for all infants and young children in Manhattan.

A TYPHOID EPIDEMIC AT ITHACA, N. Y.

It is reliably reported that typhoid fever has appeared in Ithaca, N. Y., and has spread to such a degree that there is at present an epidemic of about four hundred cases, and this out of a population of 13,000 people. Such a statement seems wholly out of accord with the present state of medical and sanitary progress. Ten or fifteen years ago we should have regarded an occurrence of this sort with a certain amount of equanimity, but now with the exactitude of our knowledge regarding the means of transmission and spread of the disease, it seems almost incredible that an epidemic of this size should arise in any civilized community, conversant with ordinary hygienic laws. When we consider further that Ithaca is a city of exceptional intelligence, that it harbors a university, which in turn supports a medical school, and that the source of infection apparently is a polluted water supply, it is hard to be lenient in our judgment. Certainly there is no possible excuse for such carelessness as an outbreak of typhoid fever implies. No doubt the blame will be shifted from person to person or from one city department to another, but the fact remains that some one is to blame who should be held strictly responsible. It has come to be almost an aphorism that a typhoid epidemic is a crime committed by some person or persons to whom censure or punishment should be meted out in proportion to the degree of their criminal negligence. The community certainly has the right to make such a demand.

MEDICAL NOTES.

RECOVERY FROM GUN-SHOT WOUND OF THE HEART. — A patient who had recovered from a gun-shot wound of the heart was presented by Drs. H. L. Niebert and L. Rassieur, at the last meeting of the St. Louis Medical Society of City Hospital Alumni, and the case reported.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Feb. 11, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 34, scarlatina 27, typhoid fever 8, measles 11, smallpox 5.

NEWTON HOSPITAL. — At the meeting of the Newton Hospital recently held, Mr. J. R. Leeson was again chosen president of the Board of Trustees. The report made at the meeting showed the hospital to be in a flourishing condition and to have had a satisfactory year, during which 824 patients had been cared for.

ANNUAL MEETING OF THE MASSACHUSETTS GENERAL HOSPITAL. — At the annual meeting of the Massachusetts General Hospital recently held, the following officers were elected: Charles H. Dalton, president; Francis C. Lowell, vice-president; Franklin Haven, treasurer; Thomas B. Hall, secretary; Francis H. Appleton, Francis Blake, Charles H. W. Foster, Francis L. Higginson, Nathaniel Thayer, Henry P. Walcott, George Wigglesworth and Moses Williams, trustees on the part of the hospital. Governor Bates appoints four trustees to represent the State on the board.

BOSTON CITY HOSPITAL ALUMNI ASSOCIATION. — This association, composed of physicians who have graduated as house officers at the Boston City Hospital and containing now about 300 members, held its annual meeting and dinner at the Somerset Hotel, Tuesday evening, Feb. 10. One hundred and twenty-five members were present. The following officers were elected: Charles P. Bancroft, M.D., Concord, N. H., president; Chauncey C. Sheldon, M.D., Lynn, Mass., vice-president; William H. Robey, M.D., Boston, secretary; William H. Prescott, M.D., Boston, treasurer. Eighteen new members and 72 associate members were elected.

Dr. Henry R. Stedman presided, and presented the following speakers: H. H. Sprague, Esq., a trustee, W. H. Sayward, Esq., Dr. George B. Shattuck, Dr. C. Ellery Stedman, Dr. C. F. Withington, Dr. J. W. Courtney and Dr. C. P. Bancroft. Dr. H. R. Stedman and Dr. Bancroft made a plea for the establishment of a ward for the acute psychoses

in connection with this general hospital. The occasion was regarded as a particularly successful and agreeable one.

NEW YORK.

WARRANTIES IN LIFE INSURANCE POLICIES. — The Third Appellate Division of the New York Supreme Court has decided, in an action against the Metropolitan Life Insurance Company, to recover on a life policy, that where such a policy makes the application for insurance a part of the contract and the answers by the insured to the medical examiner are warranted to be true, a false answer, even though immaterial, will make the policy void. On the trial, testimony was introduced which tended to show that the insured falsely stated that he had had no medical attendance since childhood. A physician was called, however, who testified that he had professionally treated the deceased for several years to the date of the policy. The trial court left it to the jury to say that if they found that this physician had attended the insured, whether that was a material fact or a breach of the warranty. A judgment for the plaintiff (the wife of the deceased), on a verdict in her favor, has been reversed, the Appellate Court holding that the trial justice, in charging as he did, committed a manifest error. In the course of his opinion Justice Parker, speaking for the court, said: "Assuming, as we must, that the statements so made by the deceased were warranties, and not mere representations, it was not within the province of the jury to determine whether they were or were not material; nor was there any question for a jury as to whether, if any such statements were untrue, there was or was not a breach of the warranty contained in the contract." He also said that "whether or not such statements were warranties within the terms of the contract, was a question of law for the court."

A ROCKEFELLER LABORATORY. — It is stated that Mr. Rockefeller has recently made a large special donation for the establishment of a laboratory in New York in connection with the Rockefeller Institute for Medical Research, and that a formal announcement concerning it will shortly be made by Dr. L. Emmett Holt, the secretary of the Institute.

TENEMENT HOUSE LEGISLATION. — At the New York Academy of Medicine on Feb. 5, Dr. S. A. Knopf read a paper on "The Care and Treatment of Consumptives at Their Homes, and the Urgent Need of Local Sanatoria," in the course of which he said: "In Manhattan there are 200,000 and in Brooklyn 125,000 interior rooms without a vestige of light or ventilation. Every one of them constitutes a menace to the public health, and yet an at-

tempt is now being made to induce the legislature to aid greedy contractors to erect tenements without light or air — veritable breeding places for consumption. If they succeed, then every one concerned should receive the just condemnation of every citizen in the land." Dr. Knopf introduced a resolution which was adopted, deploring any weakening of the present tenement house laws and urgently requesting the legislature to permit no changes to be made that will in any way decrease the amount of light and air available for the people living in such houses, or in any way to take a backward step in regard to their sanitary condition. Among those who spoke on this occasion were Drs. E. G. Janeway, H. M. Briggs, H. P. Loomis, Alfred Meyer and Beverly Robinson. Resolutions were also adopted which criticised the legislature for its delay in appropriating funds for the State sanatorium in the Adirondacks, and the city authorities for failing to bring the proper pressure to bear on the legislature.

TYPHOID AT ITHACA. — On Feb. 7 it was reported that 400 cases of typhoid fever existed in Ithaca, N. Y., and that the disease was still spreading. An analysis by Professor Charnot of Cornell University is said to have shown contamination of the drinking water.

BUBONIC PLAGUE. — The three seamen who were under treatment in the Swinburne Island Hospital for bubonic plague have all been discharged cured, and no other cases of the disease occurred among the members of the crew who were detained for observation. On Feb. 2 a resolution was adopted by the State Assembly calling upon the State commissioner of health to report to it the part taken by him in the recent conference at Washington and the plans adopted or proposed to be adopted to prevent the introduction of bubonic plague into the State of New York.

MORTALITY IN NEW YORK CITY. — The mortality in the city in the month of January represented an annual death-rate of 19.32, against 17.48 in December and 20.37 in January, 1902. The corrected death-rate, excluding non-residents and infants under one week old, was 18.31. Among the diseases which showed an increase in fatality were the following: The weekly average of deaths from diphtheria and croup increased from 47.50 to 49.75; of deaths from scarlet fever, from 10 to 14.75; from measles, from 6.75 to 7.75; from whooping-cough, from 3.75 to 9; from pneumonia, from 123.75 to 242.75; from pulmonary tuberculosis, from 145 to 169.5; from influenza, from 3.75 to 5.25; from cancer, from 45 to 54.75; from diseases of the urinary system, from 116.75 to 134.75, and from diarrheal dis-

eases, from 32.5 to 35. Smallpox has again appeared in the vital statistics as a cause of death; and two deaths from it were recorded during the month. The last death from smallpox previously reported was in the week ending Nov. 8. The weekly average of deaths from typhoid fever declined from 17 to 8.75, and from bronchitis, from 42.75 to 37.

Obituary.

JOHN HOMANS, M.D.

DR. JOHN HOMANS died at his home in Boston on Saturday, Feb. 7, in the sixty-sixth year of his age. He had been confined to his house for scarcely two weeks. Within three weeks of his death he had been attending to some of his professional duties and had been present at the regular dinner of an army dining club, where he was the life of the occasion. And yet for a number of years Dr. Homans had been conscious of several physical disabilities, any one of which would have ordinarily sufficed to depress or invalid a person of a less cheerful and courageous temperament. He was born in Boston, Nov. 26, 1836. His grandfather, of the same name, was a graduate of Harvard College, 1772, and an army surgeon during the War of Independence; his father, of the same name, was a graduate of Harvard College, 1812, and practised medicine in Boston. His nephew, whose death occurred less than a year ago, also bore the same name, and was a prominent practitioner of medicine. There have, therefore, been four representatives of the medical profession of this same name in this neighborhood within the last century and a quarter.

Dr. Homans graduated from Harvard College in 1858, and received his M.D. degree from the Harvard Medical School in 1862. The same spirit which inspired his grandfather in 1776 impelled him, at the outbreak of the Civil War in 1861, to offer his services to the Government. He was at that time a surgical house officer in the Massachusetts General Hospital, and had not yet taken his medical degree. In January, 1862, he was commissioned an assistant surgeon in the United States Navy, and served on the gunboat "*Arctostook*" during the search for the disabled U. S. S. "*Vermont*," in Hampton Roads, and later on the James River, during McClellan's campaign. He was at the battles at Fort Darling, Va., and at Malvern Hill. In November, 1862, he was given a commission as assistant surgeon in the regular army. He was at New Orleans, and later, on the staff of General Banks, took part in the disastrous Red River expedition. Those of his friends who were fortunate enough to have heard his informal accounts of that ill-advised expedition and of the search for the "*Vermont*" will not soon forget them. As side lights upon much that passes for history they were instructive as well as entertaining. Subsequently he was ordered to Washington, and held various surgical appointments in connection with the Army of the Shenandoah. He was surgeon-in-chief of the first division of the Nineteenth Army Corps, was present at the battles of Winchester and Cedar Creek, and ultimately became medical inspector on the staff of General Sheridan. He resigned from the army in May, 1865, after an eventful career of a little over three years. He immediately went to Europe for study and travel, spending most of his time in Vienna and Paris. In November, 1866, he returned to Boston and began to practise his profession. He was appointed successively a surgeon at the Boston Dispensary, the Children's Hospital, and August, 1868, at the Carney Hospital. His second ovariectomy was done at the Carney Hospital in April, 1873. He became consulting surgeon at this hospital in 1880, and resigned in 1883. He was appointed a surgeon to out-patients at the Massachusetts Hospital in 1876, a visiting surgeon in 1882, and resigned in 1900, having reached the age limit of sixty-three years.

Dr. Homans' name as a surgeon will be chiefly associated with the development of ovariectomy and of general

abdominal surgery in New England and in this country. His first ovariectomy was done in 1872. His first five cases, of which only one was a simple cyst without adhesions, were done without antiseptic precautions, and all died. In 1877 he began to use the carbolic spray and had his first recovery. The following year he operated on six cases with only one death. The number of cases rapidly increased. In 1882 he did 45 ovariectomies, with six deaths, and the following year 26, with only one death. After the middle of October, 1887, the spray was given up. In 1888 he operated on 40 cases without the spray, with two deaths. In 1899 there were 18 operations, all ending in recovery. In all, between 1872 and 1900, Dr. Homans performed 601 ovariectomies; of these 285 were done under carbolic spray, with 32 deaths; and 251 were done without the spray but with aseptic precautions, with 25 deaths, the large majority of these later fatal cases, however, were complicated by cancer. In April, 1881, he began to do abdominal hysterectomies, and up to 1887 he had 10 deaths and 17 recoveries. In 1887 he improved what he considered a faulty technique, and from this year to 1897 he did 112 abdominal hysterectomies, with 15 deaths. He was one of the first to operate upon the appendix, that is, to open the peritoneal cavity in search of an abscess in that region.

This is a brief and imperfect outline of some of his work in abdominal surgery. The real value of his services, and that to which we wish especially to direct attention, lay not so much in the number of operations or in percentages of recovery, as in the foresight, energy and independence which made him an early and useful instrument in the development of this most fruitful department of modern surgery.

Nothing can illustrate this better than the following proviso which accompanied his nomination by the surgical staff of the Massachusetts Hospital in February, 1882, to a vacancy on that staff: "Provided, also, he understands and desires to comply with the restrictive policy of the hospital in relation to the practice there of specialties, particularly the specialty of ovariectomy." Especially is this so, if this proviso be read in conjunction with the following vote, passed by the trustees of that hospital in January, 1900, on accepting his resignation from that staff:

"In accepting the resignation, the trustees would express their sense of the great value of Dr. Homans' services to the hospital, as surgeon to out-patients from 1876 to 1882, and as visiting surgeon from 1882 to 1899, when his term has expired by limit of age. Through the whole period of his connection with the hospital, Dr. Homans' service had been rendered with promptness and fidelity. The intercourse between him and the officers of the hospital has always been of the most agreeable nature. But besides the faithful performance of his regular duties, Dr. Homans has advanced to its present point the whole treatment of abdominal surgery, and by his skill, courage and unselfish devotion has added to the reputation of the Massachusetts General Hospital and the welfare of mankind."

The dates of his appointments at the Massachusetts Hospital mark with some accuracy the development of antiseptic surgery in hospital practice, and the subsequent introduction of a class of operations which hospital sepsis had previously excluded from crowded wards.

Rising thus, as Dr. Homans did, at an early age in virtue of his qualities to positions of high responsibility, he became an active participator in many important events of those times, and was intimately associated with not a few of the leading actors. He thus acquired an experience of military surgery and a training not only in the skillful use of the knife, but in dealing with great emergencies which was of invaluable service to him later in life, and doubtless exercised an important influence in molding into shape those natural gifts which he possessed in an eminent degree, and which entered so largely into his character as a matured surgeon.

His entrance upon civil practice came at the close of an era in the history of medicine. He had been an active participant in the practice in vogue during the last years of that period, — far more so than is usually given to a young man of his years, — so that he enjoyed, at the opening of the new era of surgery, the advantages of both youth and experience. His alert mind and naturally courageous character were qualities which enabled him to read clearly the signs of the time and to select the path which they pointed out for him. He had fully equipped himself with the

latest instruments for an operation which was still looked upon with distrust by the majority of the profession, and it was not long before he was able to report in the pages of this JOURNAL his rapidly increasing list of cases of ovariomy. Few can realize to-day the obstacles to be overcome in carrying out plans necessary to establish a special branch of surgery like this at that time. Dr. Homans was, however, never at a loss for expedients where a case of operative surgery was concerned. While surgeon to the Dispensary he would undertake without hesitation difficult and responsible operations, transport the patient in his own carriage to the outskirts of the city, and, if necessary, pay the board until the case was convalescent. This dispensary experience paved the way for work in the wards of the Carney Hospital and later at St. Margaret's Infirmary with which, the first private hospital in Boston, he was so long associated. And so from small beginnings he established himself in the rôle of a pioneer in abdominal surgery, and entered upon a brilliant career as an exponent of the wonderful possibilities which were to be achieved as the outcome of antiseptic surgery.

The most prominent of his characteristics was courage. This led him from the beaten track, and molded him into a bold and successful operator in the most responsible and difficult cases. To this quality was added a dogged determination to overcome obstacles. Often at the moment of uncertainty and doubt in a long and trying operation he would exclaim to his assistants, "Let us make an effort," and thus carry the case through to a triumphant conclusion.

Honesty was another striking quality of his character. "Honest John Homans" is a phrase familiar to scores of consulting colleagues and students with whom he came in contact. The graduate classes of the Harvard Medical School have, of late years, enjoyed the unusual privilege of a series of lectures on medical ethics in which, with characteristic virility and frankness, he laid down the relation of the practitioner to his colleagues and his patients. The readers of this JOURNAL are well aware that he was as ready to report a failure as a successful case.

Although a sufficient period of well-earned repose had been denied him, Dr. Homans had lived long enough to see his ambitions realized, and the surgery of which he was so enthusiastic and skillful an advocate placed upon an enduring basis. It can be said of him that at the close of his career he occupied an almost unique position in surgery, having been a *magna pars* both in the old and in the new régime. Had his life been spared a little longer, surgical literature would have gained much from a pen which had to bide its time until the knife should be laid aside.

In active work the sterner qualities of his character may have made themselves prominent to the outer world, but among intimate friends there were unfolded charming traits that easily gave him a foremost place when he chose to take it. Many who know of Dr. Homans only by reputation may not realize that in such an individual dealing largely with solemn problems of life and death, there existed the most attractive of those qualities which are associated with social life.

Dr. Homans was for many years a lecturer at the Harvard Medical School, the medical examiner of the New England Mutual Life Insurance Co., a member of the American Surgical Association, of the Society of the Cincinnati, of which his grandfather was a founder, and of the Order of the Loyal Legion. He leaves a widow and six children, three sons and three daughters. One son of the same name will follow the profession of medicine.

Correspondence.

MORTALITY IN BOSTON FOR 1832.

BOSTON, Feb. 1, 1903.

MR. EDITOR: There recently came into my possession an interesting book entitled "The Massachusetts Register and United States Calendar for 1833." This book gives as the "Mortality in Boston for 1832" the following curious list:

Apoplexy 15, diseases of the brain 17, diseases of the bowels 27, consumption 246, cholera infantum 7, cholera morbus 8, cholera, malignant, 78, convulsions 35, croup 40, dropsy 38, dropsy of the brain 44, dysentery 21, drowned 22, delirium tremens 10, lung fever 87, typhus fever 45, brain fever 13, scarlet fever 149, whooping cough 22, inflammation of the bowels 31, inflammation of the lungs 19, intemperance 44, influenza 24, measles 70, old age 62, palsy 19, stillborn 86, suicide 8, throat distemper 50, teething 21, accidental 12, heart, diseases of, 7, spasms 6.

It would be interesting to learn what changes a physician of to-day would make in the mortality lists of former years. A good diagnostician would make, no doubt, some sweeping changes in the alleged causes of death. As the population of Boston in 1830 was 61,392, and must have been about the same in 1832, an excellent opportunity is afforded for a comparison of the prevalence and fatality of diseases then and now.

Faithfully yours,
FREDERIC ALLISON TUPPER,
Head Master Brighton High School, Boston.

Miscellany.

NEW YORK STATE BOARD OF CHARITIES.

THE thirty-sixth annual report of the State Board of Charities, just transmitted to the Legislature, directs attention to the urgent need of further provision in the State institutions for the care of idiots, epileptics and the feeble-minded. More than 70 feeble-minded children are being supported, at the public expense, in private institutions not adapted to their care, owing to lack of accommodation in the Syracuse State Institution for them. In various almshouses there are now at least 250 feeble-minded women for whom there is no room at the institution at Newark, while more than 600 idiots who are unsuitably cared for in city, town and county almshouses, cannot, with the present accommodations, be admitted to the State Custodial Asylum at Rome. Although the almshouses are improperly equipped for the care of epileptics, there are some 200 of these unfortunates awaiting admission to the Craig Colony, which the board recommends should be enlarged to accommodate them.

Regarding the inspection of almshouses, the report says: "It is a matter of gratification that the board is able to report a constant tendency toward improvement in the almshouses of the State. This improvement is especially manifested in more adequate provision for the care of the sick and in better methods of lighting, heating and ventilation." It is stated that during the past year there were 5,574 pupils in the various State institutions for the deaf, the largest enrollment in their history, and that the increase in the number of pupils in these schools seems to keep pace with the general increase in population, nearly 22% in the last decade.

MORTALITY ON OPPOSITE SIDES OF STREETS.

FROM a study of 3,973 deaths occurring in 1895, in New York City, on opposite sides of twenty streets, Alfred E. Thayer draws some interesting conclusions:

(1) The mortality on the north side of any street in the district studied is liable to be higher than the mortality on the south side of the same street.

(2) The higher northern mortality is due chiefly

to three diseases: pneumonia, phthisis and nephritis. The first two are especially fatal during cold weather, when the proper ventilation of living and sleeping rooms is most likely to be neglected; the third is also affected by lack of air and sunlight, both directly and also indirectly by the depression of mind consequent upon darkness and poor air.

(3) On the south side the greater freedom from these causes of death is due chiefly to the advantages of sunlight and ventilation enjoyed.

(4) The supply of air and sunlight has more effect upon the health of people living on the south side of a street and less upon the north, owing to the general habit of New Yorkers of living in the rear of the house.

(5) Zymotic diseases appear to be independent of these conditions and may occur in excess upon the south side of the street; in such cases the mortality also may be higher on that side.

(6) "Rear" houses are situated less favorably than single houses on a lot, because not only are they darker and less ventilated themselves, but they also deprive the other house of its proper light and air. This is applicable to the south side of the street; on the north, the house on the street acts as a "rear" house to the one behind it, by cutting off its light and air.

(7) The width of any street and the distance across yards, measured from the back of one house to the back of another, should be as nearly as possible the same, that is, the latter should never be less than the former; and the height of dwelling houses should bear some relation to these measurements, so that one house may not deprive another of its light and air.

(8) In the case of contagious diseases in any family, the importance of keeping the other children from school is closely related to the question of infant mortality below the age of five years.

(9) In general, people should be urged to keep their windows open and their shades up as much as possible, and this especially for dwellings on the north side of the streets and during the colder months of the year when ventilation is most neglected. — *New York Medical Journal*.

METEOROLOGICAL RECORD

For the week ending Jan. 31, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather.* | | Rainfall in inches. |
|-------|-------------|--------------|----------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|----|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | |
| | | | | | | | | | | | | | |
| S. M. | 25 | 30.32 | 18 | 20 | 16 | 93 | 82 | 77 | N | N | 12 | 5 | N. . 12 |
| T. . | 26 | 30.46 | 22 | 27 | 16 | 82 | 63 | 73 | S | S | 10 | 5 | O. . 0. |
| W. . | 27 | 30.29 | 32 | 42 | 23 | 77 | 83 | 80 | S | W | 7 | 15 | O. . 0. |
| T. . | 28 | 30.00 | 42 | 49 | 34 | 88 | 100 | 94 | S W | N W | 7 | 5 | R. . 0.02 |
| F. . | 29 | 29.94 | 34 | 39 | 29 | 100 | 100 | 100 | N E | E | 6 | 8 | G. . 0. T. |
| T. . | 30 | 29.42 | 38 | 48 | 27 | 100 | 53 | 76 | N W | W | 5 | 22 | G. . 0. T. |
| S. . | 31 | 29.80 | 30 | 34 | 26 | 60 | 66 | 63 | W | W | 20 | 19 | C. . 0. |

45°

.54

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. 45°—Mean for week.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JAN. 31, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . . | 3,785,156 | 1,374 | 396 | 22.78 | 13.61 | 4.37 | .51 | 1.09 | |
| Chicago . . . | 1,885,000 | 586 | 157 | 20.47 | 17.74 | .62 | 2.49 | 2.07 | |
| Philadelphia . . | 1,378,527 | 623 | 137 | 17.97 | 18.13 | .96 | .64 | .32 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 242 | 67 | 19.83 | 21.48 | 4.13 | 4.13 | — | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 137 | 41 | 27.00 | 19.71 | 2.19 | 3.65 | — | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 235,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 76 | 19 | 18.42 | 18.42 | 1.31 | 5.24 | — | |
| Boston . . . | 603,163 | 269 | 72 | 18.35 | 21.18 | 1.86 | .37 | 1.02 | |
| Worcester . . . | 132,044 | 49 | 18 | 14.28 | 16.32 | — | — | — | |
| Fall River . . . | 115,949 | 54 | 28 | 24.07 | 27.78 | 3.70 | 1.85 | — | |
| Lowell . . . | 101,959 | 41 | 10 | 17.47 | 29.27 | 2.92 | — | — | |
| Cambridge . . . | 98,639 | 26 | 10 | 7.70 | 22.10 | — | 3.85 | — | |
| Lynn . . . | 72,497 | 27 | 5 | — | — | — | — | — | |
| Lawrence . . . | 69,766 | 34 | 10 | 29.41 | 17.65 | 2.94 | 2.94 | — | |
| Springfield . . . | 69,839 | 17 | 5 | 17.64 | 5.88 | — | 5.88 | — | |
| Somerville . . . | 68,110 | 23 | 4 | 13.04 | 17.39 | — | — | 4.35 | |
| New Bedford . . | 67,198 | 42 | 19 | 26.19 | 23.81 | 2.38 | — | 14.29 | |
| Holyoke . . . | 49,286 | 23 | 7 | 17.39 | 17.39 | — | — | — | |
| Brookton . . . | 44,873 | 9 | 4 | 44.44 | — | — | 11.11 | — | |
| Haverhill . . . | 42,104 | 16 | 3 | 12.50 | 32.25 | — | — | — | |
| Newton . . . | 37,794 | 5 | 1 | 20.00 | — | — | — | — | |
| Salem . . . | 36,876 | 13 | 4 | 38.50 | — | — | — | — | |
| Malden . . . | 36,286 | 12 | 4 | 25.00 | 8.33 | — | — | — | |
| Chelsea . . . | 35,876 | 20 | 6 | 5.00 | 10.00 | — | — | — | |
| Fitchburg . . . | 35,069 | 14 | 8 | — | 21.42 | — | — | — | |
| Taunton . . . | 33,656 | 21 | 6 | 14.28 | 14.28 | — | 4.76 | — | |
| Everett . . . | 28,620 | 5 | 2 | — | — | — | — | — | |
| North Adams . . | 27,862 | 7 | 3 | 14.30 | — | — | 14.30 | — | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 4 | — | — | 25.00 | — | — | — | |
| Waltham . . . | 25,198 | 10 | 3 | 10.00 | — | — | 10.00 | — | |
| Brookline . . . | 25,608 | 6 | 0 | 16.67 | 33.33 | — | — | 16.67 | |
| Pittsfield . . . | 25,589 | 8 | — | 12.50 | 25.00 | — | — | — | |
| Chicopee . . . | 21,031 | 15 | 9 | 26.66 | 26.66 | — | — | 13.33 | |
| Medford . . . | 20,962 | 2 | 1 | — | 66.67 | — | — | — | |
| Northampton . . | 19,883 | 5 | 0 | 40.00 | — | — | — | — | |
| Beverly . . . | 15,302 | 3 | 1 | — | — | — | — | — | |
| Clinton . . . | 15,161 | 1 | 1 | — | 50.00 | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 6 | 1 | — | — | — | — | — | |
| Woburn . . . | 14,300 | 3 | — | 33.33 | — | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,600 | — | — | — | — | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 2 | 2 | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 2 | — | — | 50.00 | — | — | — | |
| Framingham . . . | 12,534 | 6 | 2 | 16.67 | 16.67 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 6 | 1 | — | 50.00 | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 1 | — | — | 100.00 | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,847; under five years of age, 1,067; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 781, acute lung diseases 659, consumption 384, scarlet fever 37, whooping cough 40, cerebrospinal meningitis 5, smallpox 16, erysipelas 9, measles 20, typhoid fever 73, diarrheal diseases 97, diphtheria and croup 84.

From whooping cough, New York 7, Chicago 10, Philadelphia 4, Baltimore 1, Pittsburg 5, Providence 4, Boston, Fall River, Cambridge, Lawrence, Springfield, Brockton, Taunton, North Adams and Waltham 1 each. From erysipelas, Philadelphia 2, Baltimore 3, Pittsburg 1, Boston 3. From smallpox, New York 1, Chicago 3, Philadelphia 4, Pittsburg 6, Boston 1, Haverhill 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,923, for the week ending Jan. 17, the death-rate was 17.5. Deaths reported, 5,072; acute diseases of the respiratory organs (London) 310, whooping cough 105, diphtheria 69, measles 130, smallpox 6, scarlet fever 52.

The death-rate ranged from 5.3 in Hornsey to 31.8 in Bootle; London 17.5, West Ham 18.1, Brighton 20.0, Portsmouth 15.8, Southampton 21.3, Plymouth 15.8, Bristol 14.3, Birmingham 21.7, Leicester 16.1, Nottingham 15.7, Bolton 18.6, Manchester 20.3, Salford 18.9, Bradford 16.7, Leeds 16.1, Hull 18.6, New Castle-on-Tyne 20.6, Cardiff 16.0, Rhondda 12.6, Liverpool 21.5, Newport (Mon.) 14.1.

SOCIETY NOTICES.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.—The American Laryngological, Rhinological and Otolological Society will hold its ninth annual meeting at Lexington, Ky., April 30, May 1 and 2, 1903.

WENDELL C. PHILLIPS, Secretary.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY.—A regular meeting of the society will be held at 3 Park Street, Boston, Mass., on Thursday, Feb. 19, 1903, at 7.30 P.M. The meeting will be in charge of the Dental Section, Dr. Marion L. Woodward, chairman.

Paper: Dr. P. W. Moriarty, "Fractures of the Maxilla." Cases will be reported and patients shown by Drs. Emma B. Culbertson, Clara J. Alexander and Agnes C. Viotor.

DR. AGNES C. VIOTOR, Secretary.

RECENT DEATHS.

JAMES R. MACGREGOR, M.D., of New York died on Feb. 5, at the age of seventy-one. He was graduated from the College of Physicians and Surgeons, New York, in 1853, and at the time of his death was one of the attending surgeons to the Metropolitan Throat Hospital. Dr. MacGregor was one of the earlier presidents of the New York County Medical Association, of which he was a founder.

EARLE EUGENE WOOLWORTH, M.D., of Brooklyn, N. Y., died on Feb. 5 in the Brooklyn Hospital, in consequence of a fracture of the skull, caused by being thrown from his carriage on Jan. 21. He was born in Lyonsdale, N. Y., and was thirty years of age. He was graduated from Hamilton College and from the medical department of the New York University, in 1897.

HENRY W. ALLEN, M.D., of Brooklyn, N. Y., a graduate of Bellevue Hospital Medical College, New York, in 1882, died on Feb. 5 at the age of forty-two.

J. FRANK VALENTINE, M.D., of Richmond Hill, Borough of Queens, N. Y., died from typhoid fever on Feb. 5. He was born in New York in 1856, and was graduated from the College of Physicians and Surgeons in that city in 1879. In 1890 he was made chief surgeon of the Long Island Railroad, and was afterwards elected president of the New York State Association of Railway Surgeons. He was also surgeon of the Thirty-second Regiment, National Guard; visiting surgeon to St. John's Hospital, Long Island City, and St. Catharine's Hospital, Brooklyn, and consulting surgeon to the Nassau Hospital at Mineola, Long Island.

EDWARD VON DONHOFF, M.D., of New York died in Bellevue Hospital on Feb. 6. He was graduated from the Louisville Medical College in 1870 and in Vienna in 1876. He practised for several years in Louisville, became distinguished as a surgeon, and for a time was professor of surgery in the State Medical College of Kentucky. He was well known as a writer on surgical topics.

JOHN HOMANS, M.D., M.M.S.S., died in Boston, Feb. 7, 1903, aged sixty-five years.

ERRATUM.

In our editorial on page 161 of the JOURNAL of Feb. 5, on "The Value of Simple Clinical Tests," in the thirteenth line from the end 20 cc. should read 20 c.mm.

BOOKS AND PAMPHLETS RECEIVED.

The Medical Epitome Series. Physiology. A Manual for Students and Practitioners. By Theodore C. Guenther, M.D., and Augustus E. Guenther, B.S. Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

International Clinics, a Quarterly of Illustrated Clinical Lectures and Especially Prepared Articles on Medicine, Neurology, Surgery, Therapeutics, Obstetrics, Pediatrics, Pathology, Dermatology, Diseases of the Eye, Ear, Nose and Throat, and Other Topics of Interest to Students and Practitioners. By Leading Members of the Medical Profession throughout the World. Edited by Henry W. Cattell, A.M., M.D. Vol. IV. Twelfth Series, 1903. Philadelphia: J. B. Lippincott Company.

The Use of the Electric Cantery Clamp in the Treatment of Cancer of the Uterus. By Charles P. Noble, M.D., Surgeon-in-Chief, Kensington Hospital for Women, Philadelphia. Reprint. 1902.

A Study of the Distribution of the Colon Bacillus of Escherich, and of the Sewage Streptococci of Houston in Polluted and Unpolluted Waters. By C.-E. A. Winslow, S.M., and Miss M. P. Hunnewell. Boston. Reprint. 1902.

The War against Disease. By C.-E. A. Winslow, Instructor in Sanitary Bacteriology in the M. I. T., Boston. Reprint. 1903.

Original Articles.

OBSERVATIONS UPON LONG-DISTANCE RUNNERS.

EDITED BY J. B. BLAKE, M.D., AND R. C. LARRABEE, M.D.

THE final and culminating event in the Greek Olympian Games of 1896 was a foot race from the battlefield of Marathon to the stadium in Athens. The distance is 40 km., and the race was open to contestants from all parts of the world. The contest was won by a Greek shepherd, none of the French, German, English or American runners being in sight at the finish.

Several members of the Boston Athletic Association competed in those games. Since that time the association has held an annual Marathon run on Patriots' Day, over a course of equal length, from Ashland to the clubhouse on Exeter Street. In 1899 Drs. Williams and Arnold¹ reported the results of observations upon the contestants of that year; and the results of a series of similar observations during the past three years are here presented.

The examinations were made before the start and immediately after the finish of the contests. As some of the physical signs are modified or even entirely disappear very quickly after the race, it was necessary to have a large number of observers trained and assigned to particular duties. This resulted in a very large mass of data which it seemed best to condense and edit in the present form. The facts obtained, and the conclusions drawn, are given first. Methods and results of examinations and individual observations are added in greater detail for the benefit of future observers, or those specially interested in the subject.

The length of the course is twenty-four miles. The road is an average New England highway for two thirds of the distance, and for the remainder is the hard macadam surface characteristic of Boston's parkways. The course covers a rolling country, one or two hills, notably in Newton, being extremely long and trying. The general trend of the slope is downward.

No restrictions are put upon the runners, save that they shall proceed on foot over the specified route and shall not receive any assistance. They may, therefore, eat or drink what they please during the race. Each contestant is accompanied by an official guard on a bicycle, usually a volunteer from the Ambulance Service of the State Militia.

The costume of the runners is extremely light, consisting of cotton shirt and running pants and fairly heavy leather shoes or "sneakers," laced about the ankles and generally worn without stockings. The contestants were of various nationalities, including one Greek and one Mohawk Indian. Their ages ranged from sixteen years upwards; their occupations from laborers to students; their athletic standing was described by that somewhat elastic and much-discussed term "amateur." At the end of the race they were taken in the elevator to the dressing rooms of the clubhouse and immediately examined. After this they took a warm

bath, were given a rubdown and a light lunch, and shortly started for home, usually without assistance.

Pulse.—The rate was always increased in frequency, though the increase was often surprisingly small. It was least in the best-trained men and in those who finished slowly. In some instances it was almost as slow at the finish as at the start—notably in the winner of 1902. A very rapid pulse (over 150) was unusual.

A moderate irregularity was not infrequent.

An intermittent pulse was occasionally present.

A threadlike pulse of small volume was found in the rare cases of severe fatigue.

On the whole, the radial pulse was a fair index of the condition of the runner, though the rate alone often proved misleading.

Weight.—The estimation of the loss of weight was only approximate, for reasons given later. It varied from two to seven pounds, the extremes being one and ten pounds.

The amount lost was apparently determined by a combination of factors, including the original body weight and physical condition, the speed, the amount of solids and liquids consumed during the race and the atmospheric conditions.

Temperature.—Before the start, the mouth temperature showed not infrequent variation from the normal. This was usually a fraction of a degree, but in some instances reached 100.6°.

After the finish the mouth temperature was sometimes raised, often normal and occasionally subnormal. The rectal temperature, however, was invariably raised. In the entire three years only three exceptions were found to this rule, which will be discussed and explained below.

The difference between mouth and rectal temperature, taken simultaneously, was often surprisingly large, reaching in one instance 7°. The explanation of this interesting fact is that the men ran with open lips, and the forced and continuous breathing of cold air lowered the temperature of the mouth cavity.

The surface of the body was almost invariably cool and sometimes cold, but no distinct chills were observed.

Sphygmographic pulse tracings.—(1) Violent and prolonged muscular exercise invariably causes an alteration in the character of the pulse curve, as shown by the sphygmograph.

(2) This change in the character of the tracing is dicrotic in nature and due to a lowering of arterial tension.

Blood.—The principal finding has a leucocytosis corresponding in intensity and in type with that observed in various inflammatory diseases.

Hearts.—Before the start, the hearts invariably showed enlargement, due mainly or wholly to hypertrophy. At the finish, in practically all cases, there was further slight enlargement, inferred to be the result of acute dilatation.

In some cases murmurs, generally systolic, were heard; some were heard at the start, and were considered to be the result of nervous excitement. Concerning the nature of a number heard at the finish there is considerable doubt; we do not feel justified in asserting that they were due to mitral regurgitation.

Urines.—The examination of the urine shows

¹ "The Effects of Violent and Prolonged Muscular Exercise upon the Heart." Phil. Med. Journ., June 3, 1899.

that in every case an active hyperemia is developed during the race, probably due largely to the irritation from the "toxins of fatigue," inasmuch as the blood pressure is not increased. This condition clears up quickly, as albumin and casts had disappeared in all the cases examined one week after the race.

The amount of urine for twenty-four hours is lessened, the color becomes higher, the *specific gravity* rises and the *reaction* becomes more intensely acid. *Albumin* appears in quantities varying from the slightest possible trace to a trace, and in the *sediment* we find in every instance hyaline and fine granular casts, a few coarse granular and epithelial casts and more or less blood, normal and abnormal, free and on casts. Rare brown granular casts are found in some sediments, and calcic oxalate crystals in the majority.

The *urea* is not increased after the race, but, on

and a contestant who had run fast for most of the course might slow down at the finish, particularly if he was far ahead of the next runner; his pulse rate would already have diminished materially before the end of the race. The third factor, the time elapsing before the observation, was also important. Two or three minutes are sufficient to change a very rapid to a moderately rapid pulse. This is shown in the following table, which compares the pulse rates after the 1900 race with the race in 1902. It will be seen at a glance that the 1902 average is faster, yet the time of the race and the condition of the men were about equal. The only varying factor was the time which elapsed before counting the pulse. In 1900 two or three minutes elapsed before the runner was stretched upon the table in the examining room; in 1902 the observer was in the elevator, and took the pulses as the men stepped from the street.

PULSE RATES AT FINISH.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|
| 1900 . . . | 108 | 120 | 120 | 144 | 108 | 116 | 96 | 88 | 72 | 107 | 100 | 98 | 106 | 88 | 132 | 104 | 128 | 80 | 96 | 104 |
| 1902 . . . | 82 | 108 | 126 | 132 | 132 | 96 | 144 | 144 | 160 | 120 | 162 | 136 | 180 | 140 | 160 | 164 | 156 | 146 | | |

the contrary, appears in the majority of cases to be less for the first twenty-four hours following the race than for the last twenty-four hours before the race. By the end of a week, however, it has again risen to normal.

The pulses of the first two men in 1902 were very slow, but, even with these exceptions, the pulses of 1902 were faster than 1900.

The following table compares the pulse rates before and after the race of 1900:

BEFORE AND AFTER RACE, 1900.

| 1900 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|------------------|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|----|----|-----|------|-----|
| Before | 100 | 80 | 72 | 76 | 84 | 84 | 72 | 104 | 84 | 72 | 80 | 82 | 80 | 80 | 92 | 120? | 126 |
| After | 108 | 120 | 120 | 144 | 116 | 88 | 100 | 98 | 106 | 88 | 132 | 104 | 80 | 96 | 104 | 134 | 116 |

The *chlorides* are markedly diminished after the race. It is probable that the output of *uric acid* is diminished, and that of *phosphorus* increased, but the results vary so much that no definite conclusions can be drawn.

PULSE, WEIGHT AND TEMPERATURE.

BY J. B. BLAKE, M.D., AND D. D. SCANNELL, M.D.

Pulse.—The pulse rate seemed to depend on three factors: First, the condition of the heart itself; second, the character of the exertion, particularly in the last few minutes of the race; third, the time which elapsed between the actual finish and the observation of the pulse. The hearts best prepared for the contest seemed to have the slowest rates. These hearts were always hypertrophied, but were not overworked by excessive training. In each of the three contests, however, occasional slow pulse rates were observed in which the hearts were not in particularly good condition. These we believe to be the exception and not the rule. The second factor influencing the rate was very effective—a man may have covered the entire distance to within half a mile of the end at a slow rate of speed, and may then have run very fast either racing a neighbor or encouraged to make a creditable appearance before the thousands lining the sidewalks—his final exertion would send the pulse rate up enormously; whereas the reverse also occurred,

In this table there are three cases where the pulse at the start was as fast or even faster than at the finish. These men finished slowly, and a few minutes elapsed before the pulse was taken. At the start the men differed much in composure, many even of the veterans being extremely nervous; whereas at the finish, with few exceptions all were stolid with fatigue.

Weight.—These observations were less accurate than those of pulse or temperature, because they were open to the following sources of error: First, difference in scales; second, solids and liquids ingested during the race; third, small articles of clothing. As it is difficult to accurately calculate the first of these, and entirely impossible to estimate the second, it is obvious that the following figures can be accepted as only moderately accurate.

The extremes of one-half pound (one case) and one pound (one case) on the one hand and ten pounds (one case) on the other may be disregarded. Without doubt the first two were much influenced by the above-mentioned source of error. A large majority of the cases would be found to lie within the three- to six-pound limit. This was certainly a moderate loss, and though the time was three times that of a football game, and ten times that of the average four-mile boat race, not only the average but even the maximum loss was less than has been noted in either football or rowing. In general the heaviest men and those who ran fastest lost the greatest amounts, though there were many exceptions to this.

¹ These figures represent the position of the men at the finish.

The heaviest man of whom we have any record during the three years weighed only 166½. He did not finish. The heaviest who completed a race was 155. The lightest starter weighed less than 100. The lightest who finished weighed 104. Obviously, these are not contests for heavy weights.

either between the temperatures before and after the race, or the relation of high or low temperature to loss of weight or extreme fatigue.

The important fact demonstrated by the observations of these three years on 45 men is that the mouth temperature is not a reliable factor. The

Tables of Weights.

| 1900 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|------------------|------|-----|-----|------|-----|------|------|------|------|------|------|-----|------|------|
| Before | 125½ | 121 | 130 | 137½ | 126 | 141 | 124 | 155 | 104 | 124½ | 123¼ | 131 | 134½ | 115¼ |
| After | 120¼ | 114 | 124 | 130¼ | 120 | 134½ | 120½ | 147¼ | 100¼ | 119¼ | 117½ | 121 | 133 | 111¼ |

| 1901 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|------------------|------|------|------|------|------|------|------|------|------|------|-----|------|------|
| Before | 147¼ | 131 | 110½ | 152½ | 134½ | 111 | 127 | 139½ | 110¼ | 120¼ | 122 | 139¼ | 130½ |
| After | 143¼ | 126¼ | 108 | 147½ | 129¼ | 107½ | 124½ | 133 | 107½ | 116 | 120 | 132¼ | 130 |

| 1902 | 1 | 2 | 3 | 4 | 5 |
|------------------|------|------|------|------|------|
| Before | 135 | 130½ | 114 | 132 | 142½ |
| After | 127½ | 124¼ | 109½ | 126½ | 137½ |

Temperature. — These observations were considerably more accurate than those of the weight, and were taken by mouth before the start and by mouth and rectum simultaneously immediately after the finish. The clinical thermometers used were similar to those found in the large Boston hospitals, and were presumably correct to $\frac{2}{100}$ of a degree.

reason is plain. The temperature of the air was colder in 1900 than in the other years; and in 1899, when extreme subnormal mouth temperatures were noted by Williams and Arnold, the air was colder than even in 1900. Every one knows that forced mouth breathing accompanies all severe muscular exercise, unless it be of the

| 1900 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|--------------------------|--------|-------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
| Before — Mouth | 98.6° | 99.2° | 98.0° | 100.4° | 99.5° | 98.6° | 99.0° | 100.6° | 100.4° | 98.8° | 98.2° | 100.4° |
| After } Mouth | 98.3° | 99.6° | 102.2° | 97.4° | 99.7° | 98.6° | 97.0° | 97.4° | 101.5° | 97.2° | 99.8° | 97.6° |
| Rectum | 104.4° | 99.4° | 104.4° | 103.8° | 104.0° | 98.0° | 104.0° | 101.0° | 103.4° | 100.0° | 103.0° | 102.6° |

| 1900 (continued) | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|
| Before — Mouth | 100.7° | 100.2° | 100.0° | 99.8° | 100.5° | 98.2° | .. | .. | .. | .. | .. | .. |
| After } Mouth | 100.2° | 100.8° | 100.8° | 99.6° | 99.6° | 97.8° | 100.2° | 98.4° | 97.4° | 100.4° | 98.4° | 99.6° |
| Rectum | 101.3° | 103.0° | 102.3° | 103.3° | 102.6° | 102.8° | 103.3° | 103.8° | 99.0° | 104.3° | 103.3° | 103.3° |

| 1901 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|
| Before — Mouth | 99.4° | 98.6° | 97.2° | 98.3° | 98.9° | 98.9° | 98.3° | 98.7° | 97.1° | 98.0° |
| After } Mouth | 98.0° | 98.2° | .. | 97.5° | 97.4° | .. | 97.8° | 98.0° | 99.2° | .. |
| Rectum | 102.3° | 102.4° | 104.4° | 101.2° | 101.4° | 100.9° | 100.0° | 101.3° | 96.0° | 100.6° |

| 1902 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|--------------------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|
| Before — Mouth | .. | .. | 98.6° | 99.1° | 98.6° | .. | .. | .. | .. | .. | .. |
| After } Mouth | 97.6° | 100.6° | 99.9° | 97.4° | 99.4° | 97.9° | 99.0° | 98.8° | 97.0° | 98.1° | 98.8° |
| Rectum | 101.7° | 102.7° | 103.0° | 102.0°? | 100.7° | 100.4° | 102.0° | 101.0° | 102.6° | 103.5° | 102.0° |

These tables show that much more attention was paid to the temperatures in 1900 than in 1901 or 1902. The results are essentially the same, however; the 1900 shows a proportionately higher average both before and after the race. No less than eight out of eighteen examined before the race in this year had a temperature varying from 100° to 100.7°. There is no obvious explanation of this fact. All these men were in good condition and strong enough to finish. They did not have unusually high temperatures at the finish, nor did they show unusual fatigue. In fact, during the entire three years no definite relation could be established

briefest duration. Under the conditions of these races there is no reason why the mouth should not become almost as cool as the surface of the body. For the time being it is no longer a closed cavity. On the other hand, the rectal temperature has invariably raised, the three exceptions being, first, a man who by mistake or intent was dosed with considerable quantities of alcohol; — this man was a teetotaler and supposed he was being given hot beef tea; he was plainly tipsy at the finish; — second, a man who also had a large amount of alcohol and who was so restless that it is questionable if the thermometer really entered the sphincter; third, a

man exhausted more than the average, also overstimulated, the only one of the three whose condition was not as good as the average at the finish. Other contestants may and probably did drink certain amounts of brandy while running, but none showed the effects of it, and no evidence was obtained that a subnormal temperature depends either on overtraining or extreme fatigue.

Forced exertion of this character raises the body temperature. Other agents, acting simultaneously, may cool exposed portions of the body. In rare instances the ingestion of large doses of alcohol seems to prevent the body temperature itself from rising.

REPORT ON PULSE TRACINGS TAKEN FROM THE MARATHON RUNNERS IN THE RACES OF 1900, 1901, 1902.

BY ALLEN CLEGHORN, M.D.

| YEAR. | Complete record. (Start and finish.) | Start only. | Finish only. |
|----------------|---|-------------|--------------|
| 1900 | 11 | 4 | 9 |
| 1901 | 2 | 5 | 4 |
| 1902 | 4 | 3 | 5 |
| Totals . . . | 17 | 12 | 18 |

THE above table refers to the number of tracings obtained in the different years. From two runners only were complete tracings obtained in these three years, while from five, tracings were taken in two consecutive years, — naturally these tracings are the most valuable. Then follow the *complete* individual records obtained in the different years, and lastly in importance come the “*Start only*” and “*Finish only*” tracings. However, it is possible by combination to make a general comparison between these latter, and they show just as great a difference in the character of the curve as do the “complete records.”

The method employed to obtain the pulse curves was the same that is used in the physiological department of Harvard Medical School. It consisted in placing a glass thistle tube over the right carotid artery at a level with the lower border of the thyroid cartilage. The thistle tube was connected with a very delicate tambour writing on the smoked surface of a revolving drum. The thistle tube was held on the neck of the contestant by the observer, the pressure over the artery being varied until the lever was found to give the greatest incursion when the tracing was recorded. In all cases the subject was seated during the observation. This method was adopted because it could be manipulated with greater ease and speed than either Dudgeon's or Marey's sphygmograph.

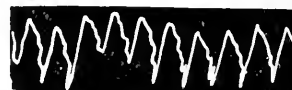
The results were uniform; the candidate invariably presented at the start of the race a normal pulse curve, but at the finish the curve was found to be profoundly altered, the tracing pointing to a condition of enormously low arterial tension. In some cases the pulse was extremely dicrotic. In about two thirds of the cases it was also found that the pulse was markedly irregular, but in the

year 1900 no irregularity was noticed in the runners who finished first, second and third.

TYPICAL PULSE TRACINGS.



BEFORE.



AFTER.

Discussion of Results. — These observations open up some interesting points for consideration. All competitors lost considerable weight during the race, presumably by loss of water through sweating, etc. Is the low arterial tension the result of a concentration or lessening of the quantity of the blood circulating in the vessels, and consequently the vessels not being completely filled? Is it due to the action of the “depressor nerve” endeavoring to ease the overworking heart by increasing the caliber of the arterioles, and so lessening peripheral resistance, or is it due to an active dilatation of the arteries caused by the circulation in them of fatigue products, CO_2 , etc.? My individual observations do not definitely point to any one of these problematical causes more than another, but, combined with the results of the other observers, would suggest that all these factors are probably concerned in producing this low tension pulse.

BLOOD PRESSURE.

Twice, during the three years occupied by this series of investigations, were attempts made to measure the blood pressure of the various contestants, both at the beginning and at the finish of the race. These experiments were made in the years 1900 and 1902.

In the former year a modified form of Mosso's apparatus was used. It was found troublesome to transport and to work; it consumed too much time in adjusting, and in obtaining the graphic record, etc., serious defects when celerity was required at the finish. In the latter year another form of tonometer was employed. This instrument is considerably less in bulk, fitting an ordinary pocket, and is much simpler to apply than the former, but on investigation it was found to be measuring the peripheral (capillary) circulation and not the arterial pressure. Consequently both methods, although the best we could devise, were unsatisfactory.

In the results obtained by these two methods the individual variation in pressure was so great that it was deemed best to reject them, only one point being as a rule maintained throughout; that is, in the majority of cases the blood pressure, as measured by Mosso's apparatus, and the peripheral pressure, as measured by the tonometer, were, in the various contestants tested, usually lower at the finish of the race than at the start.

THE BLOOD.

BY RALPH C. LARRABEE, M.D., WILDER TILESTON, M.D., AND
WM. R. P. EMERSON, M.D.

THE following results were obtained from a study of the blood in certain of the contestants in the races of April 19, 1901, and April 19, 1902. The total number of cases observed was eleven, in two of which the observations were so incomplete as to be of little value. The red and white counts were made with the Thoma apparatus. An effort was made in 1902 to estimate the hemoglobin before and after the race with the Tallqvist scale, but the results were found to be so variable that they were discarded. This method, admirable as it is for the approximate estimation of the hemoglobin in clinical work, is far too inaccurate to be of service in an investigation of this sort.

In making the differential counts the specimens were stained in 1901 by the Ehrlich triple stain, and no effort was made to count the mast cells. In 1902 two methods of staining were used — Wright's modification of the Leishman method and the Ehrlich triple stain, with the additional brief dip in methylene blue as advised by Hewes to show the mast cells. Except in some of the normal specimens obtained before the race in 1901, a thousand cells were counted in each instance.

hour before the start. In 1901 the diluted blood in the pipettes was taken to Boston and counted after an hour or two. In 1902 the examiners remained in Ashland till a later train, and made the white counts as soon as the material was collected. Probably no specimen waited over a half hour. At each puncture six spreads were made and dried in the air on cover slips. At the finish the blood was collected in the same way and examined at once. Two of the preliminary white counts and all the preliminary red counts were made a few days before the race. In two men who gave up after running fourteen or fifteen miles the blood was not obtained till they reached Boston by train, one and a half and three hours respectively after they had ceased to run. These exceptions are noted in the table.

The Classification of leucocytes adopted needs little comment. Under "large mononuclears" we have included the "transitional forms" of Ehrlich, those which have indented, horse-shoe shaped or beaded nuclei but no protoplasmic granules. As myelocytes we have classed all mononuclear neutrophils. The intermediate forms between these and true polymorphonuclear neutrophils, that is, neutrophils having indented or horse-shoe shaped nuclei, have been counted as polymorphonuclear neutrophils.

| NAME. | Year. | BEFORE RACE. | | | | | | | AFTER RACE. | | | | | | | REMARKS. | | |
|-------------|-------|------------------------|---------------|--------------------------------|---------------------|---------------------------------------|---------------|-------------|-------------|-----------|---------------|--------------------------------|---------------------|---------------------------------------|---------------|------------|-------------|--|
| | | * Reds. | Total Whites. | Polymorphonuclear Neutrophils. | Small Mononuclears. | Large Mononuclears and Transitionals. | Eosinophiles. | Mast Cells. | Myelocytes. | Reds. | Total Whites. | Polymorphonuclear Neutrophils. | Small Mononuclears. | Large Mononuclears and Transitionals. | Eosinophiles. | | Mast Cells. | Myelocytes. |
| J. L. . . | 1901 | . . . | *5,800 | 63.2% 3,666 | 26.8% 1,554 | 8.2% 476 | 1.8% 104 | . . | 0 | . . . | 16,200 | 90.3% 14,629 | 4.5% 729 | 4.4% 713 | 0 | . . | 0.8% 130 | Many cells intermediate between polymorphonuclears and myelocytes. |
| H—ks . . | " | . . . | 4,800 | 72.8% 3,494 | 18.2% 874 | 8.2% 394 | 0.8% 38 | . . | 0 | . . . | 14,400 | 88.5% 12,744 | 7.0% 1,008 | 4.4% 634 | 0 | . . | 0.1% 14 | |
| McA. . . | " | . . . | 3,700 | 72.0% 2,664 | 14.6% 540 | 10.6% 392 | 2.6% 96 | . . | 0.2% 7 | . . . | 20,800 | 83.8% 17,430 | 7.8% 1,622 | 8.2% 1,706 | 0.2% 42 | . . | 0 | |
| P. | " | . . . | *8,200 | 74.0% 6,068 | 18.4% 1,509 | 5.6% 459 | 2.0% 164 | . . | 0 | . . . | 22,200 | 86.1% 19,114 | 6.6% 1,465 | 7.1% 1,576 | 0 | . . | 0.2% 44 | Few cells intermediate between polymorphonuclears and myelocytes. |
| J. L. . . . | 1902 | 4,450,400 | 4,333 | 57.5% 2,491 | 29.4% 1,274 | 12.2% 529 | 0.8% 35 | 0.1% 4 | 0 | 4,340,800 | 14,200 | 86.4% 12,269 | 6.5% 923 | 6.8% 965 | 0 | 0 | 0.3% 43 | Pale, much exhausted. |
| C. | " | (Apr. 17) 4,808,000 | 5,200 | 66.6% 3,464 | 19.7% 1,024 | 11.4% 593 | 1.7% 88 | 0.6% 31 | 0 | 6,074,400 | 20,400 | 88.5% 18,055 | 2.2% 449 | 9.1% 1,856 | 0.1% 20 | 0.1% 20 | 0 | Good condition at finish. |
| H—n . . . | " | (Apr. 17) 4,872,000 | 5,700 | 70.1% 3,996 | 18.5% 1,055 | 9.9% 564 | 1.2% 68 | 0.3% 17 | 0 | Nottaken | 18,200 | 83.7% 15,234 | 6.9% 1,256 | 9.0% 1,638 | 0.2% 36 | 0.1% 18 | 0.1% 18 | Ran but 14 miles. Examined 3 hours after finish. |
| P. | " | (Apr. 17) 5,392,000 | 8,000 | 53.9% 4,312 | 28.2% 2,256 | 13.4% 1,072 | 3.7% 296 | 0.8% 64 | 0 | 5,418,600 | 27,500 | 79.6% 21,890 | 6.7% 1,843 | 13.1% 3,603 | 0.3% 82 | 0.1% 27 | 0.2% 55 | |
| H—ks . . . | " | 5,516,000 | 6,000 | 71.7% 4,302 | 19.6% 1,176 | 7.6% 456 | 0.8% 48 | 0.3% 18 | 0 | 6,168,000 | 22,600 | 87.4% 19,752 | 4.2% 949 | 8.2% 1,853 | 0.1% 23 | 0 | 0.1% 23 | Cyanosis. Ran but 15 miles. Examined 1½ hours after finish. |
| F. | " | 4,826,000 | 7,600 | . . | . . | . . | . . | . . | . . | . . . | 22,600 | . . | . . | . . | . . | . . | . . | Ran but 12 miles. Examined 2 hours after finish. |
| Z. | " | . . . | . . | . . | . . | . . | . . | . . | . . | . . . | 27,700 | . . | . . | . . | . . | . . | . . | 16 years old. |

* Preliminary red counts made two days before the race.

The method of procedure was as follows: The blood before the race showed no very striking abnormalities. In the case of J. L. in 1902

there was an abnormally low red count. This man was pale and did not appear to be in the best of condition. He finished third, in rather poor shape. No further cause for the anemia was found. Two men showed percentages of polymorphonuclear neutrophiles somewhat below normal. One of these was the man J. L. just mentioned as being in poor condition. The other, P., appeared to be in excellent condition, though he was eleven pounds heavier than in 1901. The other men, for the most part, showed rather high counts of polymorphonuclear neutrophiles, which is perhaps to be expected in young men in the best physical condition.

At the finish marked changes were found in the red, white and differential counts. It will be convenient to speak of these in order.

Red counts were secured in but four cases both at start and at finish, and one of these did not complete the race. Two showed no marked change, but the other two showed decided increase. One of the latter, C., finished sixth in excellent condition, his time being three hours and seven minutes. The other, H—ks, stopped running after fifteen miles, came in by train, and was examined one and a half hours after he ceased to run. He was slightly cyanotic. The explanation of this increase in reds is probably to be found in concentration due to loss of fluid.

White counts were obtained in every case before and after the race. They showed without exception a leucocytosis which varied from 14,200 to 27,700, and which was present in those who did not finish as well as those who did. The highest figure was obtained in the case of Z., a boy of sixteen, who finished the race in good form, jumped up on the examining table without help, and calmly announced that he had falsely stated his age as nineteen in order not to be excluded.

The differential counts showed that the greatest increase was in the polymorphonuclear neutrophiles, which were in every case much more numerous, both relatively and absolutely, at the finish than at the start. In the mononuclear elements the changes were equally striking and constant. The percentage of large forms as compared with the small ones was invariably increased. In all but two cases, in fact, the large forms exceeded the small ones at the finish, while at the start the small ones were invariably the more numerous. As regards absolute numbers per cubic centimeter there was always an increase in the large mononuclears during the race, while in the small mononuclears there was an absolute decrease in five out of the nine cases studied. Eosinophiles were in all cases both relatively and absolutely decreased. In four cases they were absent at the finish. The mast cells showed similar changes. In seven of the nine cases a few myelocytes were found. They were perhaps more numerous than the figures indicate, as we counted as polymorphonuclear neutrophiles a certain number of cells having neutrophilic granules but more or less indented nuclei. In fact, in 1901, two cases showed numerous cells intermediate between polymorphonuclear neutrophiles and myelocytes concerning whose classification there was much doubt. No abnormalities were noticed in the size, shape or coloring of the reds and no nucleated red cells were seen.

In commenting upon these changes in the leucocytes it must be remembered that an increase in the white corpuscles may be due to an increase in all the forms alike, so that the percentages of the different varieties remain the same, — the so-called "physiological type," such as is seen during digestion, in pregnancy and after parturition, massage or cold baths. Or it may be due to an increase in one or more of the individual varieties of leucocytes. The commonest and most significant is the "inflammatory" type of leucocytosis, seen in many inflammatory and toxic conditions, where the increase is wholly or mainly in the polymorphonuclear neutrophiles.

Schultz has shown that brisk exercise of brief duration causes a moderate leucocytosis of the physiological type. The highest count obtained by him was 13,600. The leucocytosis was transitory, entirely disappearing after fifteen minutes. Schultz explained the increase in white cells on the supposition that the increased activity of the circulation carried to the periphery leucocytes which had been at rest in the great internal veins.

Our cases in no way agree with this description. In degree the white counts obtained far exceed Schultz' figures. In kind they show that the increase was made up of two varieties of cells, namely, the polymorphonuclear neutrophiles and the large mononuclears, the changes in other forms being relatively inconsiderable in their effect on the total white count. Of the two the increase in polymorphonuclear neutrophiles was proportionately much the greater. In other words, our cases showed a leucocytosis of the inflammatory type rather than of the physiological.

This disagreement is probably to be explained by the fact that the usual view is based on the study of comparatively brief and slight degrees of exertion — such as short runs or brief exercise with apparatus in the laboratory. Even though such exercise may produce extreme dyspnea and acute fatigue, it is quite a different thing from a twenty-five-mile race under conditions of the most strenuous competition. When it is stated that the leader in the race of 1901 covered the twenty-five miles in a trifle less than two and a half hours it will be evident that this is a study of extreme exhaustion rather than "exercise."

A closer correspondence exists between our results and those of F. G. Burrows in a study of the leucocytosis associated with convulsions. As in our cases, he found considerable increase in the total leucocytes, with preponderance of the polymorphonuclear forms, increase of the large mononuclears, decrease of eosinophiles, and the appearance of a few myelocytes; though in his larger series a few exceptions to some of these particulars were noted. He found evidence that the leucocytosis was the result of a double cause — first, a moderate increase of the physiological type (all forms alike), and second, added to the first, a leucocytosis of the inflammatory or toxic type. The former he found to be temporary, the latter more persistent. Where both causes acted together a higher total count would result than from the toxic cause alone, but the percentage of polymorphonuclear neutrophiles would be less than later when the physiological element had subsided, leav-

ing only the pure inflammatory form. From the study of a case of general paralysis with violent frenzy but no convulsions and of a healthy student after a short, violent run, he infers that muscular work alone is not capable of producing a leucocytosis of the inflammatory type. Our figures prove that this inference was erroneous.

The question then arises, May not the leucocytosis in our cases be due to a double cause: muscular work acting mechanically to produce physiological leucocytosis plus a toxemia from fatigue products acting chemically to produce toxic leucocytosis? It has been amply proven that brief exercise produces an increase in all the forms of white cells alike, and we may assume that the cases here studied had such an increase during the early part of the race. Yet at the finish their leucocytoses were always characterized by a disproportionate increase in the polymorphonuclear neutrophiles. Inspection of our tables throws but little light on this interesting view, and the conclusions reached by one of us as a result of the first year's work were not fully verified by the added experience of a second year.

The significance of the remarkably constant change in the relative numbers of small and large mononuclears we are unable to explain. The decrease in eosinophiles is seen in leucocytosis from many diseases. Its importance here is that it brings our cases more nearly into line with the conditions found in pathological states. Mechanical changes pure and simple might conceivably increase one form of cell more than another, but would hardly cause the entire disappearance or very marked decrease in one form alone. The same thing may be said of the decrease in mast cells.

The occurrence of a few myelocytes has also been noted in marked leucocytosis from various causes. Their occurrence, together with the forms intermediate between myelocytes and polymorphonuclear neutrophiles, is of interest in connection with the view that the myelocytes give rise to the polymorphonuclear neutrophiles by changes in the shape of the nucleus. It is probable that the increased activity of the circulation sweeps from the marrow these "unfinished" forms.

If further work of this sort is to be done we would suggest the advisability of successive examinations at short intervals after the race till the blood becomes normal, a suggestion which is emphasized by the fact that two men who ran but fourteen or fifteen miles and were examined several hours later still showed the blood changes in full severity. If possible one or more observations during the race should be made. It would at least be possible to study the effects of practice runs of different lengths.

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THE HEARTS.

BY RALPH C. LARRABEE, M.D., AND LAWRENCE W. STRONG, M.D.

IN 1900 all men presenting themselves before or after the race were examined by the usual methods,

as was done by Williams and Arnold in the race of 1899. Owing to the noise and confusion, much difficulty was experienced in making accurate observations. Especially at the start this was the cause of nervousness on the part of the runners, which must be taken into account in interpreting the results. Many men were necessarily examined while standing, and this led to difficulty in getting satisfactory tracings of the percussion outlines. The recumbent posture ought always to be used. After discarding all unsatisfactory records, there remained ten cases upon which our study for 1900 was based.

Size.—Every heart before the race showed symmetrical enlargement to percussion, moderate in degree. At the finish there was invariably a further enlargement, moderate or slight in degree. Four showed general enlargement, two enlargement to the right, one to the left, one to the left and upwards and two upwards. In seven of the ten complete cases and in several examined only at the start there was visible bulging of the precordia. This was present at the start and was not affected by the contest.

Murmurs.—Before the start, out of eighteen men examined, three showed auscultatory abnormalities. One of these (M.) had a prolongation of the first sound, heard midway between the xyphoid and the apex, not transmitted and without accentuation of the pulmonic second. It remained unchanged at the finish. The heart was rapid and slightly irregular. We believe that the murmur was functional. In a second case (P. L.) there was marked enlargement to the right before the race, and there was also a short systolic murmur to the right of the sternum at the nipple level. Five minutes after the finish this murmur was barely audible, while the cardiac area had extended to the left. The third case was an old, experienced runner (McA.) who had recently recovered from influenza. Before the race he was nervous and excited, and had a temperature of 100.7° F. He had the usual symmetrical enlargement of the heart. The murmur was systolic, heard at the second left interspace and transmitted a short distance toward the apex. The heart's action was slightly irregular. After the race he was examined immediately, but no murmur could be heard, and the heart was regular. In but one case (T.) was a murmur detected at the finish which was not present at the start. This was systolic and heard over the pulmonic area. The man had walked the last nine miles and showed no fatigue when examined. These murmurs, like all of those heard in this investigation, were of slight intensity, and were soft and blowing in quality.

A variable, and in some cases a considerable, time elapsed between the finish and the examination of the chests, as the sphygmograph and blood tension tests were made first, but the men still showed general exhaustion and cardiac dilatation. In four cases the examination was immediate; the longest delay was a half hour.

In the race of 1901 the faults of the previous year's observations were corrected, especially as to the delay in auscultation at the finish, which has been held accountable for the absence of new murmurs. Fewer men were examined, with greater individual

care. Two and three days before the race several men were examined at their gymnasiums, and of these four finished, while several others afforded partial observations. The results obtained by inspection and percussion of the heart's area were the same as in 1900; there was always some enlargement before the race with further increase during it. Two (J. L. and H—ks) showed marked enlargement during the race; one (P.) showed moderate increase; but the fourth (McA.) showed little or none. All men were examined in the recumbent position, and great care was taken with the tracings. The results from percussion are certainly as accurate and significant as those obtained by auscultation. Of these four men one (H—ks) had no murmur either before or after the race; one (McA.) had no murmur at the start, but had a systolic murmur at the base on both sides of the sternum at the finish; the third (J. L.) had a soft booming systolic murmur, apical at the start and basal at the finish; the fourth (P.) showed at the start a systolic murmur over the whole precordial area. At the finish the first sound was noted to be impure at the apex, the abnormality being considered cardio-respiratory.

Several other men were examined both before and after the race with reference to heart sounds only. In a few of these systolic murmurs were heard both before and after the race, and in but one case was a murmur found at the finish which was not also heard at the start. This was systolic in time and was heard at the base. Exact figures as to the number examined cannot be given, as the record was lost in the confusion of the finish.

In 1902 four complete records were again made, while nine other men were examined for heart sounds only, both at start and finish. The four complete cases showed hearts that were symmetrically enlarged before the race and that underwent further enlargement during the race. There was no uniformity in the direction of the enlargement, either to right or left, and this observation holds true for all three years. The degree of enlargement during the race was slight.

Auscultation of the four complete cases, examined by the same observers both before and after the race, showed two men (H—ks and C.) without murmurs both at start and finish. The third (P.), noted to have a faint, soft, systolic murmur at the apex two days before the start, was without a murmur at the finish, while the fourth (J. L.), noted to have a slight impurity of the first apical sound at the start, had a systolic murmur at the finish. It would be unfair to regard this murmur as new-formed during the race; it was obviously an accentuation of the impurity heard before.

Of the nine men of whom we have no other record at the start than the statement of the examiner that he heard no murmurs, six showed murmurs at the finish. Of these three were cardio-respiratory, ceasing on holding the breath, and the other three were apical systolic murmurs, apparently developed during the race. There was no delay in auscultating at the finish. The murmurs were very slight in intensity.

In all three races some men were cyanotic at the finish, and others were pale. Bleeding from the mouth or nose did not occur. In 1900 a number

of the other men vomited, but only after taking food or water.

The enlargement of the heart before the race, invariably present in our cases, agrees with the work of other observers, and means hypertrophy, the result of training. It is to be compared to the hypertrophy of the peripheral muscles (which, it may be said, was not marked in these runners) and, far from being an abnormality, is probably essential to successful running.

The presence of so many systolic murmurs before the race (six out of eighteen cases) is more difficult to explain, and is wholly at variance with the results of Williams and Arnold, who studied this same race in 1899. They found no such murmurs in any of their cases. The discrepancy may perhaps be accounted for by the different conditions under which the examinations were made. In Williams and Arnold's cases the examinations were made several days before the race, and the examiners thus became acquainted with their men. The number was smaller, as was also the number of contestants, and consequently there was less excitement at the start when the final observations were made. In ten of our eighteen cases the first examination was made at the starting-point. The increasing fame of the event brought a greatly increased number of entries, and this, with the greater public interest, made much more excitement at the start than ever before.

We believe, therefore, that most or all of these murmurs before the race were due to nervous excitement. Similar murmurs have been noted by Morton Prince in candidates for the Boston Fire Department. When he examined men under circumstances calculated to produce nervous excitement, the murmurs were frequent, but when the excitement was reduced to a minimum they were rare. Out of our six cases showing murmurs at the start, the abnormal sounds had disappeared at the finish in four, and in one other the murmur was scarcely audible. Perhaps this was because at the finish the men were too much exhausted to be "rattled." Some of the murmurs may have been due to other causes, — the persistent ones possibly even to old valvular endocarditis, — but probably most of them were caused by nervousness.

We recognize that in attributing the murmurs to nervous excitement we are but stating the results of observations without adequately explaining them. How excitement produces the murmurs we cannot at present say. A discussion of the question would lead us into theories beyond the limits of this paper. We cannot, however, unreservedly accept Prince's view that they are due to mitral regurgitation from relaxation of the mitral sphincter.

After the race there was further increase in the heart area in sixteen of the eighteen cases. We attribute this to temporary acute dilatation. But why should the heart be dilated where the blood pressure is so remarkably decreased as it was in these cases? There are two possible answers. It is generally admitted that in brief exercise (or in the early part of continued exertion) the blood-pressure is raised. Darling has shown that, even after the comparatively brief exertion of a boat race, dilatation of the heart occurs. Stengel considers that the dilatation found in the presence of low blood-pressure repre-

sents the failure of the heart to recover from dilatation that occurred in the early period of high tension. The other explanation is that the dilatation represents relaxation of the heart's muscular tonus as a result of exhaustion or "fatigue products."

In regard to the murmurs found after the race, as in these found before, our results differ from those of Williams and Arnold, who found systolic murmurs in eleven out of thirteen cases. Of our eighteen cases fully examined, but six had murmurs at the finish, and in four of these the murmur was also present at the start. Of the thirty or forty cases examined by auscultation alone, we found but four more who had a murmur at the finish only.

The cause of the murmurs heard after exercise is a matter of much doubt. We do not consider that our cases bear out the theory that they are always or usually due to regurgitation from the left ventricle consequent upon relaxation of the so-called mitral sphincter. The natural explanation of the discrepancy between our results of 1900 and those of Williams and Arnold was that too long a time had elapsed between the end of the race and the examination. They distinctly state that the murmurs were fugitive, often lasting less than a minute. This objection does not apply to our work in 1901 and 1902. The discrepancy may be partly explained by difference in weather, as well as by the difference in surroundings already referred to. Moreover it seems to us that their fugitive nature is opposed to the explanation as mitral regurgitation, for the strain had continued for hours and the murmurs often disappeared while the general exhaustion and cardiac dilatation persisted.

The lack of signs of engorgement of the lungs and the character of the sphygmograph records are opposed to the supposition of mitral regurgitation. The capricious occurrence of the murmurs in our cases and their somewhat variable locations suggest that no one cause accounts for them all. While we do not deny the possibility of slight mitral leakage we are unable in our cases to find evidences of it beyond the occurrence of murmurs in systole.

We found no clear evidences of dilatation of the pulmonary conus arteriosus, which some writers have offered as an explanation of the systolic murmurs at the base. But the recognition of comparatively slight degrees of this condition is at least difficult, and we would suggest the desirability of studies with the X-ray. Stengel believes that the systolic murmurs at the pulmonic area and apex are due to dilatation of the pulmonary conus arteriosus, and continues: "The murmurs at the apex may undoubtedly be due to mitral regurgitation, but I cannot convince myself that all found in this situation are of this nature. Some, I believe, are intraventricular; others, possibly cardio-pulmonary in origin." With this unsatisfactory statement we must at present be content.

The subsequent condition of the men we were unfortunately unable to follow. We received letters from the four men studied fully in 1901, and, except for a case of badly blistered feet, all were as well as ever in a day or two. So far as we know no one has ever suffered serious or permanent harm from this race. In fact the changes, so far as the heart is concerned, must be regarded as physiological.

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KIDNEYS.

BY JOHN M. CONNOLLY, A.M., M.D.

In the three accompanying tables are given the results of the examinations of the urine for the three years 1900, 1901 and 1902. A few words in explanation of these tables are necessary.

METHODS.

The urine of each contestant from whom it was possible to obtain a specimen was examined. The urine was collected at Ashland just before the start and at the Boston Athletic Association Building as soon as it could be passed after the race. The examination was begun immediately and was completed as rapidly as possible, in order that all determinations might be made while the specimens were still fresh. The *amount* was measured, and the *color*, *odor* and *reaction* noted. The *urea* percentage was estimated by Squibb's ureometer. *Albumin* was tested for by both the nitric acid and the heat test, and *sugar* by Fehling's test, which was allowed to stand for twenty-four hours. All of these tests were made in every instance, and the *specific gravity* was taken in every case in which a sufficient amount of the urine was obtained.

Uric acid, *chlorides* and *phosphates* were quantitated in all those cases, nineteen in number, in which a specimen of the urine both before and after the race was obtained and a sufficient quantity remained after the performance of the other tests. The *uric acid* was quantitated by means of the centrifuge, by the ammoniacal argentic nitrate solution, after precipitating and removing the phosphates. The *chlorides* were estimated by titration with argentic nitrate, and in the year 1901 all the specimens both before and after the race were first titrated with argentic nitrate in the usual way. The organic matter was then removed by the Neubauer-Salkowski modification of Mohr's method, and titration with argentic nitrate again done.

The results here were interesting as showing the correctness of the rule which requires the subtraction of one cubic centimeter from the reading when the amount of argentic nitrate used amounts to 10 cubic centimeters or over. It was found that each cubic centimeter of argentic nitrate required when the organic matters were not removed corresponded almost exactly to $\frac{1}{10}$ of a cubic centimeter required after the organic matters were removed.

The *phosphates* were estimated by titration with uranium acetate, and for the year 1900 by the centrifuge also. For 1901 and 1902 the method by titration was chosen as being the more accurate.

The explanations already given apply to all the urines. In the year 1902 it was found possible, for the first time, to secure the twenty-four-hour amounts both before and after the race. This was done from three runners, and from one of these an additional twenty-four-hour amount was obtained

| 1900. | No. of Urine. | Amount in c.c. | Color. | Reaction. | Sp. Gr. | Urea, %. | Uric Acid, %. | Chlorides, %. | Phosphates, %. | Albumin. |
|-----------------------|-----------------|-----------------|---------------|-------------|---------|----------|---------------|---------------|----------------|---------------|
| H. H. P. C. | 1 | 120 | Normal | Neut. | 1.018 | 1.64 | 0.024 | 0.668 | 0.12 | 0 |
| | | 90 ² | High Normal | Str. acid | 1.030 | 2.46 | 0.082 | 0.212 | 0.19 | St. trace |
| T. M. | 2 | 125 | Normal | Acid | 1.028 | 2.59 | 0.035 | 0.704 | 0.17 | 0 |
| | | 120 | High Normal | Str. acid | 1.027 | 2.08 | 0.024 | 0.670 | 0.15 | St. trace |
| D. G. (?) | 3 | 110 | Normal | Sl. acid | 1.025 | 2.90 | 0.082 | 0.795 | 0.14 | 0 |
| | | 240 | Normal | Str. acid | 1.021 | 2.40 | 0.018 | 0.273 | 0.30 | V. sl. trace |
| F. C. | 4 | 128 | Normal | Acid | 1.028 | 3.03 | 0.059 | 1.214 | 0.11 | 0 |
| | | 90 | High Normal | Str. acid | 1.027 | 2.21 | 0.047 | 0.849 | 0.09 | St. trace |
| E. C. R., Jr. | 5 | 130 | Normal | Sl. acid | 1.027 | 2.71 | 0.035 | 0.789 | 0.125 | 0 |
| | | 120 | Sl. H. Normal | Str. acid | 1.026 | 2.40 | 0.024 | 0.304 | 0.15 | V. sl. trace |
| H. N. | 6 | 60 | High | Str. acid | 1.034 | 1.89 | — | — | — | St. trace |
| | | 30 | Normal | Acid | — | 2.96 | — | — | — | 0 |
| T. J. H—ks | 7 | 90 | High Normal | Str. acid | 1.024 | 2.46 | — | — | — | Trace |
| | | 120 | Normal | Acid | 1.026 | 3.20 | — | — | — | 0 |
| H. L. W. | 8 | 20 | High Normal | Str. acid | — | 2.40 | — | — | — | Trace |
| | | 60 | High Normal | Acid | 1.029 | 2.59 | — | — | — | 0 |
| J. L. | 9 | 30 | High Normal | Str. acid | — | 2.14 | — | — | — | Trace |
| | | 90 | High Normal | Str. acid | 1.021 | 2.77 | — | — | — | Sl. poss. tr. |
| J. J. Q. | 10 | 60 | High | Str. acid | 1.026 | 2.27 | — | — | — | Sl. trace |
| | | 90 | Normal | V. sl. acid | 1.020 | 1.64 | — | — | — | 0 |
| W. K. C. | 11 | 30 | Normal | Str. acid | — | 2.77 | — | — | — | Sl. trace |
| | | 30 | Normal | Acid | — | 2.77 | — | — | — | 0 |
| L. B. | 12 ³ | 120 | Sl. H. Normal | Str. acid | 1.021 | 2.65 | — | — | — | V. sl. trace |

¹ In these quantitative estimations Dr. F. T. Lewis, Austin Teaching Fellow, Harvard Medical School, gave valuable aid.

² After the race, in *italics*.

³ Completed 7 miles only.

| 1901. | No. of Urine. | Amount in cc. | Color. | Reaction. | Sp. Gr. | Urea, %. | Uric Acid, %. | Chlorides, %. | Phosphates, %. | Albumin, %. |
|----------------|-----------------|------------------|------------------|--------------|---------|----------|---------------|---------------|----------------|---------------------------------|
| D. | 13 ⁵ | 140 | Pale Normal | Acid | 1.025 | 3.03 | .117 | 1.03 | .0900 | 0 |
| | | 200 ⁶ | Pale N. sl. tur. | Str. acid | 1.020 | 2.27 | .024 | 0.33 | .1060 | 1 ¹ / ₂ 0 |
| S. | 14 ⁷ | 130 | Normal | Acid | 1.030 | 3.28 | .085 | 0.89 | .1575 | 0 |
| | | 125 | N. sl. turbid | Acid | 1.026 | 2.96 | .017 | 0.78 | .0900 | 1 ¹ / ₂ 0 |
| C. | 15 | 60 | Normal | Acid | 1.020 | 2.52 | .012 | 0.76 | .0225 | 0 |
| | | 65 | Normal | Str. acid | 1.015 | 1.45 | .023 | 0.44 | .0333 | 0 |
| K. | 16 | 140 | Normal | Acid | 1.025 | 3.28 | .053 | 0.80 | .0600 | 0 |
| | | 135 | Normal | Acid | 1.020 | 2.65 | .141 | 0.33 | .2250 | 1 ¹ / ₂ 0 |
| | | 40 | Pale | Acid | 1.026 | 3.03 | — | 0.96 | .0675 | 0 |
| G. | 17 | 65 | Normal | Str. acid | 1.030 | 2.90 | .012 | 0.46 | .1013 | 1 ¹ / ₂ 0 |
| | | 75 | Normal | Faintly acid | 1.025 | 2.72 | .023 | 0.99 | .0675 | 0 |
| P. | 18 | 130 | Normal turbid | Acid | 1.020 | 2.68 | .023 | 0.42 | .0890 | 1 ¹ / ₂ 0 |
| | | 75 | Pale | Str. acid | 1.027 | 3.10 | .128 | 0.80 | .1013 | 0 |
| DeV. | 19 | 200 | Pale | Acid | 1.022 | 2.58 | .012 | 0.34 | .1125 | 1 ¹ / ₂ 0 |
| | | 80 | Normal | Acid | 1.028 | 2.90 | .081 | 0.84 | .1350 | 1 ¹ / ₂ 0 |
| H—ks | 20 | 75 | Normal | Str. acid | 1.022 | 2.65 | .012 | 0.37 | .0450 | 1 ¹ / ₂ 0 |
| | | 90 | Pale | Sl. alk. | 1.025 | 1.96 | .025 | 0.89 | .0225 | 0 |
| P. | 21 | 160 | High Normal | Str. acid | 1.022 | 2.02 | .012 | 0.27 | .0450 | 1 ¹ / ₂ 0 |
| | | 60 | Pale | Faintly acid | 1.018 | 1.51 | .059 | 0.78 | .0225 | 0 |
| F. | 22 | 135 | High | Str. acid | 1.027 | 2.40 | .168 | 0.33 | .1800 | 1 ¹ / ₂ 0 |
| | | 70 | Pale | Faintly acid | 1.020 | 2.21 | .015 | 0.74 | .0338 | 0 |
| E. | 23 ⁸ | 140 | Pale | Faintly acid | 1.013 | 1.70 | .066 | 0.50 | .0538 | 1 ¹ / ₂ 0 |
| | | 140 | Normal | Acid | 1.030 | 3.22 | .011 | 0.68 | .1013 | 0 |
| J. L. | 24 | 160 | N. sl. turbid | Str. acid | 1.016 | 2.14 | .029 | 0.17 | .0768 | 1 ¹ / ₂ 0 |
| | | 35 | Pale | Str. acid | 1.027 | 2.40 | — | 1.19 | .0563 | 0 |
| McA. | 25 | 170 | Normal | Str. acid | 1.016 | 2.27 | — | 0.51 | .1350 | 0 |
| | | 50 | Sl. pale | Acid | 1.026 | 3.31 | — | 1.05 | .0900 | 0 |
| McD. | 26 | 300 | Normal | Str. acid | 1.026 | 2.98 | — | 0.44 | .2250 | 1 ¹ / ₂ 0 |
| | | 130 | Normal | Acid | 1.025 | 3.15 | — | 1.01 | .0900 | 1 ¹ / ₂ 0 |
| M. | 27 | 125 | Normal | Str. acid | 1.024 | 3.03 | — | 0.54 | .1140 | 1 ¹ / ₂ 0 |

⁴ In these quantitative estimations Mr. W. E. Connolly, Harvard Medical School, gave valuable aid.

⁵ Ran only 18 miles.

⁶ After the race, in *italics*.

⁷ Ran only 15 miles.

⁸ Ran only 20 miles.

| 1902. | No. of Urine. | Amount in cc. | Color. | Reaction. | Sp. Gr. | Urea, %. | Grams of Urea in 24 hours. | Uric Acid, %. | Chlorides, %. | Grams Chlorides in 24 hours. | Phosphates, %. | Albumin. |
|----------------|---------------|--------------------|--------|-----------|---------|----------|----------------------------|---------------|---------------|------------------------------|----------------|---------------------------------|
| C. | 28 | 1,200 | Normal | Acid | 1.027 | 2.65 | 31.80 | .117 | .759 | 9.11 | .0956 | 0 |
| | | 1,130 ⁹ | High | Acid | 1.030 | 2.02 | 22.82 | .017 | .243 | 2.75 | .1013 | 1 ¹ / ₂ 0 |
| H—ks | 29 | 1,250 | Pale | Acid | 1.030 | 3.15 | 39.375 | .081 | .807 | 10.09 | .0790 | 0 |
| | | 1,180 | High | Acid | 1.030 | 3.28 | 38.704 | .141 | .564 | 6.66 | .1131 | 1 ¹ / ₂ 0 |
| O'B. | 30 | 1,225 | Normal | Acid | 1.021 | 2.07 | 25.602 | .025 | .893 | 10.94 | .1060 | 0 |
| | | 1,120 | High | Acid | 1.023 | 2.27 | 25.424 | .017 | .443 | 4.96 | .1013 | 1 ¹ / ₂ 0 |
| | | 1,500 | High | Acid | 1.030 | 2.77 | 41.55 | .029 | 1.052 | 15.78 | .1125 | 0 |

⁹ After the race, in *italics*.

¹⁰ "30" one week after the race.

one week later. As the results for 1902 were in harmony with those for the two preceding years, the table for 1902 contains only the results of examinations made of these twenty-four-hour amounts.

RESULTS.

The most important facts learned by these examinations are summarized in the tables.

Quantity.—In most cases the quantity of urine passed after the race was quite small. The average time at which the small amounts given in the tables were passed was one and a half hours after the finish. Some of the contestants were able to pass urine almost immediately after the race. In most of these cases the quantity was rather large.

Color.—The color was in every instance higher after the race than it had been before the race. In several cases the difference was very marked. Many of the urines passed after the race were slightly turbid and a few slightly, but distinctly, smoky.

Reaction.—After the race the acidity, as shown by the intensity of the color given to litmus paper, was in every case markedly increased.

Specific gravity.—In many cases the quantity of urine secured after the race was so small that the specific gravity could not be obtained by the urinometers at hand. In the cases in which estimation could be made, there was no constant relative increase or diminution. The majority, however, showed relative diminution after the race.

Urea.—For 1900 and 1901 the percentages only could be obtained. In the majority the percentage of urea after the race was relatively diminished. Much more satisfactory are the results of the 1902 examinations, because in three cases the twenty-four-hour amounts were obtained. In two of these cases the urea was practically the same before and after the race, in one considerably diminished. It is worthy of note that in the one case in which the twenty-four-hour amount was obtained one week after the race the quantity of urea had risen markedly. It would be interesting to know if this rise is constant.

These results agree very well with the results from the researches of Fink and Wislicenus in their report of the Faulhorn, and also with the later work of Voit and of Parkes, who says that "there is no distinct increase in the excretion of urea after muscular exercise." There probably is no immediate increase after excessive exercise. I am inclined to think, however, that with the Marathon runners there is a later increase depending, as regards the time of its occurrence, upon the time when the men regain their normal appetite. In this connection it is interesting to see that in two cases in 1900, in which it was possible to follow up the urine, the urea percentage still remained below normal three days after the race, and both men declared that they had not yet (April 22, 1900) reached their normal appetite.

The results harmonize also with those of Dr. A. Darling in his study on the Harvard University Crews.¹¹ He well points out the agreement of these results with previously noted facts as follows: "Physiologists have proved that an increase in the urea elimination above normal limits is usually

caused by an increase in proteid digestion and not by an increase of muscular action."

Of course, these examinations and any conclusions based upon them are very unsatisfactory. If we could have the urines for two weeks before the event and for two weeks after, and could secure the whole twenty-four-hour amounts, results of absolute value might issue, but it is feared that this state of things will not soon obtain. Many of these men come from distant places to take part in the race, and usually leave for their homes as soon as possible after the race. And even those who live in the vicinity of Boston are not particularly impressed with the importance of these researches, and "with the best intentions" they, like college students,¹² sometimes forget, and some of the urine is lost. Only those who have had actual experience in the work know the difficulties in the way of a full and satisfactory examination of a runner, tired after a Marathon race.

It is unfortunate that of the three twenty-four-hour amounts, two had urea percentages relatively increased after the race. This is contrary to what was found in the majority of cases examined both in this and in the two preceding years.

If in the majority of cases the urea percentage is relatively diminished after the race, and the quantity for twenty-four hours is also diminished, as would seem to be the case, the results for total urea in the table for 1902 are probably exceptional. Of course, neither from three cases nor from thirty can inferences of any great value be drawn. The work, however, constitutes a beginning which may be elaborated.

Uric acid.—I expected the uric acid to be increased after the race. It would seem, instead, in the majority of cases, to be diminished.

Chlorides.—The chlorides were consistently diminished after the race. The results given in the table for 1901 are the most accurate, as especial pains with the chlorides were taken in this year, as already stated. It will be noted that after the race there is an average diminution of about 50% in the chloride percentages. The table for 1902 with its total twenty-four-hour quantities corroborates fully the results previously obtained.

Phosphates.—The phosphates apparently vary without law.

Albumin.—Albumin was absent from all but four of the urines before the race. Albumin was present after the race in every urine. The amounts varied as the tables indicate. It is of interest to note here that Dr. Darling found in the twenty-four-hour amounts several days after the boat races albumin "in 48 out of 83 specimens." "The amount," he says, "was never more than a trace." And it is his opinion that "the traces found in the twenty-four-hour specimens," after a race, "really represented a considerable amount of albumin passed in one urination after rowing, diluted with non-albuminous urine passed during the rest of the day."¹³

With a view to ascertaining whether this opinion is correct, the urines for 1902, in which the twenty-four-hour amounts were preserved, were saved with each urination in a separate vial. It was found

¹¹ Boston Med. and Surg. Journ., vol. cxli, no. 10, p. 231.

¹² Darling: loc. cit.

¹³ Darling: loc. cit.

that in two cases the amount of albumin was greatest in the first quantity passed and rapidly diminished; but in one of the three cases the percentage in the second urination was a little more than in the first, and this in spite of the fact that the quantity of urine passed at this second urination was slightly greater than that obtained at the first. All the urinations for the twenty-four hours contained some albumin. It is probable, then, that it would be nearer the truth to say that the quantity passed at the first urination generally contains most albumin and that this is diluted with *less* albuminous urine passed during the rest of the day. I am satisfied that in the Marathon racers the albumin persists, in the majority of cases, for at least thirty-six hours after the race; but from two urines which I obtained in 1900 three days after the race, and from one urine passed one week after the 1902 race, albumin was entirely absent. The quick recovery is remarkable when attention is paid to the sediment found in these cases immediately after the race. The fact that in three years only four contestants had albumin just before the race after the training that most had undergone is also noteworthy in contrast with "the albuminuria in the urine of a large proportion of the squad under ordinary conditions of training" for the crews.¹⁴ Does running involve less strain on the kidneys than rowing?

Sugar.—Sugar was absent in all cases before the race. After the race a slight reduction of Fehling's solution was noticed in two urines of the year 1900. In both of these there had been no reduction on boiling, and the reduction was not visible at the end of eight hours, but was seen at the end of twenty-four hours. It was very slight and was probably not due to sugar.

Sediment.—Like the chlorides, the sediments were consistently alike.

In most of the urines before the race only a few squamous cells were found in the sediment. In a few of the sediments a rare calcic oxalate crystal was found, and in three a rare acid sodic urate crystal.

In the cases before the race which contained albumin, however, the sediments were alike in showing an exceedingly rare pure hyaline cast, a few leucocytes, a few small round cells and an exceedingly rare abnormal blood globule.

After the race every sediment contained large numbers of hyaline and fine granular casts, a few coarse granular and epithelial casts. There was in all cases more or less blood, normal and abnormal, free and on casts. The amount of blood usually varied directly as the amount of albumin. Brown granular casts were found rarely in many of the sediments, and calcic oxalate crystals, both primary and secondary, in the majority. Spermatozoa were found in several cases. Leucocytes were not many, and there were only a few renal cells free, though many were seen adherent to the casts. The sediments from the urines of several runners who completed distances of from only seven miles up to fourteen and eighteen differed in no respect from those of the contestants who finished. The urines of two of the bicycle riders detailed to accompany the runners also had sediments exactly like those of the runners themselves. In the specimens obtained

three days and one week after the race only a few squamous cells were found.

It would be a valuable supplement to these observations if the sediments from the urines of race horses could be examined after a Charter Oak meet or some similar event.

PHYSICAL CHARACTERISTICS.

It is interesting to consider briefly the general physical characteristics of the men who were successful in these contests. While it is difficult to detect any obvious practical value of Marathon races, in a general way they may be said to resemble the conditions which would obtain in war time during forced marches of small bodies of lightly armed troops. The analogy is closer than would at first appear, because the race represents not a single effort, but the final test of a long series of practice runs, and because many of the same contestants compete year after year. The length of the course and the speed maintained (in 1901 the winner's time for the entire distance was 2 hours and 29 minutes) would counterbalance the absence of uniform and accouterments. The first three or four men in each race showed, as a rule, the same general physical characteristics, as follows:

Height, medium or less than medium; weight, 110 to 140, and more frequently approaching the former than the latter extreme; chests, not unusually large, nor was the chest expansion very great; legs, of medium length; muscles, never remarkably hypertrophied, but always firm and free from fat; feet, usually large and broad, without evidences of compression in tight shoes; hearts, invariably enlarged, and proportionately more so than the slower runners. In street clothes these men recalled the privates of the French and Austrian rather than the English or German armies, and the traditional "long, lanky Yankee greyhound" was certainly conspicuous by his absence.

It has been asserted by military critics that in time of war mobility of forces is of the first importance. The Marathon races of the past five years prove that it is entirely possible to train considerable numbers of picked young men to develop speed far beyond anything hitherto obtained in modern armies, except in the very rarest instances. Whether this proven fact is of any practical value remains to be seen.

If we consider the speed at which the winners ran, the character of the roads, the frequency of hills and the oppressive atmospheric conditions, it seems marvelous that the human body can be trained to withstand so much with so comparatively little depression. The unpleasant results of longest duration seem to have been blisters on the soles of the feet. In the entire three years we neither saw nor heard of any serious, persistent after-effects, and it is yet to be proven that even these strenuous contests leave behind them any permanent injury.

A large number of men beside those whose names are affixed to the various sections have assisted in making these observations: In 1900, Drs. J. L. Frothingham, McCurdy, Meylan, Fulton, P. Thorndike and Professor J. Hough; in 1901, Drs. W. E. Faulkner, Franz, H. L. R. Crandon and W. H. McBain; in 1902, Drs. Frothingham, R. Hammond and Peters.

¹⁴ Darling: loc. cit.

MEDICAL TREATMENT OF INTESTINAL OBSTRUCTION.¹

BY THOMAS F. HARRINGTON, M.D., LOWELL, MASS.

THERE are perhaps fewer more serious conditions which the human subject is liable than those which confront the physician and surgeon in a case of intestinal obstruction. All his resources are called to action, and upon his ability to see clearly, and to act promptly, yet not hastily, will often depend the outcome of the case. To point out some of these conditions from a medical standpoint will be my endeavor in the ten minutes allotted to me. Briefly, the causes of intestinal obstruction which can be properly classified as medical affections are impaction of fecal matter, foreign bodies in the canal, intussusception and neoplasms.

There are certain symptoms more or less characteristic of intestinal obstruction: these are constipation, pain in abdomen, distention and vomiting.

The pain usually sets in early and may come on abruptly. At first it is colicky, then continuous and very intense. An important fact in relation to the pain is the exact seat of its beginning, for upon this may depend the differential diagnosis. After the trouble has existed for a short time the importance of this point is lost. Therefore make careful inquiry from the patient or his family as to the location of the first pain. In simple intestinal obstruction the onset of pain is gradual, often expressed by the patient "as if something had given way, like an attachment or adhesion." It is paroxysmal, mild and infrequent at first, becoming violent and oft repeated as the obstruction becomes more complete. The abdomen at first is not painful to percussion and palpation, but becomes so later. Acute pain in the abdomen is not in itself a sufficient sign for surgical interference. It is well to eliminate hysteria and also abdominal pain with muscular rigidity so often seen in pleurisy or pneumonia in young children. The pain in abdominal affections should not be too readily treated with opium, as much valuable information may thereby be lost.

Constipation is a very common symptom in all intestinal obstructions. The constipation may be due to chronic intestinal catarrh, disease of brain and spinal cord, injury to abdominal walls by blows, or by abdominal effusion, hysteria, or, in fact, any injury or disease which interferes with the nerve force of the intestines or abdominal walls. There may be a daily evacuation of the bowels and yet have obstruction. This is explained by the fact that the contents of the smaller bowels being fluid or semi-fluid works its way through the mass in the large intestines, and the contraction of the sphincter ani muscle keeps the lower two inches free from accumulations.

Vomiting in intestinal obstruction commences early, and is a constant sign. At first the contents of the stomach are ejected, later greenish and bile-stained fluids, and finally when the obstruction becomes complete, a brownish and black fluid with distinct characteristic fecal odor.

The amount of distention depends upon the seat of the obstruction and upon the presence of peri-

tonitis. The distention is most marked in obstruction of the large intestines; it may be slight or absent in obstruction of the small intestines.

In acute intestinal obstruction the sudden onset, the pallid, anxious face, sunken eyes, pinched features, cold clammy skin, feeble, rapid pulse, normal or subnormal temperature, dry, parched tongue and lips, characteristic odor of the breath, high-colored, scanty urine, — all form such a complete picture that an error in diagnosis seems unpardonable.

In obstruction due to fecal impaction there is usually a history of a long standing constipation, with frequent discharges of mucus. There may be retention of feces for weeks without marked symptoms. The general health becomes impaired, and gradually the obstruction grows more marked, until a distinct soft movable mass can be felt, usually in the colon or cecum. This tumor may be as large as a fetal head, and is frequently mistaken for an ovarian or other tumor, or even for pregnancy. The patient complains of vertigo, headache, ringing in the ears, faintness, etc., pain in the back, groins, genitals and extremities, he is also very irritable and fretful. A digital examination of rectum and vagina should be made in all such cases. If the case is neglected, abdominal pain, nausea and often vomiting follow, and finally the well-marked signs of intestinal obstruction develop, with all its consequences.

In obstruction due to foreign bodies in the intestines the history of the case is most important. Often there is an account of the person, usually a child, having swallowed a marble, coin, woollen fibers, needles, etc. Young girls and pregnant women often develop a morbid appetite for chalk, magnesia, lime, etc., which if long continued may be the cause of stony concretions or enterolithes forming in the intestinal canal sufficient to cause obstruction. These are usually found in the cecum or large intestines, and are most common in young and middle-aged people, rarely in the old. Gallstones escaping from the gall bladder into the intestines is not an infrequent cause of intestinal obstruction. Small ones may escape unnoticed in the feces, but if there is a slight constriction in the canal, or if the stones are numerous or large, an obstruction results, with all its consequences. This form of obstruction is four times as common in women as in men, and usually occurs in people over fifty years of age. The passage of foreign bodies through the intestinal canal is irregular, that is, quick at one portion and slow at another, inflammation arising and subsiding, impaired health, emaciation, cachectic appearance, signs of partial closure of the bowels and repeated attacks of inflammation, especially about the cecum. In the case of gallstone obstruction there is a history and evidences of disease of liver, and attacks of hepatic colic. The attack comes on with colicky, griping pain soon followed by violent agony; vomiting begins at once and is constant, bile first, then fecal matter; pulse small, wiry and frequent; belly is retracted, features pinched, extremities cold, much prostration and collapse.

Obstruction due to intussusception occurs most commonly in children under two years of life. There is a sausage-like tumor in the transverse colon, and usually a rectal examination will confirm

the diagnosis. The symptoms are sudden pain, colicky, intense and paroxysmal, soon becoming constant; — at first, pressure on abdomen gives relief, but peritonitis with tenderness sets in in a few hours; — vomiting early but not bloody or fecal for two or three days; diarrhea with bloody mucoid discharges, ten to twenty-five a day, and is fairly characteristic; much distention and tenesmus. The invaginated bowel may slough off and thus save the life of the patient, or the inflammation may become chronic and finally result in complete obstruction. The tumor is most noticeable during the pain.

In the treatment of the conditions of intestinal obstruction described much depends upon the history of the case and the stage of the disease when first seen. Often inquiry will bring out some fact suggesting the cause of the obstruction; for example, previous attacks suggest bands resulting from a peritonitis or a kink in the bowel, emaciation suggests cancer, or a previous ascites suggests a tubercular stricture.

Much information may be obtained in cases of intestinal obstruction by auscultation and percussion of the abdomen. When the stenosis becomes marked the distended bowel can be seen and may be a guide to the seat of the obstruction. Auscultation will establish the presence of intestinal peristalsis, thus eliminating paralysis in the diagnosis. Percussion will show the presence of gas in the abdominal cavity by the absence of the hepatic and splenic dullness, thus indicating a perforation of the intestines. The digital examination of the hernial rings should never be neglected in cases of abdominal pain.

In cases where foreign bodies have been swallowed *do not give castor oil*, as the increased peristalsis set up may cause more injury to the intestinal walls. Give oat meal, unbolted flour, corn meal or mashed potatoes. If the foreign body can be felt through the abdominal walls await its ejection. Examine the rectum frequently, as the foreign body often lodges there. In intussusception it is best to chloroform the child, lay it on its back, and slowly inject one or two gallons of warm water into the rectum. The height of the column of water should not exceed ten feet in an infant, or twenty feet in an adult. The rectum is capable of holding six quarts of water. Large enemata should always be tried before advising surgical interference. The use of bellows in inflating the rectum is not as safe as distention by water. In obstruction due to impacted feces the use of opium is not contra-indicated. Often the narcosis produced will relax the bowels sufficiently to allow the spontaneous evacuation of the mass. After pain, tenderness of the belly, or any other evidence of peritonitis subsides, it is safe to give castor oil, calomel or repeated enemata of warm water. None of these should be used until all inflammation subsides. Often the mass is so readily felt that gentle taxis will move it along. An empty rectum is no evidence that the obstruction is not due to fecal accumulations.

Purgatives and irritating enemata must not be given in cases of intestinal obstruction. The treatment *par excellence* is opium in small doses pushed until the vomiting, pain and tenderness subside. The stomach should be washed out three or four times

a day. For tympanites turpentine stupes and hot applications are serviceable. Surgical interference is warranted inside of three days if symptoms do not abate. Support strength of patient by concentrated and nutritious food, and with stimulant if necessary. Intestinal distention may be tapped if extreme. Taxis is often helpful in moving an impacted mass. Blood examination is of little value in making a diagnosis in intestinal obstruction, unless malignant disease, appendicitis, peritonitis or hemorrhage is present.

Prognosis depends very much upon the time which has elapsed since the first symptom. The duration varies, average period is death in six days. The nearer the obstruction is to the pylorus, the more rapid the death. In stricture or fecal impaction and chronic intussusception patient may live for weeks or months.

There remains one class of intestinal obstruction which is usually considered as belonging to the surgical side, yet which is, I think, fully if not more so a medical class than any yet mentioned. I refer to those cases of obstruction caused by cancer or other incurable diseases. While it is probably true that mechanical disturbances call for mechanical treatment, that is, surgery, yet the first object of the surgeon and physician should be the betterment of the patient. Good surgery is the degree of benefit afforded the patient by the operation, and not the ability to perform successfully the work undertaken. Is the life prolonged by the surgeon as happy or as free from pain as the life offered by the physician, even though the latter be shorter? Is surgical interference warranted in an intestinal obstruction due to tubercular bands when the lungs and peritoneum are studded with tubercular nodules, or for an obstruction due to cancerous growth when the other organs are known to be deeply involved? Have the results of surgical interference been so beneficial that the physician is justified in transferring his patient to the surgeon? Statistics on these points would suggest a negative answer. At the Massachusetts General Hospital in the years 1890 to 1900, 77 cases of cancer of the intestinal canal were operated upon by the various surgeons connected with the hospital. Thirty-six per cent died within one week; 19%, in one to four weeks; 18%, in one to six months; 5%, in six to twelve months; 11%, in one to two years; 5%, in two to three years, and 3% still living. Thus 54% died within a month; 72%, within six months, and less than 30% had life prolonged, and, according to the written accounts furnished by the friends of these patients, the life prolonged was one of terrible suffering. These figures in detail are more convincing even than in the aggregate.²

In the question of exploratory laparotomies the physician finds very little to warrant him in endorsing this short road to knowledge. Of 213 such operations at the Massachusetts General Hospital during the years 1890 to 1900, there were but 18 cured, with 87 deaths, and 75 failures to relieve the existing suffering. With the facilities offered by modern medicine for aiding the physician in making a diagnosis, namely, blood count and blood tests, toxin treatment, as well as Röntgen rays, it

² Boston Med. and Surg. Journ., Dec. 26, 1901. — Dr. R. H. Fitz.

is but logical to expect that the surgeon must work with the physician for his diagnosis. Each should supplement the other, not supplant him. The time will never come when hygiene and surgery, one to prevent and the other to cure, will represent all there is in medicine. To-day, as never before, exists a hard-and-fast line between the physician and the surgeon. Each are as distinct and separate as any specialties more generally recognized, and on account of the wider field of each, little or no true progress in medical science tending to the betterment of mankind can result from the absorption of one by the other. In the case of intestinal obstruction each case should be closely examined by both physician and surgeon, and no case should be operated upon except for the purpose of curing disease or relieving suffering with the reasonable assurance of a cure. Never should the operation be for diagnosis only. Every other department of science and art makes the division between the two branches. Already it is being recognized in this country in medicine, as it has always been recognized in Europe, and we owe it to our patient, our profession, and ourselves that we do not delay longer in this line of progress. No legitimate argument exists, especially in large cities, for combining the two duties. A division of duties will bring a union of advantages to both, and to the patient. Not less, but more surgery will result, surgery which will not be the last resort in a hopelessly delayed case, but rather an early opportunity for the best results, a factor in itself sufficient to materially alter the mortality rate now so high in intestinal obstruction.

Medical Progress.

PROGRESS IN THORACIC DISEASE.

BY JOHN W. BARTOL, M.D.

AN EARLY SIGN IN PLEURISY WITH EFFUSION.

PRZEWALSKI¹ has noted as a very early sign in 19 cases (14 serous, 5 purulent) a readily demonstrable though not very obvious narrowing of the intercostal spaces on the affected side, with a marked increase in the sense of resistance. He considers it due to a reflex contraction of the internal intercostal muscles analogous to the contractures of the extremities in certain cases of joint inflammation.

TREATMENT OF PLEURISY WITH EFFUSION.

Delafield² supports the practice of immediate aspiration in all cases of pleurisy by the tabulation of 200 hospital cases in which this procedure was followed; in the first 82 drugs were also given, but in the others, single or repeated aspiration was the only treatment. The quantity of fluid varied from 100 cc. to 3,500 cc.; those with bloody serum (25 cases) or with turbid serum (18 cases) did as well as those with clear fluid. In more than half the cases the duration of the pleurisy before aspiration was 30 days or under, and within four weeks after aspiration 169 were completely cured. In 142 cases

fluid was withdrawn only once, and in only 4 cases was the maximum of four times reached.

In private practice the results were even better.

SEROUS PLEURISY OF THE MEDIASTINUM.

Four supposed cases of this rarely recognized condition are reported by Chauffard³.

The most characteristic sign is a vertical band of dullness close to the vertebral column on either side, extending, perhaps, to the level of the lower angle of the scapular; in three of his cases a needle inserted close to the column withdrew a small amount of fluid and confirmed the diagnosis. The course may be entirely benign without extension, but there is apt to be an associated diaphragmatic pleurisy which will give a right-angled figure of dullness, and often an extension to the general pleural cavity. The collection of fluid within the mediastinum may be sufficient to cause marked dyspnea and signs of cardiac collapse.

PRESSURE OF PLEURAL EFFUSIONS.

As a sequence to his studies of intrapleural pressure in pneumo-thorax, Bard⁴ has made detailed investigation of methods and results in cases of effusion, serous or sero-fibrinous. His apparatus consists essentially of a glass tube connected with the trocar by rubber tube, and thus capable of serving either as siphon or when elevated as manometer tube. Very full directions are given for avoidance of errors and correction of those unavoidable. The most important results of his study are to show that, contrary to general opinion, the surface pressure in effusion is, during quiet respiration, always negative during inspiration and almost, if not quite always, during expiration; experiments on the rabbit show that it is impossible to create a positive pressure by injection, the excess of fluid being immediately absorbed, and if even the slightest positive inspiratory pressure is created by use of an elastic sac within the pleural cavity, the animal immediately succumbs; a fluid effusion, in distinction from pneumo-thorax, depends entirely on its volume for its effect on the lung; careful study of intrapleural pressure gives valuable information as to the state of elasticity of the lung and as to its degree of extensibility, possibly also as to encystment or freedom of the fluid. Aspiration by use of siphon is to be recommended because it enables one to stop the flow at the establishment of physiological relations, that is, when the pressure in forced inspiration is feebly negative.

BACTERIOLOGY OF EMPYEMA.

Withington⁵ has tabulated a series of 135 cases examined to determine the etiological organism, and draws, amongst others, the following conclusions, namely, that while the majority of cases are metapneumonic, it is not safe to predicate as to the variety of pneumonia from the organism present in the exudate. Streptococcus, for example, either alone or in association with one or more others appears more frequently than any other, but is equally suggestive of lobar, lobular, or influenzal pneumonia, or phthisis with mixed infection. Fur-

³ Presse Med., April 16, 1902.

⁴ Rev. de Med., Nos. 3 and 4, 1902.

⁵ Boston Med. and Surg. Journ., Nov. 6, 1902.

¹ Centralbl. f. Chir., No. 14, 1902.

² Am. Journ. Med. Sci., December, 1902.

thermore, streptococcus in the meta-pneumonic cases seems of no worse import than lanceolatus, but when originating in suppurative or pyemic conditions outside the chest, it is probably of more virulent type, with bad prognosis. The particular organism present, if a pure culture, should have less weight than the general symptoms in determining the need of operation. If the first fluid aspirated be a clear serum containing streptococci or pneumococci a gradual development of pus can usually be forecast, but there is a possibility of later infection from within the lung even when the earlyappings are sterile.

NITROGEN EXCRETION IN PNEUMONIA.

Cook⁶ was led to pursue the study of the relation of nitrogen excretion to resolution, in the hope that in cases of delayed resolution some line of treatment would be found to promote absorption. In this hope he was disappointed, but his results are of marked interest. Assuming that in the involved lung is stored from 500 to 1,000 grms. of exudate per lobe, the absorption of which would be quite accurately indicated by the daily amount of nitrogen in the urine, he found that in the average favorable cases following the initial chill for a day or two there is a nitrogen output below normal, corresponding probably to the storing of the exudate, and beginning with the third day or so, a gradual rise in the output which reaches its maximum in perhaps two days, and then, if the lung remains clear and there is no further involvement, rapidly returns to normal *pari passu* with disappearance of physical signs.

In the cases of delayed resolution quite a different picture was presented. One case, with but one lobe involved, and temperature normal after the eighth day, but still showing signs of consolidation on the twenty-fourth day, excreted during the first thirteen days a surplus amount of nitrogen which would represent the weight of exudate in four consolidated lungs; and a like amount was secreted in twenty-four days by another patient who still showed signs on the sixteenth day. In a case ending in empyema, with a flat note over chest on the seventeenth day, the nitrogen excretion was about normal, whereas in every delayed resolution with flatness nitrogen was much above normal, a suggestion for differential diagnosis. The conclusion is reached that in delayed resolution there is not "a passive *status quo*, waiting for weeks to be carried away, but a continually progressing cycle of formation, liquefaction and absorption of pneumonic exudate," a condition properly spoken of in the long-continued cases as chronic pneumonia. Explanation of defervescence and drop in leucocytes in these cases must be deferred till more is known about the anti bodies.

In the normal cases a probable causal relation between leucocytes and resolution is shown by the parallelism between the leucocytosis curve and the curve of nitrogen excretion.

PRODUCTION OF RESPIRATORY SOUNDS.

Marek⁷ describes a number of interesting and apparently conclusive experiments made with tubes both stiff and yielding; lungs within and without the body; domestic animals living and dead, with

trachea severed and unsevered; tuning forks and other accessories.

As a matter of acoustics, he seems to prove in the first place that the lungs, whether expanded or collapsed, do not modify *pure tones*; while the so-called *murmur*, on the other hand, is made lower and stronger if ausculted through expanded lungs with patent bronchi, and remains unchanged if ausculted after the bronchi have been injected with plaster. Moreover the lungs with patent bronchi, so long as they contain air, transmit tones and also murmurs better than a solid organ like the liver, but if the air be pressed out of the lungs they transmit less well than the liver.

To show the bearing of these findings he then pictures the respiratory tract as a musical pipe with multiple branchings, the note of which is created by the to-and-fro current of air through the glottis, while the final tone represents a combination of the ground tone with the many over-tones furnished by the system of resonating tubes. This combination is the bronchial or glottis tone (not the vesicular murmur), and will or will not be transmitted to the ear ausculting over the lungs, according as the bronchial branches in the vicinity are large enough or too small to transmit the sound waves; thus in ausculting the larger domestic animals he was able to hear a vesicular murmur throughout the lungs, while the bronchial tone was heard only in the neighborhood of the larger bronchi.

Further proof of the independence of vesicular and bronchial breathing sounds was furnished by experiments on dead and living animals with severed trachea, showing the impossibility of their having the same origin.

If the vesicular murmur is not a transmitted tracheal sound it must originate within the lungs, and the most natural explanation of its causation is that it represents the vibrations set up by the stenosis existing at the termini of the bronchioles in the infundibula. The relative slowness of the air current makes the vibrations less rapid, and the result is a low-pitched tone which is strong enough to reach the ausculting ear, because many of the infundibula are in the superficial part of the lung and produce in combination a sound loud enough to be transmitted to the surface of the body. The expiratory murmur is simply a combination of glottis sound with added resonance.

Bronchial (tubular) breathing is dependent on the glottis vibration, as shown by laboratory acoustics and demonstrations on dogs healthy, and with pneumonia. In the solidified lung the walls of the smaller bronchi become less yielding, and the tracheal sound with its over-tones is more clearly transmitted to the ausculting ear; if the bronchi are plugged, however, the lung tissue becomes a very poor transmitter of sound. With lungs normal, the bronchial character will predominate if the tracheal sound is so intensified or the intervening lung tissue so thin that the resonating quality is not too much weakened by the yielding walls of the smaller bronchi. Amphoric breathing and metallic tinkle are simply further modifications of resonance due to cavity or pneumo-thorax. The production of râles is also theoretically discussed.

Hoover⁸ reports a clinical case which supports in a

⁶ Johns Hopkins Hosp. Bull., December, 1902.

⁷ Deut. Med. Wehr., Nos. 34 and 35, 1902.

⁸ Journ. Am. Med. Asso., Sept. 27, 1902.

striking way certain postulates of the above theories. An old man in the early stage of pneumonia (high pitched percussion, râles, respiration not bronchial) was seized with recurrent spasms of very violent hiccough. During these spasms auscultation over trachea showed no respiratory sound whatever, while everywhere over the lungs was heard a loud respiratory murmur of vesicular character, and over the infiltrated area during inspiration, râles were plainly detected.

BACTERIOLOGICAL EXAMINATION OF SPUTUM.

Papers by Smith and Lord respectively,⁹ covering methods and results, bring out the essential value of thorough examination of the sputum not only in cases where physical examination is inconclusive, but also in those where diagnosis can apparently be established by the clinical signs. Signs pointing to definite changes in chest or abdomen may prove on bacteriological examination of sputum to have been entirely misleading, and correct diagnosis be established by the presence or absence of certain of the familiar organisms. Thus cases suggestive of typhoid and appendicitis were shown to be early pneumonia; a supposed pneumonia with negative sputum proved to be infarct; in a case of phthisis with pneumonic complication, a relatively favorable prognosis was made (and later justified) on evidence that the solidification was probably of influenzal origin; a case originally considered phthisis was later shown to be chronic influenza.

Furthermore, influenza probably exists endemically to an extent not hitherto suspected, manifesting itself in acute form and also in types simulating ordinary chronic bronchitis, bronchitis with asthma or pulmonary tuberculosis, Pfeiffer's bacillus evidently persisting in some instances for years in practically pure culture.

AUSCULTATORY PERCUSSION.

Abrams¹⁰ has found previous methods, including the use of the phonendoscope, inaccurate and misleading, but after several years' experience with a maneuver of his own, he is led to recommend it as being of marked value either in topographical percussion, or for determining the density of the lungs. It depends on the transsonance of tissues lying between the point of percussion and the ear. The clavicle, sternum, ribs, or vertebrae are directly percussed by finger or hammer with continuous blows of uniform intensity, while the small chest-piece of the stethoscope is carried toward the borders of the organ in all directions. Relative transsonance of the apices may be determined by ausculting first one and then the other while percussing a prominent vertebrae or the manubrium. The right auricle and the left ventricle may be outlined on the dorsal surface if the patient is erect, with body slightly inclined backward. The upper liver border, the splenic outline, and the lower border of the stomach can all be readily demonstrated in individuals whose bones are not too well padded to serve as satisfactory pleximeters. For determination of the lower liver border, he clings to the manoeuvre of approximating the surface of the

liver to the abdominal parietes by having the patient bend backwards as far as possible, and then percussing in ordinary way.

COLLARGOL INTRAVENOUSLY IN ULCERATIVE ENDOCARDITIS.

Because it may possibly do good, and not because it has been helpful in the two cases treated by him, Manges¹¹ advocates further trial of Credé's method, which has been reported by other observers as favorably influencing the course of this affection in a few cases. But, as even these cases were somewhat open to question, and in his own the only effects were ill (mycotic aneurisms and painful thrombosis), Manges concedes that the ideal treatment is still to be discovered.

MOBILE HEART.

Braun¹² sounds a note of timely warning against ascribing too much importance to the existence in any individual of a heart which shows even quite a wide range of position as compared with the average limits of movability. It has become more or less the fashion to explain a variety of functional cardiac disturbances on the basis of a coincident cardioposis; this is rarely, if ever, the true cause, which must be further sought for in organic changes in the heart, or assumed to be reflex manifestations of more remote conditions.

A SIGN SUGGESTIVE OF ANEURISM.

Dorendorff¹³ premising that, as the diagnosis of aortic aneurism still remains in obscure cases, a difficult one and even the x-ray examination may be misleading, every suggestive sign, even if unreliable, may be a confirmatory aid and consequently welcome, — calls attention to the frequency with which, in aneurism of the arch, the left supra-clavicular groove is obliterated or even bulges, and the left external jugular is obviously fuller than the right. The anatomical reason lies simply in the compression of the left innominate vein as a result of the dilated arch. A mediastinal tumor may have the same effect, but dilatation in cases of aortic insufficiency is apparently seldom sufficient to effect compression.

PULSATION IN SECOND LEFT INTERCOSTAL SPACE.

Gibbes¹⁴ reports a case which seems to make untenable the position still held by some writers that this sign is caused by systole of the left auricle. The clinical signs were those of mitral stenosis and insufficiency, with a presystolic pulsation visible during expiration in second left intercostal space over an area one inch in length, beginning two and a quarter inches from left border of sternum. The thorax was transfixed postmortem by a long pin piercing the second left space at the junction of third costal cartilage with its rib. On removal of the sternum, the conus arteriosus of right ventricle extended well into the second left intercostal space, and was transfixed by the pin one and a half inches from the interventricular groove and one inch below

¹¹ Med. News, Dec. 13, 1902.

¹² Centrallbl. f. Inn. Med., Aug. 30, 1902.

¹³ Deutsche Med. Wchr., Nov. 31, 1902.

¹⁴ Edin. Med. Journ., September, 1902.

⁹ Boston Med. and Surg. Journ., Dec. 18, 1902.

¹⁰ Med. News, Nov. 8, 1902.

the highest point of the ventricle. The left auricle and its appendix were not visible. The presystolic time of the pulsation was thought to be due to asynchronism in the rhythm of the ventricles.

MULTIPLE SEROSITIS.

Under this caption Kelly¹⁵ discusses the type of obliterative pericarditis having as symptom-complex morbid changes in other tissues and organs, "notably pleuritis, peritonitis, perihepatitis, nutmeg liver, red atrophy of the liver, cirrhosis of the liver, etc." This combination has been described by various observers under different names, among which the most portentous is that of Pick, "pericarditic pseudocirrhosis of the liver," and in the category should be included cases of "zucker-gussleber" ("iced liver") of Curschmann. Altogether 39 cases are tabulated, and from the tabulation two important facts are summarized: (1) That although all the cases presented ascites as the striking clinical feature and revealed obliterative pericarditis at the necropsy, yet the organ that we might presume to be most at fault—the liver—presented far from identical lesions in the different cases; (2) That in all the cases more than one serous membrane, and in some of the cases all the serous membranes were diseased. The variety of tissues in differing combinations which may be involved create a varying picture from both anatomical and clinical point of view. The inflammation set up by organism or toxin may be primary in pericardium, pleura, or peritoneum, involving in turn one or more of the neighboring tissues, "a distinguishing feature of the lesions being the development of thick fibrous, almost cartilaginous masses of connective tissue that encase, compress, and often distort the organs and give rise to an appearance suggesting confectioner's icing, whence the designation "iced liver." The striking clinical feature is ascites not associated with edema of extremities, but of chronic and recurrent type, thus differing from the type in uncomplicated hepatic cirrhosis.

The origin of the ascites is probably somewhat different in different cases according to site of chief anatomical changes, but is assumed to be, in the majority of cases, the result of peritonitis and perihepatitis creating a *locus minoris resistentiæ*, which first manifests the sensible evidences of an impeded circulation increased as a rule by the associated pancarditis; further increase in the ascites will be caused by contraction of the newly formed connective tissue of the liver capsule, and changes in the hepatic tissues may be brought about by the original irritant or by congestion. Ascites in cases where changes in the peritoneum are absent or slight is probably the result of combined cardiac insufficiency and the associated hepatic congestion.

Diagnosis must rest on careful differential consideration of past occurrence of serous inflammation, the existence of obliterative pericarditis, and the exclusion of ordinary forms of cirrhosis of the liver.

CONGENITAL PULMONARY STENOSIS.

Burke¹⁶ was able to study postmortem three

cases in young adults who had presented the classical signs during life, and in all of whom the diagnosis was verified by autopsy. What he especially concerns himself with is the significance of accentuation of the second pulmonic occurring as an associated sign. This has been generally considered as significant of open ductus Botalli and justifying diagnosis of the same as additional defect, but a tabulation of reported cases of pulmonary stenosis shows that in the 14 in which there was distinct accentuation of second pulmonic, ductus Botalli was closed, whereas in the three cases in which open ductus Botalli was the only complication the second pulmonic was either weak or absent; on the other hand it is shown that in the great majority of cases with accentuated second pulmonic the foramen ovale is open, and also the striking fact is brought out that in many of the cases, including the author's own, the deformity of the pulmonary valve was such as to make it impossible for an accentuated sound to have originated at the orifice, and accentuation in such a case—provided that retraction of lung borders leading to apparent accentuation is ruled out—must be due to one of three causes: (1) transmission of the aortic sound; (2) distention of the walls of the pulmonary artery; (3) contraction of the hypertrophied walls of the right auricle. The first two are ruled out on absence of evidence; the third seems likely in light of the fact that the contraction of the normal auricle is accompanied by a faint sound, and it is reasonable to expect this to be increased by the hypertrophy due to open foramen ovale.

In other cases where the valve curtains are intact, as in stenosis of the conus, an accentuation of the second sound is assumed to be the result of heightened tension in the pulmonary circulation, due to back pressure from right to left auricle through the foramen ovale.

Early cyanosis may be due to mixing of blood currents; terminal cyanosis is significant of failing right ventricle. A presystolic murmur in pulmonic area is probably due to cross currents through the foramen ovale. Although an accentuation of second pulmonic might be caused by open ductus Botalli, the cases in which the caliber of the vessel is large enough to cause sufficient back pressure are extremely rare. The frequency with which phthisis occurs in cases of pulmonary stenosis are probably due not primarily, as is generally held, to this condition, but to the hypoplastic aorta so often associated in these cases of faulty development, which results in deficient blood supply to the lungs.

Reports of Societies.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

NINETY-SEVENTH ANNUAL MEETING, HELD IN ALBANY, JAN. 27, 28 AND 29, 1903. HENRY R. HOPKINS, M.D., OF BUFFALO, PRESIDENT.

FIRST DAY. — TUESDAY, JAN. 27.

PRESIDENT'S INAUGURAL ADDRESS.

DR. HENRY R. HOPKINS of Buffalo delivered this address. He sketched the history of the society

¹⁵ Am. Journ. Med. Sci., January, 1903.

¹⁶ Zeit. f. Heilkunde, May, 1902.

and expressed the conviction that an important feature of its organization was its delegate system. The abandonment of the Code of Ethics was referred to as a step which had been far-reaching and most salutary in its influence, being virtually a confession on the part of the society that it had erred in the past and a declaration that in the future its members intended to adhere more closely to the requirements of the State laws. The speaker then discussed the proposed bill to register trained nurses in this State, and advised that the society give this movement its support. He was strongly in favor of establishing the degree of "D.P.H.," Doctor of Public Health, this degree to be conferred upon those who had successfully followed a prescribed course in hygiene and sanitary science. With regard to the efforts that had been made to unite the medical profession in this State, Dr. Hopkins said that the encouragement afforded by the reorganization of the American Medical Association on a broader platform had prompted the society to make overtures towards the resumption of diplomatic relations with the national body. It was hoped that a settlement might be effected before the society celebrated its centennial, but no matter how long it might take, this society could never agree to the sacrifice of those principles for which they had fought so long and earnestly.

REPORT OF COMMITTEE ON HYGIENE.

DR. JOHN L. HEFFRON of Syracuse presented this report. It was largely taken up with a review of what had been accomplished in the control of tuberculosis. It was pointed out that in recent years the death-rate from this disease in Great Britain had been reduced 45%, and in New York City 40%, and the society was urged to throw the weight of its influence in support of the new tenement-house laws, in securing the co-operation of the profession in the registration of this disease and in its more efficient control by the health authorities. In this connection a resolution was introduced by Dr. George B. Fowler of New York, and adopted by the society, requesting the legislature to permit no changes to be made in the present tenement-house laws.

REPORT OF STATE BOARD OF MEDICAL EXAMINERS.

DR. WILLIAM WARREN POTTER of Buffalo presented this report. He said that since the establishment of this board 7,034 candidates had presented themselves, of whom 5,528, or 78.5%, had been successful. The board was in favor of some change by which old practitioners from other states could be more leniently dealt with in the examinations for the primary branches.

REPORT OF COMMITTEE ON UNIFICATION OF THE PROFESSION.

DR. HENRY L. ELSNER of Syracuse, the chairman of the committee, presented this report. The correspondence which had taken place between the two State committees was presented in full, and the report gave in minute detail all the features of the work likely to prove of general interest. The committee expressed itself as satisfied that the cor-

responding committee from the State Association was sincere and earnest about desiring a union of the factions which have so long been a discredit and a detriment to the profession of this State. The chief obstacles to effecting the desired unity were the questions of the plan of reorganization and the old bone of contention — the Code of Ethics of the American Medical Association. With regard to the first, it was learned by consulting legal counsel that there was no occasion for the State Society to appeal to the legislature for a new charter, as that society possessed the power to change its by-laws by vote of its members, and could in the same way incorporate into its membership all members of county societies. This being the case, the New York State Medical Association could abandon its present organization and its members could be admitted to the Medical Society of the State of New York by suitably changing the by-laws of the latter. According to the same legal opinion, the application for a new charter would mean the termination of the existence of the present Medical Society of the State of New York, a step which the members of that society were naturally loath to take in view of the fact that this honorable body had nearly completed its first century. With regard to the second point, the speaker said that they had been assured by Dr. Billings, the president of the American Medical Association, that the Code of Ethics was still in existence and unchanged; hence the committee did not favor recommending to the State Society that any action be taken until the American Medical Association should make it possible for that society to subscribe to its constitution and by-laws and written rules of order without sacrifice of principle. Various plans of reorganization had been suggested. Among them was one which would probably come up for consideration at the New Orleans meeting of the American Medical Association. This called for the payment of a single fee to the State treasurer by every county society member, this payment to entitle the said person to membership in both the State and national bodies. In conclusion, the committee reported progress, and asked to be continued, and at the same time entered a formal protest against both the spirit and the letter of the following resolution, which had been adopted by the New York State Medical Association last October, at the instance of Dr. E. D. Ferguson of Troy: "Resolved, that if the Medical Society of the State of New York shall fail to approve such plan of union by a charter to be secured at the approaching session of the legislature in 1903, then this committee shall be considered as discharged, and the proposition of the association withdrawn." The State Society accepted this report of its committee, and the committee was continued with instructions to persevere in its work and report the result at the next annual meeting.

ARGUMENTS FOR THE EXISTENCE OF A SEPARATE CORTICAL CENTER FOR WRITING.

DR. HERMAN C. GORDINIER of Troy opened the scientific program with this paper. He reported four cases, one of them his own, in which there was motor agraphia and motor aphasia with a pathological lesion at the base of the second and third left frontal convolutions. He said that there

was clinical proof that destruction of Broca's center did not necessarily cause agraphia.

MEDICAL SCHOOL INSPECTION IN THE CITY OF NEW YORK.

DR. HENRIETTA P. JOHNSON of New York read this paper. She said that in the first year of the work of the medical inspectors of schools 108,638 examinations were made, and 6,829 children were excluded from school as a result. The need for such inspection was well shown by the fact that on the school opening day in one school alone there were no less than 100 cases of catarrhal conjunctivitis discovered. In the past four weeks 950 new cases of trachoma had been seen, and 127 operations performed.

THE CARE OF THE INSANE.

DR. CHARLES G. WAGNER of Binghamton discussed this subject, showing in sharp contrast the primitive and inhuman methods of the old asylum with the modern hospital for the insane, the latter being more like a thriving town than a prison. After the acute stage had passed, the secret of successful treatment was to be found in giving these unfortunates suitable occupation. The cases should be individualized, and, in the acute stage, treated by superalimentation and rest, the greatest possible personal liberty consistent with safety being secured by the employment of well-trained nurses.

DIFFERENTIAL DIAGNOSIS OF THE FAMILIAR FORMS OF SPINAL DISEASE.

DR. FLOYD S. CREGO of Buffalo presented this paper. He pointed out that confusion constantly arose as a result of confounding functional and organic diseases of the spinal cord. In many cases the functional or hysterical element was prominent, and yet underlying it careful search would show an organic lesion. In hysteria one would find patches of anesthesia; in hysterical paralysis there was no analgesia and no loss of the heat sense. Lumbar myelitis was often mistaken for Landry's disease, an acute ascending paralysis dependent probably upon some toxemia having a special affinity for the nervous system.

ERYTHROLEPUM: A CLINICAL STUDY.

DR. REYNOLD W. WILCOX of New York read this paper. He stated that while this drug slowed the heart and increased the blood pressure, it acted with greater rapidity than digitalis. It was useful in cases of rapid heart action associated with low tension and venous congestion. It was contraindicated when the heart was very weak.

OBSERVATIONS ON AMERICAN CLIMATES AND LOCALITIES IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

DR. JAMES K. CROOK of New York was the author of this paper. He earnestly advocated an earlier and more general resort to appropriate climatic treatment, claiming that if this were done the disease would progress in 99% of the cases, despite the supposed better knowledge and more scientific

methods of the present day. Fortunately within the limits of these United States could be found types of all of the best climates, some of them within a short distance of New York City. If it were possible to place each tuberculous person without delay under an environment uniting good air, food and sanitation, with skilful medical supervision, a long step would be taken in the direction of subduing this disease. This could only be accomplished by the establishment of sanatoria in localities having the requisite climatic conditions.

RETINOSCOPY.

DR. D. H. WIESNER of New York read this paper. The instrument used for retinoscopy consists of a plane mirror of glass, about $1\frac{1}{2}$ inches in diameter, having a central aperture, and mounted on a rather long handle. The necessary illumination is obtained from an Argand burner placed about 40 inches distant. Retinoscopy consists in observing the movements of the reflex from the retina in both the horizontal and vertical meridians. When the illumination moves with the mirror in both meridians the eye is known to be hyperopic; when the movement of the illumination is opposite to that of the mirror, the case is one of myopia.

THE PHYSICIAN AND THE OPHTHALMOSCOPE.

DR. FRANCIS VALK of New York presented a paper with this title. Its object was to show some of the reasons why this valuable diagnostic instrument was not more commonly employed by the general practitioner, and to simplify the subject so that it might become a more popular means of diagnosis. The procedure advocated is as follows: Having properly placed the source of light, the latter should be reflected into the patient's eye. If a red reflex were not then visible a + 6 glass should be brought before the aperture, as this would allow the observer to obtain a clear view of the field if there were no opacity. One of the difficulties most frequently encountered by those inexperienced in the use of the ophthalmoscope was that of adjusting the observer to the rays of light reflected from the eye under examination. This could be best overcome by placing one of the concave lenses, one of those marked in red, before the aperture, thus neutralizing the observer's accommodation and bringing the details of the background of the eye into view. Sometimes it would be necessary to temporarily dilate the pupil, and if this were done with a little cocaine or homatropine, the patient would experience no great inconvenience after a few hours. The arteries were distinguished from the veins on the fundus by the fact that the former were of lighter color and had a line along the center.

INCOMPLETE TRANSVERSE CONGENITAL OCCLUSION OF THE VAGINA.

DR. SAMUEL M. BRICKNER of New York reported four cases of this kind, and drew the following conclusions from their study: (1) Transverse vaginal septa are due to an embryonal fold, and (2) this is due to a reversion to a former type.

(To be continued.)

Recent Literature.

The Medical Epitome Series. Diseases of the Skin. A Manual for Students and Practitioners. By ALFRED SCHALEK, M.D. Series edited by V. C. PEDERSEN, A.M., M.D. Philadelphia and New York: Lea Brothers & Co.

There seems to be no limit to the supply of condensed handbooks of skin diseases. Dr. Schalek has added one that seems to be carefully compiled and that has a neat and attractive appearance. So little opportunity for originality is offered by this class of publication that further comment is unnecessary.

The Force of Mind, or the Mental Teacher in Medicine. By ALFRED T. SCHOFIELD, M.D., M.R.C.S. 12mo, pp. xvi, 309. Philadelphia: P. Blakiston's Son & Co. 1902.

The first part of this volume treats of the action of the mind, including what is now so often called the unconscious mind in the causation of disease, the mental factor being an element in all diseases. This mental factor, the author maintains, is too often neglected by the physician, and the patient thus becomes a ready victim for the charlatan who makes use of it. It is, therefore, of great importance to utilize this mental factor in the treatment of disease, especially by the influence of the unconscious mind. Although the author's main position is a sound one, and one that has long been accepted, the work itself is of little value. It is made up largely of clippings from various medical writers and reported cases of cures by psychical agencies of greater or less authenticity, connected by a platitudinous text and supplemented by an absurd bibliography, containing such enlightening references as "Solomon, King, Proverbs of," and "Lancet, 1853, 1879," etc.

Clinical Psychiatry. A Textbook for Students and Physicians. Abstracted and Adapted from Sixth German Edition of Kraepelin's "Lehrbuch der Psychiatrie." By A. ROSS DEFENDORF, M.D., Lecturer in Psychiatry in Yale University, etc. Cloth, 8vo, illustrated; pp. 450. New York: Published by Macmillan Co. 1902.

This work is the only English exponent of the teachings of Kraepelin as a whole that we have, and on that account should be welcomed by all alienists. Like most adaptations, many of the excellences of the original are lost and some of the editor's additions, abbreviations and other changes are unfortunate and detract not a little from the value of the book. Nevertheless, the condensation as a whole is effected without the loss of any of the important features of the extensive work of the great psychiatrist. It will, therefore, appeal to the student and general physician, who would be apt to regard the graphic and masterly pictures of disease-forms in the original as too redundant in acts and minor symptoms to be practical or necessary.

The best chapters are those on Dementia Precox and Manic-Depressive Insanity, in the study of which lies the chief value of Kraepelin's illuminating contribution to the knowledge of the disease-

forms of insanity. Mental impairment due to senility, a subject of especial interest to physicians generally, does not receive here proper consideration, and will disappoint those who look for full description of these states and discriminating opinion for guidance in medico-legal cases.

The translation is so clear, readable and generally acceptable as to make it especially disappointing that the editor was unable to carry out his original intention of giving us a complete translation of Kraepelin's work. Until this can be had, Defendorf's book in spite of its demerits, which after all are minor ones, is indispensable for alienists and students who are not ready readers of German and who wish to familiarize themselves with the most satisfactory doctrine of psychiatry that has yet been advanced.

A Text-Book of Materia Medica, Therapeutics, and Pharmacology. By GEORGE F. BUTLER, Ph.G., M.D., Professor of Materia Medica and Therapeutics in the College of Physicians and Surgeons, Chicago; Medical Department of the University of Illinois, etc. Fourth edition, thoroughly revised. 896 pp. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1902.

The author classifies the drugs more or less according to a system of his own, without much regard for pharmacological action. One illustration without comment will suffice to show his method or lack of method. For example, he puts iron, fat, phosphorus, earthy salts, mineral acids and bitters in the same group, which he calls that of "Restoratives." The book contains misstatements and, even in spite of its large size of nearly 900 pages, important omissions. It is unsuitable as a text-book of pharmacology, materia medica and therapeutics. — M. V. T.

A Manual of Practical Medical Electricity, the Röntgen Rays and the Finsen Light. By DAWSON TURNER, B.A., M.D., F.R.C.P. (Edin.) Third edition, revised and enlarged. 8vo, pp. xx, 396, with 168 illustrations. New York: William Wood & Co. 1902.

With each new manual of electro-therapeutics or each new edition of an old manual comes some new application of electricity to the diagnosis or treatment of disease. The title of the volume before us shows the latest use of electricity in the production of the ultra-violet rays as advocated by Finsen, a method which, although involving elaborate and costly apparatus, seems, nevertheless, to be of great value in the treatment of lupus, rodent ulcer and possibly other conditions. Practical details are given of the application of this method to the treatment of disease, with illustrations of the various forms of apparatus. In addition to these new chapters, the rest of the work, dealing with the more familiar applications of electricity in medical and surgical work and with electrophysics and electro-physiology, has been thoroughly revised. The book is concisely and clearly written by a man familiar with the subject, who has himself done valuable work in research. It is a useful guide for the student, and one of the best of the recent works on the subject that have come to our notice.

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THE JOURNAL'S SEVENTY-FIFTH ANNIVERSARY.

THE first issue of the BOSTON MEDICAL AND SURGICAL JOURNAL as a weekly journal under that title appeared Feb. 19, 1828; with this year and this issue, therefore, the JOURNAL celebrates its seventy-fifth anniversary even to the day of the month. From February, 1828, to February, 1903, there has been a continuous weekly issue of the JOURNAL without intermission. Through all the changes and chances of medical journalism during that long period, — and these have been both numerous and serious, — the JOURNAL has held its own and kept on its way. The London *Lancet* is probably the only other weekly medical journal now in existence with anything approaching such an unbroken record.

In another form the JOURNAL antedates the year 1828. It was the product of a combination between two other medical publications, namely, the *New England Medical Journal*, a quarterly, begun in 1812, under the control of Drs. John C. Warren, Walter Channing and John Ware, and the *Boston Medical Intelligencer*, which was started as a weekly journal in 1823, by Dr. Jerome V. C. Smith. After the consolidation of these two periodicals in 1828, under the control of the former managers of the *New England Journal*, the BOSTON MEDICAL JOURNAL was not only the first to live but for many years the only weekly medical journal in this country.

The *Lancet* was started as a weekly journal by Thomas Wakley in London, Oct. 5, 1823, and the *American Journal of the Medical Sciences* began as a quarterly in Philadelphia in November, 1817, a few months earlier than this JOURNAL in its present form. Within recent years the *American Journal* has changed its form to a monthly.

Prior to this JOURNAL thirty-one medical jour-

nals had been started in the United States, twenty-three of which had suspended or merged in other journals. Of the immense number that have been conceived, been born and died since that time it would be futile to attempt an estimate. Those who may have curiosity upon this point are referred to an article by Dr. J. S. Billings, on the "Medical Journals of the United States,"¹ contributed to the opening number of our one hundredth volume, where may be found tables of mortality of medical journals from 1797 to 1878 inclusive and lists of medical journals of the United States arranged by states.

As at present, so for the greater part of its existence, this JOURNAL has been owned and controlled by medical men and edited and published for the benefit of the profession at large, with particular reference to New England. The simple statement "Conducted by a Number of Physicians" upon the title page of its progenitor, the *New England Journal of Medicine and Surgery* in 1812, suffices to-day as it did then. We only desire to repeat but to add nothing to the following concise and modest sentences from the first editorial of Feb. 19, 1828: "Whether it will be continued in its present form will be determined by experiment. As it is devoted to no party nor institution, the editors (and Board of Management) offer it to the medical profession as a vehicle for such publications as they may wish to make; and they hope by it to bring out the talent of this part of the country."

THE MANAGEMENT OF STATE INSANE HOSPITALS.

THE growing medical interest in the management of insanity prompts us to make some comments on an interesting set of pamphlets recently issued by the State Charities Aid Association of the State of New York. During the legislative session of 1902 Governor Odell forced the passage of a bill which roused much indignation, both owing to the method employed and owing to the consequences. The Tenth Annual Report of the association gives a brief history of the step. In his message the Governor made serious charges against the Boards of Managers of the State hospitals, which were made responsible for extravagances and grave mismanagement. Remonstrances followed, but no specific facts were furnished in reply. Bills were then introduced in the Senate and House to bring about the changes recommended by the Governor. The issue of the propositions was practically the removal of the boards of managers and the investment of the commission with all those authoritative decisions

¹ Boston Med. and Surg. Journ., Vol. c, No. 1.

which had been in the hands of the local authorities, the superintendents and the boards of managers.

The centralization of power in the commission was, however, only part of the plan. Formerly the Governor had merely the power of appointment of the commissions and managers subject to the approval of the Senate, and the power of their removal upon cause shown, and after an opportunity to be heard; further, the approval of the classification of salaries and wages of the officers and employees, together with the Secretary of State and the comptroller. This new law made the decisions of the commission subject to approval by the Governor on the following points: Rules and regulations of management of the hospitals; transfer of any of the powers and duties of the superintendent to another officer, to be appointed by the commission; transfers of superintendents and assistant physicians from one State hospital to another; the abolishment of the office of any of the resident officers and employees; expenditures for repairs and construction of buildings and the letting of contracts (together with the comptroller). The Governor also obtained the right to appoint and remove at his pleasure the members of the boards of visitation. These boards are required to report monthly to the Governor and to the commission. They have no power of action.

The bill was passed on a party vote. The numerous remonstrances were at no time answered, and the insinuations against the managers were not made specific until after the bill was signed. A noteworthy document was given out by the Governor, with twenty-three cases of extravagance, inefficiency or improper conduct on the part of the managers. Eighteen of them were based on total misunderstanding of the facts, four had occurred before the existing system was introduced (1893), and the only substantiated case, one of bribery, was probably misstated, since the Governor has since appointed one of the two accused persons as a member of the new board of visitation. The Governor had obtained his facts not from the authorities most likely to be informed, but apparently on a hasty visit to a number of the State hospitals. The change is said to have been made "in good faith," but obviously with total disregard for coöperation with the parties best informed and most immediately concerned, and without any effort to get at the facts before conclusions were reached.

The pamphlets of the State Charities Aid Association show plainly the evil features of this step. The chief departure from natural and efficient plans lies in the assumption that three commissioners could have the time and capacity for work to attend properly to the duties put upon them — not to speak of the Governor. This leads to arbitrary decisions

and creates a large number of dumb officials in the institutions, with crippled authority, no longer accountable for what is now decided for them. Since the pressure in Albany is for economy, and the consequences are merely felt in the hospitals, a policy becomes possible which is irremediable unless strong enough outside pressure attempts to correct the condition. The association has not been very successful so far, and it remains to be seen how this unnatural state of affairs will correct itself.

The State of Massachusetts may well be congratulated on the wise limitation of the centralizing mania. It seems very obvious that the main power of shaping things should rest with those most familiar with the needs and those under direct responsibilities. To sacrifice the efficiency of shaping things to mere methods of control is a very short-sighted policy. In this State the wisdom of the present regulations cannot be overrated. It makes the central authorities advisory and helpful and only secondarily controlling, and leaves the decision in the hands of the responsible local board and authorities. This means coöperation, not coercion.

It is to be hoped that other states which look for reform may give careful attention to this comparison. If physicians are worthy of the trust of being managers of the question of insanity, the profession should stand firmly by them, and guarantee a policy of free discussion of the facts instead of the method of *a priori* conclusions and centralization of power where centralization of knowledge and experience is out of the question.

While the State hospitals of New York have not suffered any demonstrable damage yet, the respect for professional opinion has certainly received a lamentable blow.

HARVARD GRADUATES DEFICIENT REPRODUCERS.

At brief intervals, and always on the appearance of his annual report, the president of Harvard University furnishes men, and women too, with food for reflection and comment. President Eliot now presents himself *quasi* Rachel, weeping not merely for children that are not, but for children that never were. Will he refuse to be comforted?

It appears from investigations which he has had made in regard to six Harvard classes, from 1872 to 1877 inclusive, that: "These classes have by no means reproduced themselves; that they have, indeed, fallen 28% short of it. Twenty-eight per cent of the members of these classes are unmarried, and those who are married have on the average only two surviving children; so that the married pairs just reproduce themselves on the average. It

is obvious from these figures that the entering classes of Harvard College and the Lawrence Scientific School to-day can be recruited from sons of Harvard graduates only in small degree. If the graduates of the six classes named could send all their sons to Harvard College within the six years 1902-07 inclusive, they would only supply one hundred freshmen a year, or possibly one seventh of the total number who will enter. The table suggests further that the highly educated part of the American people does not increase the population at all, but on the contrary fails to reproduce itself. If many other colleges and universities publish class reports analogous to the Harvard reports, a competent statistician might establish from the assembled reports some interesting and important conclusions. It is probable that the regrettable result indicated by the figures is due in part to the late postponement of marriage on the part of educated young men, a postponement which the protracted education now prescribed for men who enter the learned and scientific professions makes almost unavoidable. The young physician, lawyer, engineer or architect is now fortunate if he marries at twenty-eight or twenty-nine; whereas he should have married at twenty-five or twenty-six. To make earlier marriage possible is one of the strong inducements for bringing to an end the school course at seventeen or eighteen, the college course at twenty or twenty-one, and the professional training at twenty-four or twenty-five."

It seems, however, that Harvard College is by no means alone in this matter. The graduates of Yale College apparently are doing no better, if as well, as reproducers. There is complaint that young Americans of American parentage, upon whom certain industrial undertakings in Connecticut have been accustomed to rely as recruits for their most competent workers, are getting scarce. The native New England population in general is far from being prolific, and this is nearly as true of those without as of those with a college training. These facts have for some time been steadily forcing themselves upon the attention of the social statistician at home.

And when we look across the Atlantic we find that the same tendency, and even less flattering conditions, are filling the minds of men with concern. For some time back natality and mortality in France have been almost evenly balanced. France has recently appointed an extra-parliamentary commission on depopulation. A recent number of the *British Medical Journal* contains an editorial on "Depopulation and the Marriage-Age." The writer takes the stand that: "France's concern we, her neighbors, cannot afford to be indifferent about, if for no higher

reason than that there are signs that we also may before long find ourselves in like case." Macquart, a French anthropologist, statistically shows that a diminishing birth-rate, first evident in France, has, since 1874, increasingly manifested itself also in England, Germany, Belgium and Holland. Macquart suggests the conclusion that civilization and a diminishing birth-rate go hand in hand. France simply leads the way in civilization, and the other nations follow. This causes the *British Medical Journal* to denounce a civilization which, once definable as the humanization of man in society, is now to be the sterilization of the race.

On the other hand, Dumont, another French anthropologist, looks upon delayed marriage as the root of all this evil, as responsible for the acknowledged falling birth-rate. The parasitic stage of life for sons is unduly lengthened. "The individual aims more and more at the goal of personal comfort and is less and less willing to accept new and ill-defined responsibilities." To remedy the trouble, he proposes shortened service in the army and improved and extended education — especially in the sciences.

Many seem to be wandering in the same sterile wilderness, with contradictory or misleading guides.

To a weeping Rachel this is indeed cold comfort, but misery does love company, and restriction in the more-prolific-than-thou salutations is an alleviation, however slight. We say nothing about pre-natal mortality; and the female philosopher who tells us there is no misfortune, because Harvard graduates are not the best material for purposes of paternity, we simply ignore!

THE PHYSIOLOGICAL EFFECTS OF COMPETITIVE SPORTS.

THE article based upon observations on long-distance runners, which appears in this number of the JOURNAL, is of interest from several standpoints. It is in reality a physiological research, conducted under unique and often uncomfortable circumstances. The uproar and excitement which surrounds both the start and the finish of these contests is not ideally suited to research work; yet it is the invariable accompaniment of such forms of exertion, and it cannot be ignored, therefore, in studying resulting effects. Pure physiological experiments or observations upon hired performers suffer from the absence of these factors, and in so far fail to reproduce all the conditions of actual competition.

Boston is almost the only city in the world where a race of this sort is an annual affair, and where there is ample opportunity to carefully examine the contestants both at start and finish.

Comparatively little work of this character has been done in this vicinity: Atwater, Darling and Williams and Arnold have been the chief contributors. Enough has been accomplished, however, to show that varying forms of exercise may produce varying results, and that sweeping deductions cannot logically be based upon observation of a single type of exertion. Rowing and football have been studied with much care.

This particular research has brought to light conditions of the blood and the urine which had not previously been considered consistent with health. It shows that the exertion of running may be so violent as to produce temporarily the symptoms of disease in a perfectly healthy individual, and that these symptoms rapidly diminish and disappear, apparently leaving no trace behind them. It also explains certain conflicting statements in relation to temperature, and demonstrates the surprising differences that may obtain between the mouth and rectal temperatures, taken simultaneously. It contributes to the knowledge of the effects of exercise upon the heart, though it does not finally settle this question. It suggests many other lines of investigation, among them the results of the ingestion of alcohol in such contests, the effects of such exercise upon the processes of digestion, and the blood-pressure results as measured by the Riva-Rocci apparatus.

Investigations such as these furnish the only scientific data which can be accepted in endeavoring to answer the vexed questions of the final effects of violent competitive athletics. Statements of individuals are often tinged with prejudice, since those who are fond of exercise are apt to consider it beneficial; while those who dislike it are equally sure that it is hurtful.

The observer who brings to his task a mind entirely unbiassed, and makes and compares observations taken as in any other routine physical examination, will eventually be in a position to answer the questions in an authoritative manner. It is earnestly hoped that such observations will be continued, will increase in frequency and will be applied to all sorts of sports. They might well be undertaken by army surgeons, who could in addition control accurately the quantity as well as the character of the food ingested. It is certainly true that such investigations increase in value with further experience in methods. This has been definitely shown in the studies of the Marathon runners. It is a pleasure to record that the officials as well as the contestants of the Marathon races have done all in their power to aid and facilitate observations which must at times have seemed to them rather mysterious and tiresome.

MILK AND THE PUBLIC HEALTH.

WE desire to call attention to a recent valuable piece of work by George M. Kober, Chairman of the Committee on Public Health, Civic Center, and Chairman of the Committee on Legislation, Medical Society of the District of Columbia, on the subject of milk in relation to public health. This work has been published as Senate Document No. 441. Dr. Kober has for a number of years been engaged in the study of milk in relation to the public health, regarding the production and dissemination of pure milk as an important sanitary problem. The publication before us, in 235 pages, discusses, and in much scientific detail, the broad questions relating to dairy farms, care of cattle and methods by which the public may be safeguarded from the dangers of carelessness. A series of tables on epidemics of typhoid fever and of other diseases supposed to have been due to contaminated milk supply is appended, which should be of great value to the student of statistics in relation to this important matter. We can cordially recommend the reading of this work to all those who are interested in the public health, and particularly to students of that still common disease, typhoid fever.

MEDICAL NOTES.

"BIOCHEMISCHES CENTRALBLATT."—The great strides made in medical chemistry and in those fields of medicine verging on chemistry necessitated the publication of a central organ. This is now published in Berlin under the direction of Ehrlich, Fisher, Kossel, Liebreich, Muller, Proskauer, Salkowski and Zuntz, and they have appointed Heinrich Stern of New York editor for the United States and Canada. The object of the publication will be:

(a) To report such experiments and observations of physical and employed chemistry as are of importance to the physician.

(b) Reports on the physiology of plants.

(c) Physiological chemistry in the narrower sense (constituents of the body and their derivatives.)

(d) Chemistry of the tissues and organs under normal and pathological conditions.

(e) Chemistry of digestion, secretions and excretions, metabolism and blood.

(f) Ferments and fermentations, toxins of a non-bacterial nature.

(g) Chemistry of the pathogenic micro-organisms (toxins, antitoxins), phenomena of immunity.

(h) Toxicology and pharmacology.

(i) Hygienic chemistry, disinfection, examination of water.

As this is the only international organ devoted to

these scientific fields, the American editor invites American observers and investigators to prepare abstracts of their papers which have appeared since Jan. 1st and will appear hereafter, and send them to Dr. Heinrich Stern, 56 East 76th Street, New York City.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Feb. 18, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 27, scarlatina 23, typhoid fever 4, measles 12, smallpox 10.

BEQUESTS. — In the will of Miss Emily E. Sears of Boston, which has recently been filed, \$5,000 was left to each of the following institutions: The Home of the Good Samaritan, the Associated Charities, the Children's Hospital and Trinity Church, for the poor of the parish. The Art Museum received \$25,000.

A TRUSTEE FROM THE RANKS OF LABOR. — It is reported that at a recent meeting of the Central Labor Union of Boston it was decided to request the mayor to give the laboring classes representation on the board of trustees of the City Hospital. It was argued that, inasmuch as working men are the chief patrons of the institution, they should have a voice in its management. The fallacy and possible danger of such a principle of representation is apparent.

A CENTENARIAN. — Capt. J. F. Stickney died recently at Newburyport at the reputed age of one hundred and one years. He is said to have recalled events which occurred during the war of 1812.

A FATEFUL ANNIVERSARY OF AN OLD SOCIETY. — Had there been sufficient interest in the subject, the Boston Society for Medical Improvement might have celebrated this month its seventy-fifth anniversary, having been begun the same year and the same month as this JOURNAL. The celebration proposed seems, however, inclined to take the form of a "wake," with a prudential committee sitting on the corpse.

AN ERUPTION OF SOUFFRIER MOUNTAIN, ST. VINCENT ISLAND. — Notwithstanding recent happenings, one of the most vivid descriptions of a West Indian volcanic eruption may be found in the pages of the JOURNAL's progenitor, *The New England Journal of Medicine and Surgery*, Vol. II, p. 95, 1813. This eruption occurred April 30, 1812, after a century of quiescence on the part of this volcano at St. Vincent's Island. The quiescence remained again unbroken for nearly a century, until the terrible recurrence last year.

GEORGE HIGGINSON PROFESSORSHIP OF PHYSIOLOGY. — Henry Pickering Bowditch, M.D., professor of physiology at the Harvard Medical School, has lately been appointed to the new George Higginson professorship of physiology at this institution.

NEW YORK.

DRUG IMPURITIES. — At a meeting of the Society of Medical Jurisprudence held Feb. 9, Dr. H. W. Wiley, chief of the Division of Chemistry of the Department of Agriculture at Washington, read a paper on drug impurities, and the dangers to the public from the use of common articles. In the course of it he stated that in several samples of black stockings tested in his department a large amount of arsenic was found, and referred to the case of Senator C. K. Davis of Minnesota, who died from blood poisoning caused by his stockings. Arsenic, beside being present in stockings, he said, was found in most wall papers and in many cloths, as well as in beer and glycerin. After commenting on the New York Health Department's recent discovery that the substitution of acetanilid for phenacetin was common, he spoke of the danger of optic neuritis in consequence of the prevalent substitution of methyl alcohol for ethyl alcohol in various articles, and mentioned the case of a citizen of Boston who had lost his eyesight from the use of Jamaica ginger in which this had been done. Many of the patent medicines, the names of which give no indication of the fact, contain considerable quantities of alcohol, and the consumers of them are extremely apt to acquire the alcohol habit in consequence. The cocaine and other drug habits are acquired similarly. The Government, he thought, should afford some means of protection against such dangers. He spoke of the Pure Drug Bill now pending in the Senate, after having been passed by the House, and recommended a national and state system of inspection, the two supplementing each other. Last year, he went on to say, Congress authorized his department to inaugurate a systematic investigation of drug impurities, such as have been made in regard to foods for the past fifteen years. As yet no laboratory for this new work had been provided, but on the 1st of March the testing of drugs was to be commenced, the other laboratories of the department being used for this purpose.

BEQUEST OF CHARLES A. COWTOIT. — On February 11 there were opened at St. Mary's Free Hospital for Children two new wards, provided through a bequest of Charles A. Cowtoit, and also a new chapel and an additional building for domestic offices.

SITE FOR THE ROCKEFELLER INSTITUTE LABORATORY.
It is understood that negotiations are now pending for the purchase of a portion of what is known as the Schermerhorn farm, fronting on the East River, the site for the new laboratory for the Rockefeller Institute. This lot comprises four city blocks of improved land, uncrossed by streets and extending from Sixty-fourth to Sixty-eighth Street. The land has an elevation of twenty to thirty feet above the river, of which, with Blackwell's Island, it commands an unimpeded view.

Correspondence.

THE COLLECTION OF CLAIMS.

BOSTON, Feb. 14, 1903.

In June, 1902, a young man of kindly manner and intelligent appearance came to my office and presented me a card of a firm of lawyers down town on which was printed his own name underneath. He was, he said, in their office, and their chief business lay in the collection of different claims. It was, in fact, in regard to one of these that he had come to see me, he said, and he asked me if Mr. A. did not owe me an old account of \$36. This I found to be the case, but I had some recollection of Mr. A. having gone into bankruptcy, which I had come to regard as the graveyard of doctors' bills. The young man said that Mr. A. had gone into bankruptcy, but had plenty of money, and, in fact, had paid him a larger bill than mine within a week.

The collection of such a bill he very justly remarked necessitated some extra expense, and I must pay him \$3 if he undertook it or he would buy the claim of mine for \$8 cash, but he called my attention to the fact that I would be a good deal better off to retain the claim to sell the claim. As his offer to buy the claim for cash seemed eminently a fair one I gave him \$3 and assigned the claim to him, taking his receipt.

When I came back from my vacation my first visitor, by telephone appointment this time, was the same young man from the lawyers' office. He said he had been waiting to see me on a matter of importance. If he was not mistaken, he said, Mr. B. owed me \$359 and with interest it would amount to perhaps \$450. Now Mr. B. had also been in bankruptcy but had money and could be made to pay, in fact he had paid a small bill a few days ago and in so doing had displayed a large roll of bills. I called the attention of the young man to the fact that the claim of Mr. A. had not yet been paid me, but he said he had forgotten to tell me that he had Mr. A.'s note which would be paid in a week or he would make trouble for Mr. A. The full amount, he said, was as good as in my hands. To collect the claim of Mr. B., however, this claim of \$450, I must join the collection agency that he represented. A little claim like Mr. A.'s was well enough, but for this second claim I must join for a year, which would be \$25 in advance, plus the usual percentage. For this they would take all my bad bills. He left a printed form for me to fill out, and I put him off over Sunday as I had begun to take an interest in the game.

A mercantile agency, consulted through a friend, spoke well of the lawyers, and the young man had shown me several letters from well-known physicians. A lawyer friend whom I saw on Sunday gave me three pieces of advice: (1) Take up at once any cash offer; (2) be very careful what I signed; (3) not pay out one cent. On Monday my young man was on hand. I was very indefinite, and he offered me \$50 for the claim. I let him offer it again and then I closed on the offer. He said he hated to see me lose \$300 or more, but I told him I could judge of that for myself, and I should hold

him to his offer. He asked if a certified check for \$50 would do, and I said that it would perfectly. He promised it for two o'clock that day.

A few days later, being down town, I went into the office; there, sure enough, was the intelligent young man, he had been ill, he said, and out of town, and was sorry to have troubled me. The check should be in my hands by one that day. About a week later I was enough interested to go to see the lawyers. They, of course, repudiated the young man. He was their agent only to solicit for their agency, but he had no right to go as far as he had. In fact he should only have charged me \$10 for a year's membership. Did I care to join at that price?

I know when I am beaten and I stopped. As I write it out I cannot see how I was so green, but he was a very plausible young man and some of your other readers may have met him. At present I have paid \$3 and have given away a claim of \$36. To balance this I have his promise to pay me \$50 (unsecured and five months old), and I have learned a certain amount about the collection of claims.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 7, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,433 | 407 | 21.49 | 17.72 | 3.27 | .91 | 1.12 | |
| Chicago . . . | 1,885,000 | 596 | 172 | 20.96 | 21.30 | 2.18 | .50 | 1.50 | |
| Philadelphia . | 1,378,527 | 596 | 141 | 23.97 | 17.44 | 2.61 | 2.51 | .17 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 245 | 84 | 26.93 | 16.73 | 2.45 | .41 | — | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 134 | 45 | 26.86 | 15.67 | 1.49 | 2.23 | — | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 293,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 88 | 32 | 11.36 | 21.58 | — | — | — | |
| Boston . . . | 603,163 | 251 | 64 | 19.52 | 21.51 | 1.99 | 1.59 | .78 | |
| Worcester . . | 132,044 | 40 | 14 | 10.00 | 17.50 | — | — | 2.50 | |
| Fall River . . | 115,549 | 54 | 26 | 27.91 | 24.06 | 3.70 | — | — | |
| Lowell . . . | 101,959 | 47 | 17 | 14.89 | 31.90 | 2.13 | — | 2.13 | |
| Cambridge . . | 98,639 | 34 | 12 | 8.82 | 29.41 | — | — | 2.94 | |
| Lynn | 72,497 | 24 | 6 | 8.33 | 8.33 | 8.33 | — | — | |
| Lawrence . . | 69,766 | 29 | 12 | 20.69 | 37.92 | 6.89 | — | — | |
| Springfield . | 69,389 | 21 | 7 | 33.33 | 23.81 | 4.76 | 4.76 | — | |
| Somerville . . | 68,110 | 26 | 8 | 11.55 | 26.95 | 3.85 | — | 3.85 | |
| New Bedford . | 67,198 | 25 | 12 | 24.00 | 28.00 | — | — | 8.00 | |
| Holyoke . . . | 49,286 | 17 | 12 | 23.53 | 29.40 | 5.88 | — | — | |
| Brockton . . . | 44,873 | 17 | 3 | 5.88 | — | — | — | — | |
| Haverhill . . | 42,104 | 14 | 4 | 14.28 | 21.42 | — | — | — | |
| Newton . . . | 37,794 | 8 | 1 | 25.00 | — | 12.50 | — | — | |
| Salem | 36,876 | 21 | 4 | 9.52 | — | — | — | — | |
| Malden . . . | 36,286 | 19 | 11 | — | 26.31 | — | — | — | |
| Chelsea . . . | 35,876 | 13 | 4 | — | 30.80 | — | — | — | |
| Fitchburg . . | 35,069 | 10 | 2 | 20.00 | 10.00 | — | 10.00 | — | |
| Taunton . . . | 33,656 | 9 | 1 | 22.22 | — | — | — | — | |
| Everett . . . | 28,620 | 14 | 6 | 7.14 | — | 7.14 | — | — | |
| North Adams . | 27,862 | 8 | 4 | 12.50 | 37.50 | 12.50 | — | — | |
| Gloucester . . | 26,121 | 6 | 2 | 23.33 | — | 16.67 | — | — | |
| Quincy . . . | 26,042 | 7 | — | 14.30 | 42.90 | — | — | — | |
| Waltham . . . | 25,198 | 7 | 3 | 14.30 | — | — | — | — | |
| Brookline . . | 22,608 | 5 | 2 | — | — | — | — | — | |
| Pittsford . . . | 22,589 | 4 | 1 | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 6 | 4 | — | 33.33 | — | — | — | |
| Medford . . . | 20,962 | 6 | 3 | — | 16.67 | — | — | — | |
| Northampton . | 19,883 | 6 | 2 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 3 | — | — | — | — | — | — | |
| Clinton . . . | 15,161 | 7 | — | 14.30 | 28.60 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 2 | 1 | 50.00 | 50.00 | — | — | — | |
| Woburn . . . | 14,300 | 4 | 1 | — | — | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,600 | 6 | 3 | — | — | — | — | — | |
| Melrose . . . | 13,600 | 3 | 1 | — | 33.33 | — | — | — | |
| Westfield . . . | 13,418 | 3 | 1 | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 6 | 2 | 16.67 | 33.33 | — | — | — | |
| Framingham . . | 12,534 | 7 | 1 | 28.60 | 42.90 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 5 | 1 | — | 40.00 | — | — | — | |
| Southbridge . . | 11,268 | 4 | 1 | — | 25.00 | — | — | — | |
| Watertown . . | 11,077 | 3 | — | 66.67 | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,893; under five years of age, 1,140; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 817, acute lung diseases 733, consumption 413, scarlet fever 34, whooping cough 41, cerebrospinal meningitis 5, smallpox 5, erysipelas 10, measles 31, typhoid fever 64, diarrheal diseases 79, diphtheria and croup 99.

From whooping cough, New York 13, Chicago 3, Philadelphia 15, Baltimore 1, Pittsburgh 3, Boston 4, Springfield 1, Fitchburg 1. From erysipelas, Chicago 2, Philadelphia 4, Baltimore 1, Pittsburgh 1, Boston 2. From smallpox, Philadelphia 2, Pittsburgh 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,023, for the week ending Jan. 24, the death-rate was 20.1. Deaths reported, 5,822; acute diseases of the respiratory organs (London) 411, whooping cough 185, diphtheria 80, measles 123, smallpox 5, scarlet fever 48.

The death-rate ranged from 6.2 in Smethwick to 32.9 in West Bromwich; London 20.9, West Ham 20.3, Brighton 13.7, Portsmouth 16.3, Southampton 18.0, Plymouth 22.8, Bristol 19.5, Birmingham 22.0, Leicester 12.8, Nottingham 21.0, Bolton 19.5, Manchester 24.4, Salford 19.1, Bradford 20.4, Leeds 19.5, Hull 18.8, New-Castle-on-Tyne 27.0, Cardiff 18.1, Rhondda 20.0, Liverpool 24.5, Hornsey 12.0, Bootle 20.6.

METEOROLOGICAL RECORD

For the week ending Feb. 7, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Wet'th'r * | | Rainfall in inches. |
|------|-------------|--|--------------|----------|--------------------|-----|--------------------|-----------|-------------------|-----|------------|-----------|---------------------|
| | Daily mean. | | Daily mean. | Maximum. | Minimum. | | 8.00 A.M. | 8.00 P.M. | Daily mean. | | 8.00 A.M. | 8.00 P.M. | |
| S. . | 1 30.11 | | 20 | 35 | 26 | 62 | 76 | 69 | W | E | 6 | 6 | O. O. |
| M. . | 2 29.97 | | 37 | 41 | 33 | 78 | 100 | 89 | W | E | 4 | 5 | O. R. 16. |
| T. . | 3 30.00 | | 43 | 49 | 37 | 72 | 62 | 62 | W | N E | 7 | 3 | C. C. .01 |
| W. . | 4 29.40 | | 38 | 42 | 34 | 100 | 100 | 100 | S E | N W | 20 | 10 | R. R. .51 |
| T. . | 5 29.38 | | 28 | 35 | 21 | 71 | 50 | 60 | W | N W | 14 | 26 | O. F. .20 |
| F. . | 6 30.00 | | 30 | 37 | 22 | 43 | 55 | 49 | W | N W | 15 | 7 | C. C. O. |
| S. . | 7 30.27 | | 26 | 32 | 21 | 59 | 64 | 62 | N W | S | 12 | 9 | C. C. O. |
| ☞ | 29.88 | | 39 | 28 | | 70 | | | | | | | .88 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING FEB. 14, 1903.

E. J. CROW, passed assistant surgeon. Detached from the "Marblehead" and directed to wait orders.

W. L. BELL, passed assistant surgeon. Detached from the Naval Hospital, Mare Island, Cal., and ordered to the "Marblehead."

R. W. PLUMMER, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, junior grade, from June 17, 1902.

R. W. BRIGGS, assistant surgeon. Appointed assistant surgeon, with rank of lieutenant, junior grade, from Jan. 19, 1903.

R. L. SUTTON, F. W. S. DEAN, assistant surgeons. Appointed assistant surgeons, with rank of lieutenants, junior grade, from Jan. 26, 1903.

W. H. BLOCK, acting assistant surgeon. Ordered to the naval recruiting office, Chicago, Ill.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING FEB. 12, 1903.

MAGRUDER, G. M., surgeon. Granted leave of absence for one day. Feb. 6, 1903.

DECKER, C. E., assistant surgeon. Granted leave of absence on account of sickness, for ten days. Feb. 10, 1903.

PARKER, H. B., assistant surgeon. To proceed to New Orleans, La., for special temporary duty. Feb. 6, 1903.

HAMILTON, H. J., acting assistant surgeon. Granted leave of absence, on account of sickness, for thirty days from Dec.

27, 1902. Feb. 3, 1903. Granted fifteen days' extension of leave of absence, on account of sickness, from Jan. 27. Feb. 7, 1903.

SIBREE, H. C., acting assistant surgeon. Granted leave of absence for six days from Feb. 7. Feb. 6, 1903.

ULRICH, C. F., acting assistant surgeon. Granted leave of absence for twenty-five days from Feb. 15. Feb. 11, 1903.

GAHN, HENRY, pharmacist. Granted leave of absence for five days from Feb. 6, 1903, under provisions of paragraph 210 of the regulations.

RESIGNATION.

Acting Assistant Surgeon Pedro Malaret resigned, to take effect Jan. 31, 1903.

BOARD CONVENED.

Board convened to meet at Washington, D. C., Feb. 9, 1903 to consider an outline plan for the marine hospital to be erected at Savannah, Ga. Detail for the Board: Assistant Surgeon-General J. H. White, chairman; Assistant Surgeon-General L. D. Williams, Assistant Surgeon-General W. J. Pettus, recorder.

SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY. MEDICAL MEETING.—The regular meeting will be held in the John Ware Hall, Medical Library Building, The Fenway, on Monday, Feb. 23, 1903, at 8.15 P.M., sharp.

Program: Dr. Charles W. Townsend, "Cream for the Home Modification of Milk"; Dr. Philip P. Sharples and Dr. Eugene A. Darling, "Variation in the Composition of Human Milk"; Prof. Theobald Smith, "Foot-and-Mouth Disease"; Dr. Arthur H. Wentworth, "Foot-and-Mouth Disease in Children"; Dr. Edward H. Bradford, "Congenital Dislocation of the Hip," illustrated by means of Pathological Specimens and Lantern Slides.

ARTHUR K. STONE, M.D., Secretary,

543 Boylston Street.

RECENT DEATHS.

THOMAS N. DE BOWES, M.D., a well-known surgeon of Brooklyn, N. Y., died on Feb. 7, at the age of seventy-one years. He was born in Ireland and was a graduate of Trinity College, Dublin. He received his medical degree from the University of the City of New York, and was one of the founders of St. Mary's Hospital, Brooklyn. In the Civil War he served as a surgeon in the Connecticut Volunteers.

HERMAN MYNTER, M.D., a prominent surgeon of Buffalo, and one of those who was in attendance on President McKinley after he had been shot, died on Feb. 9.

JOHN J. CONWAY, M.D., of Brooklyn, N. Y., died on Feb. 13, at the age of forty-three years. He was graduated from the Long Island College Hospital in 1880. He was a surgeon to the Brooklyn City Hospital and also to the Manhattan Elevated Railway Company.

BOOKS AND PAMPHLETS RECEIVED.

Four Lectures on the Nature, Causes and Treatment of Cardiac Pain. By Alexander Morison, M.D., F.R.C.P. (Edin.). Illustrated. Reprint.

Presence of Tetanus in Commercial Gelatin. By John F. Anderson, M.D. Bulletin No. 9, Hygienic Laboratory, U. S. Marine Hospital Service, Washington. September, 1902.

Laboratory Technique. Articles on Ring Test for Indol and Colloidal Saes, by S. B. Grubbs, M.D., and Edward Francis, M.D., and on Microphotography with Simple Apparatus, by H. B. Parker, M.D. Bulletin No. 7, Hygienic Laboratory U. S. Marine Hospital Service. Washington. May, 1902.

The Medical Epitome Series. Obstetrics, a Manual for Students and Practitioners. By W. P. Manton, M.D. Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Essentials in the Construction of Hospitals for Large Cities. By A. J. Ochsner, B.S., F.R.M.S., M.D., of Chicago. Reprint. 1902.

The Surgical Treatment of Tuberculous Peritonitis. By A. J. Ochsner, M.D., of Chicago. Reprint. 1902.

Provision for the Criminal Insane. By William Francis Drewry, M.D., of Petersburg, Va. Reprint. 1903.

Congenital Dislocation of Hips. With Report of Cases and Description of a Pelvis obtained Three Years after Successful Reduction by the Lorenz Method. By Edward H. Ochsner, M.D., of Chicago. Reprint. 1902.

The Life Within. Boston: Lothrop Publishing Company. 1903.

Report of the Connecticut Hospital for the Insane for Two Years ending Sept. 30, 1902.

Original Articles.

A FEW REMARKS ON BLOOD PRESSURE.

BY JAMES MARSH JACKSON, M.D., BOSTON,

Physician to Out-patients, Massachusetts General Hospital.

IT is about three years since I first began to experiment with Gaertner's blood-pressure machine, and the results have been so satisfactory that I am led to say a few words on a subject which is just now exciting much interest.

I was very fortunate in getting a tonometer that was fairly accurate, though it has been necessary to test it from time to time with a mercury manometer (also Gaertner's) and to rearrange the dial. Although these instruments (I refer to the spring manometers) are very convenient, I should hardly care to recommend them for general use, as they vary greatly in accuracy, as must all spring manometers. If, however, a tonometer can be found that will stand the test with a mercury manometer, I do not see why it should not be accepted as a standard machine. It is certainly much more convenient and portable.

Whether or not this method of Professor Gaertner is an exact index of the actual blood pressure I am not prepared to say, but I believe that it is a sufficiently accurate measure of tension for all practical purposes, or at least gives us fairly accurate measures for comparison. It does not seem to me that the objection usually raised, namely, that the reaction looked for in the finger is largely dependent on the tension in the capillaries and that this tension is a very variable one, is of much moment. As I have noted it, the blush in the finger tip is almost instantaneous and takes place the instant the pressure on the arteries of the finger is sufficiently relaxed to permit the blood to flow by the obstruction. I do not see why this method is not the same as the Riva Rocci, the former utilizing the smaller, the latter the larger, arteries of the arm.

I have recently been using the Riva Rocci apparatus which Dr. Locke very kindly made for me, and have been comparing the results obtained by these two machines. As a rule the readings have been about the same, but occasionally there has been a wide divergence for some unknown reason, and I am not able to say which has been the more accurate. This is a matter which must be worked out carefully.

There have been several cases of marked arteriosclerosis in which the blood pressure with the Riva Rocci was very much higher than with the Gaertner, and I believe that the latter was nearer right, as the brachials in these cases were so rigid that it took great force to constrict them, whereas the smaller vessels of the finger seem to be less affected by the disease, so that in all cases of arteriosclerosis I shall continue to use the Gaertner.

Just here I should like to suggest that all records of blood pressure should be accompanied by the name of the instrument used, as otherwise some of the high readings in arteriosclerosis with the Riva Rocci might be very misleading.

Last week an interesting case of angina brachialis appeared at the clinic, and an attempt was made to take the blood pressure. As there were no brach-

ial or ulnar arteries to be felt, and as the radial was so feeble that it could scarcely be perceived and disappeared entirely during the attack of angina, we were obliged to give up the Riva Rocci and use the Gaertner. It was interesting to note that the blood pressure was lower during the angina, which is the reverse of what happened in Dr. Walton's case of intermittent claudication published last year.

Every one who intends to take blood pressures should be equipped with a mercury manometer of one form or another to start with. Then he should have the Riva Rocci armlet and the Gaertner finger ring, both of which can be used with the same machine. The advantage of this will be seen in what was said of the arteriosclerosis cases, and the same applies in patients with very fat arms or in whom the radial pulses for some reason are hard to find.

In order to have the readings taken by different observers fairly uniform, the following rules should be observed: With the Riva Rocci method the blood pressure should be taken with the patient in recumbent position; with the Gaertner method the patient may either lie down or sit up, but the finger should always be on a level with the heart. The patient should be under no mental excitement at the time of the reading, as otherwise an elevation of the blood pressure will be found. Two readings at least should always be taken and if they agree this may be considered accurate, but if there is a marked difference then there has been some mistake in the experiment, and other readings will have to be taken.

I should like to speak of a few observations which I have made in the course of my clinical work. In a series of cases of exophthalmic goiter which I have followed for over two years, and in which I used at Dr. F. C. Shattuck's suggestion bromide of quinine, I have found no variation in the blood pressure of any account. These cases (all women) have nearly all had a pressure ranging from 120 to 160 (Gaertner), that is, they were above the normal, but in none of the cases have I found a marked diminution of the pressure with improvement in the symptoms. None of these cases are absolutely well, but even those without symptoms still have a rise of blood pressure.

In one case of small cystic goiter the pressure has ranged about 160, whereas in a case of large cystic goiter which reached to the second rib the pressure was below normal.

It might also be interesting to note the range of pressure in the cases of chronic nephritis in which the operation of decapsulation of both kidneys was done. In 5 out of 6 cases which I had the opportunity of following there was a rise of pressure even with marked improvement in the symptoms. In one the pressure rose from 125 at time of operation to 210 at the end of two weeks. At this point digitalis was given on account of a failing pulse, and the tension soon fell to 130, which was contrary to my expectation, as I thought that the digitalis would maintain the high tension. As improvement set in at the end of another month the pressure again rose to 220. Three months after the operation the tension was 190, and the patient was in very good condition. The albumen had gradually diminished in amount from $\frac{1}{2}\%$ to a trace. This was a case of chronic diffuse nephritis.

In a case of chronic glomerulo-nephritis the tension rose from 100 at time of operation to 150 in a month, although there had been a great improvement of the symptoms and the albumen had gone from $\frac{1}{2}$ of 1% to $\frac{1}{10}$ of 1% in this time. One showed a drop in the pressure and that of only 20 mm., or from 170 to 150 in four weeks. These observations were all made with the Gaertner.

As an aid in diagnosis the blood pressure is fast taking an important place. We know, for instance, in arteriosclerosis the blood pressure is high; in chronic nephritis, especially of the interstitial type, the pressure runs very high, and in a way the amount of tension is a good index to the extent of the disease.

I remember one case in this connection which is of interest. A young girl came to my office complaining of headache and some dimness of vision, and on examination I found considerable enlargement of the heart and beginning retinitis, although she was still at work and made but little complaint. No edema was present, and examination of the urine showed no trace of albumen and the sediment was also normal. The blood pressure was 250, or as high as could be measured by the tonometer. I sent her at once to the hospital, as I could not explain her condition. Nothing more was found until a few days later, when a slight hyperemia was apparent in the urine. She died suddenly after a week in the hospital, and it was found that she had a tuberculous kidney with occluded ureter on one side and a normal but somewhat hypertrophied kidney on the other. Although this patient did not appear very ill until the last day or two, the blood pressure was a very significant sign.

Thus far the best use to which I have put the instrument has been in the demonstration of tension to the students. This has always been a hard subject to teach, but with a direct measure before them they have been much keener in their interest to perfect themselves, and the results have been very satisfactory. I have always taught them that the blood pressure in a young healthy man ranges from 100 to 130 mm. of mercury, but I have frequently found it as high as 150 in young men who, so far as I could ascertain, were perfectly sound. These same cases, however, are liable to considerable variation, and I think this ought always to be taken into consideration in all our experiments.

In young women the pressure is decidedly lower, and ranges from 90 to 110, so that while a pressure of 140 to 150 may be normal for a man it is abnormal for a woman. Elderly people almost always, so far as I have observed, have an elevated pressure, due for the most part to changes in the arteries, so one should not be disturbed in finding in a person of fifty years a pressure of 175.

Low pressures are uncommon, except in cases of shock and collapse, and it is with high pressures that we have to deal with principally. Pressures of 200 are not infrequently found, and should always be considered more or less dangerous, while pressures of 250 are very dangerous and are only seen in grave cases. One hears of much higher readings, but I do not believe that they are always accurate except, perhaps, in some bad head injuries. In the last year five of my patients with pressures of over 190 have died of apoplexy, and I now make it a rule

to warn the family of a patient with a tension above 190.

I regret very much that I did not have an instrument of high registering power in a case of apoplexy which occurred last year in my clinic, for I am sure the pressure must have been very high. The patient, a woman of about sixty, with marked arteriosclerosis and interstitial nephritis, had been coming to the clinic for some time, and I had made several readings of the blood pressure, which ranged about 210 Gaertner. One day she came in complaining of severe headache, and as I was taking her pressure I found it to be higher than my machine would register (250), and while I was making a third attempt to take it, to be sure that I was correct, she fell to the floor unconscious, and died within a few hours of cerebral hemorrhage.

In closing, I wish to urge on all who are doing clinical work, or who are teaching, the importance of this new measure of tension. There is a great deal to be learned, and there is no question but that it will be of great diagnostic value as soon as we arrive at more definite conclusions.

INTESTINAL OBSTRUCTION BELOW THE ILEO-CECAL JUNCTION.¹

BY THOMAS H. MANLEY, PH.D., M.D., NEW YORK CITY.

VARIOUS types of intestinal obstruction call for active surgical interference after tentative therapy fails.

During the past twenty-five years remarkable progress has been made in the direction of enlarging our knowledge of the diverse pathological characters of disease processes situated in the large intestine, from its joint with the ileum to the point where it passes externally at the anus. Moreover, aggressive and ingenious surgery of the intestine—comparatively a modern creation—has wrought a radical revolution in therapy here, and in this area of the alimentary canal it promises to accomplish more, in what was formerly a group of most distressing maladies.

SURGICAL EXPERIMENTS IN PHYSIOLOGICAL PROBLEMS.

Modern surgery points to the necessity of a modified conception of function in digestion, a revision of physiological teaching. It has recently been demonstrated that the complete excision of the colon or the stomach is not incompatible with full nutrition of the body; those who survived the loss of their stomachs even gained in weight and vigor. The colon is a long, sacculated funnel for the reception of the residue of digestion; it was formerly supposed to serve only as a reservoir for the *débris* and bye-products of alimentation.

From early infancy until late in life the terminal coil is more frequently the seat of functional derangement and organic disease than all other areas of the alimentary canal, from the pylorus down, and yet, until a recent period, only its rectal end, when diseased, was considered as worthy of exhaustive study by pathologists, and was but indifferently treated by practitioners.

¹ Read before the Hartford Medical Society, Hartford, Conn., Dec. 22, 1902.

ENTS IN THE ANATOMY OF THE LARGE INTESTINE.

The adult large intestine constitutes about one th the length of the intestinal canal, measuring out five feet. I have found by experiments on a cadaver that, without over-distention, its capacity averages 120 oz. — nearly a gallon. It quite completely encircles the abdomen.

Its position laterally is more or less fixed, but the transverse and sigmoid loops are capable of a considerable degree of movement. The gut is sacculated or pocketed, of a convoluted outline; it contains less muscular but much more fibrous tissue than the ileum.

Like the urinary bladder, the colon is capable of enormous distention. The nerve supply of the fixed colon is from both the sympathetic and spinal, the ileum above from the sympathetic only. The arterial supply is from various sources; except at the rectum minus its venous blood is all poured into the portal system. At either end the large intestine has a large expansion — at the beginning the cecum, and at the end the rectal ampulla; at each end, also, it presents openings influenced by muscular action. The ascending colon is normally uncovered by peritoneum in its posterior aspect. This point deserves special emphasis for various cogent surgical reasons. The descending is similarly invested, though the second part of the sigmoid, like the transverse loop, is entirely covered by peritoneum. The rectum our latest writers very judiciously describe as that part of the large intestine *below* the peritoneal reflexion of the pelvis and the third piece of the sacrum.

TRANVERSE COLON.

The transverse colon usually lies on a line just above the umbilicus, but in cases of lax bellies, gas-troptosis or hernia it may sink nearly as low as the pubis.

THE SIGMOID.

The usual descriptions of the anatomical relations of the sigmoid are radically faulty. The question has been lately raised as to whether it is U-shaped or has the double curve of an S. The fact is, it possesses no definite shape, because the length of the sigmoid very commonly varies. Its central portion is most mobile. It may have a mesentery not more than 10 inches long, and hence it can scarcely move at all; again, and very commonly, the mesentery is so long as to permit the sigmoid to rise high above the pubis. In many operations on the appendix, the right tube or ovary in the female, the first coil to come into view is the distended sigmoid.

The large intestine nor any of its segments is ever completely empty and collapsed, as we find the bladder after urinary expulsion.

Of late years the anatomy of the sigmoid has acquired special importance, as it is being frequently utilized as a redundant loop of the large bowel, available for short circuiting in colic obstructions, in those stenotic conditions which formerly were relieved only by artificial anus.

The rectal end of the large intestine in its anatomical composition bears a close resemblance to the oesophagus; it is a musculo-membranous tube; in both cases it lies in close contact with other important

passages; its movements are voluntary; it is a highly vascular structure.

Sexual distinctions are obvious in the relations of the parts here. For physiological reasons, we can readily understand the rectum's greater exposure to trauma in child-bearing women; and from the near position of the vulva to the anus, the ease of infection in septic vaginal discharges. By manipulation through the vagina, one may explore the anterior wall of the rectum to where the peritoneum is reflected over it.

From the cecum down, we will note that the large intestine is constructed rather for strength than facility in movement; it is powerfully supported by a broad band of fibrous tissue on its anterior aspect, and dense circular bundles at its sacculations; its mucous membrane is everywhere firmly adherent except in the rectum.

ATYPICAL DEVIATIONS.

Dr. W. W. Babcock declares that of all the fixed viscera of the abdomen, the large intestine shows deviations from the usual, most frequently. In the fetus the gut is nearly straight. Jacobi has pointed out its larger proportional volume in young children. It varies in length from 40 to 80 inches; it bears no relation to the development of the individual or the length of the small intestine; its position, length and capacity vary widely.

Deviations are most common in the caput coli, the transverse colon and in the sigmoid. Babcock discovered variations in about 20% of subjects. In 52% of adult bodies Treves found neither an ascending nor descending mesocolon; Jessett found this arrangement in 50 out of 100 subjects. The ascending colon normally measures about eight inches, but it may more than double this measure when it sinks low in the abdomen or is carried out through the abdomen in hernia. Again, *per contra*, when the fetal type persists, it has practically no length at all, but lies on the right kidney under the diaphragm. The transverse colon is 18 inches long in most bodies, but in various states of laxation and displacement it may easily double this figure. The length and position of the descending colon are fairly constant.

According to Illoway, the sigmoid loop is of the narrowest caliber, there being a marked constriction at the third piece of the sacrum where the rectum begins; this is the site of "O'Beirne's valve."

Reeve notes the remarkable range of movement in the colon when overfilled, and says that the distended sigmoid may rise up to the iliac fossa, or make excursions up to the under surface of the liver. The frequent uncertainty of the sigmoid's position sometimes renders the construction of an inguinal anus tedious and the passage of long rectal tubes difficult and dangerous.

Morris gives the length of the mesosigmoid as from one to one and a half and two inches.

Byron Robinson found a mesosigmoid, in the first third of this loop, absent in 80 out of 300 autopsies.

A strange anomaly, strictly speaking, is the absence of the large intestine; that is, the gut may be no larger, nor even as large in caliber, as the small intestine.

Some years ago I made an autopsy on an old woman whose small intestine was but 10 feet long; the caliber of the bowel was very large. The colon measured 4 feet 3 inches; it everywhere had a long mesentery, and was only about half the diameter of the ileum.

In a large, muscular young woman mortally injured by a fall, I found, on autopsy, a voluminous, freely movable cecum, as big as a fetal head, lying up under the diaphragm; the diameters of the transverse colon were no greater than those of the finger. From the splenic flexure down to the sigmoid, the dimensions of the descending colon were normal. The sigmoid was a vast movable pouch, with a very long mesentery.

Dodd found the transverse colon in an adult subject no larger than a lead pencil, and Formad saw the caput coli of a man as big as that of an ox.

PHYSIOLOGY: THE RÔLE OF THE LARGE INTESTINE IN ALIMENTATION.

If the colon only serve the purpose of receiving and discharging the residue of digestion it is self-evident that the surgical sacrifice of part or all of it should not, in any serious manner, impair the nutrition of the body; that the danger lies wholly in operative procedure, in its immediate effects on the system. From the after-histories of some of those cases in which there has been partial or total colic resection, we must infer that life may be continued without this loop of intestine.

Lilienthal swept away the whole colon from the ileocecal valve to the sigmoid, and now, two years since, he informs me that his patient is in good health and has two natural evacuations daily.

But it may be well to determine, if we can, whether or not digestion is ended at the isthmus of the cecum. That one may survive without it does not settle this problem by any means, as we may dispense with all our teeth and yet insalivate the bolus; we may part with our tongue and larynx and yet possess audible speech. Are the colon's secretions, its bacterial elements and the chemical changes of its contents essential or even auxiliary to assimilation of food and nutrition of the body?

Sir Michael Foster says they are. He says the colon is something more than a sewer vent, that digestion is not completed when the ingesta reach the cecum. He notes the putrescent elements in the colon, induced by fermentation changes, brought about by the secretion of its own mucous membrane, with the admixture of acid-producing microbes, the presence of skatol, a bacterial product, and marsh-gas. According to this celebrated physiologist, the bile is not an antiseptic in its strict sense, but "only modifies bacterial action in the mixed intestinal juices."

Cellulose, only in part digested by the small intestine, is often completely reduced and absorbed by the colon.

Prof. Austin Flint regards the digestive changes in the large intestine as "unimportant in physiological conditions; as hardly anything but water is absorbed by its lining membrane."

The clinical aspects of this problem point another way. Hence we must turn to the practical side of the question as physicians and surgeons, rather

than depend entirely on either chemistry or physiology.

We all are familiar with the extraordinary absorbing power of the large bowel in taking up fluids, solids or gases; several medicinal substances act more promptly and with greater energy by the rectum; ether anesthesia may be effected by this channel; for weeks an invalid may be fed from below, by nutrient enemata; gelatin, cellulose, egg-albumen, the proteids of milk, saccharine liquids and alcohols diluted, being all reduced and absorbed in the large intestine. In this respect—its physiological aspect—the colon so widely differs from the bladder, which in the healthy state absorbs absolutely no materials of any description. Large and repeated flushings of the large intestine are exhaustive in the normal state by the waste which they involve, but in coprostasis, a good clearing out exhilarates and strengthens.

Goodhardt, a surgeon of prominence and large experience, regards "the colon as the most important segment of the alimentary canal, possessed of great resorbing power, and always a very active agent in digestion."

The movements of the large intestine are languid, entirely dissimilar to those of the ileum. In the latter the peristaltic wave is muscular and active; in the former it is much more complex. On exposure in the abdomen of the living animal, while we may note the intermittent wave of the ileum, the coils of the colon are still. At a fistulous opening of ileum near the cecum Goodhardt saw chocolate appear in five minutes; Grad saw swallowed carmine appear in same situation in fifteen minutes.

The most conspicuous forces in the action of the colon are (a) *vis a tergo* force, transmitted from the ileum; (b) gravity; (c) a vacuum on evacuation of the rectum; (d) contraction of the colic walls, and (e) the compressive energy of the diaphragm and other abdominal muscles.

Colicky spasm in stenotic obstruction of the colon, with energetic contraction and peristalsis, we can often see and feel. In order here to force the fecal current through the strictured or narrowed part, the colon's walls are powerfully reinforced by marked hypertrophy.

STENOTIC OBSTRUCTION FROM ORGANIC CHANGES IN THE WALLS OF THE INTESTINE.

Mechanical impediment to the intestinal current, depending on structural changes in the walls of the gut, or uncomplicated stricture of the intestine, occur by all odds with greater frequency in the large, rather than the small intestine. It is said that about 5% of cancer cases involve the intestinal tract, 80% of these seizing on the rectum.

Nothnagel, in 41,831 autopsies in Vienna, found cancer of the large intestine 326 times, in the small intestine 17.

Hypertrophic tuberculosis, according to one noted author, leads to intestinal lesion, with greater frequency in the small intestine; Eisenhardt, in 96 cases, found it to occur in the large intestine but eleven times, in the sigmoid, once. Harris says that tuberculosis of the rectum never induces stricture.

Paul Daniels, however, gives a much wider range

for the ravages of the lesion, and observes that it occurs with greater frequency in the large than small intestine, especially in the rectum, "where it often can be distinguished from cancer with difficulty; the infiltrate is mostly submucous. It may be a cause of rectal stricture."

Daniels' experiences with respect to the rectum are in entire accord with my own.

Tubercular infiltration of the submucous tissues, or open ulceration just within the anus, certainly does present several of the common characters of malignancy. It is difficult, if not sometimes quite impossible, to establish its precise identity here, because the specific bacillus eludes detection; but, if the lesion primarily tubercular, it is believed, in various situations may take on malignant changes; in fact, it may be said that all acute tubercular processes are essentially malignant in the fullest acceptance of the term. Bovis records three cases of syphilis of the large intestine, degenerating into malignancy, and why may not tuberculosis take the same course?

Cancerous stricture of the large intestine occurs most frequently in the lower third of the rectum. Jessett alleges that "in the lists of mortality, cancer of the rectum holds a position next to that of the tongue."

The next favorite site is in the cecum and near the hepatic flexure. It seldom seizes in the transverse or descending colon and very rarely on the sigmoid loop. I have only seen two cases of the disease in the sigmoid, one in an aged physician. In 1,908 cases of malignant disease entering the London Cancer Hospital, 3% involved the rectum.

Williams, in 5,556 cases of malignancy, found the rectum involved in 4.4%. In the rectum, when detected early, the cancerous mass may take the form of a hard, raised papilloma, localized in plaques or producing an annular infiltration under the mucous lining. It is seldom more than a finger's length from the sphincter. Quain well described the "annular growth" as a circumscribed scirrhus; he said the narrowed part seemed as if tied by a string; others have described it as the tied neck of a sack. The intestine also becomes widely distended and dilated, with its walls greatly hypertrophied; finally infiltration occurs, with breaking down, a consecutive mixed infection sometimes provoking abscess or fistula, or opening into the nearest hollow viscus of the abdomen or pelvis. It is a curious pathological fact that the malignant infiltrate from uterine cancer very rarely if ever produces stenosis of the rectum.

Luetic stenosis of the rectum usually belongs to the third stage of syphilis, but it may appear at a long interval after all the distinctive features of the disease have vanished.

Sexual influence plays a dominating rôle in luetic diseases at the anal portal. Pæen found the proportion of anal chancre as 15 in the female to 1 in the male. Syphilitic deposits at the anal verge are first located in the submucosum, to later break down and infiltrate.

Gonorrheal infection is regarded by Pæen, Gerard and several other pathologists as a fertile source of ulcerative proctitis and rectal stricture. Morejean believes that it occurs more frequently in males than is generally believed. Torturing

pruritus, distressing tenesmus and free bleeding are said to accompany the initial stages. All authors agree that it is most frequent in the female. It may provoke phlegmon or fistula. Usually it pursues a chronic course and tends to stricture; hemorrhoids or proctitis in the male, which may lead to prostatic abscess; infection may spread into the base or neck of the bladder and extend into the tissues of the pelvis. Monod and Litten have seen this infection extend from the rectum to the uterus, the tubes and broad ligament.

Again, Rothrock alleges that gonorrheal infection of the female adnexa may extend downward through the pelvic lymphatics and engage the rectum.

Gonorrheal syphilitic or tubercular ulcer is nearly always lodged low down in the rectum, the cicatrization following repair leaving various degrees of stenosis.

Stricture of any area of the large intestine is very rarely, if ever, impermeable. There is always a passage through the tightest, for fluids or gases; but this opening is sometimes blocked by elements of the feces, or temporarily closed by spasmodic contraction. It may be said that this type of stenosis is most frequently incomplete, but when stuffed with plugs it is complete, and full stasis exists.

CLINICAL HISTORY OF STENOSIS OR OBSTRUCTION OF THE LARGE INTESTINE.

Intestinal obstruction, where the large intestine is involved, is never sudden, never acute, the gut is not strangled nor is there abrupt vascular asphyxia, it is never trapped, though it may be twisted or telescoped. The *etiology* of obstruction in the small and large intestine is totally dissimilar as a general rule; as in the former, strangulation, with rare exceptions, depends on *extrinsic* influence, the latter on *intrinsic*.

AGE.

Acute intestinal obstruction involves rarely but the small intestine, and occurs most frequently in early life; on the contrary, stenosis of the large bowel is never other than insidious in its onset, it is chronic and is generally a lesion of middle or advanced age.

The economy in a most striking manner adjusts itself to the effects of colic or rectal impediment, to coprostasis. For months and years the colon may very imperfectly empty itself, large fecal masses lying in its coils, the individual's health meanwhile suffering little if any impairment; the appetite is good, and there may be a blissful ignorance of colic stasis or impaction.

But in time, as the stercoral current comes to complete arrest, the crisis has arrived, and distressing symptoms gradually set in, or one may go to the grave never realizing the real character of his malady. In the mortuary records we may, perchance, find the case entered as "inflammation of the bowels or peritonitis."

TREATMENT: PALLIATIVE AND RADICAL.

While we cannot fail to note the striking contrast in the etiology and pathology of stenosis in the large and the small intestine, yet in extreme cases

of either its radical treatment is on similar lines. In the former, however, there is seldom imperative urgency, time is permitted to critically study the case, and work out the best plan for operative procedure; while in the latter immediate and decisive action is necessary for the adoption of such a course as is best calculated to relieve suffering and prolong life.

Palliative, tentative measures.—Always mindful of the possibility of error in diagnosis, of the wonderful powers of nature to overcome simple stenosis of every variety, the latency, insidiousness and chronicity of various types of cancer of the large intestine, and, moreover, not closing our eyes to the large mortality following surgical intervention, we will do well, in a considerable number of these cases, especially in old people, or if doubt exist, to first patiently and perseveringly test the efficiency of such therapeutic measures as will in no manner jeopardize life and may possibly effect a cure.

Eight years ago a physician brought to me, for examination, his father, who had for some years back been suffering from tenesmus, with frequent sanguino-mucoid discharge from the rectum. The gentleman was a preacher of the gospel, of good physique and enjoying vigorous health, sixty-two years old, of good habits. About two inches from the anus I came on a hard, stony growth in the posterior and lateral walls of the rectum. There did not appear to be any sigmoid impaction. My prognosis, of course, was sombre, and early excision was advised. But the advice was declined, no operation has been done, and he, now in his seventieth year, still occupies his pulpit. I am entirely at a loss to understand how he has survived, though possibly my diagnosis of cancer was an error. This case well bears out the view of Fitz as to the remarkable chronicity of pipe cancer in elderly people.

Inflammatory changes and spasm commonly attend the propagation of cancer of the bowel. Psychological impressions, as well as various sedative remedies, powerfully influence this phenomenon. Hence, however unfavorably a case may impress us, we should always endeavor to inspire confidence and hope. We may then turn to constitutional and local remedies.

Sedatives, local and constitutional, are of the greatest value, opium being well to the front. Packard notes the useful virtues of escerine $\frac{1}{10}$ gr. doses. Belladonna, because of its relaxing effect on smooth muscle, is said to be highly efficient. Assafoetida, in hysterical cases, blended with other sedatives is highly useful. Laxatives are usually ruled out, but small doses of opium and calomel may effect a large, free and painless motion when other medicaments have failed.

Quicksilver.—McKean Harris records two remarkable examples of success with the employment of quicksilver. One of his patients was sixty, the other eighty. In the first, high enemata and hot stupes had failed; the extent of abdominal distention was great. A half pound of quicksilver was given, this was followed every hour by a grain of opium. The next day the patient had a large evacuation with complete relief. The second case was a desperate one; the same treatment instituted with free and full evacuation on second day. In neither

case did salivation follow. Harris recommends this weighty charge in those who refuse operation, or who are not in a physical condition to sustain it. Hot stupes, kneading the abdominal walls, massage, inunction of mercury, or electrization are all, judiciously employed in appropriate cases, valuable adjuncts in treatment.

I have found that the well-oiled, warm hand, by deep but gentle kneading over the course of the colon gives great relief. It stimulates the languid bowel to fresh contraction, subsequent ease succeeding from the escape of gases.

Rectal enemata and instrumental dilatation are most helpful means of relief in practically every variety of fecal stasis depending upon a contraction of the bowel. Their employment, however, must be governed by a judicious discrimination. Warm medication, oleaginous or saponated clysters are useful and afford great relief, quite regardless of the site of the stricture. They tend to overcome spasm; more or less of the fluid passes beyond the stricture or occlusive agent, in this way clearing the passage of scybalous plugs of feces, and thus permitting of a later escape of softened excrement and gases; with the discharge of the enema, large audible gusts of wind escape from the anus. The passage of the fecal elements tend to keep the lumen of a narrowed intestine open. The injection of fluids not only cleanses the bowel, but also, in a measure, widens the strictured part.

We will do well here to employ the long, stiff, rectal tube with caution, lest we inflict serious harm. The following case illustrates this: A bartender was seized at midday with severe colic; being constipated, he took an injection, but without relief. When the physician was called he gave him a "high enema" with the long tube; but his alarm was great when he discovered that it only increased his patient's agony, and none of the fluid came down.

At ten the same night, I made an abdominal section. A large hole had been punctured through the free loop of the sigmoid, and the peritoneal cavity was widely distended by soapsuds, sweet oil and the feces. He sank before midnight.

Nor should we overlook the enormous energy of hydraulic pressure when we charge the colon by the piston, irrigating bag or other means.

A young carpenter came under my care at Harlem hospital last spring, who, to simplify things and save trouble, fastened a rubber tube to a faucet in the bath-tub, lay down, passed the nozzle up his rectum, and let the water on. "All of a sudden," he said, "I felt something burst in my stomach." He quickly pulled the tube out, but too late; his agony was so great he was unable to leave the tub. He was immediately brought to the hospital in mortal shock, to die three hours later. On autopsy a large rent was discovered on the upper surface of the transverse colon, and the peritoneal cavity was found to contain fully two gallons of water with an admixture of feces.

Dilatation of any segment of the long intestine except the rectum, by bougies or sounds, is a reckless proceeding, and in cancerous infiltration it can be only productive of much harm or grave consequences; but in tubercular, syphilitic or gonorrheal stricture of the middle or lower third of the rectum it is often a very efficient agent, both for relief and

sometimes cure, but we should not resort to it if the mucous membrane is either inflamed or ulcerated, and those which are not so complicated are very few indeed. Tierlink advises the rejection of rigid sounds here, "because their introduction is not without danger to the intestines."

I have seen mortal shock follow the forcible, vainless effort of canalization of a scirrhus in a firmly strictured rectum.

(To be continued.)

THE TREATMENT OF HEMORRHOIDS.

BY JOHN O'CONOR, M.A., M.D., DUBLIN UNIVERSITY,

Senior Medical Officer, British Hospital, Buenos Ayres, S. A.

IN 1894, when first perusing the details of Whitehead's operation in Sir Frederick Treves' "Operative Surgery," I was so much struck by the thoroughness and simplicity of the procedure, and by its sound practical and pathological basis, that I resolved to give it a trial, and the results obtained in 150 operations amply confirm the claims of its distinguished author.

Like Mr. Whitehead I am happy not to have to report a single death, and in only five instances did any appreciable contraction supervene. In six an annoying after-effect, "weeping bottom," caused discomfort. These complications occurred in my earlier cases, and were due to injudicious encroachment on the skin when separating it from the mucous membrane. I have now learned how to prevent these troubles, and I must here acknowledge my indebtedness to my respected teacher, Prof. Charles Ball, for his paper, in which he drew attention to the best site for the application of the scissors. He advocated circular division along the apex of the rosette; this I found somewhat superfluous, as too much tissue remained and developed into rugosities, which had subsequently to be trimmed off. But unquestionably he did great service to Whitehead's method in warning operators not to infringe on the skin area.

I do not consider Mr. Whitehead claims a fraction too much for his operation, for it not only fulfils all that he vouchsafes, but possesses the further important advantages: synchronous removal of fissures, ulcers or polypi, which not infrequently attend pile formation, and if properly performed leaves no raw, secluded stumps, which are continually subjected to traumatism by passing feces, and which occasionally become converted into chronic ulcers or fissures.

Also the practice of leaving raw surfaces, with contaminated unabsorbable ligatures, is inconsistent with the ideas of modern surgery, and I cannot see any justifiable reason for treating the mucous membrane of the most sensitive rectum in a manner which would be almost considered medico-legal if done on the skin.

I have performed Whitehead's operation in old and adult, weak and strong, plethoric and anemic indiscriminately, and I regret I have not performed it more often, for many cases which I treated by ligature turned up with a recurrence within five years, and others found it difficult to get their "inward sores" to heal. Not a single relapse has followed Whitehead's operation in my practice.

In the latest edition of "The Operations of Surgery" over half a page of criticisms is devoted to this method, not a single one favorable. To any one like myself, accustomed to the procedure, it is hard to realize that Mr. Jacobson's condemnation refers to such a deserving operation, and, with all due deference to the most conscientious of surgical authors, I have a suspicion that he has departed from his usual custom in this instance, and has not balanced his criticisms on the scales of his own personal observation.

He commences by stating that the operation is "needlessly extensive and severe," at the same time he does not deny Mr. Whitehead's contention that the extent is necessary in order to effect a radical cure, and as all other operations are at best only temporary expedients, it is absurd to judge the extent of one by the other. And as to its severity, my personal experience entitles me to state that it is a matter entirely depending on the capacity of the operator. I maintain no excessive hemorrhage takes place if the operation is performed according to the rules which govern modern surgery, combined with the absence of what Sir Frederick Treves describes as surgical delirium, which of course is hopeless.

Again, "the time required for the operation is an objection this process takes on an average at least thirty minutes, where a skilled surgeon can operate with the ligature in less than five minutes," the value of the first part of this sentence may be determined from the following: During the past twelve months my colleague, Dr. Phelps, and myself have operated on 26 cases. The total time occupied was 328 minutes, or an average of twelve and one-half minutes to each, the maximum time taken was twenty minutes (in only one case) and the minimum five. Consequently I am unable to reconcile Mr. Jacobson's statement with our experience, unless there is a considerable difference in appreciation of the standard "skilled surgeon."

"The operation by ligature or by clamp and cautery, carefully performed, gives most excellent results, and in answer to Mr. Whitehead's argument that as long as this diseased area is left to reproduce piles over and over again, no permanent cure can be expected, I may say that I have always found that after one of the above operations has been properly carried out, the patient can easily prevent recurrence by attention to common-sense details in daily life . . . Finally I know of a case in a young, healthy patient fatal from blood poisoning." It is difficult to estimate the meaning of "most excellent results" from the operative standpoint if it has afterwards to depend on frail human nature to carry on the never-completed cure. Surely with the plethora of uterine monomaniacs in the world, there can be no necessity for creating a male class with rectum on the brain.

And as to the statistical value of an isolated death I should like to mention that the first case of piles on which I ever operated died from pyemia on the tenth day, after a combined ligature and clamp procedure. Yet, notwithstanding such an unpropitious début, I have since operated on hundreds without another fatality. I have little doubt that Mr. Jacobson's case and mine perished from the same cause, most probably dirty finger nails, quite irrespective of the method employed.

In the following description I may have introduced a few modifications which practice dictated, yet all claim as to originality must be unreservedly reposed in the famous Manchester surgeon whose practical genius has endowed surgery with two classic operations—excision of tongue and excision of hemorrhoids.

The patient is usually given a few days' rest in bed, during which the bowels are freely evacuated, warm mercurial sitz baths are given night and morning, and mist. calcii chloridi thrice daily internally. Chloroform having been administered—

(1) Artery forceps are applied to the four cardinal points of the rosette, or if the case be non-protrusive, the forceps are applied at same points about one third of an inch from skin margin. The assistant by making traction on two adjacent forceps removes the rugose condition, and brings the line of junction of skin and mucous membrane readily into view, while I divide around with scissors about one sixth of an inch from skin.

(2) The mucous membrane is next separated from underlying structures by passing the left index finger into rectum, which acts as a most efficient guide, while, with a blunt dissector, and an occasional snip of a scissors, the mucous cuff is raised, and separation carried well above pilous zone. So far there is generally very little hemorrhage, but if any should occur it is immediately ligated with catgut. Care is necessary during this part of the operation not to injure the sphincters by any reckless scissoring. If the mucous membrane is divided deep enough at the commencement the blunt dissector and fingers do the rest.

(3) By the four artery forceps originally applied, the cuff of mucous membrane is drawn outwards, and it is transversely divided above pile area. In doing this it is most necessary to determine the extent of each scissors snip by the amount of hemorrhage, every spurting vessel must be at once caught up in forceps, and by working round in this manner it is surprising how little blood is lost. When the cuff has been removed, each bleeding point is ligated with catgut. I usually retain a few forceps in position after ligation, as they are useful during the next move; namely, approximation of mucous membrane to skin.

(4) All hemorrhage having been effectually arrested, the part is well irrigated with warm salt lotion, and the mucous membrane is attached to skin by a continuous catgut suture.

If there is a key to success in this operation, it is not to draw this suture too tight, for, if so, necrosis of tissues follows. And under no consideration should this suture be utilized as a suture ligature to choke hemorrhage, for it invariably fails in such an object, collections of blood take place beneath mucous membrane, and within forty-eight hours the whole part is converted into a swollen, strangled mass. It would be superfluous to mention what follows.

After a final irrigation the wound is dried, a morphia suppository inserted, and iodoform gauze applied, which is changed daily. A few belladonna pills are given on third evening, followed by a dose of castor oil on following morning. The male nurse cleanses the part after each motion, and when suture loops appear too tight he snips them

through. If any separation of edges occurs a warm mercurial sitz bath is given night and morning, and afterwards the patient is dressed with borated talc or zinc powder. By careful attention to the wound we are enabled to discharge all our cases with a new and dry anus within the fortnight.

I have so far purposely omitted mentioning what has heretofore been considered an essential preliminary in these operations—forcible dilatation of the sphincters. For a long time past I have abandoned it, as it is quite unnecessary, and so disturbs and magnifies the condition of things as to render Whitehead's operation apparently a formidable task.

In cases with prolapse sufficient dilatation occurs during operative manipulations for all practical purposes. And I find I can perform a far neater job without going through the performance so graphically depicted in "The Operations of Surgery."

When no prolapse has occurred, the assistant introduces his index fingers into rectum, and gently dilates orifice until the piles protrude.

"Other's follies teach us not
Nor much their wisdom teaches,
And most of sterling worth is what
Our own experience preaches."

Clinical Department.

THE USE OF CARGILE MEMBRANE IN THE NOSE IN ORDER TO PREVENT ADHESIONS.

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

NEXT to the abdominal cavity, the nasal cavity is the most liable to be the seat of adhesions. In the abdomen adhesions often give pain and occasionally cause obstruction; in the nose they rarely cause pain, but often do cause obstruction. The anatomical peculiarities of the two cavities especially favor the formation of adhesions. In one you have the constant contact of two serous surfaces, in the other their occasional and often prolonged contact.

Adhesions in the nose cannot be made light of. On account of them the simplest operative procedures not rarely result disastrously. The direct cause of their formation is readily explained. If the operation, for instance, is the removal of a spur, the physician instead of wounding the nasal mucous membrane only at the seat of the operation also wounds the mucous membrane of the turbinate opposite. This is not recognized, and the manipulation which was undertaken in order to relieve obstruction ends by increasing it.

It is in the use of the cautery, perhaps, that one is most liable to have such an accident happen. On the other hand men who do the major operations on the nose where much tissue is removed are prone when they come to the less severe operations, like the correction of deformities of the septum, to overlook the importance of adhesions and to have their results marred by them.

Many methods have been advocated for dealing with adhesions. By far the most satisfactory is the removal of the band with as much of the basal tissue as possible. In a roomy nose this is easy to

do, but since from the very nature of things the majority of adhesions occur in narrow noses this method of wide excision is not often practical. If you dissect out an adhesion in a narrow nose only to have the reaction which results from the trauma carry the turbinate over to the septum and hold it there for a while, the adhesion is sure to return. A variety of substances, especially strips of rubber, have been used in the nose in the hope of keeping apart the two raw surfaces long enough for the stumps of the adhesions to skim over with mucous membrane. The splint must stay in the nose a long time in order to accomplish this, and when it is taken out it is often found that the pressure of the splint has caused new ulcerations and has established a vicious circle which it is very hard to break. Films of rubber have been found difficult to keep in place. The same is true of paper. The treatment of nasal adhesions, therefore, has reduced itself to this: generous excision when possible, and when it is not, to make a quick, clean cut through the adhesion. The idea of the latter is to do as little trauma as you can, in order that the resulting reaction will be slight and so permit a little of the adhesion to remain ununited. This process must be repeated again and again until the whole is separated and the former attachments of the adhesion are covered again with mucous membrane.

Within the last two years an animal membrane made from the peritoneum of the ox has been coming into use in abdominal work for the purpose of preventing adhesions. It is called after the name of the inventor Cargile membrane. The originator's name for it, "animal velum," describes it well. It looks much like gold beater's foil, and comes sterilized in a double envelope. Experimentation has shown that when it is applied to the raw service of the bowel it adheres without any supporting stitches, and forms an artificial peritoneum. Further, it has been demonstrated by killing animals which have been previously operated on that it is successful in preventing adhesions. Another use for it in abdominal work is to pack it about gauze drainage and on the edges of the incision where this is left open. The advantages of this procedure are obvious. The membrane possesses, also, the valuable property of stimulating and conducting the growth of epithelium.

Some time ago I tried the membrane in the nose, hoping to duplicate some of the results which had been obtained with it in the abdomen. I happened at the time to be working on a large post-operative adhesion which had been sent to me. I had gained a little on it by repeatedly cutting it through. Then I began with the membrane, and made quick and satisfactory progress. At once it was evident, however, that it could not be used in the nose exactly after the manner in which it was used in the abdomen, because it was very hard to make a single layer lie on the cut surfaces. With the bowel flat before the operator this is easy to do, but in a narrow nose the breath of the patient crumples the thin tissue into a tangled mass. If a drop of blood touches it the same thing happens. I found, however, that by folding the membrane into a wedge-shaped strip several layers thick, it would introduce more easily, and that I could then pack it firmly between the two cut ends of the adhesion. Packed in

securely in this way, much after the fashion in which one calks a seam, the membrane will stay in place for several days before it needs to be replaced. Since using the membrane on this case I have given it a rather extensive trial, and have found it to be of much help.

I have used it on turbinates after cauterizing, in order to keep the cauterized turbinate from cauterizing the septum opposite, and I have used it on the raw surface left by sawing off a spur. Other uses in the nose which readily suggest themselves are: As a dressing on the septum after the operation for the correction of deflection; as a sleeve for a packing which has to be left in the nose for any length of time; to hold down flaps of mucous membrane after the submucous dissection of cartilaginous spurs; as a guide and stimulant to the growth of epithelium in order to prevent the formation of a perforation, and in order to help toward the closure of perforations after the refreshing of their edges; and as a dressing for the cartilage of the septum whenever it is found to be exposed.

GONORRHEAL URETHRITIS WITHOUT SYMPTOMS.

BY ARTHUR L. CHUTE, M.D., BOSTON.

A FIRST attack of gonorrheal urethritis is usually a condition which is not easily overlooked by a patient; however, it may occasionally be so insidious, both in its onset and course, that even an observing person may not be aware of infection until some time after it has taken place.

Whether the condition which existed in the following cases is to be ascribed to an unusually high resistance on the part of the patient or to infection with a small number of unusually weak organisms, I shall not attempt to say. Perhaps neither is the proper explanation of this rather unusual condition.

The following cases illustrate very well the latency which may at times occur in gonorrheal urethritis:

CASE I. A student, twenty-two years old, who was seen by me about two years ago. He had chancroids a year before. He had been exposed to the possibility of infection many times, and from many different sources, but with the exception of the chancroids was unaware that he had had any venereal trouble. He never had any urethral discharge, ardor or frequency of urination. A week before he was seen, he noticed a slight swelling in the tail of one epididymis; there was also slight tenderness. A few days later the same condition appeared in the other epididymis. A short time before these swellings were noticed, a fine red eruption appeared on his body and the backs of his hands. This eruption itched a good deal. At the time of observation each epididymis was about the size of a pecan, rather hard, neither one especially tender. There was a feeling of uneasiness in both spermatic cords. No discharge, moisture or puffiness to be seen at the meatus.

He said that the fine red eruption had not changed since it first appeared. For three or four days previous to observation he had been taking ten grains of iodide of potash three times a day. The iodide had been given, because, in the absence

of any history of urethral infection, the combination of epididymitis and a rash had been suggestive of syphilis to his physician. This patient's urine contained shreds, which when stained showed gonococci. Between his fingers were burrows of scabies. These findings made the nature of the epididymitis and rash perfectly clear. The rash disappeared under the use of sulphur ointment; the double epididymitis ran the ordinary course of subacute gonorrheal epididymitis. Some days after the date of first observation there was a slight but noticeable urethral discharge.

This man was of good intelligence, feared he had syphilis and was most anxious to do everything in his power to clear up the diagnosis. Even after he was satisfied that he had gonorrhea, he was equally positive that there had never been any discharge, ardor or frequency. He could give no idea as to the probable duration of the disease.

CASE II. A boy eighteen years old, who never had any previous urinary or venereal trouble. His last and only recent exposure had been sixteen days previous to the time of observation. Until the afternoon of the day preceding he had had nothing suggestive of urethral disease; he then suddenly became unable to pass urine. When seen the next morning the retention had been absolute for about eighteen hours. He was in a good deal of pain, with his bladder distended to within one and a half inches of the umbilicus. The lips of the meatus were not puffy, a very little secretion was, however, expressed from the urethra, which on staining showed a few gonococci. His urethra was irrigated with a solution of boracic acid and a catheter passed; after emptying his bladder, it was very thoroughly washed.

His prostate was found enlarged, hot and very tender. Suppositories of opium and belladonna, one half grain each, were ordered, also hot rectal irrigations, hot sitz baths and rest in bed; there was no recurrence of the retention, though the prostatitis and urethro-cystitis gave considerable trouble for some little time. As soon as somewhat relieved he ceased attending the clinic, and was lost sight of.

In this boy the infection had been entirely without symptoms until it had reached the prostatic portion of the urethra and extended into the substance of the prostate; yet the infection must have occurred at the meatus and crept back the length of the anterior urethra and the greater part of the posterior urethra before giving signs of its presence.

Both these men were of good intelligence and apparently truthful. I see no reason to doubt the accuracy of their observations as to the complete absence of symptoms during the time the disease was confined to the urethra alone. Beside the above instances, I know of a case, occurring in the practice of another physician, which was about parallel with my second case. I have also seen several patients in whom the history, though very suggestive of a similar condition of affairs, was not entirely conclusive. I am inclined to believe that this condition, while relatively rare, is perhaps not so uncommon as we have supposed. Finger, in his book on gonorrhea, says, in substance, that occasionally gonorrhea may be wholly without symptoms until such time as the posterior urethra has become infected.

In these cases not only were there no symptoms during the time the disease was confined to the anterior urethra, but even the posterior urethritis was symptomless until complications in the shape of epididymitis and prostatitis had arisen. It would seem probable that in these cases, had the disease stopped short of the epididymis in the one instance, or the substance of the prostate in the other, the patients would have been unaware that they had been infected.

We know that *not all* ordinary attacks of gonorrhea extend to the posterior urethra, and that in a considerable percentage of those that do involve the posterior urethra the patient escapes further complications. I feel that these cases suggest very strongly the probability of men occasionally having gonorrheal urethritis without being aware of the fact. It suggests the advisability, in certain instances, of not putting too much weight on the denial of infection by a patient, even when it is plain that he is telling what he believes to be the truth; additional evidence should be sought, such, for instance, as the presence or absence of urethral shreds in his urine.

While this will be of most help in making clear the nature of lesions of the genito-urinary tract, it is by no means confined to such troubles. It may throw light on the nature of joint lesions, in which, because of the history, the possibility of gonorrheal origin had not been considered. It offers a rational explanation of the etiology of certain strictures which are *supposed* to have come about without either trauma or gonorrhea; it also may account for the great differences in the periods of incubation which have been noted in gonorrhea.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

TRUE AND FALSE KELOIDS.

BERLINER¹ believes that the keloids should still be divided into spontaneous and scar keloids; a spontaneous keloid being that which is developed in the deeper part of the skin from either unknown or undemonstrable causes, which slowly grows to a certain size, has great tendency to recurrence, a slight tendency to degeneration, ceases to grow after a certain time, and sometimes undergoes involution and disappears spontaneously. The recurrences of spontaneous keloids, if they can be spoken of as such, are no different from scar keloids. The latter arise upon scars, from excoriations, wounds, burns and loss of substance of any kind; and show by their tendency to recurrence and their rapid growth a local malignancy which suggests that of spindle-celled sarcoma, with which they have much similarity histologically. The distinction between spontaneous and scar keloids, from a histological point of view, has usually rested on the condition of the papillae, it having been maintained that the papillary layer is preserved in the spontaneous variety.

A case is described in which a man of thirty

¹ Monatshefte f. prakt. Dermatologie, 1902, Band xxxiv.

years had begun to have keloidal growths at the age of seventeen years, the first one behind the left ear, and shortly after others upon the chest, back and arms. The growth behind the ear was excised because of the sharp pain, and a few weeks after the operation, was succeeded by another keloidal growth, which was larger than the original lesion. A second operation on the same growth was followed by a like result. Other tumors were operated on with the same result. When seen, the patient presented on the anterior and lateral surface of the chest about eighteen or twenty large and small bluish-red, hard keloids. The histological examination of the spontaneous keloids in this case showed the epidermis well preserved and the papillary layer intact. The blood vessels were somewhat dilated. The keloidal growth was limited to the corium, and sharply bounded and enclosed in a capsule of thick connective tissue. The connective tissue of the tumor consisted of bundles of fibrous tissue running parallel with the surface of the skin. A difference from fibroma was shown in the complete disappearance of elastic tissue at the periphery of the keloid. The sebaceous glands and follicles were found thickly surrounded with cells.

In sections from the scar keloids a marked difference was seen in the arrangement of the new-formed fibrous tissue; the epidermis was thinned, and the papillæ either wanting or much reduced in size. The arrangement of the fibers was also an irregular one.

The writer concludes that spontaneous keloid is to be regarded as a secondary affection caused by chronic inflammatory appearances in the neighborhood of the sebaceous glands.

MYCOSIS FUNGOIDES.²

At the meeting of the French Society of Dermatology and Syphilis of June 3, 1902, Gastou showed a case of mycosis fungoides that was interesting from several points of view. It could be proved that the affection started with an "initial lesion" of circinate shape, and prominently raised. This phenomenon has been described by Hallopeau as occurring in several cases of this disease, and he has given it the name of mycosic chancre. Of further interest in this case was the existence of an intense erythema, slightly scaling, at the same time as the occurrence of rounded tumors with central depression, of which the infiltrated edges are formed by focal collections of lymphocytes, which have the histological appearance of abscesses. Pruritus was not marked, and was confined to the night. The urine was diminished in all its elements, and there was slight enlargement of the lymphatic glands. This patient had been treated for about a month with daily doses of cacodylate of sodium 5 to 10 cg.

In the resulting discussion Hallopeau claimed to have had good results as regards the itching in this affection from a one per cent ointment of sulfonal. Leredde believed that the cacodylate of sodium ought to be given in large doses, up to 30 or 40 cg., by injection. Brocq declared that we had no treatment of value in mycosis fungoides, but that we may attain a considerable amelioration in certain cases

by large doses of the arsenical preparations. These remedies should be vigorously pushed. He did not think that the spontaneous improvement and even complete disappearance of the tumors that occurs could invalidate the claims of the cacodylate. In one of his cases each interruption of the treatment was followed by an aggravation of the lesions, while when the drug was resumed there was always an improvement. Frickham had a case of this affection in which injections of the cacodylate had repeatedly brought about the disappearance of exacerbations.

PSORIASIS FOLLOWING AN EMOTIONAL SHOCK.

At the same meeting of the society Balzer and Faure-Beaulieu showed a patient of fifty-four who had developed a psoriasis in disseminated patches as the result of a fright. This patient had rather a neurotic history, having always been subject to violent headaches and nervous crises at one period of his life. He had never had psoriasis before. On May 5, 1902, while taking an afternoon walk with his children, his little girl strayed from him and was with difficulty rescued from being run over by a tram car. He was seized immediately after this with a nervous trembling, and was obliged to take to his bed, when he suffered from fever and chills. On the following morning he discovered several red spots on his left forearm. Two days later these spots had appeared on his chest, his left arm and his legs. He was taken into the hospital two weeks later, with a typical psoriasis of a rather small type. It was noticed that the flexures of the joints were affected, a most unusual sight. He had no fever nor other symptoms. He rapidly mended under a 10% chrysarobin-traumaticin treatment.

Hebra denied the influence of emotional shocks in the etiology of psoriasis, but since his time it has been recorded by many observers. Not infrequently a relapse has occurred under different nervous influences, but it is seldom that a sudden *début* of psoriasis is reported as following a violent emotion. Hardy has recorded one in a person who was nearly drowned, Leloir that of a priest who developed psoriasis after being chased by a mad dog. Brocq's case related to a mother whose child had been suffocated accidentally by its nurse in lying upon it. Other instances are those after a fall from a horse, during a charge of cavalry and after rescue from death by execution. Anger, sorrow, intellectual overwork have also been accused.

It has been mentioned that in this case the subject had a somewhat neurotic history. This has been observed in other cases where psoriasis has been noticed to occur in this manner. As the writers state, this occurrence is interesting with regard to the much-discussed question of the parasitic origin of psoriasis. It might be argued theoretically that nervous shocks diminish the resistance of the organism to a parasitic element that was up to that time innocuous.

MOLLUSCUM CONTAGIOSUM, BY C. J. WHITE AND W. H. ROBEY.³

In examining the question as to the nature of the molluscum bodies, the writers first give a short

² *Annales de Derm. et de Syph.*, June, 1902.

³ *The Journ. of Med. Research*, April, 1902.

résumé of the literature, in which it is stated that Bateman was the first to describe the disease, in 1817. Virchow's view was that the new growth was a glandular epithelioma; and although he spoke of the resemblance of the molluscum bodies to the psorosperms found by Klebs in intestinal epithelium, he yet regarded them as a peculiar degeneration of the epithelium.

Kaposi was one of the first to raise the question of the contagiousness of the disease. He believed the tumor was of follicular origin; but was opposed to the view that the molluscum bodies were parasites. Hebra always believed in the sebaceous origin of the growths. Neisser has always been the champion of the coccidial nature of the molluscum bodies. He considers that the rete cells are filled with the parasites, which push aside the nuclei.

The writers' own work consisted in the microscopical examination of a number of tumors, as well as a bacteriological study, as far as the material permitted. They found that the new growth is caused by a hyperplasia of the rete cells, which push the mass down and outwards. They never saw any bodies which they could possibly consider coccidiæ; and they never saw any division of a nucleolus. They found no membrane about the cytoplasm walling off the nucleus; but there was a marked frequency of an empty perinuclear space in the Malpighian and granular cells. They regard the so-called molluscum bodies as simply keratin, identical with the horny layer, except in the shape of the individual cells. Attempts to cultivate micro-organisms in bouillon, blood serum, agar-agar, glycerine agar and gelatine 10%, were negative. Attempts were also made with a medium made from human skin. The staphylococcus epidermidis albus of Welch was frequently found.

TREATMENT OF CUTANEOUS TUBERCULOSIS⁴ BY PHOTOTHERAPY.

Leredde and Pautrier, in discussing this question, consider first the numerous failures that have followed the older methods of treatment, such as the application of various ointments, plasters and caustics, and the more radical surgical measures. They then relate three observations of cases which had been treated in various ways with no improvement whatever, and in which life had been made extremely wretched. Forty-three subjects were treated by the Finsen method, of which 8 had been wholly cured, and 7 partially. Most of these cases were of long standing and of great virulence, and had been treated previously by other methods. Certain of these patients could be benefited in certain regions, while other places were more obstinate. They discussed the new method of treatment by permanganate of potash, which has been claimed to be a very curative agent. Their conclusion is that in some cases it may be applied as an aid to a method which is really curative, but that in itself it cannot be considered a cure.

In regard to radiotherapy, they do not consider that the statistics are as yet sufficiently numerous for an opinion to be formed as to their real value. At the moment they consider it inferior to photo-

therapy, while recognizing that this may change in a few years. Their opinion is that phototherapy, in treatment of lupus of the face, occupies at the present time the highest place; and that other methods of treatment should be abandoned, if they are not successful in a short time. With regard to lupus erythematosus, the results in this case were much less favorable than those obtained in tuberculosis, as they could only record 17 cures in 33 patients. These patients also were obstinate cases that had been subjected to many other forms of treatment. Nevertheless, they regard phototherapy as infinitely superior to all other methods at the present time.

A CLINICAL STUDY OF SEVENTY-ONE CASES OF LUPUS ERYTHEMATOSUS.⁵

Sequeira and Balean offer an analysis of 71 cases observed at the London Hospital. They found that the disease began early in life in a larger proportion of cases than is generally believed. In 8 cases it began between the age of eleven and fifteen. The oldest patient in whom the disease began was fifty-eight.

They recognize two varieties of the disease—the circumscribed and the disseminated. The disseminated cases differ from the circumscribed in the appearance of numerous small foci, which form large areas by coalescence.

With regard to tuberculosis, a history of this disease was found in the family in 34 cases, rather less than one half. It was more common on the mother's side than on the father's. This enquiry related only to pulmonary tuberculosis, all other forms of the disease being disregarded. Of the 71 cases, there was evidence of tuberculosis in 18, a proportion just under 25%, as opposed to Boeck's figures of 83% and other large percentages.

The disseminated form was found to be associated with tuberculosis much more frequently than the circumscribed.

As to the place of onset: In 18 cases it began upon the cheeks over the flush area; in 15, it first involved the nose. In the disseminated cases, the face was affected first. The areas affected did not correspond with the distribution of the vessels, and the writers are inclined to explain them by the influence of the vasomotor nerves. In one case the application of a poultice to the abdomen was followed by a crop of patches of the disease; and in another the Finsen treatment seemed to increase the size of the spots and to cause the development of fresh ones at their borders.

In 27 cases examination of the urine showed the presence of albumin in 7; 5 of these were disseminated cases.

The notes of the fatal case of the disease are then given, that of a girl of eighteen, whose parents and brother and sister were alive and in good health. Her maternal grandmother had died of consumption. The disease had begun a year and a half previously, as a small, scaly patch on the left cheek, and in the course of a month it had extended over the greater part of the face. Later, patches appeared upon the hands, scalp and trunk. When admitted, she complained of headache and

⁴ Annales de Derm. et de Syph.

⁵ British Journ. of Derma., April, 1902.

abdominal pains. There was swelling of the legs and hematuria. The urine was smoky in color, specific gravity 1020, with one-tenth albumin, and blood and granular casts. She died soon after, with acute pulmonary symptoms. At the autopsy, pleurisy and infarction were found in the lungs, and an acute glomerulonephritis. No distinct signs of tuberculosis were recorded.

In conclusion, the writers state their belief that there is strong evidence in favor of lupus erythematosus of the disseminated type being of tubercular origin, or at least that the presence of tuberculosis modifies and affects the course of the disease. The albuminuria which they found in a large proportion of the disseminated cases they believe to be of toxic origin, just as the exanthemata and other diseases produce toxins which set up a nephritis. Another theory is that a previous disease of the kidneys prevents the excretion of toxins, and that their retention in the blood causes the cutaneous disease. The writers incline to the former view.

Reports of Societies.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

NINETY-SEVENTH ANNUAL MEETING, HELD IN ALBANY, JAN. 27, 28 AND 29, 1903. HENRY R. HOPKINS, M.D., OF BUFFALO, PRESIDENT.

(Concluded from No. 8, page 214.)

SOME SCIENTIFIC AND PRACTICAL DETAILS REGARDING VACCINE AND VACCINATION.

DR. PETER H. BRYCE, secretary of the Provincial Board of Health of Ontario, presented this paper. Attention was called to the work of certain French investigators, which showed that vaccine lymph could be neutralized by adding to it the serum from vaccinated monkeys or from human beings recently infected with variola. The deeply rooted opposition to vaccination as compared with the comparatively new treatment of diphtheria with antitoxin is attributed to the very fact that vaccination had been made compulsory; nevertheless, he was of the opinion that vaccination should be compulsory for the following reasons, namely: (1) The theory of the immunity conferred by vaccination is founded on incontrovertible scientific evidence; (2) the infectiousness of smallpox has been shown to be uncontrollable by mere sanitary regulations unaided by the vaccination of the community; and (3) vaccination is adequate to protect completely against smallpox after exposure to that disease even up to the fourth day, and would reduce the severity of the disease to such an extent as to avert a fatal issue in almost every case in which vaccination is concurrent with the exposure. The question of the effectiveness of glycerinated vaccine lymph was no longer a matter of opinion, for out of 126,000 vaccinations made with this lymph, 98 were successful. The manufacture of vaccine lymph should be either carried out by State officers or by private concerns under direct State supervision. There was much evidence

to show that greater protection was afforded by making several scarifications at the same time.

TREATMENT OF PURULENT CONJUNCTIVITIS.

DR. EDGAR S. THOMSON of New York was the author of this paper. While not advocating the postponement of treatment until a bacteriological examination of the discharge had been made, he insisted that such examination should be made in every instance, and that it would be found a valuable guide to the treatment. In a case of gonorrheal ophthalmia an application of a 2% solution of nitrate of silver should be made at the earliest possible moment to the entire conjunctiva. For the abortive treatment a 3 or 4% solution should be tried, but in this case the action of the silver nitrate should be neutralized by salt solution. In making this application the upper cul-de-sac should not be neglected. Although a 6% solution of protargol was very much less irritating than silver nitrate, the latter should be selected for the gonorrheal cases. Besides these applications the eye should be cleansed very frequently with boric acid solution.

TRANSPORTATION AND THE OPHTHALMIC REFEREE.

DR. JUSTIN L. BARNES of New York presented this paper. By a confidential inquiry he had learned that apparently about one third of our railway companies rely upon the advice of laymen in the important matter of determining the existence of color blindness in their employees. Color blindness might be temporary or permanent, congenital or acquired, and it might affect one eye or both. If the eyes were tested together the existence of defective color perception in one eye would be overlooked, a matter of no little importance when it was remembered that an engineer so affected might at any moment have the good eye injured. Many persons who were color blind were able to pass a good examination in colors because they had learned to distinguish the colors by slight differences in illumination, but the conditions of actual practice among railroad employees were such that even this extraordinary power of discernment was no safeguard.

DR. PERCY FRIDENBERG of New York observed that the railroad men very naturally objected to being compelled to match various shades of colors, contending that this was totally different from the conditions of color perception imposed upon them when at their work. It was also a matter of record that some persons could pass a satisfactory examination with the colored wools, yet would fail with the lantern tests.

EYE STRAIN AND HEADACHE.

DR. LUCIEN HOWE of Buffalo presented a brief paper on this topic. He said that the theory that this pain was nervous or cerebral had so little foundation that it was not worth considering. A more natural explanation was that the pain was due directly to muscular contraction. While the theory of Helmholtz regarding accommodation had been quite generally accepted, a better explanation had been given by Professor Tscherning. He contended that with near vision the ciliary muscle was con-

tracted, thus drawing the edges of the lens and bending the central portion of the anterior surface further forward—in other words, making it more convex. The correctness of this view was borne out by a number of facts. Understanding, then, that this act is an active muscular effort, it was not difficult to explain the pain in the eyes constituting the first feature of ocular headache. Again, a certain amount of accommodation always meant a certain degree of convergence of the visual axes, with tension of certain of the ocular muscles and of the accessory muscles of the forehead. It was the effect upon these accessory muscles that was chiefly responsible for the headache of eye strain. The contraction in this way of the anterior and posterior portions of the occipito-frontalis muscle explained both the frontal and occipital headache. The author's conclusions were as follows: (1) The pain and headaches which are experienced in the so-called eye strain can be accounted for most rationally as due to excessive muscular contraction; (2) the pain in the eye itself is to be explained by our recently acquired knowledge of the process of accommodation and the tension on the internal recti during convergence; (3) the pain over the eye in the forehead is caused by contraction of the fibers of the corrugator supercilii, by the anterior portion of the occipito-frontalis and by other fibers extending over the forehead which are accessory muscles of accommodation, and (4) the pain at the back of the head is the result of contraction of the fibers of the posterior portion of the occipito-frontalis and the upper fibers of the trapezius when acting indirectly as accessory muscles of accommodation.

HYDROPS TUBÆ.

DR. HENRY D. INGRAHAM of Buffalo reported two cases of this kind, the cause in one being a complicated child-birth and in the other, long-standing constipation.

STERILIZED MILK, PASTEURIZED MILK OR CLEAN MILK.

DR. C. W. M. BROWN of Elmira read a paper with this title. He argued in favor of Pasteurization, though admitting that this method required more care and intelligence than sterilization, and was not desirable when ice was not obtainable.

THE EXAMINATION OF MILK BY THE GENERAL PRACTITIONER.

DR. HENRY L. K. SHAW of Albany presented a paper on this subject, but for lack of time gave only a brief outline of it. He said that milk having an acidity of over 0.2 of 1% was not fit for use. The acidity should be determined either by titration or by Farrington's alkaline test tablets. For taking the specific gravity of milk, particularly of small samples of breast milk, he used a small Quevenne lactometer containing a thermometer, thus making it easy to correct the readings according to the temperature of the milk. The specific gravity of average breast milk was 1.030 and that of cow's milk 1.029 at 60° F. In estimating the percentage of fat he preferred the Babcock method, and to that end made use of a convenient centrifuge manufactured by D. H. Burrall & Co. of Little Falls, N. Y.

The advantage of this apparatus was that it used the regulation size test-bottles, and yet could be used for urinary and bacteriological work. Having determined the specific gravity and the percentage of fat, the total solids could be determined by dividing the specific gravity by 4 and adding to this one fifth of the percentage of fat, and finally adding the percentage of fat. In connection with such milk analyses it was exceedingly convenient to make use of a clever device known as Richmond's sliding milk scale, which made it unnecessary to have recourse to mathematical formulæ. The proteids could be determined approximately by subtracting the percentages of fat, sugar and salts from the total solids.

BLOOD EXAMINATION IN GENERAL PRACTICE.

DR. IRVING P. LYON of Buffalo reported a number of cases to show how such examinations might prove useful.

THE EOSINOPHILES; THEIR ETIOLOGY AND VALUE IN DIAGNOSIS AND PROGNOSIS.

DR. THOMAS R. BROWN of Baltimore was the author of this paper, but as he was unavoidably absent, it was read for him. He said that the increase of the eosinophiles was sometimes of assistance in a number of infectious diseases, for example, scarlatina, chicken pox, smallpox, typhoid fever and tuberculosis. In trichinosis it was a most valuable diagnostic sign, and it was sometimes of service in differentiating certain forms of leukemia.

DEGENERATION OF THE ERYTHROCYTE.

DR. J. C. DACOSTA, JR., of Philadelphia was the author of this paper. He said that the presence of nucleated erythrocytes of the megaloblastic type indicated a very severe form of anemia. Grapular punctate basophilic degeneration was found in cases of lead poisoning quite early, and was also present in other toxemias.

THE IODINE REACTION AND ITS DIAGNOSTIC SIGNIFICANCE.

DR. EDWIN ALLEN LOCKE of Boston, Mass., read this paper, illustrating it freely with photomicrographs. The technique as given by him is as follows: A thin film of blood is spread on a cover-glass and dried in the air. It is then mounted on a slide with a drop of the iodine solution, and may be examined at any convenient time. An oil immersion lens and strong daylight should be used for this examination. The reaction consisted in the presence of brownish granules in the protoplasm, a diffuse brown tinting of the cells or the presence of diffuse brown extracellular masses. The reaction appeared to be dependent upon a change in the cells brought about by certain toxemias.

SECOND DAY. — WEDNESDAY, JAN. 28.

THE SURGEON'S ENEMY — THE SKIN.

DR. ROBERT H. M. DAWBARN of New York read this paper. His first point was that certain regions of the body were best deprived of hair by chemical shaving, a process which could be conducted very

atisfactorily by the use of a 25% aqueous solution of Merck's hydrosulphate of sodium. It should be left on for ten minutes.

In connection with the use of rubber gloves, attention was made of the expense attendant upon the constant renewal of such gloves demanded by tears and punctures. He had found that they could be mended if one would take a little trouble and would procure a few test tubes, two flatirons and a cautery set such as is used for burnt-leather decoration. To renew the end of a glove-finger, the latter should be trimmed smoothly, the tip of a finger from a worn-out glove cut off, and the one fitted nicely over the other with the aid of a test tube, held bottom up to serve as a form. The edges of the rubber should be softened with the cautery, the patch applied and held in place by twine. In putting on flat patches, one flatiron was used as a surface on which to work and the other iron was used as a weight, here taking the place of the twine. Gloves so mended could be sterilized by boiling.

A third point made was with regard to the exclusion of perspiration from the operative field. He had accomplished this by the use of a powder composed of lycopodium, talc, or stearate of zinc containing 20% of alum, and sterilized. This powder was dusted freely over the operative field one hour before the operation and was left on until the usual cleansing applications were made. The area of skin so treated would not perspire in the time necessary to do an operation.

THE TECHNIQUE OF PROSTATECTOMY.

DR. RAMON GUIERAS of New York presented this paper. For this operation he makes use of an instrument specially devised by himself for holding and controlling the prostate. It is like a sharply double-curved urethral sound. Having opened the membranous urethra, the forefinger should be introduced and the prostate separated from the capsule. The prostate usually comes away with the so-called middle lobe attached to one of the lateral lobes. artery forceps should be secured on each side of the wound until after the drainage tube has been introduced.

PERIDUODENAL ABSCESS SECONDARY TO PERFORATIVE ULCER OF THE DUODENUM.

DR. WILLIAM S. BAINBRIDGE of New York presented this paper in abstract. He had been able to find 26 cases on record, in 22 of which the diagnosis had not been made until operation or after death. The author reported one case with autopsy. The onset of this affection was rapid, and usually there was a previous history of gastrointestinal disturbance. Very often there was no blood discharged per rectum.

IMPORTANT POINTS REGARDING THE TREATMENT OF THE FUNCTIONAL DISORDERS OF THE SEXUAL ORGANS IN THE MALE.

DR. FREDERIC R. STURGIS of New York read this paper, speaking more particularly of loss of sexual power in the male. He denied that masturbation was a very frequent cause, and expressed the opinion that "withdrawal" at the time of coition was

a much more potent factor. In about 50% the cause was to be found in an uncured urethral stricture from gonorrhea. In many cases the cause was the presence of granulations in the urethra. The secret of successful treatment was the employment of sedatives, and local remedies were more useful than internal medication. Of the local applications nothing was better than nitrate of silver in proper strength. Very little could be done for the relief of sterility in the male, because in 90% of the cases the cause was the absence from the semen of the spermatozoa. Electricity was not of much value, and of the various currents the Faradic was the worst. These patients should avoid stimulants, sometimes even going so far as to refrain from coffee.

DR. R. H. M. DAWBARN of New York said that the simple operation of tying off some of the veins at the base of the penis did good by increasing the vigor of the erection.

DR. A. JACOBI of New York thought circumcision was often beneficial, chiefly, however, through the profound mental impression it produced.

PRESIDENT'S ADDRESS: PROGRESS, UNITY, LIBERTY.

DR. HENRY R. HOPKINS of Buffalo delivered the annual address, taking the above for his theme. The opinion was expressed that satisfactory progress could only be made by having in the Cabinet at Washington a Secretary of Health. Unity was not favored by discussing and criticizing the modes of practice of our professional brethren. There was unfortunately still in this State an anomaly in the form of an examining board for each of the three "schools" of medicine, and it should be our aim to do away with this.

PLASMIDIOPHORA BRASSICÆ.

DR. HARVEY R. GAYLORD of Buffalo gave in this paper a general description of this organism and what had been so far learned of its bearing upon medicine.

PRIMARY CARCINOMA OF THE VERMIFORM APPENDIX.

DR. ARTHUR W. ELTING of Albany read this paper, reporting three recent cases that he had studied personally. He had found 40 cases reported in the literature. The disease showed a tendency to occur rather early in life, but no great disposition to spread. The chief symptom was pain in the region of the appendix, so it was not surprising that a number of cases had only been accidentally discovered at autopsy.

EARLY RECOGNITION AND SYMPTOMS OF ARTERIO-SCLEROSIS.

DR. DELANCEY ROCHESTER of Buffalo presented this as the opening to the symposium on arteriosclerosis. He classified the cases into: (1) Those due to the strain of occupation; (2) those resulting from poisons introduced into the system from without, — for example, syphilis, lead and alcohol, — and (3) those resulting from a toxemia developed as a consequence of faulty metabolism. Hypertrophy of the heart was apt to be an early development.

ARTERIOSCLEROSIS AND THE HEART.

DR. GLENTWORTH R. BUTLER of Brooklyn presented this paper. The cases coming under this head were arranged into two groups, depending upon whether or not the coronary arteries were involved. In senile arteriosclerosis the heart was often not enlarged nor the arterial tension augmented. Marked cardiac hypertrophy due to arteriosclerosis was most apt to occur in middle life, though it was by no means unknown in quite young persons. When the hypertrophy gave place to dilatation the resulting symptoms were practically those found in ordinary heart disease. In advanced cases the skin was pale and wet, the pulse weak as compared with the apex beat, and there were apt to be attacks simulating angina pectoris. True angina was rarely met with except when the coronary participated in the sclerosis. Cases having attacks of severe gastralgia and exhibiting degeneration of the arteries and myocardium should be regarded with suspicion.

ARTERIOSCLEROSIS AND THE KIDNEY.

DR. IRVING P. LYON of Buffalo discussed this subject. He enumerated as the prominent factors in these cases, syphilis, alcoholism, lead poisoning, gout and prolonged physical strain.

ARTERIOSCLEROSIS AND THE DIGESTIVE SYSTEM.

DR. CHARLES G. STOCKTON of Buffalo said that arteriosclerosis was indirectly a common cause of digestive disturbance, and the opinion was gaining ground that it was more often a direct cause than had hitherto been believed. Among the direct effects were severe attacks of pain usually diagnosed as gastralgia.

ARTERIOSCLEROSIS AND THE NERVOUS SYSTEM.

DR. WILLIAM BROWNING of Brooklyn passed in rapid review the many conditions in which arteriosclerosis was found to be responsible to a greater or less extent for disease of the nervous system.

ARTERIOSCLEROSIS AND MENTAL DISEASE.

DR. ADOLF MEYER of New York said that while arteriosclerosis of the heart and aorta was very frequently met with in the insane, it was rare that mental disorder could be ascribed to such changes. Arteriosclerosis of the brain was usually associated with loss of memory of the immediate past, and often with temporary delirium or with mental confusion. There was really no good ground for speaking of arteriosclerotic insanity, and hence there was no special treatment for cases of insanity in which arteriosclerosis was one element. The condition was chiefly of interest from its bearing on prognosis.

PULSUS INFREQUENS.

DR. THOMAS E. SATTERTHWAITE of New York was the author of this paper. He said that the prevailing terminology was unfortunate. Thus, the ending "cardia" implied that the key to the action of the arterial current was in the heart rather than in the peripheral arteries, whereas the reverse was the case. The prefix "brady," as in bradycardia, was also erroneous, because in some cases of infrequent pulse

it was not slow — in fact, might be quick. The infrequent pulse might occur at almost any period of life, but, in his experience, it was more apt to occur in middle life or later. By common acceptance a pulse below 60 was held to be infrequent. It was quite rare for the pulse to go below 40. There were two principal varieties, the physiological and the pathological. The infrequent pulse was more common in males than in females in the proportion of five to one. The pathological variety was subdivided into the temporary and the chronic forms, the latter being very uncommon. The pathological forms were usually dependent upon infections, digestive disturbances or disease of the cerebrum. The relation of these cases to mitral stenosis was discussed, as well as their association with arteriosclerosis, diabetes and chronic nephritis. In the treatment, large doses of digitalis should be avoided and milder cardiac remedies, reinforced by hydrotherapy, massage, electricity and exercises, should be relied on.

DR. E. LIBMAN of New York, in discussing the general subject of arteriosclerosis, said that it was important to examine the arteries of both the upper and lower extremities, and not be content with observing the condition of the radials. In persons having arteriosclerosis pulmonary edema was apt to develop without obvious cause.

DR. A. L. BENEDICT of Buffalo observed that too much attention had been given to alcohol as an etiological factor in hepatic sclerosis, to the neglect of a proper appreciation of the part played by arteriosclerosis.

DR. EDWARD D. FISHER of New York thought that when apoplexy occurred in young persons it was apt to be the result of a disease affecting chiefly the muscular coats of the arteries.

DR. J. J. WALSH of New York reported a remarkable case of infrequent pulse that he had observed. The pulse rate was never over 30, and yet this young woman was able to continue her occupation of theatrical dancing without any discomfort arising from this peculiar condition of the circulation. Strangely enough, although she had suffered from the usual diseases of childhood, no physician ever commented on any peculiarity of her pulse until she had an attack of influenza a few years ago, from which it was inferred that the condition had been acquired.

SOME POINTS PERTAINING TO THE THERAPEUTIC MANAGEMENT OF THE UREMIC STATE.

DR. HEINRICH STERN of New York was the author of this paper. He said that uremia was not always dependent upon the same cause, and the serum of each variety possessed certain peculiar features. The tendency to convulsions in parenchymatous, and to coma in interstitial, nephritis was probably explained by the varying constitution and physio-electric condition of the respective blood sera. Uremia was neither so common nor so severe in chronic parenchymatous nephritis. As to the treatment, the speaker said that sweating was indicated in every case of acute uremia, but its effect was most salutary in chronic parenchymatous nephritis. Enteroclysis or hypodermoclysis could be employed in conjunction with diaphoresis

venesection produced the most lasting results in acute nephritis. In children from 100 to 250 cc. of blood should be abstracted, while in adults the quantity might vary from 300 to 500 cc. The withdrawal of blood did not alter the molecular concentration of the remaining blood, nor did it increase oxidation. The improvement observed after venesection in these cases seemed rather to be due to the relief of vasoconstriction in the kidneys or central nervous system, or in both. The effect of either hypodermoclysis or of saline infusion was apt to be transitory, but might prove useful in a crisis. Isotonic solutions of chloride of sodium were not so good in uremia as hypotonic solutions. Morphine was not indicated in the uremia of chronic interstitial nephritis, and might even do harm.

HEPATIC BALLOTTEMENT OR BIMANUAL PALPATION.

DR. A. L. BENEDICT of Buffalo described under this term a method of bimanual palpation of the liver which he found useful. Pressure should be made downward, forward and to the left, and the movement of the organ under the hands was more easily detected, and the organ itself mapped out, even where no such motion occurred.

THIRD DAY. — THURSDAY, JAN. 29.

CANCER OF THE CERVIX UTERI TREATED BY THE X-RAY.

DR. THOMAS S. SCULLY of Rome presented a paper on this subject, in which he described his experience with this new treatment in three cases. He had been particularly impressed with the great relief afforded by the treatment to persons who had previously suffered pain almost constantly.

AN OPERATION FOR CICATRICIAL CONTRACTURES OF THE UPPER EXTREMITIES.

DR. A. H. TRAVER of Albany reported this case. A good result in a very bad case followed division of cicatrices and four-flap operations after the Z-plasty method.

OFFICERS ELECTED.

Dr. A. T. Bristow of Brooklyn, president; Dr. Edward B. Angell of Buffalo, vice-president; Dr. C. Curtis of Albany, secretary; Dr. O. D. Ball of Albany, treasurer.

Recent Literature.

The Development of the Human Body. A Manual of Human Embryology. By J. PLAYFAIR MCMURRICH, A.M., Ph.D. With 270 illustrations. 12mo. Pp. xvi, 527. Philadelphia: P. Blakiston's Son & Co. 1902.

There has long been needed a succinct and adequate manual of embryology, and this need is well met by the present volume, which is an excellent text-book. The author treats his subject so as to especially emphasize the value of embryology as a means of explaining, and thereby render intelligently comprehensible, the anatomical structure of the adult, and has increased the value of his text for medical men by interpolating the embryological

explanations of many important anomalies of structure. His style is simple, direct and concise, and reveals a talent for clear statement which does much to enhance the value of the book. The selection of the illustrations has been judicious. Except for a number of diagrams, few of the figures are original, but are, for the most part, new copies from recent authorities, so that they have a certain freshness. The type is large and the printing good, though the ink used is too heavy to give the best effect with the illustrations. A sufficient index closes the volume.

The work makes no claim to originality, and is based on the larger standard treatises, but it is to be recommended as the best, probably, of the shorter manuals of embryology now on the market.

Studies from Institute for Medical Research, Federated Malay States. No. I, Volume 1. The Malarial Fevers of British Malaya. By HAMILTON WRIGHT, M.D. (McGill). Philadelphia: P. Blakiston's Son & Co.; L. & A. Churchill, London. 1902.

We are in receipt of the first number of the first volume of "Studies from the Institute for Medical Research from the Federated Malay States" on the subject of malarial fevers. The pamphlet is edited by Dr. Hamilton Wright, who is director of the institute, and concerns itself particularly with malaria of the Malay Peninsula. The volume contains a vast number of facts and observations, which are unquestionably of very considerable value to students of malaria. In addition to the text there is a large number of charts illustrative of phases of the disease and matters of interest relating to it, with an excellent map of the Malay Peninsula. We should judge from the title page that this is the first of a series of similar publications on the same or allied subjects.

Cushny's Pharmacology and Therapeutics. A Text-book of Pharmacology and Therapeutics; or the Action of Drugs in Health and Disease. By ARTHUR R. CUSHNY, A.M., M.D., Professor of Materia Medica and Therapeutics, University of Michigan, Department of Medicine and Surgery, Ann Arbor, Mich. Third edition, revised and enlarged. In one handsome octavo volume of 750 pages, with 52 engravings. Philadelphia and New York: Lea Brothers & Co., Publishers. 1903.

Our readers are so familiar with this work that it is only necessary to call to their attention the appearance of a new edition. The book is so reliable and so full of modern thought that it has come to be accepted as the standard work on pharmacology and therapeutics in this country. The present edition differs little from its predecessors except in additional space devoted to the nutritive value of alcohol, the subarachnoid use of cocaine and the discussion of the various uses of the adrenal gland. It is a gratification that what the author in his preface denotes "minor changes" in reality include so much. We hope that succeeding editions will not grow in the number of pages. E. P. J.

The International Text-Book of Surgery. By American and British Authors. Edited by J. COLLINS WARREN, M.D., LL.D., Hon. F. R. C. S. Eng., Professor of Surgery, Harvard Medical School;

and A. PEARCE GOULD, M.S., F. R. C. S. of London, England, Surgeon to Middlesex Hospital, etc. Second edition, thoroughly revised and enlarged. Philadelphia and London: W. B. Saunders and Co. 1902.

This work, which was first presented to the medical profession in 1900, has become so well known as to scarcely require farther description of its character. Little has been said of it except in commendation.

The new edition appears also in two volumes, of which Volume I is devoted to general and operative surgery, while Volume II treats of special and regional.

Volume I is a royal octavo, containing 965 pages (slightly larger than Volume I of the first edition), with 461 illustrations and 9 full-page colored lithographic plates.

Volume II, also royal octavo, contains 1122 pages (increased from 1072), with 419 illustrations and 8 full-page colored lithographic plates.

The present edition has been carefully revised, not only by the individual authors, but also by the editors themselves in the effort to have the work fully represent the surgery of today. Especially have the chapters on military and naval surgery been revised and rewritten. The section on diseases of the lymphatic system, formerly by Dr. J. B. Hamilton, has been completely rewritten by Drs. J. Collins Warren and R. B. Greenough. The chapter on surgery of the kidney has also been extensively revised. The increased number of illustrations also attracts attention.

The general character of the book, as is so well known, is that of an excellent textbook of surgery, presenting in a concise manner our present knowledge of surgical pathology, symptomatology, diagnosis and treatment. One can find little to criticize in the new edition. The authors of the various parts of the work are all men of wide experience, and often notably expert in their especial field of work. Their tasks have been well performed. The general characteristics of the first edition as regards classification of subjects, paragraphing, indexing, type, illustrations and presswork reappear in the present one and are equally satisfactory.

It is a book containing all that can practically be condensed in a work having so broad a field, and the data are presented in a form easily accessible. The essential facts are usually found. The second edition certainly sustains the high standard of excellence set by its authors when the first edition was published; and the reader can be sure that when he has thoroughly studied these volumes and familiarized himself with their contents, his knowledge of modern surgery will be up to date.

Studies from the Department of Pathology of the College of Physicians and Surgeons, Columbia University, New York. Volume VII, for the Collegiate Year 1901-1902. Reprints.

Volume VII of *Studies from the Department of Pathology of the College of Physicians and Surgeons, Columbia University*, has appeared. It is a pamphlet of reprints of papers published in various journals throughout the collegiate year of 1901-1902. Many of the papers are valuable, and the whole publication shows a high degree of departmental activity.

THE BOSTON

Medical and Surgical Journal

THURSDAY, FEBRUARY 26, 1903

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THE TEACHING OF PHYSIOLOGY.

Few branches of medicine have escaped the improvements in methods of teaching which the past few years have brought forth. In this general movement physiology has taken a conspicuous part. The very great and growing importance to the medical student of a fundamental knowledge of the normal functions and processes of the human body has impressed itself the more of late, owing to the development of other lines of scientific medicine. The practitioner or investigator in any field requires not only a knowledge of physiological facts, but also of physiological method, if he is to attack intelligently the problems which are everywhere presenting themselves for solution. The experimental method, which for a long while was the prerogative of the physiologist, has long since become the property of the pathologist, and has begun to invade many branches of practical medicine. This means that the former teaching of physiology to students beginning their course, by lectures and occasional demonstrations, must give place to a more first-hand acquaintance with the questions at issue, by personal experience in the means of experimentation and the lessons it teaches.

No doubt physiology has long been one of the best taught of the medical sciences; the didactic lecture filled its place and certainly has not yet outgrown its usefulness, and students finishing the course as given ten or fifteen years ago had a knowledge of physiological processes which served as a basis for much which was to follow. To have given the average student more would have been placing undue stress upon a branch of knowledge which then as now must be fitted into the general scheme of instruction as one part of a component whole. The situation is now quite different. If for no other reason, physiology must keep pace with other

branches of research by cultivating in its students a knowledge of method and of immediate acquaintance with fact. The lecture must, therefore, be subordinated to the demonstration, and the demonstration must be subordinated to the actual work of personal experimentation if modern physiological teaching is to fulfil its completest mission.

As a matter of fact, few subjects have been more revolutionized than this of the teaching of physiology within the last few years, due to a variety of circumstances, to some of which we have alluded, and to the energy and deep-seated convictions of certain of its prominent teachers. We may get an admirable idea of the new method as actually practised by reading a pamphlet published by Dr. William T. Porter of the Physiological Department of the Harvard Medical School, entitled "Physiology at Harvard," which has recently appeared in its second edition.

As a preface, Dr. Porter writes: "This book is written to explain a new method of teaching, sound in theory and feasible in practice; to provide the Harvard Medical School with a precise account of the work done by each student in Physiology, and to create for students and instructors like a working-plan by which they may find their way unvexed through much detail." The pamphlet is a clear exposition of the advantages of the new method, by which the student is brought into immediate relation with experimental evidence. This matter has been ably presented before by the author in a preliminary publication in this JOURNAL and by others subsequently.

A natural drawback to the successful prosecution of a large number of experiments by classes of one or two hundred students has hitherto been the cost of the necessary apparatus. To overcome this difficulty the attempt has been made with success at the Harvard Medical School to manufacture large quantities of simple, adequate and inexpensive apparatus for the use of its own students, which may also be procured by other institutions. Inasmuch as the course as now given requires the issue of at least twenty-five thousand articles, it is forthwith apparent that inexpensiveness of production without loss of accuracy is absolutely demanded. This demand has been met, so that the teaching of physiology from the standpoint of personal experimentation has become possible and is now in active practice. This marks a step in advance which it is hard for those engaged in other lines of work fully to appreciate. It is, as Dr. Porter suggests, not so much a development of former methods as a completely new method, demanding a wholly different mental attitude on the part of the student. The new plan is unquestionably in accord with the best tendencies

of the time. To perfect the details will require many years' experience, but there need be no misgivings provided one is sure of the soundness of the principle, and of this there can be no doubt unless the whole fabric of our modern conception of education is wrong.

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

SOMETHING of the plan and scope of the great laboratory of the Rockefeller Institute has just been made public by Dr. L. Emmett Holt, secretary of the institute, and his statements show that there is contemplated the erection and equipment of probably the most extensive and complete medical laboratory in the world. Immediately available for preliminary expenses Mr. Rockefeller has given \$1,200,000, but the total expenditure, it is said, is likely to exceed this sum tenfold. The site previously mentioned in the JOURNAL has now been practically secured, and suitable buildings, so arranged as to permit of such extension as the growth of the work in hand may necessitate, are to be at once put up. Dr. Simon Flexner, at present professor of pathology in the University of Pennsylvania, who has won such enviable distinction by his original researches, is to be the chief director of the laboratory, and associated with him will be directors of the various departments of physiological chemistry, preventive medicine, pathology, bacteriology, pharmacology, therapeutics, etc., under whom there will be a corps of paid fellows or scholars. There will thus be a large body of specially trained persons, whose entire time will be devoted to research work. In order to ally the research work with practical results, it is the purpose to erect in the near future a completely equipped hospital in which suitable cases may be treated by special methods. Furthermore, the project will ultimately include not only facilities for an increased knowledge of the causes and cure of disease, but for the health education of the public, by making the laboratory a center for the diffusion of popular information in regard to matters of hygiene and the prevention of disease.

In speaking of the work of the institute, Dr. Holt said its great aim was to promote medical research with special reference to the prevention and treatment of disease. It was thought wise by the board of directors not to concentrate the work of the first year, just completed, in any single place, but to enlist the co-operation of various investigators in different parts of the country. Accordingly twenty fellowships were established, these being placed in the universities of Harvard, Yale,

Columbia, New York, Johns Hopkins, Pennsylvania, Michigan, McGill, Wesleyan, California and Western Reserve. In addition, three physicians were sent abroad, two to work in Ehrlich's laboratory at Frankfort-on-the-Main, and one to work in Koch's laboratory in Berlin. Among the subjects of investigation have been tuberculosis, typhoid fever, dysentery, tetanus, diabetes, smallpox, vaccination and problems connected with the dissemination of infections by mosquitoes. Under the supervision of Dr. William H. Park of the New York Health Department, eight physicians have been engaged upon a study of the milk supply of New York City, including the inspection of dairies, the bacteriological examination of milk and observations upon children in institutions and tenement houses. At the end of the first year it was evident that, while much could be accomplished by individual workers carrying on their investigations in separate laboratories widely scattered, the highest results of research could not really be obtained in that manner. Existing institutions did not seem to afford adequate facilities for many phases of investigation which the directors deemed of the greatest importance. They were unanimous, therefore, in the conviction that the best work could not be done in this way, and that the high purpose of the founder could not be realized by such agencies. It was believed that only by concentrating the most important lines of work in a fixed place, with special equipment, under a competent head or series of heads, could the best results be obtained in the different subjects of investigation.

The directors consider it very gratifying to find how large a number of trained men and women there are in America who are anxious to devote themselves to research work. What has been lacking in the past has been the opportunity, hitherto not afforded in any existing institutions. It was with these facts in mind that Mr. Rockefeller gave assurances that he would bear the expense of erecting in New York such buildings as might be deemed necessary for concentrating the work and raising it to the highest point of efficiency, with a view to practical results.

PRACTICE VERSUS THE LABORATORY.

EVERY one will admit, as we have recently suggested in these columns, that simple and practically possible clinical tests are altogether desirable for the medical practitioner if he is to keep pace with the progress in diagnosis. No doubt he can perform many of these now necessary tests with sufficient accuracy to form definite judgments as to their significance. At the same time it must forth-

with be admitted that those who are doing Widal reactions and making blood counts daily in great numbers of cases are far better able to estimate the significance of such examinations with their bearings on prognosis than the practitioner whose work is exacting and whose time is already full. The difficulty is evidently a real one; the conscientious practitioner feels himself bound to make use of the most modern methods, and at the same time, from force of circumstances, is often incapable of so doing. The inevitable result must be that tests are used, often uncritically, and with small benefit to the patient, not because the physician is careless or unmindful of his highest duty, but simply because the day is too short for a large medical practice and the work of the laboratory. Under such conditions the laboratory methods are certainly doomed to neglect.

Dr. Addison S. Thayer, himself a practitioner of wide general and special experience, read at the last annual meeting of the Maine Medical Association a paper on the query: "To what extent can general practitioners make use of the newer diagnostic methods?" A physician in middle life is pictured who is considering what should be the medical equipment of his son about starting in practice. He sees and realizes the importance of modern methods, and expects that in some way his son may be able to master them all, and put them into useful practice. Of this Dr. Thayer says:

"It is becoming plain that this ambitious parent has suffered a loss of perspective. In the rapid development of medicine during recent years, he has crowded into his boy's future program one number after another, until he expects a performance of which no finite being is capable; and he has developed in himself a species of mild megalomania. Although he claims to expect from the young man no more than a rudimentary grade of skill, this claim is palpable self-deception. He really expects the equal of his own keen stethoscopic ear to be straightway reproduced in his son, and, in addition, a fluoroscopic eye and various other twentieth-century accomplishments. He looks for a composite of the technical skill of the specialties of modern medicine to have the clearness of definition which is characteristic of each specialty.

"He himself has never made investment in the paraphernalia required for radiology nor for practical bacteriology. For these aids in diagnosis he has relied upon experts. And here, if he did but know it, is the key to the puzzle. Believing as he does, with all his soul, that the function of the family doctor will never be lost, he should recognize also that this is distinctively the era of the expert; that the specialist should be a helper, not a rival, and that the helpfulness of specialists is notably promoted when family physicians know enough themselves to protect their patrons from fads and to tell them when and where to seek the benefit of special skill.

"The general practitioner of the future should be more

han a guide-post, more than a gatherer of urine, spum and tonsilar mucus. He should be, in the widest sense, a medical adviser."

With this in general we heartily agree, but there are those who venture to doubt as to this looked-for apotheosis of the general practitioner, and who suspect that it may be a fallacy to suppose that the family physician of the future can in the "widest sense be a medical adviser," when he is confessed to be imperfectly informed on the very matters for which his medical advice is to be sought.

THE PASSING OF FORMALIN INJECTIONS.

DR. WILLIAM H. PARK, of the division of Bacteriology of the New York Health Department, has made a series of careful experiments on rabbits, which goes to show that in cases of septicemia, the intravenous injection of formalin is not only useless, but attended with considerable danger, on account of the deleterious action of this agent on the blood. The animals were inoculated with streptococcus material, and while the formalin did have some direct coagulating effect on the bacteria, it is also said to have caused more or less disintegration of the red blood corpuscles. The practical outcome of the experiments was that, instead of increasing the resistance of the system to the operation of the bacteria, formalin actually lessened it, as was shown by the fact that the infected rabbits into which the solution was not injected lived longer than those subjected to the formalin test. On the same day that Dr. Park made known the results of his researches there died in Bellevue Hospital a patient with puerperal septicemia, in whose case the formalin treatment had been employed. The condition of the woman when admitted was so aggravated that the attending physician was convinced that the injection of normal salt solution, which is ordinarily used in these cases, would prove unavailing. Therefore, although from its first exploitation he had been entirely skeptical as to its alleged good results, he advised that the injection of formalin should be tried.

SMALLPOX IN MASSACHUSETTS.

It has been said that when smallpox appears in epidemic form during one winter it is sure to reappear in the next. This statement has received confirmation in the experience through which Boston, Massachusetts, and other States and cities have passed during the last two winters. In this community the disease has, on the whole, been less widespread this winter, and now, although the cold weather is not yet past, it has practically disappeared.

The history of the epidemic is briefly as follows: It was imported apparently from the Southern States in 1898, and began to be epidemic in Massachusetts in October, 1901. The number of cases and deaths in 1902 was upward of two thousand, and thus far this year somewhat less than one hundred and eighty-three have been reported. As is usual, the preparations to meet the disease were insufficient in many places, particularly in the smaller towns. It is worthy of comment that almost without exception these smaller communities recognized the danger, and forthwith provided buildings for the use of smallpox patients. It is to be hoped that even after the disease has wholly disappeared these same communities will still see the desirability of maintaining hospitals which may be quickly used for the same purpose should occasion require. It is, in fact, stated that some of these towns are planning to erect more adequate structures than at present exist, in order to meet possible future contingencies.

Now that the disease is decreasing to a very evident degree, it is desirable to consider some of the reasons for this decrease, and also to utter a warning regarding over-confidence in the future. Undoubtedly isolation and vaccination have been the two agencies which have led to the practical cessation of the epidemic. Under very great discouragements and much active opposition, the various boards of health in this State have insisted upon general vaccination. It is also true that never before has so large a percentage of unvaccinated cases appeared in our hospitals as during this winter, and the mortality in Boston has probably been larger than in any other part of the country. It must be remembered, too, that patients are still coming to the hospitals and that the work of vaccination must go on with undiminished zeal if we are to prevent the constant reappearance of the disease. The ideal will not be reached until the population may be regarded as wholly vaccinated, a condition which apparently exists in Germany, where the disease has been reduced to a minimum. Considering the difficulties under which the work of prophylaxis has been carried on, the city and State are certainly to be congratulated that in the middle of a winter of rather unusual severity the disease is rapidly disappearing.

MEDICAL NOTES.

THE PLAGUE EPIDEMIC IN INDIA. — According to the *Lancet*, the mortality from plague throughout India is advancing by leaps and bounds. This week the total has risen to 19,224. The details published are: Bombay Presidency, 8,962 deaths;

the Punjab, 2,442; the United Provinces, 2,291; Bengal, 2,124; the Central Provinces, 605; the Madras Presidency, 683; the Mysore State, 806; Bombay City, 443; and Calcutta, 37. In Poona the disease is raging very virulently; nearly 100 deaths are occurring daily, the normal death-rate of the city being 12. In Calcutta a fresh outbreak has started and the figures are running up rapidly. This year the general development of plague is more widespread and involves a larger population than at any previous period. The Government has been compelled to abandon the system of inspection for plague on the railways in the United Provinces as hopeless. This inspection is credited with having postponed the invasion of certain areas, but when the disease has once attacked a province precautions on the railways are of no further avail.

TUBERCULOSIS IN GERMANY.—The Imperial Health Office in Berlin is reported to have made the following statements with regard to tuberculosis in Germany: Out of 1,000 deaths of persons between the ages of fifteen and sixty, 316 die of tuberculosis alone. Persons under fifteen and over sixty are seldom affected. The mortality of the whole population averaged 242 per 100,000 yearly, rising in the Bavarian Palatinate to 329, in Bremen to 337 and in Hesse to 314. The conditions in Germany are shown to be better than in France, Austria and Russia, but worse than in Switzerland, Belgium, Denmark, Norway and especially England. The chancellor said the Health Office found that consumption can best be treated in special hospitals, in which Germany now has accommodation for 30,000 patients. The statistics of 1896 to 1901 showed that, on the average, out of 100 cases treated 87.7 were dismissed as cured or improved, 8.8 as no better, 3.1 as worse, and that 0.4 died.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Feb. 25, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 34, typhoid fever 11, measles 24, smallpox 4.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported for the week ending February 21 was 197, as against 250 the corresponding week last year, showing a decrease of 53 deaths, and making the death-rate for the week 17.52. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 29 cases, 6 deaths; scarlatina, 26 cases, 2 deaths; typhoid fever, 9 cases, no deaths; measles, 22 cases, no deaths; tuberculosis, 29 cases, 21 deaths; small-

pox, 10 cases, no deaths. The deaths from pneumonia were 38, whooping cough 5, heart disease 15, bronchitis 12, marasmus 4. There were 9 deaths from violent causes. The number of children who died under one year was 40; under 5 years, 57; persons over 60 years, 49; deaths in public institutions, 63.

NEW YORK.

WOOD ALCOHOL IN JAMAICA GINGER.—According to a report recently made by Dr. J. A. Deghoree, chemist to the Health Department, wood alcohol, instead of ethyl alcohol, was found to have been used in the preparation of Jamaica ginger and spirit of ammonia in 40 out of 215 samples purchased of New York druggists. As a result of this, one arrest has already been made, and proceedings are to be instituted against a considerable number of other pharmacists.

REPORT OF THE GERMAN HOSPITAL AND DISPENSARY.—The annual report for 1902 of the superintendent of the German Hospital and Dispensary was presented at a meeting of the board of trustees held Feb. 20, showing that during the year the daily average of patients in the hospital was 176; treated in dispensary, 181; total, 357. A gift of \$25,000 was made by one of the trustees, and bequests amounting to \$10,083 were received, while various organizations contributed nearly \$10,000 more to the institution.

TYPHOID AT ITHACA, N. Y.—The cases of typhoid fever at Ithaca still continued to increase until recently. On a single day, Feb. 17, no less than three Cornell students died from the disease. Shortly before that an official count showed that there were 449 cases in the town. On Feb. 19, 16 new cases were reported; on the 20th, 10 new cases, and on the 21st, 7. Over one thousand students have gone to their homes. The university lacks adequate hospital facilities. The Sage homestead, which is used as an infirmary, will comfortably accommodate 20, or at most 25 patients. It now contains 60, all very ill, and cots have to be placed in the halls. In this overcrowded hospital there had been up to Feb. 20 as many as eleven deaths, an excessive percentage for typhoid as treated by modern methods. The plan only recently decided on, to convert one of the large college buildings into a hospital, should certainly have been adopted weeks ago. It has been intimated that Cornell University should be held to an even heavier responsibility than was at first supposed for the exposure of its students to the danger of typhoid.

SWINDLING INSURANCE COMPANIES.—Through the confession of a man who until recently was the chief soliciting agent in New York of a Cincinnati life insurance company, and who states that he was an accomplice in the scheme, the district attorney has obtained a detailed account of the doings of a band of conspirators, mostly Italians, who during the past ten years have swindled more than a dozen insurance companies out of thousands of dollars. The chief plotters in the scheme appear to have been Trepani, an undertaker, and Cirone, a barber, and among the persons who have been arrested are two physicians, one an American and the other an Italian. In one instance a man was insured with ten policies, and the swindlers collected \$20,000 on false proofs of death. The following statement is alleged by the confessing agent to have been made to him by Cirone: "We have been in the business for ten years, and we have never made any mistake yet. The insurance people are easy to fool, and we can go on for ten years more. It is the biggest money maker I know of. There would be more in the business if we did not have to give a share to Drs. — and — and the notary public, who certifies the death proofs; and then we generally have to pay the family from which we get the body." The confession went on to say: "Trepani, who had a wide acquaintance among the Italians, knew everybody who was rich and likely to die. Then they would secure a dummy, who would make an application to one or more insurance companies for a policy. They had thousands of dummies from whom they could make a selection. If it could be done, they would give the name of the dummy to the insurance company, and arrange with the family, by the payment of a small sum, to have the dead person buried under the name of the person insured."

Correspondence.

PEYRONIE'S DISEASE — *STRABISME DU PÉNIS*.

PITTSBURG, Feb. 14, 1903.

MR. EDITOR: An old codger of about 65 years came on one day, and, casting a furtive glance about the room, shut the door with great deliberation. To my question, "What is the matter?" he replied, "Squint of the cock." As I did not take genito-urinary cases, I advised him to consult my friend Dr. Ricord, upon which he handed me a letter, saying that his doctor had told him that I would be most interested in his case. He then told his story. A widower for some years, he was anxious to marry again, but was afraid to do so on account of a most remarkable change in his yard. When erect it curved to one side in such a way as to form a semicircle, hopeless and useless for any practical purposes. I call it, he said, "*squint of the cock*." Examination showed at one side of the root of the penis a firm induration about the size of a cherry, so placed as to completely fill a part of one corpus cavernosum. Of course, on erection blood

filled the other corpus only, and in consequence the penis curved towards the affected side, producing the *squint* of which he spoke. In the works at my disposal, including one well-known manual of genito-urinary surgery, I could find no account of this singular affection, but having learned when in doubt to consult Jonathan Hutchinson's "Archives of Surgery," I there found a very full account of these fibrous plaques in the corpora cavernosa, which if unilateral produce all sorts of distortions of the penis, if bilateral, impotence. Turning to another storehouse, the *Dictionnaire Encyclopédique*, under the article *Pénis*, I there found a very good description, but in addition, what was most interesting, the statement that in about 1765, Peyronie, a French surgeon, had described the disease as *Strabisme du pénis*, the very term used by my old patient. There are very good illustrations of the conditions in Taylor's Manual, but in these eponymic days old Peyronie should have the credit of describing in a happy phrase a very unfortunate defect.

J. W. W., Jr.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 14, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|----------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Measles. | |
| New York . . | 3,785,156 | 1,516 | 412 | 20.45 | 21.44 | 2.97 | .40 | 1.12 | |
| Chicago . . . | 1,885,000 | 634 | 192 | 20.97 | 23.18 | 2.52 | .31 | | |
| Philadelphia . | 1,378,527 | 558 | 139 | 20.79 | 20.44 | 1.97 | 1.61 | .72 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 215 | 60 | 17.67 | 20.00 | 2.32 | — | 1.39 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 139 | 59 | 20.14 | 20.86 | 6.70 | 2.16 | 2.16 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 73 | 35 | 19.18 | 24.66 | — | 5.11 | — | |
| Boston . . . | 603,163 | 243 | 66 | 18.52 | 21.81 | .82 | 2.47 | — | |
| Worcester . . | 132,044 | 40 | 16 | 15.00 | 22.50 | — | 5.00 | 2.50 | |
| Fall River . . | 115,549 | 45 | 19 | 15.55 | 22.22 | 2.22 | — | 2.22 | |
| Lowell . . . | 101,959 | 42 | 12 | 7.14 | 14.28 | — | — | — | |
| Cambridge . . | 98,639 | 27 | 5 | 11.11 | 25.92 | — | 3.70 | — | |
| Lynn | 72,497 | 28 | 10 | 7.14 | — | 3.57 | — | — | |
| Lawrence . . | 69,766 | 19 | 10 | 5.26 | 57.89 | — | — | — | |
| Springfield . | 69,389 | 31 | 10 | 32.26 | 6.45 | 6.45 | 9.68 | 6.45 | |
| Somerville . . | 68,110 | 16 | 5 | 56.25 | 6.25 | — | 6.25 | — | |
| New Bedford . | 67,198 | 25 | 11 | 20.00 | 21.00 | — | — | — | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brockton . . . | 44,873 | 9 | 1 | — | — | — | — | — | |
| Haverhill . . | 42,104 | 19 | 5 | 15.79 | 26.31 | — | 5.26 | — | |
| Newton . . . | 37,794 | 10 | 2 | 20.00 | 20.00 | 10.00 | — | — | |
| Salem | 36,876 | 20 | 5 | 5.00 | 15.00 | — | — | — | |
| Malden . . . | 36,286 | 9 | 3 | 11.11 | — | — | — | — | |
| Chelsea . . . | 35,876 | 16 | 3 | 25.00 | 12.50 | — | 6.25 | — | |
| Fitchburg . . | 35,069 | 14 | 5 | 28.56 | — | 14.28 | 14.28 | — | |
| Taunton . . . | 33,656 | 15 | 3 | 26.66 | — | 6.67 | — | — | |
| Everett . . . | 28,620 | 8 | 2 | — | — | — | — | — | |
| North Adams . | 27,862 | 8 | 3 | 12.50 | 12.50 | 12.50 | — | — | |
| Gloucester . . | 26,121 | 13 | 3 | — | — | — | — | — | |
| Quincy . . . | 26,042 | 8 | 4 | 37.50 | 25.00 | 12.50 | 12.50 | — | |
| Waltham . . . | 25,198 | 6 | 1 | — | — | — | — | — | |
| Brookline . . | 22,608 | 6 | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 5 | — | — | 40.00 | — | — | — | |
| Chicopee . . . | 21,031 | 8 | 3 | 12.50 | 12.50 | — | — | — | |
| Medford . . . | 20,962 | 2 | 2 | — | — | — | — | — | |
| Northampton . | 19,883 | 6 | 2 | 33.33 | — | 16.67 | — | — | |
| Beverly . . . | 15,302 | 2 | — | 50.00 | — | — | — | — | |
| Clinton . . . | 15,161 | 7 | 5 | 14.30 | 42.90 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 12 | 0 | — | 16.67 | — | — | — | |
| Woburn . . . | 14,300 | 7 | 1 | — | 14.30 | — | — | — | |
| Hyde Park . . | 14,175 | 4 | 3 | — | 75.00 | — | — | — | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 3 | 0 | — | — | — | — | — | |
| Melrose . . . | 13,600 | 9 | — | 22.22 | 22.22 | — | 11.11 | — | |
| Westfield . . . | 13,418 | 3 | 1 | — | 33.33 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 2 | — | — | — | — | — | — | |
| Framingham . | 12,534 | 1 | 1 | 100.00 | — | — | 100. | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 6 | 1 | — | 50.00 | — | — | — | |
| Southbridge . | 11,268 | 5 | — | 20.00 | 20.00 | — | — | — | |
| Watertown . . | 11,077 | 3 | 2 | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,897; under five years of age, 1,122; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 766, acute lung diseases 812, consumption 377, scarlet fever 43, whooping cough 55, cerebrospinal meningitis 7, smallpox 12, erysipelas 5, measles 30, typhoid fever 54, diarrheal diseases 72, diphtheria and croup 95.


From whooping cough, New York 6, Chicago 14, Philadelphia 9, Pittsburgh 3, Providence 3, Boston 6, Springfield 3, Worcester 2, Fitchburg 2 and Cambridge, Somerville, Haverhill, Chelsea, Quincy, Melrose and Framingham 1 each. From erysipelas, Chicago 1, Baltimore 3, and Boston 1. From smallpox, Chicago 5, Philadelphia 2, Pittsburgh 3, Boston 2.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,023, for the week ending Jan. 31, the death-rate was 18.01. Deaths reported, 5,229; acute diseases of the respiratory organs (London) 355, whooping cough 163, diphtheria 71, measles 105, smallpox 13, scarlet fever 47.

The death-rate ranged from 7.6 in East Ham to 26.0 in Wigan; London 17.7, West Ham 19.2, Brighton 14.1, Portsmouth 14.2, Southampton 17.5, Plymouth 18.6, Bristol 19.4, Birmingham 18.2, Leicester 13.7, Nottingham 19.1, Bolton 20.4, Manchester 21.7, Salford 20.3, Bradford 16.9, Leeds 17.3, Hull 20.9, New-Castle-on-Tyne 25.1, Cardiff 16.3, Rhondda 19.2, Liverpool 22.6, Smethwick 18.6, West Bromwich 23.5.

METEOROLOGICAL RECORD

For the week ending Feb. 14, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barom-eter. | Ther-mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | | |
|---|-------------|---------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|----|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8 00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. . 8 | 29.76 | 20 | 43 | 18 | 54 | 100 | 82 | N W | S | 2 | 18 | O. | R. | .31 |
| M. . 9 | 29.76 | 29 | 33 | 25 | 58 | 52 | 55 | W | N W | 25 | 20 | C. | C. | .02 |
| T. . 10 | 30.14 | 34 | 43 | 26 | 66 | 59 | 62 | W | W | 14 | 12 | O. | C. | O. |
| W. . 11 | 29.85 | 42 | 50 | 35 | 66 | 96 | 81 | S W | S E | 8 | 24 | O. | R. | .07 |
| T. . 12 | 29.64 | 44 | 50 | 38 | 67 | 65 | 66 | SW | W | 30 | 20 | O. | C. | .28 |
| F. . 13 | 30.02 | 44 | 50 | 37 | 73 | 65 | 69 | S W | W | 7 | 13 | F. | O. | O. |
| S. . 14 | 30.22 | 30 | 37 | 24 | 47 | 37 | 42 | N W | N W | 12 | 13 | C. | C. | O. |
|  29.91 | | 44 | 29 | | | 65 | | | | | | | | .68 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING FEB. 21.

J. A. HAWKE, medical director, retired. Detached from Naval Hospital, Mare Island, Cal., and ordered home.

M. H. SIMONS, medical inspector. Ordered to Washington Feb. 24, for examination for promotion and thence to Naval Hospital, Mare Island, Cal.

H. B. FITTS, surgeon. Detached from the Naval Hospital, Sitka, Alaska, and ordered to the "Pensacola."

H. T. NELSON, JR., acting assistant surgeon. Ordered to Marine Barracks, Sitka, Alaska.

D. N. BERTOLETTE, medical inspector. Detached from the "New York" and from duty as fleet surgeon of the Pacific Station, and ordered home to wait orders.

D. O. LEWIS, surgeon. Detached from the "Pensacola" and ordered to the "New York" for duty as fleet surgeon of the Pacific Station.

G. C. GRIEVE, acting assistant surgeon. Ordered to the Navy Yard, Boston, Mass.

J. R. DYKES, acting assistant surgeon. Ordered to the "Franklin."

V. DABNEY, acting assistant surgeon. Ordered to the "Pensacola."

T. C. BLACKBURN, acting assistant surgeon. Ordered to the "Culgoa."

RECENT DEATHS.

ERNEST GISBORNE BURKE, M.D., M.M.S.S., died in Quincy Feb. 19, 1903, aged thirty years.

ASHLEY ADAM WEBBER, M.D., of Brooklyn, N. Y., died on Feb. 19 at the age of forty. His death was due to injuries received last autumn in an accident, in which to save from collision a carriage in which a family party was driving, he sacrificed his automobile and risked his own life. He was a native of Maine, and was graduated from the Medical Department of the University of the City of New York in 1888. He was for a number of years an attending surgeon to the Long Island Throat Hospital and Eye Infirmary. Dr. Webber was widely known as the champion revolver shot of the world, and he had won innumerable trophies by his extraordinary skill in shooting.

WILBUR H. BLAUVELT, M.D., of Newark, N. J., a graduate of the New York University Medical School in 1900, died on Feb. 19, at the age of twenty-seven.

APPOINTMENTS.

L. R. G. CRANDON, M.D., has been appointed third assistant visiting surgeon at the Boston City Hospital.

LEO V. FRIEDMAN, M.D., has been appointed third assistant visiting physician for diseases of women at the Boston City Hospital.

WILLIAM J. MCCAUSLAND, M.D., has been appointed to the position of resident surgeon at the Boston City Hospital Relief Station, Haymarket Square.

ERRATUM.

On page 216, first column, five lines from the bottom of the JOURNAL, Feb. 19, for 1817 read 1827

BOOKS AND PAMPHLETS RECEIVED.

Manual of Bacteriology. By Robert Muir, M.A., M.D., F.R.C.P. (Ed.), and James Ritchie, M.A., M.D., B.Sc. American edition (with additions). Revised and edited from the third English edition, by Norman MacLeod Harris, M.B. (Tor.). Illustrated. New York: The Macmillan Company. 1903.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden. Authorized American Edition, translated under the direction of Boardman Reed, M.D. Parts I and II. New York: E. B. Treat & Company. 1903.

Therapeutics of Infancy and Childhood. By A. Jacobi, M.D., LL.D. Third edition. Philadelphia and London: J. B. Lippincott Company. 1903.

The American Year-Book of Medicine and Surgery, being a Yearly Digest of Scientific Progress and Authoritative Opinion in All Branches of Medicine and Surgery, Drawn from Journals, Monographs and Text-Books of the Leading American and Foreign Authors and Investigators, Collected and Arranged with Critical Editorial Comments. By various writers, under the General Editorial Charge of George M. Gould, M.D. Surgery. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1903.

The Practical Treatment of Stammering and Stuttering, with Suggestions for Practice and Helpful Exercises. By George Andrew Lewis. And a Treatise on the Cultivation of the Voice, with a Discussion of Principles and Suggestions for Practice. By George B. Hynson, M.A. Illustrated. Detroit: George Andrew Lewis. 1902.

Paralysis of All Four Limbs and of One Side of the Face with Dissociation of Sensation, Developing in a Few Hours and Resulting from Meningo-Myeloencephalitis. By Charles K. Mills, M.D., and William G. Spiller, M.D., of Philadelphia. Reprint. 1903.

The Anatomy of the Human Peritoneum and Abdominal Cavity, Considered from the Standpoint of Development and Comparative Anatomy. By George S. Huntington, M.A., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Tenth Annual Report of the State Charities Aid Association to the State Commission in Lunacy. New York. Nov. 1, 1902.

Report on the Mentally Defective. By George F. Canfield, President of the State Charities Aid Association.

Report of the Committee on Politics in Penal and Charitable Institutions.

Centralization in State Charitable Institutions. By George E. Dunham, Secretary of the Board of Visitation of the Utica State Hospital for the Insane.

Regulations for the Government of the Public Health and Marine Hospital Service of the United States. Approved Nov. 21, 1902. Washington, D. C.

Original Articles.

A RESEARCH INTO THE MEANS OF CONTROLLING THE BLOOD PRESSURE.¹

BY GEORGE CRILE, M.D., CLEVELAND, OHIO.

THE privilege of addressing the Boston Medical Society is deeply appreciated by me, and it is with no little hesitation that I venture to present to this distinguished body, whose members have added so much luster to medicine, the results of an experimental study into the means of controlling the blood pressure.

If, in presenting this summary of a series of more than two hundred experiments upon a subject which has been neglected, both in research and in practice, statements are made which are contradictory to current opinions, it is with all respect due them, and wholly in the spirit of an earnest search for the truth.

Of the various cases of diminished blood pressure demanding a study of the means for their control, none are more urgent than those attending shock and collapse. A study of shock and collapse may well serve to illustrate the relative value of the various means of controlling the blood pressure in other conditions.

SHOCK.

In shock the essential phenomenon is a diminution of the blood pressure. Since there are no demonstrable lesions in the fatal cases, and no later effects in those that recover, we will assume exhaustion, rather than structural lesions, to be the cause of this fall. It must then be an exhaustion of the cardiac muscle; of the cardiac centers; of the blood vessels; or of the vaso-motor center.

(a) Is it due to fatigue, or exhaustion of the cardiac mechanism? The heart, as an organ, is noted for the large amount of labor it may perform without fatigue. In shock, on account of the diminished blood pressure, there is even less work for the heart muscle to do than in the normal state. In a series of experiments after the animal had been reduced to a degree of shock presumably fatal, the blood pressure was, by special means, raised much higher than normal. The heart then performed its normal function. There was, then, no material fatigue of the heart muscle.

(b) Is there fatigue of the cardio-inhibitory center? In experiments in which the animals had been reduced to a degree of shock presumably fatal, the blood pressure was by special means raised to the normal. Then on manipulation of the laryngeal mucosa a normal reflex inhibition of the heart was induced. The cardio-inhibitory center and its peripheral nerve mechanism were, therefore, not exhausted. That the cardio-accelerator mechanism remains active in every degree of shock is constantly evidenced by the increasing rapidity of the heart, until the inauguration of the phenomena of death. In a series of experiments the heart was isolated from the nervous system by severing both vagi and both accelerantes. Shock in such animals was as readily produced as in the controls. We may then exclude the heart and its nerve mechanism as factors in the primary causation of shock and

look to the loss of peripheral resistance as the essential factor. The loss of peripheral resistance may be due to: (a) An exhaustion of the peripheral nerve vascular mechanism, the anatomical periphery; or, (b) an exhaustion of the vaso-motor center. In a series of experiments in which both vagi and both accelerantes had been severed, a physiologic dose of curare given, and artificial respiration maintained, the animals were reduced to such a degree of shock that the vaso-motor center gave the usual physiologic proof of exhaustion. Varying doses of adrenalin were then given. The blood pressure rose proportional to the dose, even much higher than the normal.² Fatigue of the blood vessels may then be excluded. That the vaso-motor center becomes exhausted in complete shock is indicated by the absence of any rise in the blood pressure on electrical stimulation of the sciatic nerve, or burning the paw, by giving a physiologic dose of strychnin, or by deepest asphyxia, all of which cause stimulation of the vaso-motor center.³ Cocainizing the vaso-motor center, or severing the cord just below the medulla, causes a fall in the blood pressure to about the same level as that of profound shock.⁴ We may then conclude that shock is essentially an exhaustion or breakdown of the vaso-motor center. From this standpoint, then, let us consider the vaso-motor stimulants, such as strychnin. In forty-eight experiments it was found that strychnin in therapeutic doses does not cause a rise in the blood pressure. In another series in which the dose was gradually increased until the convulsive stage was reached a remarkable rise occurred. Was this rise due to the muscular contractions in the convulsions? No; since an equal or greater rise occurred when convulsions were prevented by preliminary injections of curare—the centers presiding over the vaso-muscular system and voluntary muscular system seem to be equally susceptible to the action of strychnin. Was the rise partly due to a simultaneous stimulation of the heart? No; since strychnin caused an equal rise in the blood pressure in animals, in which both vagi and both accelerantes had been previously severed and a paralyzing dose of curare given;⁵ neither was an increased action noted on making direct observations of the heart, nor by noting the endocardial pressure. It was, therefore, a pure vaso-motor stimulant. A brilliant stimulant indeed—sometimes doubling the normal blood pressure and lasting from thirty minutes to several hours. Each succeeding physiologic dose caused less effect, and after from two to four doses no appreciable effect was obtained. The blood pressure in the meantime had fallen, and at last had reached the same level as in most profound shock. It was at this stage not possible by reactions, such as electric stimulation of the sciatic nerve, burning of the paw, by deepest asphyxia, nor by a study of the terminal tracings, to distinguish between these animals and the animals in profound traumatic shock.⁶ The vaso-motor center in each was exhausted. It was, in effect, shock produced by strychnin. The effect upon the function of the vaso-motor center seemed to be alike, whether the stimulation was mechanical and external, as in injuries or operation;

² See Fig. I.

³ See Fig. XIX.

⁴ See Fig. II.

⁵ See Fig. III.

⁶ See Fig. IV.

or internal, as from strychnin. Conversely, in a series of experiments in which strychnin was given in various degrees of shock in such dosage as to cause a stimulation, the effect was proportional to the degree of shock; that is, when but little shock was present, a marked effect from strychnin was obtained — when most profound there was no effect. In the intervening degrees, the effects were proportional, but after giving the strychnin, the animals not yet in complete shock always passed into shock of deeper degree.⁷ Later in the research, it was found that the most convenient and certain method of producing shock for experimental purposes was by the administration of physiologic doses of strychnin.⁸ It then follows that treatment of shock by vaso-motor stimulants in the form of drugs is on precisely the same basis as treatment by burning the animal or crushing its paws, or by subjecting it to injury or operation. It would seem to be as reasonable to treat strychnin shock by administering traumatism, as traumatism shock by strychnin.

What has been said of strychnin may be assumed to apply equally well in the case of other stimulants of the vaso-motor center. Turning then to cardiac stimulants, we must first consider how much influence an increase in the force and frequency of the heart beats have upon the blood pressure. Even in normal animals, when the peripheral resistance is at its best, an increase in the force and frequency of the heart beats has but a limited power of increasing the blood pressure. In a series of experiments in which the vaso-motor center was reduced to varying degrees of exhaustion, and the vagi severed, — thereby increasing the force and frequency of the heart beats, — the rise in the blood pressure sustained an inverse ratio to the degree of exhaustion; and in the cases in which the vaso-motor center was entirely exhausted, the blood pressure was not raised by any increase in the force and frequency of the heart beats. An artificial circulatory apparatus was arranged so that the peripheral resistance was represented by the atmospheric pressure in a cylinder which contained an elastic bag filled with water and communicating by means of tubing with an artificial heart on the outside. In this rough way the force and frequency of the heart beats and the peripheral resistance could be increased or diminished at will. It was not possible by any increase in the force and frequency of the artificial heart beats to raise and maintain the artificial blood pressure more than 10 mm. The velocity of the circulation was, of course, much increased. On the other hand, any change in the peripheral resistance was attended by an equal change in the blood pressure. From the standpoint of physics, as well as physiology, it would seem that the peripheral resistance (vaso-motor action) fixes the gauge for the height of the blood pressure, while the heart supplies the force necessary for circulating the blood.

This would leave but a limited range of possibilities for heart stimulants. In another series of experiments cardiac stimulants, particularly digitalis, were tested. It was found that as the peripheral resistance was lowered, the effect upon the blood pressure was diminished, and when complete exhaustion of vaso-motor center existed, the

cardiac stimulants had but slight influence upon the blood pressure.⁹ Other drugs which are, in practice, generally included in the class of stimulants, such as alcohol and nitro-glycerin and amyl-nitrite, were studied at length. No justification could be found for classifying these drugs as stimulants. In the case of alcohol, in not a single instance was there a sustained improvement in the blood pressure or in the respiration. On the contrary, the most constant and the most marked effect upon the blood pressure was a decline. The rapidity and the extent of the decline were proportional to the depth of the shock and the dosage of alcohol.¹⁰ In all the experiments upon nitro-glycerin, when any effect was noted, it was an immediate fall in the blood pressure. This occurred in every degree of shock. A compensatory rise equal to the fall in most instances followed. The rising curve was usually more gradual than the falling.¹¹ Most of the animals showed a marked degree of toleration. On the whole, nitro-glycerin acted unfavorably in shock. As in digitalis and alcohol, when considerable dosage had been given, the final break-down of the circulation was more sudden than in the control animals.

If the foregoing be true, it is obvious that in true shock the use of stimulants acting upon the vaso-motor, the cardiac and other centers of the medulla are, on the whole, either inert or harmful. In considering other methods of controlling the blood pressure, normal saline solution demands consideration. Normal saline administered intravenously or subcutaneously is a purely mechanical aid to the circulation, which temporarily increases the blood pressure. The solution in any considerable quantity is not retained in the blood vessels, but is eliminated at a rate proportional to the rate of administration through the same tissues that normally absorb water, — mainly the alimentary tract. That the blood does not tolerate much dilution with normal saline was shown also by repeated observations upon the number of corpuscles and the amount of hemoglobin during its administration. The accumulation of saline solution in the walls, and in the lumen of the stomach and of the intestines, in the peritoneal cavity and in the liver, after approximately 320 cc. per kilo has been given, causes so much abdominal distension as to progressively hinder and finally prevent the excursions of the diaphragm and the movable ribs, causing death from respiratory failure. In the cases of pure shock, that is, in cases in which the vaso-motor center has been exhausted, and no blood has been lost, the rise in the blood pressure, even during its administration, if prolonged, is not sustained on account of the absence of the peripheral resistance and the elimination of the solution.¹² Saline solution has a limited range of usefulness. It is obvious then that to increase and sustain the blood pressure when the vaso-motor center is exhausted, it is necessary to create a peripheral resistance either by a drug acting upon the blood vessels themselves or by mechanical pressure. Adrenalin in the normal animal, or in any degree of shock, caused a marked and, in sufficient dosage, an enormous rise in the blood pressure. This rise occurred when the vaso-motor center was proven to have been exhausted¹³; when it was cocaineized,¹⁴ and when it was destroyed.

⁷ See Fig. V. ⁸ See Figs. III and IV.

⁹ See Figs. VI and VII. ¹⁰ See Figs. VIII and IX. ¹¹ See Fig. X.
¹² See Fig. XII. ¹³ See Figs. I and —. ¹⁴ See Fig. XIII.

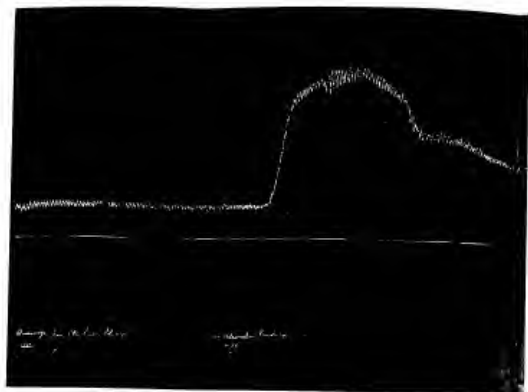


FIG. 1. *Effect of strychnine*.—Animal reduced to profound shock. Burning the paw, stimulating the sciatic nerve and administering physiologic dosage of strychnine caused no change in the blood pressure. After which the blood pressure was raised higher than normal by injecting adrenalin.

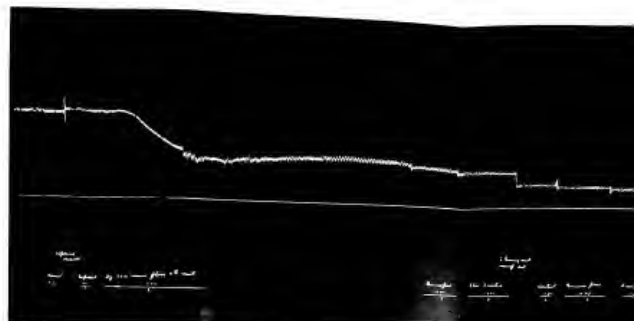


FIG. 2. *Moderate Cocaine*.—Note the reversal in the blood pressure curve and that of profound shock.



FIG. 4. *The intracardiac tracing of a normal animal reduced to shock by strychnine*.

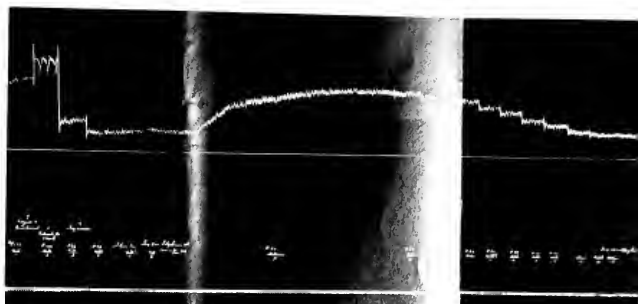


FIG. 5. *Effect of Cocaine*.—Both right and left acceleranets severed. Animal reduced to profound shock. On administering a physiologic dose of strychnine the blood pressure gradually fell. Then on repeating the dose no rise occurred, indicating the exhaustion of the vaso-motor center.

shock that stimulation of the sciatic nerve failed to elicit. The blood pressure gradually rose to about the normal.



FIG. 7. *Profound Shock*.—Note the negative effect of therapeutic doses of digitalis.



FIG. 8. *Moderate Cocaine*.—Note the fall in blood pressure on injecting strychnine.

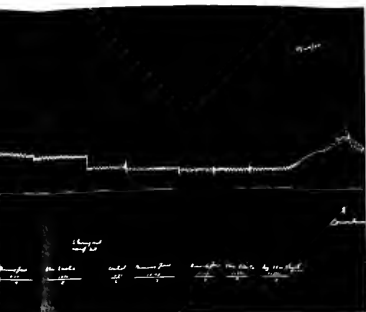




Fig. X. *Anura ca. shurt*. — Note the fall in blood pressure on administering strychnine.

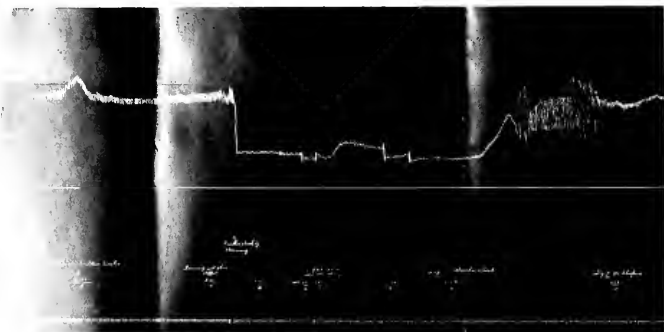


Fig. XI. *Anura ca. shurt*. — Note the gradual rise in blood pressure, the absence of vaso-motor spasms, and after a certain period, a decline in the blood pressure equal to the rise.



Fig. XII. *Death from Epinephrine*. — The dam was slipped in the middle of the tracing. After a lapse of ten minutes, artificial respiration, rhythmic pressure upon the thorax over the heart, and intravenous injection of adrenalin were simultaneously begun. The animal was resuscitated.

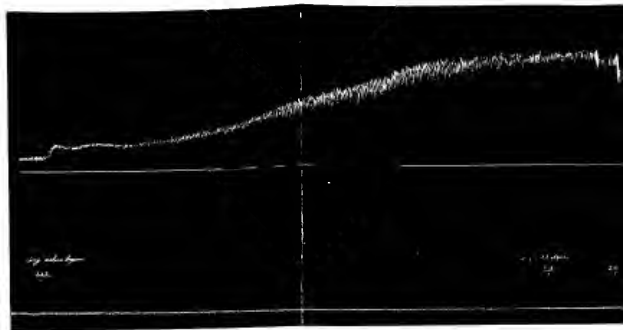


Fig. XIII. *Anura ca. shurt*. — Note the gradual rise in the blood pressure, the absence of vaso-motor spasms, and after a certain period, a decline in the blood pressure equal to the rise.

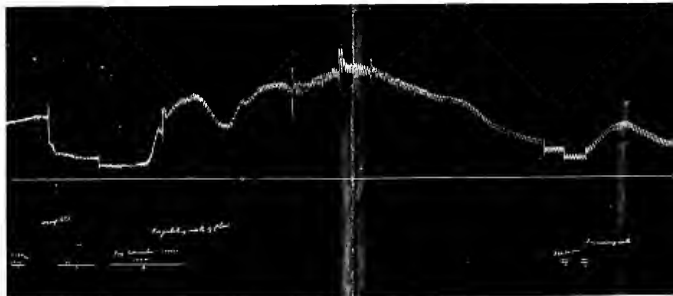


Fig. XIV. The first abrupt fall was caused by the application of the strychnine. The irregularity in the curve was due to an adjustment of the absolute control over the blood pressure obtained by the continuous flow. This decelerated animal lived 40 hours.

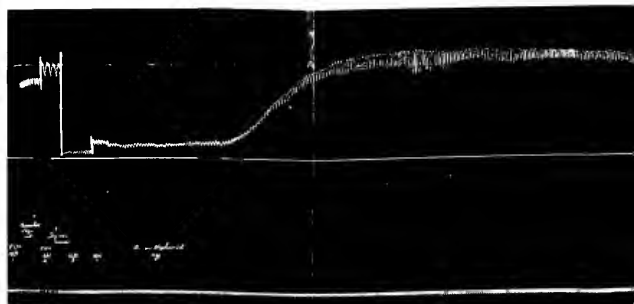
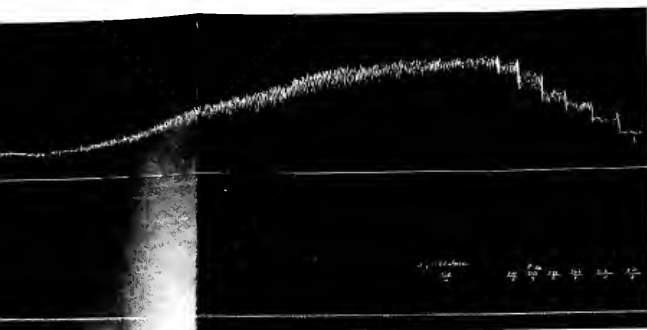


Fig. XV. *Profound collapse*. — Note the marked rise in pressure following the injection of a physiological dose of strychnine.



of saline solution. Note the gradual rise in the blood pressure, the increase in the pulse-wave, 6d, a decline in the blood pressure equal to the rise.

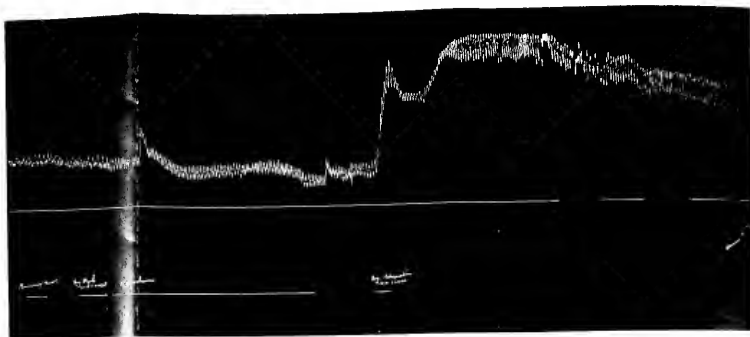
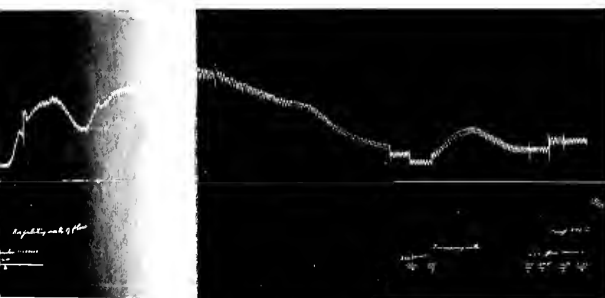


FIG. VIII. Spinal C. free on injecting adrenergic



get the following results:

1. The first group was 100% correct.

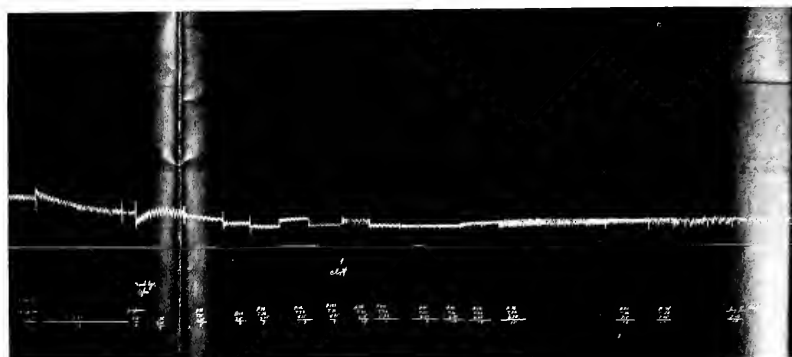


FIG. XVI. Curve of blood pressure ten hours after decapitation.

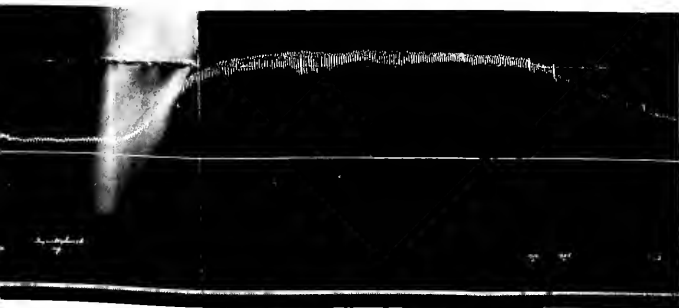


FIG. VIII. *Protonal collapse*—Note the marked rise in pressure following the injection of a physiological dose of strychnine.



FIG. XIX. *Curare*. Taper and 4-cylindrical Serrated—Pneumod Shock.—Note the negative effect of repeated injections of strychnine.

occurred when in addition both vagi and both celerantes had been severed, and the animal was under the influence of curare. In larger doses a marked inhibitory action upon the heart was noted. This was immediately relieved by the injection of atropin.¹⁵ It was finally found that the most effective method of administration was by a continuous cravenous infusion in salt solution, varying in length from 1 to 50,000 or 100,000. After the experimental research seemed to have shown that adrenalin and salt solution thus administered could maintain the circulation with a heart isolated from a nervous system by section of both vagi and both celerantes, with the vaso-motor center exhausted (complete shock), and with the muscular system paralyzed with curare, it followed that if these observations were correct, a decapitated animal must be kept alive during a certain period of time. An ordinary laboratory dog was decapitated. Adrenalin and saline solution were immediately and continuously administered. It was found that the blood pressure could be controlled at will.¹⁶ The beheaded animal lived ten and one-half hours, and finally died of air emboli, produced by the artificial respiration. In beheading animals, the primary fall in the blood pressure was approximately the same as in profound shock.¹⁷

But one clinical application of adrenalin when the vaso-motor center was exhausted has been made.

In this instance, a patient who was dying was kept alive for nine hours by the continuous administration of adrenalin and the application of external pressure. It is to be remembered that, owing to rapid oxidation in the tissues, adrenalin is more effective when given intravenously, and since it is even more rapidly oxidized in the blood, it should be given continuously. It is found to be most conveniently given in saline solution from a burette, the rate of flow being controlled by a screw cock attached to the outer tube. The circulatory phenomena should be under continuous observation. Great caution must be exercised in the administration of adrenalin.

In considering external pressure as a means of applying a peripheral resistance it is well to bear in mind that when the vaso-motor center is becoming exhausted, the blood accumulates in the veins—especially in the larger venous trunks. The condition may be described as an intravenous hemorrhage. Pressure applied uniformly upon the skin from the periphery toward the center over an area containing such intravenous hemorrhage causes the blood to flow toward the heart just as the normal muscular tone does. After numerous experiments, in warm water baths to pneumatic chambers in which it was attempted to devise a method of supplying artificial peripheral resistance, a rubber suit was found to be the most practical. The suit is made of a double layer of specially constructed rubber, and when inflated gives a uniform pressure upon the surface, producing an artificial peripheral resistance. The inflation is accomplished by means of a bicycle pump, and may be varied at will. Regardless of the posture of the patient, a considerable portion of the blood may be delivered to the right heart, preventing thereby, to a certain degree, the continuance or development of cerebral anemia. By means of this suit, the blood pressure may be maintained within a range of 25 to 60 mm. mercury, placed

under the operator's control. The pneumatic suit has been employed in many clinical cases, and the effects studied by means of the Riva-Rocci-Cushing sphygmomanometer.

COLLAPSE.

For the purpose of this paper the term "collapse" is applied to the cases of the more sudden fall of the blood pressure from hemorrhage, from injuries of the vaso-motor center, or from cardiac failure. These conditions represent suspension of function rather than exhaustion of centers. There being no exhaustion, stimulants may be of value. As an illustration: If one animal is subjected to such a degree of shock (exhaustion of the vaso-motor center) as to produce a sufficient accumulation of blood in the veins (intravenous hemorrhage) to cause a decline in the blood pressure to 25 mm., and if another animal is subjected to an extra vascular or ordinary hemorrhage, until the blood pressure has been reduced an equal degree, it would be impossible, on the symptoms alone, to make a differential diagnosis. Yet, in the one case, stimulants could have no effect because the vaso-motor center is exhausted, and in the other the effect might be marked because the center is not exhausted.¹⁸ In the animal with the exhausted vaso-motor center, (or shock) saline solution could be of little assistance, but in the animal subjected to ordinary hemorrhage, and having a normal vaso-motor center saline infusion might be of marked assistance. In collapse, mechanic, thermic, electric or therapeutic stimulants, such as bruising, burning, application of electrodes, the administration of saline infusion, or change of posture, may be beneficial.

After having considered the means of controlling the blood pressure in cases in which there is exhaustion of the vaso-motor center (shock), and in cases in which there has been a temporary suspension of the function of the heart or of the vaso-motor center (collapse), it remains to consider the control of the blood pressure in cases in which the vaso-motor center, the cardiac centers, the heart itself and the respirations have all ceased to show any functional activity,—that is to say, when the animal is apparently dead. In a series of experiments, observations were made upon the use of electricity; upon needling the heart; upon massaging the heart; upon making rhythmical pressure upon the thorax over the heart; upon the injection of strychnin, ammonia and other drugs into the chambers of the heart and into the heart muscle; upon artificial respiration; upon the administration of salt solution intravenously; upon rapidly alternating the posture of the animal, head up and head down,—all of these methods were employed singly and in various combinations, but in no instance did we find it possible to resuscitate the animal after more than fifty-eight seconds after the last beat of the heart.

The most favorable results were obtained by combinations of rhythmic pressure upon the thorax over the heart, artificial respiration and intravenous saline infusion. Unless the heart and the vasomotor center resumed action, the blood pressure could be raised and sustained to but a very limited degree. During the experiments upon the decapitated dog, it was observed that adrenalin acted upon the blood vessels after the circulation

See Fig. XIV. ¹⁶ See Figs. XV and XVI. ¹⁷ See Fig. XV.

¹⁸ See Fig. XVIII.

had ceased. It was then planned to kill the animals by asphyxia, give artificial respiration, make rhythmic pressure upon the thorax over the heart, and at the same time administer adrenalin in saline solution into the jugular vein. By this means, adrenalin might, through the feeble artificial circulation, be brought into contact with the walls of the blood vessels, causing their contraction, thereby increasing the blood pressure, which in turn might re-establish the coronary circulation, which in turn might re-establish the action of the heart. By this method animals apparently dead for various periods up to fifteen minutes were restored to conscious life again.¹⁹ The circulation and the respiration in dogs electrocuted by a shock of 2300 volts of an alternating current were re-established.

SUMMARY.

In many instances the control of the blood pressure is synonymous with the control of life itself. Surgical shock is an exhaustion of the vaso-motor center. Neither the heart muscle, nor the cardio-inhibitory center, nor the cardio-accelerator center, nor the respiratory center, are other than secondarily involved. Collapse is due to a suspension of the function of the cardiac or of the vaso-motor mechanism. In *shock* therapeutic doses of strychnin are inert, physiologic doses are dangerous or fatal. If not fatal, increased exhaustion follows. There is no practical distinction to be made between external stimulation of this center, as in injuries and operation, and internal stimulation by vaso-motor stimulants, as by strychnin. Each in sufficient amount produces shock, and each, with equal logic, might be used to treat the shock produced by the other. Stimulants of the vaso-motor center are contraindicated. In *shock* cardiac stimulants have but a limited range of possible usefulness, and may be injurious. In *collapse* stimulants may be useful because the centers are not exhausted.

Saline infusion in *shock* has a limited range of usefulness. In *collapse* it may be effective. The blood tolerates but a limited dilution with saline solution. Elimination takes place through the channels of absorption. Its accumulation in the splanchnic area may be sufficient to fix the diaphragm and the movable ribs, causing death by respiratory failure. Saline infusion in shock raises but cannot sustain the blood pressure.

Adrenalin acts upon the heart and blood vessels. It raises the blood pressure in the normal animal; in every degree of shock; when the medulla is cocainized, and in the decapitated animal. It is rapidly oxidized by the solid tissue and by the blood. Its effects are fleeting; it should be given continuously. By this means the circulation of the decapitated dog was maintained ten and one-half hours. In excessive dosage there is a marked stimulation of the vagal mechanism. Due caution must be exercised.

The pneumatic rubber suit provides an artificial peripheral resistance without injurious side effects, and gives a control over the blood pressure within a range of from 25 to 60 mm. mercury. By the combined use of artificial respiration, rhythmic pressure upon the thorax and adrenalin injected into the jugular vein, animals which were apparently dead as long as fifteen minutes were resuscitated.

¹⁹ See Fig. XVII.

ON ROUTINE DETERMINATIONS OF ARTERIAL TENSION IN OPERATING ROOM AND CLINIC.

BY HARVEY CUSHING, M.D., BALTIMORE, MD.,

Associate in Surgery, the Johns Hopkins Hospital.

THERE has been a long-felt want in the surgical operating room, possibly even more than in the clinic, for some practical form of apparatus which will give with facility numerical equivalents for variations in pulse tension, and by means of which consecutive observations on this quality of the pulse may be diagrammatically charted.

During a critical operation the hearsay dependence which the surgeon must place on the palpating finger of the anesthetist for a knowledge of the cardiac strength of his patient may oftentimes be one of his most trying responsibilities. Were it possible, therefore, under such circumstances for him to be told with the definiteness which figures alone can give, or for him to read by a glance at a plotted chart that the strength of the cardiac impulse, irrespective of its rapidity, was keeping at a normal level or was affected in one way or another by certain manipulations, not only would this feeling of responsibility be much lightened, but the operative procedure might oftentimes be modified with a consequent lessening of its risks.

It by no means behooves us to disparage the value of an educated touch as a means of estimating vascular qualities, but the tactile and muscular sense, no matter how well trained, must give way to some method more precise, especially when serial observations for purposes of demonstrating alterations taking place from day to day, hour to hour, or moment to moment are demanded. For this an instrument of precision is needful, and it may be said in passing that no amount of training in palpation of the arterial pulse will educate the muscular sense as well and as quickly as when there is an associated use made of some form of sphygmomanometer. In place of the loose and indefinite terms applied to degrees of tension one learns to interpret them with some measure of numerical accuracy, and recognizes a "weak" or "compressible" pulse as one with a tension perhaps of 80, a "hard" or a "bounding" pulse as one, for instance, of 260.

The belief is more or less prevalent that the powers of observation so markedly developed in our predecessors have, to a large extent, become blunted in us, owing to the employment of instrumental aids to exactness, and the art of medicine consequently has always adopted them with considerable reluctance. Take for example the two instruments upon which we place today our chief reliance for obtaining ordinary routine clinical data — the thermometer and the watch. Although the former instrument dates back to the time of Galileo, and was used by him as a means of estimating body temperature, the necessity of thermometric observations in disease had no widespread clinical recognition until after the publication of Wunderlich's classical monograph in 1868. Today one wishes to know, not as in pre-Boerhaavian times solely by manual palpation that there is a more or less evident pyrexia, but the degrees or fractions of degrees of variation, which our instrument of precision alone can supply. Galileo, also,

¹ Read by invitation at the Boston Medical Library, Jan. 19, 1903.

Blood



Four fragments from blood-pressure chart of a case of apoplexy in which systolic and diastolic pressures were recorded. Heavy line between 130 blood pressure and 50 pulse-rate taken to represent normal alicsca. Solid charted line represents pulse rate. Broken lines represent blood pressure. upper = systolic; lower = diastolic. PERIOD I.—Condition before operation with a vagus pulse of high tension. PERIOD II.—Operative period with extraordinary drop in pressure consequent upon evacuation of blood clot. Pulse-rate not affected. Cessation of vagus stroke. PERIOD III.—Normal levels immediately after operation. PERIOD IV.—Condition two days after vagus stroke. Slight rise in systolic pressure, without particular alteration in mean.

by shortening or lengthening the arm of a pendulum until it would oscillate synchronously with the pulse-rate, learned to speak with some accuracy of a "10-inch" or a "12-inch" pulse, and an English physician, Sir John Floyer, in 1710, had constructed for himself a chronometer with a second hand, his "pulse-watch"; but not until long afterward did the rate of the heart-beat come to be universally registered with some numerical definiteness instead of being spoken of merely as relatively "rapid" or "slow." At the present time, largely owing to the convenience of our timepieces, pulse-rate is commonly recorded alongside of the temperature and perhaps of the respiration on our clinical charts, to the utter neglect of a numerical record of that vascular quality which in many conditions is incomparably of greater clinical consequence, namely, arterial tension.

The familiar query is raised. Are we not surfeited with instruments of accuracy in clinical work, and are not approximate values in the long run as useful as precise ones? I can only reply that there is no superabundance of simple instruments which like the watch and thermometer enable the nurse or orderly to accumulate data, the interpretation of which remains for the visiting physician, and I earnestly believe that the time is not far distant when routine observations on blood pressure in cases that are shown to be appropriate will be taken in our hospitals in correspondence with the present thermic and pulse-rate observations.

For the full appreciation of the reliance which the physiologist does and the physician should place on blood-pressure observations, one needs after some clinical experience to return once more for work in the laboratory of the former. For the experimentalist to make observations pertaining to the cardiovascular system without dependence on the records of manometer and kymographion would be the equivalent of a clinical study of fevers without thermometric observations. The simple and accurate method of recording blood pressure from an open vessel so serviceable to the physiologist is, of course, precluded in the clinic, and many devices have been suggested in substitution for it. For one reason or another most of the instruments which have courted clinical introduction since the early appliances of v. Basch (1887) and Potain (1889) have received only a half-hearted welcome, and although from one or another of them in spasmodic fashion information of great interest and value has been obtained by individual skilled observers, they have not made for themselves a lasting place in the clinical armamentarium². Some of them, as the Mosso sphygmomanometer, have been so complex as to demand for their manipulation especial technical skill. In others single observations have required a length of time sufficient to condemn them, and, like the Hürthle plethysmograph, are only adaptable for laboratory purposes. The sphygmometer of Bloch and its various modified forms possess too many sources of error for a widespread adoption.

²For those desirous of a careful historical *résumé* of the subject of blood-pressure estimations, together with a description of the structure and principle of action of some of the numerous forms which have been introduced, a series of articles by N. Vasschide and J.-M. Lahy on "La technique de la mesure de la pression sanguine particulièrement chez l'homme," will be found in the *Archives Générales de Médecine* for September, October, November and December of 1902. An extensive bibliography accompanies this important "Revue spéciale" of the subject.

The Gärtner tonometer, otherwise a most valuable instrument, possesses disadvantages for the reason that the circulatory activity in the fingers during states of low blood pressure is not sufficient to give the necessary color contrasts, and these very states of low blood pressure are the ones demanding the closest clinical attention. The actual needs are for an apparatus whose mechanical principle and application is so simple that the mere act of registration of arterial tension requires no particular preliminary training, and in which there is the least possible personal coefficient of error. The apparatus should, furthermore, register tension with sufficient celerity so as to allow of a frequent repetition of observations in a short time, since in the critical moments of any operative procedure likely to upset circulatory conditions, alterations in tension from moment to moment are called for. It should be as free as possible from annoyances or discomfort to the patient during its application, since these factors in themselves may reflexly affect arterial tension. It should, furthermore, be portable, durable and sufficiently inexpensive to allow of its widespread distribution.

In the line of work in neurological surgery, which I have been given the privilege of following in Professor Halsted's clinic, the desirability of the routine employment of a blood-pressure apparatus is perhaps especially apparent. Having become dependent on the interpretations of manometric tracings for the outcome of some experimental work upon cerebral compression, the possibility of a practical application of these observations to the diagnosis of stages of compression in man without some corresponding aid seemed prohibited. The propriety, also, of instituting operative procedures for the relief of these processes without concomitant blood pressure tracings seemed questionable, to say the least. Various forms of apparatus experimented with had given but little satisfaction, and not until the instrument, which I shall demonstrate with some apologies, as it is already familiar to many of you, was brought to my attention in its own home, did any of them promise to meet the demands of the operating table situation.

Two years ago, while on a tour among the Italian University towns, I had the good fortune in Pavia to be shown through the medical wards of the old Ospedale de S. Matteo by Dr. Orlandi, a colleague of Riva-Rocci, and to my great interest found that a simple "home-made" adaptation of the latter's blood-pressure apparatus was in routine daily use at the bedside of every patient. I think at the time they were making an especial study of chlorosis, in examples of which the clinic abounded. Thanks to Dr. Orlandi, I was given a model of the inflatable armlet which they employed, and practically the same form of apparatus which was in use in Pavia has been utilized at the Johns Hopkins Hospital with increasing satisfaction ever since.

The instrument, in part, consists of a distensible cylinder or tire of thin rubber covered with a linen jacket. This cylinder, while encircling an extremity, preferably the upper arm, is inflated by means of a double cauterly bulb until the pulse-wave, peripheral to its seat of application, becomes no longer palpable. Inserted in the course of the rubber tubing, which connects the bulb and tire, is a simple upright

mercury manometer, which records the pressure of the air in the cylinder necessary to obliterate the pulse. The principle is the same, therefore, as in many other varieties of sphygmomanometer, and the apparatus differs only in some important details from the appliance described by Hill and Barnard. The particular form of the instrument I have to demonstrate is somewhat more carefully constructed than the home-made ones we have heretofore employed, and possesses the advantage, following a suggestion of Dr. H. W. Cook, of having a disjointed manometer tube, enabling it to be enclosed in a smaller compass.³

It is presumable that this apparatus by no means represents what will be the final form of clinical sphygmomanometer, for there are numerous criticisms, chiefly on the ground of inaccuracy, which may justly be raised against the Riva-Rocci instrument. It can be seen at a glance that there must be considerable variation of tension as measured in different individuals, according to the amount of panniculus or muscle covering the vessel which is being compressed, as well as upon the degree of thickening and rigidity of the arterial walls themselves. This objection, although deserving of consideration, may for the time being be waived on the ground that the record of variation in arterial tension in a given case, with its gradual fall or rise under different circumstances, represents the objective point of most of our observations rather than comparative records made upon different patients.

Another very proper objection to this form of instrument, which the physiologist naturally raises, is that it records systolic pressure or tension at the crest of the pulse-wave alone, and does not give the mean or average arterial tension. And, as a matter of fact, Drs. Cook and Briggs have shown that the diastolic pressure after a little experience may be registered with this apparatus on the plethysmographic principle, by recording the level at which there is the greatest visible pulsation in the column of mercury when the tube between the manometer and bulb is compressed. The studies of Howell and Brush have shown that this level of greatest pulsation, on which principle the Mosso, the Hill and Barnard and other sphygmomanometers operate, corresponds with the diastolic rather than mean blood pressure, as heretofore presumed by most investigators. Dr. Erlanger has skillfully combined the two forms of systolic and diastolic apparatus in a way which renders it possible, as in the Hill and Barnard apparatus, to establish with some degree of accuracy the absolute mean of blood pressure.

For the purposes, however, to which we have chiefly put the apparatus, the record of systolic level has amply sufficed to give us the data we desired, and the conditions in which alterations in systolic level are unaccompanied by a more or less equivalent alteration in mean level (*cf.* accompanying chart) are sufficiently unusual in clinical cases to render them for the time being relatively unimportant. If it is a desirable thing, as it seems to be,

to register blood pressure as a routine in the clinic as well as during many of the critical medical or surgical operative procedures, it is advisable, for present purposes at least, to use the simplest, although it be a somewhat inaccurate instrument, and the errors of the Riva-Rocci apparatus are more than compensated for by its ready applicability to most clinical demands. Long experience has taught us when frequent observations on the pulse-rate and temperature are of especial clinical value. It will require time as well to indicate with definiteness the conditions in which blood-pressure observations are of the greatest utility, and many a long chart will be plotted seemingly to no purpose before there is a final selection of conditions wherein it will be considered negligent to omit these observations. When these conditions have become more or less roughly determined by the everyday use of some simple form of instrument like the one under discussion, its possible errors should doubtless be controlled by the observations taken on same apparatus which is more accurate from the physiologists' standpoint and by those individuals who have become especially skilled in its manipulation. At present one barely knows what cases to select, what ones to pass by. New facts of interest from a purely physiological point of view, or, what is to us more essential, of prognostic, diagnostic or therapeutic value to the clinician, are constantly being brought to light.

It will be impossible, in the short time allotted, to more than suggest some of the lines of observation which are deserving of especial attention. There are, of course, many maladies usually characterized by a hypo- as well as others by a hyper-tension of the arterial blood stream, and tabulations of the pressure levels commonly found in these diseases have been made by Potain and others. Such records may be of considerable value for purposes of differential diagnosis, as, for example, between states of simple albuminuria and those of actual chronic nephritis, or again between the hemiplegia of intracranial hemorrhage and that of cerebral softening. There are other clinical states which are associated with great cardiac instability, shown by the variation in strength of successive contractions, and no form of apparatus will record in a satisfactory way the irregularities such as may be found, for instance, in certain severe cases of Basedow's disease. Alterations in blood pressure, nevertheless, which occur with a definite rhythm, such as those which occasion or accompany periodic respiratory phenomena, as of the Cheyne-Stokes type or those which, for example, characterize the *pulsus paradoxus*, are easily recognized by the apparatus which has been described.

It is, however, rather from notations on the variations of tension from time to time in an individual case than with the mere fact of an average hyper- or hypo-tension in the given disease, that we derive the greatest benefit from these pressure records.

Their prognostic and diagnostic value are shown in many conditions of falling pressure, whether of mechanical, toxic or nervous origin; in case of hemorrhage or when there has been a great depletion of fluids due to persistent vomiting or diarrhea; when during the course of acute or prolonged fevers evidence of cardiac failure is beginning to

³ Elmer and Amend of 205 3d Avenue, New York, have made for Dr. Cook and put upon the market a serviceable form of the Riva-Rocci apparatus. An equally useful instrument can be easily home made, provided the rubber armlet is secured from some source. Dr. Crile tells me that he has used a small standardized aneroid barometer inserted in place of the mercury manometer in an instrument of the Riva-Rocci pattern. This brings the instrument into still closer structural relationship with the Hill and Barnard apparatus.

show itself⁴; when there is existent or impending shock or collapse. Similarly useful are records in cases in which the reverse takes place, namely, a progressive rise in tension, such as occurs in some acute intracranial processes and in states of renal insufficiency.

Their therapeutic value is perhaps even more apparent as one is enabled to accurately estimate not only the degree of stimulant or depressant effect which a given procedure or drug may have upon the cardiac activity, but also to follow the duration of its action. In no other way is it possible for us to learn the actual therapeutic results of stimulation; to appreciate, for instance, the inadequacy of saline infusions as a means of raising blood pressure; to learn the uses and limitations of alcohol, strychnia, digitalin and nitroglycerin; to study the effects of that remarkable substance, adrenalin, which may possibly become of therapeutic value in cases of profound shock.

I think that Dr. Cook has been the first to put to any practical application the principle of stimulation in accordance with blood-pressure records. During a summer service among numerous cases of cholera infantum he found it practicable to leave orders for stimulants of one sort or another, to be administered in accordance with the blood-pressure observations, which the nurse herself regularly made on the cases that were seriously ill. Thus, without waiting for the personal advice of the attendant, oftentimes occasioning serious delay, on a fall of blood pressure to a certain subnormal level, a saline infusion or a given dose of digitaline was to be administered, to be followed, if the pressure did not shortly return to and remain at a safe level, by a certain amount of strychnia, for example. The advantages of such a routine are quickly apparent, and orders for stimulants may thus be left with the same definiteness as are the directions for a bath in case the pyrexia of typhoid fever exceeds a certain degree of temperature. Similarly, when a depressant effect of drugs is desired to alleviate symptoms associated with hypertension, treatment may receive its indication from something more definite than the mere palpation of pulse tension.

The beneficial effect of rest treatment for those nervous disorders which are associated with a high tension can be best appreciated by accompanying blood-pressure observations. An illustration, also, of what recumbency can do for the high tension of arterial sclerosis is shown by this chart, which Dr. McCrae has privileged me to show you. It represents the blood-pressure record of a patient who entered Dr. Osler's service a few months ago with an aortic aneurism and a general arteriosclerosis of an advanced degree, associated with the usual vascular hypertension. Under a rigid Tufnell treatment the blood pressure, as can be seen, has fallen from its previous great height to a level considerably below normal, where, averaging between 95 and 110, it has remained for the past two months. It is evident that the pulse rate, although considerably diminished, has not been affected by the treatment in so striking a way. It can be readily understood

that a diminution in the vigor of the cardiac contraction is of even greater importance in this form of treatment than the lessening of the number of pulsations, and by means of control observations on blood pressure in this particular case, after a level of hypotension had once been reached, it was found possible to make concessions to the patient and to relieve him in a measure from the severe regulations of the treatment, according as it was found that their withdrawal had but a slight and transient influence in increasing the arterial tension.

There are many operative procedures, also, which fall to the lot of a physician, such as the aspiration of effusions of one sort or another from the serous cavities, the occasional accidents associated with which may be avoided by concomitant registrations of blood pressure. Thus the well-known fall in pressure which follows the withdrawal of a large amount of fluid from the abdomen may be recognized before a dangerous level of pressure has been reached. So, also, the abstraction of blood in cases of hypertension associated with various maladies may be definitely regulated and the therapeutic effect of the procedure best appreciated by an accurate numerical estimation of tension during venesection.

In the surgical operating room procedures which tend to upset in any way the cardio-vascular apparatus, whether directly by loss of blood, or indirectly through insults to its nervous mechanism, will be recorded with fidelity, and if harmful their continuance or repetition avoided. As stated elsewhere, I feel assured that by placing reliance on the blood-pressure charts kept during critical operations in the past year, it has been possible to anticipate and ward off severe conditions of surgical shock, and indeed in some instances to save lives. A great number of blood-pressure reactions known to the physiologist as occurring in animal experimentation it has been possible to demonstrate on man with some degree of conformity. The general tendency of a rise in blood pressure during ether administration and the frequent fall during chloroform anesthesia show graphically the danger of narcosis induced by the latter drug. Chloroform is commonly advocated as the anesthesia of choice in intracranial operations, on the ground that its use is associated with less likelihood of hemorrhage. The fall in blood pressure explains this diminished tendency to bleed, and at the same time points out the danger of the drug. A sorry experience has led me to abandon chloroform for this reason in craniotomies, as well as in other operations. In a similar way comparative observations on blood pressure might enable us to determine the less dangerous of two or more methods of operating, when different procedures to accomplish the same end are advocated by schools or individuals.

All things considered, operations conducted under painstaking hemostasis, even though performances of great magnitude and requiring long manipulation, as the complete Halsted operation for carcinoma of the breast, may be unassociated with alterations in arterial tension. If, however, many or large nerve trunks are encountered or require handling during operations, marked variations may be occasioned. These are dependent upon the reflex effects of afferent sensory impulses, and it

⁴Certain recent experimental observations from Curschmann's clinic tend to show that the circulatory disturbance in acute infectious diseases is brought about by a peripheral vasomotor breakdown rather than from cardiac failure. Pässler und Rolly, Münch. Med. Woch., 1902, October, p. 1737.

has been seen on certain occasions that during recovery from anesthesia, and some time after the completion of a severe operation, which apparently had been unassociated with evidences of shock, that there may be a reflex fall in pressure of considerable degree, occasioned by the pains and discomforts which are felt during the restless period of returning consciousness. The weak pulse seen under these conditions, according to our charts, receives its best stimulant from small doses of morphia, which are quieting, prevent restlessness, and so check the inflowing sensory impulses.

In further conformity with experimental observations one sees that traumatism of sensory nerves when an individual is in normal condition will be accompanied by a rise in blood pressure. This reflex rise is especially well marked during such operative procedures as the stretching of a nerve for neuritis or the forcible dilatation of the anus for the treatment of fissure or preparatory to a hemorrhoid operation. When one sees recorded the great rise of pressure which may occur under these circumstances, the occasional hemiplegia which has been known to follow supposedly simple operations of this sort need be no cause for wonderment. In case of fatigue or exhaustion of the nervous system from repeated stimuli, instead of this normal rise, a fall will occur, and in case the pressure is already low, as in conditions of traumatic shock, this additional depressor response may be sufficient to insure a fatal outcome. The value of blocking nerves by the injection of cocaine in prevention of such reflex disturbances has been emphasized heretofore by Dr. Crile and myself.

In operations upon the central nervous system, perhaps more than in any others, are blood-pressure observations of great value. The reactions which occur as a normal response to varying degrees of intracranial pressure may suffice not only to serve as a timely warning of the necessity of operative interference, but may also show during those surgical procedures which necessitate compression or elevation of a portion of the brain, the extent to which the process may safely be carried. In spinal surgery, especially in operations carried out in the upper part of the cord, shock may play such an important part in the reactions that the warnings gained by pressure records are of great use. In cases of transverse lesions of the spine, the few records I have had the opportunity to make have tended to show that there is an early elevation of tension in low segmental lesions, a lowering of the same in high lesions. This would be expected, since in the former case the splanchnic nerves presumably are stimulated, while in the latter case they are cut off from their central connections with a consequent loss of control over the great vascular territory of the abdomen. The great fall in pressure which often follows the subarachnoid injection of cocaine would be enough to deter any one who has made blood-pressure observations on these cases from employing this much-discussed method of anesthesia. It is not impossible that the shock commonly seen in these cases is due to an intraspinal paralysis of the vasomotor nerves controlling the splanchnic territory rather than to the general toxic effect of the drug which has reached the general circulation.

In abdominal surgery there is a great field for observations on pressure, owing to the importance of this same splanchnic vascular territory. The removal of large abdominal tumors by a resultant flooding of the vessels may seriously affect the heart on "*die leere Pumpe*" principle of Goltz. Evisceration or extensive intra-abdominal manipulations, especially when conducted in the upper quadrants, may produce a rapid fall in pressure, whether reflexly, by sensory stimuli coming from the parietal peritoneum, or in consequence of the direct insult to the vasomotor terminals, and only by pressure observations at the time can the extent of vascular disturbance be appreciated and so possibly checked before irremediable shock has been occasioned.

Further illustrations without number might be cited. What has already been said may suffice to show that in most of the departments of clinical work, whether devoted to internal medicine itself or surgery or neurology or obstetrics or psychiatry, etc., will these routine observations be found of practical utility in diagnosis, prognosis and therapy.⁵

Afterword. — There is one word I should like to say in conclusion, and before leaving this clinico-physiological subject.

For reasons that possibly are not far to seek there seems to have taken place during the past few decades a gradual withdrawal of interest on the part of the clinician from his quondam interest in research along the lines of experimental physiology. Clinical medicine has offered an arm to pathology and her handmaid bacteriology, and the old companion is passed by for the most part unnoticed. Morbid anatomy is courted on every hand; morbid physiology is but little heeded. To the student, from my own recollection, this is especially evident, and although there may and must be a lingering memory of physiological principles which clings to his mind, there is little if anything said or done in most schools during his period of bedside instruction to point out the physiological effects of processes of disease, much less to stimulate him with any personal keenness for the pursuit of knowledge along the physiological highway. Few medical teachers like Sahli, whose clinico-physiological course is one of the most widely attended exercises in Berne, or like Krehl, whose textbook on "*Pathologische Physiologie*" is probably well-known to many of you, make a systematic effort to emphasize the physiological background of the clinical picture. Few surgeons to-day, like Kocher, Horsley and Dr. Crile, have devoted themselves extensively to the solution of clinical problems by adopting methods of physiological research. Would it not be well if what is done for the student during his clinical years in the way of instruction in morbid anatomy, and encouragement toward original work in this department of "general pathology," could with equal thoroughness be done for morbid physiology?

Although seemingly but a small factor in this direction, if the introduction of some method of instrumental estimation of blood-pressure changes in clinical cases does nothing other than serve to

⁵ A lantern-slide demonstration was given of numerous plotted blood-pressure records, illustrating the reactions of many operative procedures of therapeutic measures and of conditions of disease. A single example accompanies this article.

keep the student's mind alive to the physiological principles of the circulation and to make clinical observations on the cardio-vascular apparatus more nearly in accord with his earlier experiences in the physiological laboratory, its routine use needs no greater justification.

CYTO-DIAGNOSIS: A STUDY OF THE CELLULAR ELEMENTS IN SEROUS EFFUSIONS. A PRELIMINARY REPORT.

BY PERCY MUSGRAVE, M.D., BOSTON,

Assistant in Chemistry, Harvard Medical School.

SINCE 1882 the investigation of cellular elements in serous fluids has been carried on by various observers, namely, Erlich, Quincke and others, but to Widal and his pupil Ravaut we are indebted for the knowledge gained by the systematic study of the cells in these effusions. The earlier observers aimed their investigation chiefly at the diagnosis of malignant disease, but Widal studied all the cells and their relative proportions, in order to determine the cause of effusions from serous membranes. Since Widal's original article in 1900, many observers in France have contributed to the literature of this subject. In this paper the writer will confine himself, however, to a consideration of the cellular elements found in pleural effusions.

The technique.—The technique divides itself into three operations; namely, (1) obtaining the liquid, (2) obtaining the sediment, and (3) finally making preparations and staining the sediment. Of the first it is not necessary to speak, as the ordinary methods of paracentesis commonly employed are sufficient.

To obtain the sediment, the liquid is placed in the ordinary centrifuge tubes, and centrifuged at about 2,500 to 3,000 revolutions per minute, for three to five minutes. The tubes can then be inverted, and the liquid poured off without disturbing the sediment, which is usually firmly packed at the bottom of the tube and more or less adherent. The few drops of fluid then remaining are stirred with a platinum wire, in order that a homogeneous mixture may result and the cells in the sediment be uniformly distributed throughout the small amount of liquid. This mixture is then spread on thoroughly clean cover slips by means of the platinum loop. The spreading should be done by moving the loop in constantly enlarging circles from the center outward, in order to get a uniform spread. Spreading a drop between two cover slips, as practised with blood, is not advisable, because the cellular elements are dragged to the outer edges of the preparation, and also, on account of the friability of the cells, they are apt to be more or less altered in shape and broken up.

The above procedure is entirely sufficient for making a good preparation from fluids immediately after withdrawal from the body, but, if the fluid has stood any length of time, coagulation will sometimes embarrass the operator. If coagulation has begun, the fibrinous clot will entangle many of the cellular elements, especially the polynuclear leucocytes. The simplest procedure to avoid the above difficulty is to defibrinate by shaking with small glass beads for from five to ten minutes.

This causes the clot to contract, squeezing out the entangled cellular elements, and the clot itself, if not already more or less firm, will be broken up into very small particles. It is then necessary to let the liquid stand for a few moments, until most of the fibrin, at least the larger masses, have settled, and then to decant and centrifuge as before. It is therefore obvious that the sooner the liquid is centrifuged, the easier it will be to make clean preparations. However, a fair idea of the different proportions of the cells may be obtained even as long as twenty-four hours after the withdrawal of the fluid, if it has been gathered aseptically in sterilized receptacles.

The cover-slip preparations already described should not be heated in order to dry them, as this causes contraction of the film and more or less distortion of the elements, often quite well marked in cases dried at too high a temperature. These cover-slip preparations can be stained, as Widal has described, with hematoxylin and eosin, or preferably, as the writer believes, with Leichman's blood stain. If hematoxylin and eosin are used, fixation is first necessary, with equal parts of alcohol and ether. Erlich's triple stain has also been used, but the heating necessary to obtain the best results by this method alters the size and shape of the cells, and also makes a preparation which is rather difficult to decolorize properly. Wet preparations can be made in the usual way, by placing a drop between slide and cover slip. Both forms of preparations should be examined with an oil immersion lens.

Enumeration of the cellular elements per cubic millimeter has also been practiced, but is of doubtful value.

Descos, in an exhaustive article on the subject in the *Revue de Médecin* for September and October, 1902, has reviewed the work up to that date, and, following the lines laid down by Widal and other observers, has been able to give us a certain number of what he calls cystologic formulæ.

In making up these formulæ we have to consider, in the first place, the red blood corpuscles, which exist in almost all fluids, from those that are almost purely serous to those which may be regarded as hemorrhagic.

Second, the white corpuscles, the relative enumeration of which is the essential part of cystology, are found in varying numbers. All the forms of white corpuscles, with the exception of myelocytes, have been observed in serous fluids. The polynuclears do not ordinarily present any differences from those found in blood, except that they are usually smaller in size, and with Leichman's stain have the same appearances. Of the polynuclear leucocytes, we find neutrophiles, eosinophiles and mast cells. Any of these varieties may be more or less altered, depending upon the age of the fluid and the producing cause. Both varieties of mononuclear leucocytes occur. The large mononuclear cells are at times difficult to distinguish from the endothelial cells about to be described.

Third, the endothelial cells are desquamative elements, cast off from the serous surfaces. Their relative size is usually enormous as compared with the other elements found. These cells may occur

isolated or in groups of two or more. Isolated, they are of variable size, and in general their nucleus is round or oblong. Their protoplasm stains a lighter shade, their general contour is nearly always circular. Less frequently, they form in large sheets, especially in the mechanical variety of effusions. It is difficult to make out the outlines of the individual cell walls when they occur in groups. The endothelial cells are the first elements in the fluid to undergo changes on standing. Sometimes the protoplasm becomes disintegrated and ragged, leaving only a small part of the original protoplasm surrounding the circular nucleus, and in this case they are very difficult to distinguish from the large mononuclear leucocytes. Again, large swollen, often more or less vacuolated, diffusely staining cells with degenerated nuclei, occur. At times two or three nuclei may be seen in what appears to be the same cell, and also hour-glass-shaped cells are encountered.

Fourth, in some cases the so-called cancerous cells have been described as larger even than the endothelial cells, occurring singly or in groups of two or three, and with protoplasm studded with vacuoles, which, when studied in the fresh specimen, appear as numerous refractile granules. The nucleus is large, often showing karyokinetic figures. These cells are also said by Erlich to contain a certain number of glycogen granules, which may be stained with iodine.

From a study of the relative proportions of the above-mentioned cells in various serous fluids, Widal and Ravaut have formulated the following general laws: (1) Lymphocytosis is characteristic of tuberculous pleurisy; (2) polynucleosis is characteristic of acute infectious pleurisy; (3) large numbers of endothelial cells are characteristic of mechanical pleurisy.

The same authors classify pleurisy under the following general headings: Tuberculous pleurisy, acute inflammatory pleurisy and the so-called mechanical pleurisy, and, fourth, cancerous pleurisy and a pleurisy of so far unknown etiology, namely, eosinophilic pleurisy.

Tuberculous pleurisy.—These are divided into primary tuberculous pleurisy, a form which is supposed to start in the pleura itself, and not by extension from a previously existing tuberculous focus in the lung; and secondary pleurisy, caused by direct extension of the tuberculous process from the lung tissue. These fluids differ considerably in regard to the number of polynuclear leucocytes found. In the primary form, we have a large predominance of lymphocytes, varying from 65 to 100%, except at the onset, when for from five days to a week the polynuclear varieties may predominate, but as the disease progresses, there is a constantly increasing ratio of lymphocytes and a diminishing ratio of polynuclear cells. After a duration of three weeks, the character of the fluid, as regards the relative proportion of leucocytes, is said to remain practically constant. In the secondary form, in which the diagnosis is usually less important, as the more or less evident signs in the lung usually give us a clue to the etiology of the effusion, the cells are often irregular, ragged, vacuolated and filled with refractile granules, and it is difficult to distinguish between the different cellu-

lar elements in the stained specimens. The lymphocytes may be more or less altered and necrotic as well as the other cells, but usually preserve their characteristic properties to a greater degree. The enumeration of the different variety of cells in these cases is difficult, but the different appearance of the preparation, as described above, is characteristic of this variety. The same formula is found in hydro-pneumothorax. It is possible that these characteristic differences may be accounted for by the probability that we have a mixed infection by means of more or less remote communication with the bronchus. Despite the above-described changes, the lymphocytes usually predominate.

Acute infectious pleurisy are characterized, in general, by the relatively large number of polymorphonuclear elements. Widal and Ravaut report a case of streptococcus pleurisy in which the polynuclear elements alone were present. These cells showed deformed nuclei, streptococci were scattered between the cellular elements, and also included in their protoplasm. Cultures showed pure streptococcus.

Pneumococcus pleurisy is characterized by the predominance of polynuclears, with a greater or lesser number of large mononuclear cells, some of which present the appearances of phagocytes, encircling the polynuclears in their protoplasm. Small numbers of lymphocytes and endothelial cells are also encountered, as well as the red blood corpuscles in varying numbers. In seven cases, the above observers were unable to find pneumococci in the cover-slip preparations, nor were Troisier and Netter able to find them in six cases which came under their observation.

A study of the pleural effusions of typhoid etiology have not so far shown a constant formula, but have been characterized in general by a large relative proportion of large mononuclear cells, and also the presence of numerous eosinophiles has been noted.

Mechanical pleurisy are characterized by the presence of numerous large endothelial cells, which have been described before, often occurring in groups or sheets of three or four elements or more. Early in the course of the effusion these sheets are often extremely abundant, and are occasionally of such size as almost to cover the microscopic field. Later the number of these cells diminish, and among them are scattered a variable number of lymphocytes. Late in the course of the effusion they undergo various degenerative changes, which have been spoken of before, and normal endothelial cells will often be found mixed with these old and more or less degenerated forms.

Eosinophilic pleurisy.—Eosinophiles were found in three of 43 tubercular cases reported by Bajon and Cade. Their presence has been spoken of above in typhoid pleurisy. They have also been found in pleurisy due to malignant disease. It does not seem, therefore, that this should be classed as a separate variety of pleurisy, but rather the interesting fact noted that in serous effusions of differing etiology these cells may occur, and in all the hitherto reported cases where the blood has been studied no increase in the number of eosinophiles has been found. The percentage of eosinophiles found in cases which can be spoken of as eosinophilic

pleurisy has varied from 14 to 54%. In the three cases reported by Widal, the liquid, when inoculated into guinea pigs, showed an unusual toxicity, as all the pigs inoculated died within twenty-four hours of a fibrinous peritonitis, from which no bacteria could be obtained.

The data from which the previously described formulæ have been compiled have been taken from cases in which clinical, bacteriological, inoculation or postmortem methods of diagnosis have been used. Postmortem results have been made use of wherever possible, and in Bajon and Cade's cases, previously mentioned, 25 of the 43 cases reported came to autopsy.

The following cases are reported by the writer :

CASE I. Lizzie E., twenty-six, single, occupation housework. Clinical Diagnosis; Hodgkins' disease. Pleurisy with effusion. Family history, cancer. One brother died of "decline."

Previous history and present illness: Two years ago was treated in the Out-patient Department of the Massachusetts General Hospital for eleven weeks, and was then sent to Rutland, where she remained eighteen months, and where the diagnosis of incipient tuberculosis of the left apex was made. Seventeen months ago was operated on at the Worcester Hospital for removal of glands of the neck, and eight months later was operated on the second time, at the same place, for the same cause. Cough and dyspnea were the only important symptoms. Six weeks previous to entrance on the medical service at the Massachusetts General Hospital, she was operated on at the same institution for removal of glands of the neck, the pathological examination of which showed Hodgkins' disease. Patient entered the medical service on Feb. 3rd, and the symptoms at that time were dyspnea on slight exertion, fainting spell the day before entrance, considerable cough and thick, yellow expectoration. Temperature showed marked irregularity, ranging between 99° and 102° during the day, once reaching 103° in the afternoon.

Physical examination showed normal heart in normal position. Examination of the lungs revealed squeaking, coarse, moist râles over both lungs, with signs of pleuritic effusions at the right base. Patient had previously been tapped twice on the surgical side, and was tapped again on the medial side on Feb. 4th. The blood count showed 16,000 whites. The differential count showed 86½% polynuclears, 12½% lymphocytes and 1% eosinophiles. The condition has remained practically the same, and the patient is still in the hospital.

Fluid, Jan. 2, straw colored; albumen, 2½%; specific gravity, 1.020. *Centrifuged sediment* four hours after tapping, count of 1,000 cells. Polynuclears, 18½%; lymphocytes, 64.7%; eosinophiles, 14.7%; rare large endothelial cells and a little blood. On Feb. 4, 44 oz. of straw-colored fluid. Specific gravity of 1.020. Albumen, 2½%. *Centrifuged sediment* immediately after tapping. Lymphocytes, 90%; Polymorphonuclears, 5%; Large Mononuclears, 3%; Eosinophiles, 3%; a little blood, rare large endothelial cells, and rare mast cells were found. While in the Worcester Hospital this patient showed marked tuberculin reaction. The fluid is that of a tubercular effusion. Sputum, no tubercular bacilli found.

CASE II. M. O'M., twenty-six, single. Examined Jan. 2, 1903, by Dr. Tileston. Family history, markedly tubercular. Previous history, negative. Present illness, For two or three months subject to cough, and for last month has had night sweats. Three weeks previous to examination had pain in the left chest, without dyspnea or palpitation. Patient not intelligent, and unable to give accurate history.

Physical examination.—Phthisical habit. Poorly nourished. Flat thorax. Feverish. Signs of left pleural effusion. Right lung negative, heart dislocated to the right. Jan. 4, two quarts of serum withdrawn, after which heart resumed normal position. Fairly rapid

convalescence. Jan. 17, no return of fluid. Showed signs of thickened pleura.

Fluid, straw-colored; specific gravity, 1.022; albumen, 2½%. *Centrifuged sediment* three hours after tapping showed lymphocytes exclusively, occurring singly and in clumps. Clinical Diagnosis; tubercular effusion. Diagnosis from fluid, tubercular.

CASE III. O'C., teamster, forty-six, married. Entered medical service of Massachusetts General Hospital, Jan. 10. Family history, good. Previous history, negative. Present illness, pain in side for five weeks, night sweats for same time, with a loss of fifty-two pounds in weight. Dyspnea compelled cessation of work ten days previous to entrance. Had been up and about up to the time he entered the hospital. Temperature averaged 99 to 101½° F.

Physical examination.—Lungs, signs of left pleural effusion filling the chest, no signs of disease of the lungs. Heart, dislocated to the right. Blood, 6,800 and 9,600 whites. Sputum contained no tubercle bacilli. Patient was tapped on Jan. 10 and Jan. 16, and was discharged much relieved on Feb. 4.

Fluid, Jan. 10, straw-colored; specific gravity, 1.020; albumen, 1¾%. *Centrifuged sediment* immediately after tapping, lymphocytes, 96%; polymorphonuclears, 2%; large mononuclears, 2%. Occasional large endothelial cells.

Fluid, Jan. 16, specific gravity, 1.020; albumen, 2.2%. *Centrifuged sediment* two hours after tapping, almost exclusively lymphocytes. Many lymphocytes in large and small clumps, very rare polymorphonuclears. Occasional large mononuclear, rare endothelial cell. Diagnosis from fluid, tubercular pleurisy.

CASE IV. B., thirty, married, teamster. Diagnosis, hydro-pneumothorax. Family history, negative. Previous history, doubtful specific disease. Habits, alcohol in excess. Present illness, slight cough without expectation, no other symptoms since latter part of last winter. Entered Massachusetts General Hospital Jan. 21, 1903. Last July strained himself lifting heavy object, and immediately had fit of coughing, during which he raised about a pint of blood. He kept at work, however, but the cough has increased since that time. Slight white expectoration, but no hemoptysis. Has had night sweats. Since November cough has increased, and has had extreme dyspnea while lying on the left side. Has not worked since Thanksgiving. Cough and dyspnea prominent symptoms at entrance.

Physical examination.—Maximum temperature 100° F., below that most of the time. Signs of hydro-pneumothorax in right chest, namely swashing, shifting dullness and tympany. Left lung negative, except for fine râles at base. Heart displaced to the left. Blood, 7,600 whites. Sputum, no tubercle bacilli found.

Jan. 25 was discharged, with symptoms relieved and with signs of hydro-pneumothorax persisting.

Was tapped on Jan. 22. Fluid, 46 oz., straw-colored; specific gravity, 1.022; albumen, 2%. *Centrifuged sediment*, two hours after tapping. Most of cells more or less broken up and staining badly. Neutrophils seemed to predominate, but there was a large percentage of lymphocytes. On account of the ragged and broken up condition of the cells, the differential count was very difficult. Occasionally a large endothelial cell. Examination for tubercle bacilli negative.

CASE V. G., forty-six, widower, worked in factory. Diagnosis; Mitral and aortic regurgitation. Family history, negative. Previous history, negative. Present illness, entered Massachusetts General Hospital, Jan. 20. Precordial distress for three months. Swelling of feet for one week. Has been unable to work for two weeks on account of dyspnea on slight exertion. Has lost five pounds in three months.

Physical examination.—Temperature subnormal throughout. Heart enlarged, and signs of mitral and aortic regurgitation. Lungs, moderate pleural effusion, right base. Left lung negative. Abdomen, slight ascites. Legs, edematous.

Blood, 7,600. Patient had no expectoration. Patient was tapped on Jan. 22. On Jan. 25 patient contracted

gonorrheal ophthalmia, and was transferred to the Eye and Ear Infirmary, where he died the following day of a postorbital abscess. No autopsy was obtained.

Fluid, 42 oz.; specific gravity, 1.011; albumen, 2%.

Centrifuged sediment, one hour after tapping. Many endothelial cells, mixed with lymphocytes. Rare neutrophiles and eosinophiles. Endothelial cells occur in sheets of two or three, and sometimes four or five cells are seen joined together. These cells show sharply defined and round nuclei with an occasional occurrence of two or three nucleoli in the same cell. Three slides examined for Tubercle Bacilli were negative. Diagnosis from fluid, Mechanical exudate.

CASE VI. G. H., colored, twenty-three single, porter. Entered Massachusetts General Hospital, Feb. 7, 1903. Family and previous history are negative. Present illness, gradual onset of cough, malaise and anorexia, three weeks before entrance. Was able to work for one week after symptoms were first noted, and was able to be about the house for a week following. One week before entrance complained of dyspnea, and first noticed a whitish expectoration.

Examination.—Temperature ranging between 99 and 102° F. on the average, rising in the afternoon. Heart in normal position, signs of left pleural effusion. Right lung negative. Blood, 6,400 whites. Sputum, no tubercle bacilli found. Was tapped on Feb. 7th. Fluid, slightly turbid. Straw-colored. Amount, 44 oz. Specific gravity, 1.020. Albumen, 3.2%. *Centrifuged sediment* immediately after tapping. Lymphocytes, 87%. Polynuclears, 12%. Large mononuclears, 1%. Eosinophiles, 0%. Considerable number of red corpuscles. No endothelial cells found. Diagnosis from fluid; Tubercular pleurisy.

Although the writer realizes that there is no absolute scientific proof that these cases were due to the causes which the examination of the fluid would indicate, still the histories show a decided clinical probability. In making up the data from the examinations of sediments in all the cases, at least three, and on the average five or six, slides were examined, and in some of the wet preparations as well, before any conclusions were drawn. In Case IV examination of the sediment was absolutely typical of hydro-pneumothorax, as can be seen by referring to the formula for this condition, as described by Widal and previously mentioned in this article.

In conclusion, the writer can state without hesitation that the descriptions given by Widal, and other before-mentioned observers, have been accurate, as far as his limited observation has gone; not only from observations made on the reported cases, but from several preparations made from abdominal fluids, which we do not care to speak of in this paper. The writer believes this procedure will be found of clinical value after a more thorough observation and study. If it is found that the cystologic formulæ are accurate after careful control of the cases studied, it is plain that the immediate results which can be obtained by this method, and which the French observers claim are more accurate than any clinical method now practiced, will be of much value in diagnosis as well as prognosis.

The writer wishes to express his thanks to Drs. F. C. Shattuck and R. H. Fitz for their kind permission in allowing him to report five of the cases, and to Dr. Tileston for the sixth. He also wishes to thank the house officers of the Massachusetts General Hospital for their kindness in promptly notifying him when cases were tapped, and other material help rendered. Thanks are also due to Dr. J. H. Wright for valuable suggestions.

INTESTINAL OBSTRUCTION BELOW THE ILEO-CECAL JUNCTION.¹

BY THOMAS H. MANLEY, PH.D., M.D., NEW YORK.

(Concluded from No. 9, page 229.)

OPERATIVE TREATMENT: ARTIFICIAL ANUS, RESECTION, ANASTOMOSIS.

THE basic principles of the operative treatment of stenosis of the large intestine, and for other tubular lesions, has undergone remarkable changes of late years; nevertheless in advanced cases when stercoræmia exists, when the patient is starved to emaciation, and when he is quite worn out by pain and loss of rest, and is in a settled despondency, all operative intervention has a harrowing mortality.

Artificial anus in former times was the only relief possible for all these unfortunate cases; it has and always will hold a position of prime importance as a last resort and a relief measure, but it leaves a loathsome condition. There is commonly a tendency to closure of the fistula or a prolapse of the intestine outward.

In malignant disease of the large bowel, or that type which restricts us to tapping the colon, the site of the artificial anus is determined by the location of the disease; if in the rectum or sigmoid, the descending colon is chosen; if in the ascending or transverse colon, the ascending segment; if the cecum or first part of the ascending colon, the gut is drained direct from the site of blockage.

Fortunately in a considerable proportion of cases of annular scirrhus of the colon, the disease is strictly limited to the wall and has not spread through the lymphatics to neighboring structures; at the point narrowed the gut looks as though reduced by a hard circular cicatrix, much like an artery ligatured in continuity, the mucosum, the cellular and muscular layers have been quite totally destroyed, and little more than a hard knot of cartilaginous consistence remains. But there are several other pathological conditions leading to intestinal stenosis which are not malignant. For some of these and annular scirrhus, resection and anastomosis have come to supplant the antiquated procedure of artificial anus; and, for many varieties of cancer not permitting of excision, we now resort to side tracking, or exclusion by anastomosis.

Spontaneous anastomosis.—By observing the unaided efforts of nature to relieve herself in this class of cases, we may gather a few very significant hints, and we may imitate her modes of effecting relief with the most signal benefit.

We find scattered through records on pathology, through revelations on autopsy, as well as illustrative instances on the living body, examples which point the way to effective relief in intestinal obstruction by an automatic mechanism, devices by which fecal blocking is overcome and the continuity of the bowel restored by adhesions and a free opening of one hollow viscus into another. The following are a few illustrative examples: Treves saw an instance of the jejunum opening into the transverse colon; Bland Sutton, another of what he terms "an accidental anastomosis"; Guyon, one of the ileum and the transverse colon; Boas, one of a similar character; Hausmann, two ileocecal anas-

¹ Read before the Hartford Medical Society, Hartford, Conn., Dec. 22, 1902.

tomoses; Lacroze, four cases, fibrous bridges reinforced two. I have seen two instances myself in which the imprisoned feces of the colon by adhesions had established vicarious channels for escape—one of stricture of the splenic end of the colon, the cardiac end of the stomach being opened; in the other, an old physician, the bladder was opened. Talma's case belonged to this class, as well as one from Dr. Reeve's group.

Anastomosis, transplantation or carrying the loop of gut from the afferent end of the stenotic part to some point beyond, jointing it with the free coil of the sigmoid, or rather bringing the divided ileum over and anastomosing it at once with the sigmoid, is the ideal procedure; it relieves all strain and gives a free outlet to the excretory elements by a route entirely under control. It is true that this procedure quite completely excludes any digestive action on the part of the large intestine and leaves the local lesion untouched. Theoretically viewed, we can conceive many objections to this mode of short circuiting an overdistended crippled colon, but when we recall that it is utilized mostly in malignant disease as a substitute for artificial anus, it becomes a most acceptable substitute. Hennequin anastomosed the ileum with the sigmoid for inoperable cancer in a military officer. Immediate relief followed, with full recovery of health later.

Resection with anastomosis in stenosis of the colon has, of late years, become a well-established operation. Terrier has successfully removed the cecum, the ascending colon and the proximal half of the transverse colon for a cancerous growth, bringing up the ileum and anastomosing it with the remaining loop of the colon; the following day there was free movement *per anum*. The patient left the hospital on the thirty-seventh day after operation, having gained 4 kgr. In the medical literature of America and Europe, a large number of similar operations are recorded, and from year to year this number is growing, the ratio of successes steadily augmenting. One surgeon of large experience says that in the last quarter of a century the mortality in operations on the large intestine has been lowered from 50% to 20%. Bennett, however, writing in 1887, denied that "up to that time resection of the bowel could boast of but few successes"; but since that date no single division of operative surgery has achieved more notable triumphs, though fifteen years ago it was little more than in its experimental stages. Tierlink observes that "surgery alone can deal with tumors or stenosis of the sigmoid."

THE COMPARATIVE SEVERITY AND DANGERS OF VARIOUS SURGICAL PROCEDURES FOR ORGANIC STENOSIS OF THE LARGE INTESTINE.

The dangers attending the various modes of surgical intervention for the relief or cure of occlusion of the colon are influenced:—

- (1) By the pathological character of the lesion and its situation.
- (2) By the age, sex and the general condition of the patient.
- (3) By the mode of operative relief.

With few exceptions cases of organic stenosis

of the colon constitute a very undesirable class for major operations. This is notably true of malignant disease and the male sex, wherein this type of intestinal lesion most frequently occurs; rarely are these cases handed over to surgery till exhaustion is advanced, but little vital resistance remaining, and hence, from the shock of operative intervention, but very few survive. It is proverbial that the male subject is less tolerant of intraperitoneal exposure and manipulation than the female, and therefore the reason why the drastic resources of surgery are viewed askance, as a *dernier ressort* of questionable utility, here. But, very large as the mortality is, up to the present, for extreme cases, it is no larger than obtained after celiotomy for strangulated hernia twenty-five years ago, when the aid of surgery was seldom invoked until gangrene had set in, or the patient was in mortal collapse.

In internal as well as external strangulation of the intestine, the only hope of anything like satisfactory and effective results is by early intervention.

Rectal cancer.—Crook remarks that "there are no distinctive symptoms of cancer of the rectum, but diagnostic uncertainty is inexcusable—its early symptoms do not differ from the ever-popular piles."

This view is in the main correct, but it applies only to the advanced stages of the disease, and when it is located in the lower portion of the rectum.

It is true enough that piles may mimic quite every phase of malignant disease, and also be present when stricture of the gut co-exists, but there is one symptom in stricture never present in uncomplicated piles, "the fecal drip." A young woman came to my notice three years ago who had a cluster of piles excised in a private hospital, but her misery was greater after than before.

I found the rectum in its middle third stuffed full of cancer vegetations; and now she had the piles again, or rather a large eversion of the verge from powerful straining.

It is imperative, therefore, in every case of hemorrhoids, to pass the well-oiled finger high up the rectum that we may exclude a new growth or stricture before we deal with these in the way of treatment; as in many cases their presence is only symptomatic of other deep-seated or more serious trouble.

Sexual distinctions are important to remember. In colic obstruction, timely and judicious surgery should have a low percentage, inasmuch as the system still possesses active recuperative energy.

Artificial anus in intestinal obstruction is now regarded in essentially the same light as of an amputation of a limb; namely, an opprobrium of surgery. It is true we do not sacrifice the intestine, but by an enterostomy, we either temporarily place in abeyance one of the most important functions of the large bowel or destroy it; nevertheless, of all operative procedures for the relief of fecal impediment, from organic stenosis, an enterostomy is the simplest and safest. In several instances, we have no other choice. The ascending or descending colon are the safest sites to tap for artificial fecal evacuation, as the peritoneum is not opened. Because of its long free loop, its easy accessibility and adaptability,

sigmoidostomy or Maydl's operation is the most satisfactory for a free vent when the rectum is obstructed. Enterostomy may be utilized with advantage as a preliminary measure in certain cases where it is desirable to drain well an overdistended colon, and permit our patient to regain his strength before submitting him to the more formidable procedure of resection or anastomosis.

Resection and simultaneous anastomosis is the ideal procedure when the condition of the patient and the character of the lesion justify it, for the reason that we simultaneously remove the neoplasm or diseased segment of the bowel and re-establish its continuity at one operation. Of this procedure I can speak with confidence of its facility and infinite value from personal experience in gangrenous hernia, but in only two cases have I had an opportunity to employ it in the large intestine for a malignant growth.

One patient had a cancerous stricture about six inches above the peritoneal reflection of the rectum. Fecal stasis had so elongated the sigmoid loop that it measured about 20 inches in length; it rose well above the pubis, swinging over and resting upon the cecum.

I was enabled to locate the point of stricture very well before operation. Patient had never had vomiting nor passed any blood-stained feces, but was literally starved for fear of increasing the distention, and he only yielded to operation as obstruction was becoming more and more complete, and he became conscious of a steady loss of strength.

It was my original purpose to only tap and drain the colon, and later anastomose, but when the sigmoid was reached and it was found that the annular narrowed strictured part was readily accessible, I prepared for its clean excision with an immediate anastomosis. Having ligated an ample area of the mesentery, with the bowel well lifted out and the peritoneal cavity well protected, a cut was made three inches above the stricture into the bowel, transverse to its long axis. An enormous mass of feces was then pressed out, the incision was again closed and the bowel clamped in either end, well away from the scirrhus; now the strictured part was removed. It was then discovered that an end-to-end anastomosis was impracticable, because the gut below the stricture was abnormally narrowed and collapsed, while that above was at least four times its normal diameter, hypertrophied and rigid; it had a consistence very similar to the aortic arch. It was feared that the larger Murphy button would be adjusted here with difficulty, that it must long block the way before it could squeeze its jaws through the dense fibrous margin above. Therefore, it was decided that junction by lateral anastomosis would be the safest and most expeditious resource. This was readily accomplished, an opening three inches long being made at site of joining. Strong silk was employed for suture, applied after Connell's method and reinforced by several Lembert sutures, interrupted. The abdomen was closed without drainage. Patient bore the operation very well; passed a very comfortable night, no morphine given; no thirst; no vomiting. Morning temperature after operation 99°, pulse 100.1; no meteorism. At this time it looked as though he would have smooth sailing, with a good recovery in sight,

but unhappily there were breakers ahead. For the first day he remained easy, resting comfortably, from time to time calling for hot coffee, which he sparingly drank with great relish.

At seven o'clock on evening of the second day, he called for the bed-pan and had a very large fecal movement, consisting mostly of hard, large scybalous masses.

Thereafter, a sudden change set in, violent abdominal pain, distressing vomiting with alarming exhaustion. At 11.30 he passed away.

Autopsy twenty-four hours later. Abdomen widely distended with gases. Fecal fluids found oozing up through the wound. On opening the peritoneal cavity fully a gallon of thick fecal material escaped; at one side of anastomoses which had been united the silk sutures had torn out, where they had been placed in the thin, collapsed distal loop. From this breach the fatal escape came, probably in the straining, attending the evacuation.

By another mode of attack, it is now my belief this case should have had a favorable termination; namely, by first making an artificial anus in the center of the descending colon, then, some weeks after, resecting the growth and jointing, meanwhile leaving the lumbar fistula well open, until sound union had occurred below. But we are all rich in after-wisdom and resource, when a case goes wrong.

CONTAMINATION OF PERITONEUM — IMMUNITY TO INFECTION.

The combination operation of resection and anastomosis for colic obstruction, whether we do an end-to-end anastomosis or an exclusion, joining colon to colon, or uniting the ileum with the sigmoid, involves a free abdominal section in order that the part to be dealt with can come well into view.

We are dealing with the great sluiceway of the alimentary canal, always charged with malodorous gases and materials supersaturated by a great multiplicity of germ life; hence it must seem beyond the range of possibility to sterilize properly the peritoneum when the colon is freely opened; it is quite evident, however, that infection *per se* is not the principal danger here, but shock. We well know that the peritoneum manifests a singular tolerance to the colon's contents, where the escape is small and gradual, else every one would die who sustained a perforation of the appendix, which, we have come to well know, is not the case. Let one place the open hand on the distended colon's wall in the living, for a moment; when we withdraw it, it imparts a distinct fecal odor, which conclusively goes to show that exosmosis of gases from the intestine entering the serous cavity of the abdomen is a physiological condition.

Prof. Heinrich Stern, who has made an exhaustive study of the bacteria of the intestine and their *role* in disease, distinctly states, that "in conditions of health there are no pathogenic microbes in any of the area of the alimentary canal; as those domiciled there serve a purpose essential to digestion." He particularly insists that the colon bacillus is not a pyogenic germ.

As a matter of experience we know that wounds, incisions or sections of the large intestine heal with even greater rapidity than those of the ileum.

TECHNIQUE.

Precision in technique, with a deft manual acquired by experimental work in vivisection on animals, with ample practice on the cadaver, inspires the operator with confidence and permits of prompt execution in technique, which is of vital importance in reducing the dangers attending intestinal surgery, and is especially indispensable here.

The ileocecal valve may be quite disregarded when expediency requires its excision or exclusion. In one instance of large resection of the ileum, I was obliged to implant the free end of it on the anterior wall of the caput coli; prompt recovery followed, and now after more than two years there has at no time been any evidence of physiological disturbance in digestion resulting.

RESECTION AND ANASTOMOSIS — RECORDED CASES.

Joubert resected the splenic angle of the colon for cancerous stricture in a man of fifty-eight years, anastomosing the ends by aid of suture. The same night the patient had a natural evacuation, later, complete recovery. Charrier saw a young man of twenty-eight years with persistent constipation, fullness and pain in right iliac fossa; was thought to have "appendicitis." A large, free motion followed lavage, with complete relief. Five months later had another seizure, constipation now absolute. On operation found tumor involving hepatic angle of colon; this was resected and the open ends closed, ileum implanted in sigmoid loop. An hour after operation there was a large evacuation, later, full recovery.

In an elderly, wasted woman of fifty, eighteen months ago, I resected the hepatic flexure for a cancerous occlusion. The procedure was not attended with much loss of blood; but thirty-five minutes occupied in the operation; an end-to-end anastomosis was made and wound closed without drainage. Large fecal movement four hours later; death on third day from exhaustion. No autopsy.

Quènu considers at length the conditions essential for the best results when we essay resection, but strongly emphasizes its great dangers in those greatly wasted, especially if the lesion is malignant.

The late Gregg Smith said that once the presence of intestinal occlusion, by growth, is clearly made out, "it must be immediate surgery or none at all." And this rule is, on the whole, the best, as surgery as a last resource in this class is only too often a useless mutilation.

THE RECTUM.

The rectal end of the large intestine is the favorite situation of a great diversity of pathological conditions, leading to its contraction; in their order of frequency (1) tuberculosis, (2) cancer, (3) syphilis and (4) gonorrhea.

Cancer and luetic stricture are the types commonly calling for surgical relief. Two or three modes of intervention are, at present, most frequently resorted to here. The *first* and most common, as well as the safest, is by an enterostomy of the sigmoid above the pubis. This side-tracks the fecal current, and relieves urgent symptoms. The *second* is sacral resection in the male, or the vaginal in the female; both of these contemplating the

removal of the growth and rectal anastomosis. The *third* and latest involves a laparotomy, as well as a section from below, and then drawing the third segment of the sigmoid down into the hiatus, as a substitute for the displaced rectum; or after the diseased rectum is removed, establishing a left flank anus by the free, open end of the sigmoid.

Some of the elaborate, beautifully drawn illustrations of these operations, which we frequently meet, would lead the uninitiated to suppose that these procedures for rectal resection were simple enough, but here is the delusion, for some of these attractive cuts depict anatomical structures which do not exist as drawn, and are a product of the imagination of the artist, who is usually innocent of any knowledge of anatomy or pathology. Some of these procedures, as so set forth, are not only impracticable on the living body, but they are impossible of execution on the cadaver.

The accessibility of the upper segment of the rectum has been very much increased by the Trendelenburg position, but the difficulties in the way of high resection are sometimes quite redoubtable.

Mickulicz reports a hundred cases of carcinoma entering the Breslau clinic during the past eleven years, of which five were in the small intestine, six in the ascending colon, seven in the hepatic flexure, eight in the transverse colon, twelve in the splenic flexure, four in the descending colon, thirty-one in the sigmoid flexure, twenty in the cecum and twelve in various areas of the large intestine.

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Clinical Department.

SYMPTOMS SIMULATING APPENDICITIS CAUSED BY AN INTRA-ABDOMINAL BAND.

BY JAMES A. KEOWN, M.D., LYNN, MASS.,

Chief Surgeon, Lynn Emergency Hospital.

THE following case is reported to show that other conditions besides appendicitis may cause pain and tenderness in the right side of the abdomen, with a rise of temperature, as well as the need of more careful examination of the abdomen when a normal or nearly normal appendix is found at operation.

A. W., a boy of eight, has for two years had more or less distress in the abdomen in the vicinity of the umbilicus. At times, the pain for a few days would be quite severe. At these times tenderness would be quite marked at McBurney's point, also extending up to the umbilicus. The temperature would also be elevated during these attacks, and in the final one rose to 102.5° F. In two of the attacks vomiting was present, but not to a marked extent. On Sept. 30, 1902, patient after a long period of freedom from pain was seized with vomiting, pain in the abdomen and marked tenderness at the umbilicus and over McBurney's point, with rigidity. The temperature rose to 102° F. on the second day, and slowly subsided during the next week. At the end of two weeks there remained some tenderness on deep pressure at McBurney's point, with some rigidity.

During these attacks the patient was seen by another physician who diagnosed the case, appendicitis. As the mother was alarmed, and as the existence of appendicitis could not be ruled out, the patient was operated upon. On Sept. 30, 1902, under aseptic precautions, an incision was made over the appendix, and the usual McBurney's operation done. The appendix, except for being excessively long (six inches), was normal. On more careful examination for the source of the pain a band was found running from a loop of small intestine upwards to the umbilicus. This was ligated and removed; the stumps were turned inward covered by peritoneum. This on examina-

tion was found to leave an opening part way on the bowel side. At about the end in connection with the bowel, the peritoneum was granular and red. The abdomen was closed, and the patient made an uneventful recovery.

Medical Progress.

REPORT ON PROGRESS IN PATHOLOGY.

BY JOSEPH H. PRATT, M.D., BOSTON.

INTRACRANIAL TENSION.

THERE are two kinds of cerebral compression—local and general. In the former an unequal distribution of intracranial tension results, while in the latter the intracranial tension is distributed equally over the brain. A tumor, abscess, or blood-clot within the cranial cavity illustrate the former condition, in that they subject the brain to the effects of local compression. As the brain is practically non-compressible, the introduction of a foreign body within the skull cavity is only possible through the emptying of the vascular and lymphatic channels in the vicinity of the foreign body. General compression is produced, for example, by acute hydrocephalus, general meningitis and acute cerebral edema of the type described by Cannon and Bullard, which they attributed to alterations in osmotic pressure.

Cushing¹ observed the circulation of the cerebral cortex in dogs by inserting a glass window in the skull. Local compression was produced by distending a rubber bag, which was attached to the inner end of a cannula inserted through a trephine opening. The degree of pressure desired was obtained by allowing mercury to run into the bag from a burette. General compression was produced by allowing normal salt solution to enter the cerebro-spinal space through a rubber tube connected with a flask. The tension was regulated by the degree of elevation of the flask.

Moderate local compression of a hemisphere produced a distinct widening of the smaller veins in the portion of cortex exposed under the window and the veins became darker and easily distinguished from the arteries by their color. If the compression was increased until the intracranial tension equaled the capillary pressure the convolutions lost their rosy color and became blanched. The veins remained filled with dark, stagnant blood. Further increase of pressure caused remote parts of the hemisphere to lose their rosy color and to become anemic. If the compression was general, then the centers in the medulla were rendered anemic.

Venous stasis is indicated clinically by dilatation of vessels in the eye-grounds, and also by drowsiness, apathy or stupor. Anemia of the hemispheres may be produced by local compression without calling forth any symptoms, aside from some slowing of the pulse and alteration in respiration. This indicates that the medulla has not been compressed. Not until the degree of general compression nearly equals blood pressure do the major

¹ Mittheilungen aus den Grenzgebieten der Medizin und Chirurgie, 1902, vol. ix, p. 773; Amer. Journ. of the Med. Sci., 1902, vol. cxliv., p. 375.

pressure symptoms appear. The result of anemia of the medulla is not death, as commonly held, but a stimulation of the vasomotor center, which leads to a rise of blood pressure above the level of intracranial pressure. With this rise of blood pressure the rosy color could be seen to return to the blanched convulsion. If further increase of intracranial tension was produced experimentally anemia of the medulla again ensued and again was overcome by an additional rise of blood pressure. In some instances Cushing found that the blood pressure was held for a time as high as 250 mm. of mercury without evidence of vasomotor failure. This vasomotor reaction was shown to occur when both vagi had been cut. When the vasomotor control of the splanchnic area was eliminated by cutting the spinal cord, the action of the vagi was not able to raise the blood pressure.

Cases of fracture of the base with resulting hemorrhage into the subdural spaces observed by Cushing have given exact clinical confirmation of the experimental findings. The effused blood causes an increase of intracranial tension. When the tension becomes sufficient to produce anemia of the medulla by interfering with the circulation of that part the familiar clinical picture appears, with the slow pulse and respiration and the high, bounding, incompressible peripheral artery, whose tension can be measured at times almost at 300 mm. of mercury. The rise in blood pressure, which is an attempt to supply the vital centers in the medulla with blood, serves only to increase the hemorrhage and thereby to increase the intracranial tension, which was the primary cause of the stimulation of the vasomotor center. Thus a vicious circle is established, and the vasomotor center rapidly fails. Vasomotor failure is indicated by the characteristic rapid pulse of low tension. Arrest of respiration precedes that of the heart. In a patient at the Johns Hopkins Hospital the heart continued to beat twenty-three hours after spontaneous respiration had ceased.

The Traube-Hering waves were frequently observed in the experiments when the vasomotor center was severely taxed to maintain the blood pressure above the intracerebral pressure. The tops of these rhythmic blood-pressure waves rise above, and their hollows fall below the level of the intracranial tension. The low-pressure stage leads to anemia of the respiratory center, and temporary cessation of respiration results. Hence respiration resembling in character the Cheyne-Stokes type is seen.

METHODS FOR DETERMINING THE BLOOD PRESSURE IN MAN.

Stanton² discusses the methods now in use for making clinical estimations of the blood pressure. The principles upon which they are based are set forth and an original apparatus for determining both the systolic and diastolic pressure described.

CLINICAL STUDIES OF THE BLOOD PRESSURE.

Briggs³ presents the results of a clinical study of the blood pressure as measured by the Riva-Rocci sphygmomanometer in various morbid conditions.

The value of a knowledge of the blood pressure in the diagnosis of obscure comatose conditions was shown by a case in which a large cerebral hemorrhage was found postmortem projecting into the lateral ventricle. When brought to the hospital the patient was comatose and the reflexes were absent. There were no localizing symptoms, and from the character of the urine the diagnosis of uremia was made. The blood pressure was enormously high, so high that it could not be accurately determined with the apparatus at hand, but at least equal to 400 mm. of mercury. There is no record of such a high blood pressure in nephritis or uremia, and the author believes that in any similar case the diagnosis of intracranial hemorrhage could be based on the blood pressure alone.

The maximum blood pressure was recorded at intervals of from two to five minutes in a series of cases which were receiving one or another of the "stimulant" drugs. Whisky produced a temporary rise in blood pressure never lasting over thirty minutes, and followed by a slight fall below the former level. Sometimes the initial rise was absent. The total effect of alcohol, therefore, on the vasomotor system is depression. Tincture of capsicum in small doses was found to produce an equal rise, which was not followed by a fall. This supports the view that the primary rise in pressure which alcohol produces is due to gastric irritation. Strychnia hypodermically in moderate doses caused a rise in blood pressure which lasted for from one to three hours. Digitalin had a similar though less marked action. Briggs states that subcutaneous infusions of normal saline solution do not cause any rise of the blood pressure. He concludes that the use of strychnia and digitalin meets the first indication in the treatment of many cases of shock, and these drugs should be given in such quantities as will have the best effect on the blood pressure.

In healthy children Cook⁴ found the blood pressure during the first six months ranged from 75 to 90 mm., during the second year from 85 to 95 mm. and during the remainder of early childhood from 90 to 110 mm. For a child over eighteen months of age 80 was considered moderately low, 70 to 75 low and 60 very low. The author tested the value of blood-pressure determinations as a guide for stimulation in sick children. Alcohol, he states, in repeated doses appeared to have a beneficial effect on blood pressure. Strychnin exerted a more positive action. Hypodermic doses of $\frac{1}{400}$ gr. to infants during the first year and $\frac{1}{100}$ during early childhood usually produced a rise in ten to twenty minutes, which was maintained for two to six hours. With digitalin the rise began, as a rule, in from five to ten minutes, and sometimes amounted to 20 or 30 mm. and lasted from one to two hours.

THE ORIGIN OF THE GRANULAR LEUCOCYTES.

Ehrlich and others have held that the granular leucocytes are formed in the bone marrow. The results obtained in the exhaustive study made by Brinckerhoff and Tyzzer⁵ bring additional support to this view. The bone marrow is regarded as the chief source, if not the only source, of the amorphophilic leucocytes of the rabbit, which are the

² Univ. of Penn. Med. Bull., 1903, vol. xv, p. 466.

³ Johns Hopkins Hosp. Bull., 1903, vol. xiv, p. 35.

⁴ Johns Hopkins Hosp. Bull., 1903, vol. xiv, p. 37.

⁵ Journ. of Med. Res., 1902, vol. viii, p. 449.

homologues of the polynuclear neutrophils of man.

In the early stages of mild peritonitis, produced by the injection of a dilute suspension of turpentine, the amphophilic leucocytes accumulate in the mesenteric vessels and in the surrounding tissues. Coincident with this the number in the peripheral blood decreases but later increases, and the bone marrow becomes depleted of adult amphophilic leucocytes.

The adult amphophiles are formed from the undifferentiated marrow cells, which cannot be distinguished from lymphoid cells. The undifferentiated marrow cells are of small size, with a round vesicular nucleus and a moderate amount of protoplasm, which contains a basophilic cysto-reticulum. Every intermediate form is found in the marrow between these simple cells and the adult amphophile. In addition to the formation of amphophiles by differentiation of these simple cells they may arise by multiplication of the myelocytes. The amphophiles do not multiply.

The supply of amphophilic leucocytes in the circulation is kept up by the entrance of fully formed cells from the bone marrow. The hypothesis is advanced that the chemical composition of the blood serum exerts a chemiotactic influence on the leucocytes in the bone marrow and draws them into the circulation. A leucocytosis is only an indication of an increase of the chemiotactic substances in the blood.

MAST CELLS.

It is not generally known that the granules of mast cells are soluble in water. The granules of the mast cells which are present in such very small numbers in normal blood have more resistant granules than the mast cells in leukemic blood. In 50% alcohol Michaelis⁶ found the granules remained intact. He has devised the following staining method:

(1) The blood spreads are fixed by heat or alcohol.

(2) Stain about five minutes in a saturated solution of thionin in 50% alcohol.

(3) Wash quickly in 50% alcohol.

(4) Dry.

(5) Mount.

The mast-cell granules stain reddish brown to reddish violet. The nuclei stain blue.

THE NATURE AND STRUCTURES OF THE BLOOD PLATELETS.

The blood platelets have been generally considered to be structureless bodies. Some authorities have regarded them as degeneration products of the red blood corpuscle. Dekhuyzen⁷ and Deetjen,⁸ working independently, have found that the blood platelets are ameboid nucleated cells. This important discovery has since been confirmed by a number of investigators.

Dekhuyzen studied the living blood cells in solutions of sodium chloride, which were isotonic with the blood. For amphibians he found 0.8% NaCl the proper concentration, for mammals, 0.9 to

0.95% NaCl. All the glassware used in the preparation or preservation of this saline solution and slides and cover-slips were carefully cleaned with fuming sulphuric acid and then strongly heated before they were used. The water was distilled in an apparatus consisting entirely of glass. The sodium chloride was purified by repeated meltings and crystallizations.

The salt solution was sterilized in small high beakers, each of which was placed in a Petri dish and covered with a larger inverted beaker.

The streaming blood was well mixed with the salt solution. Some of the sediment was removed with pipettes and examined under large cover-slips (from 3 to 5 cm. in size).

As a fixing and staining medium, Dekhuyzen employed a mixture of either three or nine parts by volume of 2% osmium tetroxide (OsO₄) and one volume of a 6% acetic acid which contained $\frac{1}{2}$ % methylene blue.

To demonstrate the blood platelets in man, the solution containing nine parts of osmium tetroxide should be used. The solution is cooled in a vessel packed in ice. Then the cold fluid should be vigorously stirred with a bleeding finger tip.

From his studies Dekhuyzen concludes that in worms, echinoderms, mollusks, crustacea and vertebrates this cell has the same function. It is an ameboid, finely granular spindle cell with an oval nucleus. In the circulating blood its surface is smooth. It is very vulnerable. As soon as it leaves the blood stream its circumference enlarges through the formation of protoplasmic lamellae, which unite to neighboring cells so that a great accumulation of cells arises, and thus a thrombus is formed. The name "thrombocyte" is adopted as preferable to blood platelet, as it indicates the apparent nature and purpose of these bodies.

Argutinsky⁹ has been able to demonstrate the nucleus of the blood platelets in cover-slip preparations which were fixed in a mixture of mercuric chloride and alcohol and stained by the Nocht-Romanowsky method. The blood films should be very thin, and at once immersed in the fixing fluid. The stained nucleus of the platelet has the same color as the nucleus of the lymphocyte. The surrounding zone of protoplasm is pale blue.

SMALLPOX THE RESULT OF A SYMBIOSIS OF THE SPECIFIC MICRO-ORGANISM AND STREPTOCOCCUS PYOGENES.

Although Ewing¹⁰ does not maintain that *Streptococcus pyogenes* is the specific contagium of variola, he believes that there is a symbiosis of *Streptococcus pyogenes* and the specific agent, and that it will be impossible to produce the disease without the aid of this micro-organism.

THE PUSTULATION IN SMALLPOX NOT DUE TO BACTERIA.

Shamberg¹¹ holds from his observations that the pustulation in smallpox is not due to secondary infection with any of the ordinary pyogenic bacteria, but is probably the result of the action of the micro-organism which produces the disease. *Streptococcus pyogenes* and other bacteria were rare in the early

⁶ Münch. Med. Woch., 1902, p. 225.

⁷ Anatomischer Anzeiger, 1901, vol. xix, p. 529.

⁸ Arch. f. path. Anat., vol. clxiv, p. 239.

⁹ Anatomischer Anzeiger, vol. xix, p. 552.

¹⁰ Trans. Assoc. Am. Phys., 1902, vol. xvii, p. 209.

¹¹ Journ. Am. Med. Assoc., 1903, vol. xi, p. 439.

lesions. In the variolous fluid the so-called sporozoa described by Guarnieri were always present.

ACID-RESISTING BACTERIA.

Abbott and Gildersleeve¹² conclude that the majority of the acid-resisting bacteria may be distinguished from the true tubercle bacilli by their inability to resist decolorization by a 30% solution of nitric acid in water. Some of the acid-resisting bacteria are capable of causing in rabbits and guinea pigs nodular lesions suggestive of tubercles. These nodules are always seen in the kidneys, occasionally in the lungs, and practically not at all in the other organs. They do not undergo caseation, and dissemination never occurs. Although sometimes present in dairy products, they have no pathological significance, and are the result of accidental contamination from the surroundings.

ALTERATIONS IN THE RED BLOOD CORPUSCLES IN CARCINOMA OF THE STOMACH.

It has been shown that in icterus and in infectious diseases there is an increased resistance of red blood corpuscles to hypotonic sodium chloride solutions. Lang¹³ has devised a method of determining the resistance of red blood corpuscles against the hypotonic sodium chloride solution. The method depends upon the fact that as red blood corpuscles go into solution, the mixture becomes transparent. He studied seventeen cases of carcinoma of the stomach, and twenty other cases of stomach disease, and found that resistance of erythrocytes to lowering of the osmotic pressure of the surrounding fluid is generally greater in cases of carcinoma than in other stomach diseases. He attributes this change to toxic products formed by the neoplasm. This condition becomes more marked as the disease progresses. The author suggests the hypothesis that a toxin formed by the new growth causes at first hemolysis, but later the red blood corpuscles grow more resistant to the toxin, and this same resistance acts against hypotonic solutions.

LECITHIN AS A COMPLEMENT.

Keyes¹⁴ found that the erythrocytes of some animals were hemolyzed directly by venom, while the erythrocytes of other species were hemolyzed only after a complement was added. Not all the corpuscles in any animal showed the same susceptibility. The red blood corpuscles of dog and guinea pig were most susceptible, of horse very little, and of ox, sheep and goat, not at all, but hemolyze on addition of a complement.

Keyes shows that an endocomplement exists in red blood corpuscles, and that a definite chemical crystallizable substance, lecithin, can assume, in a certain sense, the rôle of complement. He thinks that lecithin and cobra amboceptors come into union, and by this the avidity of the cytophile group of the cobra amboceptors is heightened. He holds that the venom amboceptors, besides a cytophile group, have two heptophore groups, of which one can bind the ordinary complement and the other the lecithin.

A STUDY OF SNAKE VENOM.

Flexner and Noguchi¹⁵ found that red blood corpuscles washed free from serum were agglutinated but not dissolved by snake venom. If serum was added hemolysis appeared. They conclude that venom contains several or many amboceptors, which become active through certain constituents of the serum. Venom contains principles which are agglutinating and dissolving for white blood corpuscles. The agglutinating principles may be identical for both white and red cells. The dissolving principle for leucocytes is distinct from that for red cells. In order that solution of venomized leucocytes shall occur, a complement-containing fluid is required. All venoms when used in considerable quantities destroy the bactericidal properties of many normal blood sera. The manner of this destruction consists in the fixation of the serum complements by the venoms.

Antivenom neutralizes venom and removes both the hemolytic and the anti-bacteriolytic actions.

Recent Literature.

Applied Surgical Anatomy, Regionally Presented for the Use of Students and Practitioners of Medicine. By GEORGE WOOLSEY, A.B., M.D., Professor of Anatomy and Clinical Surgery in Cornell University Medical College; Surgeon to Bellevue Hospital, New York, etc. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1902.

This book is an octavo volume of 511 pages, attractive in appearance, of convenient size, and printed with clear, distinct, easily read type. The text is illustrated with 125 illustrations and diagrams, including 59 full-page "inset" plates in black and colors. It has a vast amount of anatomical knowledge of a topographical, physiological, pathological and clinical character condensed in its pages. The writer claims that, as anatomy is the most basic of all medical sciences, a working knowledge of its data is indispensable for the study and practice of scientific medicine or surgery. Isolated details do not usually arouse a student's interest, but when set forth in their natural relationship and their practical application emphasized as well as indicated, the mind not only grasps but retains them with ease, oftentimes even with pleasure.

Dr. Woolsey has endeavored to embody these principles in this work in such a manner as to meet the requirements of both students and active practitioners.

After an experience of twelve years in anatomical teaching, he believes that the regional and topographical method of treating "Applied Anatomy" is the most convenient for clinical purposes. One might say that after the study of surgical anatomy comes the study of anatomical surgery, or, perhaps, more correctly, that the one should go hand in hand with the other, so intimately are they connected.

In making this book the author has combined what facts his own study, observation and experi-

¹² Trans. Assoc. Am. Phys., 1902, vol. xvii, p. 37.

¹³ Zeitsch. f. klin. Med., vol. xlvii, p. 153.

¹⁴ Berlin. klin. Woch., 1902, pp. 886, 918.

¹⁵ Journ. of Exp. Med., 1902, vol. vi, p. 277.

ence have shown him to be important as well as of value with the best he has been able to collect from the writings of others, notably Joessel, Tillaux, Merkel, Gerrish, Testut, Keiller and Zuckerkandl. The classification of the subject is regional; the anatomy that of one skilled in modern methods of studying and presenting the subject. The detailed description of the relation of important structures is often exceptionally full and satisfactory. One notes this in connection with the description of the parotid and its environments, an area usually presented as if projected on a plane surface without much attention to perspective topographical detail. The especial anatomy of the orbital region is another illustration of this point which attracts attention. Again the manner of graphically presenting in colors the areas of the cutaneous nerve supply is exceedingly convenient and satisfactory to one wishing to apply such knowledge to a particular case clinically. The same is true of the table showing the relation of the origin of the spinal nerves to external anatomical landmarks; also that indicating their peripheral distribution.

As one studies these pages one is continually finding data the practical value of which is readily appreciated by any one engaged in clinical work, especially diagnosis and operative surgery. The book will also prove to be one of marked value to the medical practitioner as well as to those whose chief work is surgery.

The illustrative portion of the book is a striking feature. The illustrations (so important a part in a work of this character) are well chosen, are excellently well made and form a valuable adjunct to the text. The author has apparently fully appreciated the value of the graphic method of teaching, but has by no means subordinated the rest of the subject to this feature, as is often done. It is in no sense a mere "picture" book, since each factor is presented in its just proportion to form an harmonious whole.

After an inspection of the volume one does not hesitate to congratulate the writer on the success of his efforts and to welcome gladly his contribution to medical literature. It is a book that will be extensively used, especially by those whose work requires a knowledge of topographical or one might say "applied" anatomy above the ordinary.

Diseases of the Stomach. Their Special Pathology, Diagnosis and Treatment, with Sections on Anatomy, Physiology, Chemical and Microscopical Examination of Stomach Contents, Dietetics, Surgery of the Stomach, etc. By JOHN C. HEMMETER, M.D., Philos. D., Professor in the Medical Department of the University of Maryland, Baltimore, etc. With many original illustrations, a number of which are in colors, and a lithograph frontispiece. Third enlarged and revised edition. Philadelphia: P. Blakiston's Son & Co. 1902.

Professor Hemmeter not only writes excellent books, but has the faculty of keeping them up to date. The present volume is no exception. It contains one hundred pages more than did the first edition published in 1897, and the text shows real revision. New work, whether from the physiological, chemical, pathological or clinical standpoint, has found a place. As a single example of the additions in

bibliography, we would mention that the literature of gastric cancer has been enriched by nearly one hundred and fifty references.

The author apparently feeds his ulcer patients by the mouth three days after hemorrhage, and suggests that ulcer patients, when well nourished, can go several days without nutrient enemata in the beginning of treatment. We surmise, however, that he seldom goes to such extremes. We are in accord with the view that chronic continuous flow of gastric juice is a secondary rather than a primary disorder. The author advises operation for gastric cancer quite freely. It would appear to us that a decided reaction had taken place in the last two years against such operations, the field now being reserved for exceptionally favorable cases.

It must be a source of gratification, as it is of congratulation, that views expressed as hypotheses in the first edition, in the third, through the results of experimental study, can be recorded as facts. We have reread the volume with interest and profit, and can heartily recommend it.

E. P. J.

A Reference Handbook of the Medical Sciences, Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By various writers. A new edition, completely revised and rewritten. Edited by ALBERT H. BUCK, M.D. Volumes IV and V. New York: William Wood & Co. 1902.

Considering the natural difficulties in the prompt publication of a book of this character, it must be gratifying alike to editor and readers that already five volumes of the set have been distributed. Volume IV takes us partly through the letter "I," and Volume V into the letter "M." Many important subjects are considered in those two volumes, among which many be mentioned an excellent discussion of the eye, of the heart and its diseases, an important résumé of our knowledge of inflammation, and a detailed treatment of the lymphatic system, together with a series of carefully prepared papers on the general subject of insanity. It is unnecessary to say that the exceptionally high merit of the earlier volumes has been continued in these, both in respect to the subject matter and the admirable accompanying illustrations, which are exceptionally profuse and well executed for a work of this character. Three further volumes are expected, with which this most successful edition of a well-established reference handbook will be completed.

A Nurse's Guide for the Operating Room. By NICHOLAS SENN, M.D., Ph.D., LL.D., C.M. Illustrated. Chicago: W. T. Keener & Co. 1902.

This book of 132 pages is written to serve as a guide to the trained nurse in her work in the operating room. The text is stated to be chiefly abstracts of Dr. Senn's lectures to the Training School of St. Joseph's Hospital, Chicago.

For descriptive purposes, the book may be divided into two parts; one of which treats of the usual details described in nurses' manuals, such as sterilization, methods of preparation for operative work, dressings and surgical materials, use of anesthetics, etc., while the other consists of lists of instruments which Dr. Senn is in the habit of using for different operations, illustrated more or less by cuts of instruments and apparatus.

There is an opportunity for just such a book as Dr. Senn has apparently attempted to write, but this publication, although a neat, attractive volume of convenient size, will, we fear, answer the *general* demand only indifferently well. The rambling description of the subject suggests the unsystematic extemporaneous lectures so frequently delivered to a hospital nurse, the subject matter of which (good, bad and indifferent) is evolved from the speaker's personal ideas and experience under the inspiration of the moment and the suggestions of his environments. There is apparently a lack of care in the arrangement of both text and illustrations.

If the book is intended only as a guide for Dr. Senn's assistants it will undoubtedly serve such a purpose satisfactorily; but the details of technique described are of such a local and personal character as to prove rather disappointing to one seeking a systematic manual in this branch of technical work.

The plan of using illustrations of instruments in common use, in order to familiarize a nurse with their names and purposes, is an excellent one.

Clinical Methods. A Guide to the Practical Study of Medicine. By ROBERT HUTCHINSON, M.D., M.R.C.P., and HARRY RAINY, M.A., F.R.C.P. Ed., F.R.S.E. Fifth edition. 612 pp. Chicago: W. T. Keener & Co. 1902.

In trying to condense into a volume of this size so extensive a subject, which includes a description of all the physiological, chemical, bacteriological and clinical methods useful in present-day practice, the authors fail, as it seems to us obvious they must fail, to produce a book of real value. The subjects are of necessity briefly and too superficially considered, omissions are inevitably made, and, in spite of the evident pains taken to bring the subject matter up to date, important recent material and conclusions have not been introduced. Comprehensive treatment of any one subject is impossible in the space allotted to it, and the book lacks the value which such treatment of any one subject might furnish as a suggestion for similar lines of investigation in other directions.

The book has, however, had a wide sale, having now reached its ninth thousand.

Lea's Series of Pocket Textbooks: Anatomy. A Manual for Students and Practitioners. By WILLIAM H. ROCKWELL, JR., M.D., Formerly Assistant Demonstrator of Anatomy in the College of Physicians and Surgeons, Columbia University, New York. Series edited by BERN B. GALLAUDET, M.D. Illustrated with 70 engravings. Philadelphia and New York: Lea Brothers & Co.

Gray's classical textbook of anatomy apparently serves the double purpose of providing students and practitioners with a practical guide in their anatomical work, and also in forming the basis upon which smaller textbooks may be written. The author of this manual claims no originality for his work, inasmuch as it is a compilation from Gray's Anatomy, which has been closely followed in order and description. The book is conveniently arranged and printed with type of such a character that quick reference is facilitated. The binding and general appearance of the volume is the same as that of others of the series which have already appeared.

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IMMUNITY.

THERE is perhaps no question relating to medicine which has received so much attention from investigators during the past ten years, and which is so pregnant with possibilities for the future, as the subject of immunity. Its importance would seem to be sufficiently evident if the term were applied in its narrower sense, that is to say, in its relation to infectious diseases; but even a short excursion into the realm of recent literature shows that the term "immunity" as now used is a broad one, which cannot be circumscribed by considerations affecting bacteria and their products alone, but must be enlarged to include animal and vegetable cells of very varying character and origin. To the already well-known types of immunity seen after diphtheria, tetanus, typhoid and cholera, must now be added other varieties of immunity such as those produced by the action of red corpuscles, white corpuscles, spermatozoa, etc.; for all these cells, bacterial or otherwise, when introduced in a proper manner into susceptible animals, produce tissue changes through which the animals acquire an increased resistance to those cells or their products, and it is the study of just these phenomena of increased resistance and its causes which offers such a bright outlook for progress in a number of directions, and especially in that of serumtherapy.

Although broad foundations for this study had been laid already by such men as Behring, Roux and Pfeiffer, at present the most important names associated with this question are those of Ehrlich in Germany and Bordet in France, and of these two, Ehrlich undoubtedly holds the higher place. It is to Ehrlich that we owe the now well-known "side-chain" theory, which, though not perfect, furnishes the best working hypothesis yet dis-

covered for the explanation of immunity, natural and acquired. According to this theory the process of intoxication such as is seen in diphtheria, for instance, is not in its essence pathological, but is, in large degree, analogous to physiological processes as seen in the assimilation of food. That is to say, the diphtheria toxin is poisonous because there are certain body cells which take it up; which have certain "receptors" which attract and unite with the toxin just as the cell attracts and assimilates from the blood certain food molecules. On the other hand, if a certain animal is resistant to a certain toxin, it is because the cells of that animal possess no receptors capable of uniting with that toxin. When, however, the toxin becomes once anchored to the cell the analogy to physiological processes, just mentioned, ceases, for in this instance, the toxic molecule causes an injury to the cell, that is, an intoxication. This injury the cell, if not too severely damaged, hastens to repair, but, according to the general law of repair, does not content itself with a simple *restitutio ad integrum*, but reproduces in excess that very portion of the cell which in the first instance united with the toxin. This excess is thrown off into the blood current, and there, by its continued affinity for the poison, acts as antitoxin. By the immunization of animals with gradually increasing amounts of toxin, we get finally the production of these cell receptors or antitoxin in great excess, and it is by these newly formed cell constituents, now free in the blood, that the toxin in diphtheria is neutralized and kept from its injurious action upon the body cells.

The problem, as thus outlined, is the one seen in diphtheria and tetanus, and is comparatively simple. When we come to the consideration of typhoid and cholera, however, the question becomes much more involved. Pfeiffer in all his monumental work upon typhoid and cholera immunity could not produce a true antitoxin for these diseases. His sera were of the bacteriolytic variety, that is, they could dissolve, under proper conditions, the bacterial cell, but could not neutralize its toxic product.

It was at this point that the studies upon hemolysis and allied processes began, and as hemolysis and bacteriolysis follow practically the same laws, the two processes may be considered at the same time.

In the first place we soon find that, in their relation to the "side-chain" theory, hemolysis and bacteriolysis are subject to conditions much more complicated than those seen in intoxications of diphtheria and tetanus. To be sure we have to do still with receptors and their indefinite multiplication as the result of inoculations with the especial

variety of cell, but, whereas the receptor (or antitoxin) in diphtheria was of a simple variety known as a "uniceptor," with but a single bond of affinity, in bacteriolysis the specific body obtained as the result of immunization is an "amboceptor," with two bonds of affinity, one for the special cell and the other for a second substance, now spoken of for the first time, and known as the complement. This complement is a nonspecific body present in nearly all normal sera, and resembles in nature the ferments. It is very unstable, is destroyed at $58^{\circ}\text{C}.$, and disappears from a serum spontaneously with considerable rapidity. It thus differs markedly from the specific immune body or amboceptor, which is stable, resists heat ($58^{\circ}\text{C}.$), and can be preserved unchanged for considerable lengths of time.

Now, for the destruction of the special cell, both the immune body (amboceptor) and complement are absolutely essential, the amboceptor acting as a connecting link, through which alone the complement can exercise its destructive power upon the cell. Neither substance can act in the absence of the other. That this is a fact of the utmost importance can be seen easily when we learn that, in the process of immunization (of a horse against typhoid for instance), it is the immune element alone which is increased to any extent. The amount of complement remains practically unchanged. The probable cause for the failure of serumtherapy in this class of diseases is thus apparent. We have supplied the patient with the immune element probably in excess, but have achieved no convincing results because of lack of complement. The moral is obvious.

It seems, therefore, almost certain that in natural as well as acquired resistance to disease these complements, acting through natural or acquired amboceptors, are the defensive agents, and in support of this view may be mentioned the experiments of Longcope on terminal infections; Abbott, on the influence of alcoholic poisoning on susceptibility to infectious disease; and Moro, on the sera of breast-fed and bottle-fed infants. Terminal infections, alcoholic poisoning and bottle-feeding were all associated with marked decrease in the complements of the blood. These experiments suggest, immediately, of course, an explanation for the high mortality of alcoholics in pneumonia, for instance, and that of artificially fed infants as compared with the breast-fed. The field for investigation in this line is really unlimited. For instance, why do certain families succumb to tuberculosis? Is there not a lack of complements? Are the complements increased by outdoor life? Was there not something good in that treatment of tuberculosis in which patients drank fresh blood at the slaughterhouses?

Another line of inquiry would have in view a serum antagonistic to cellular growths of malignant types,—cancer and sarcoma. Such sera have been produced by injecting animals with the proper cells, but the results of treatment are as yet discordant.

Finally, the far-reaching studies in hemolysis cannot but throw much light on the subject of the severe anemias, the causes of which have been up to the present far from established.

That the study of these subjects is most promising is shown furthermore by the large number of investigators engaged in it. All the world is represented in the work, and we may look with confidence to very important results in the near future.

AN IMPROVED OPERATION ON THE FIFTH NERVE.

WITH the extirpation of the Gasserian ganglion or the division of the sensory root of the fifth nerve, between the ganglion and the pons, the last word on operations for tic douloureux has apparently not been said. Dr. Robert Abbe of New York, in a paper in the January number of the *Annals of Surgery*, reopens the question and suggests a new procedure, the usefulness of which has been confirmed in his experience. The plan which he suggests as feasible and reasonable is to divide the second and third divisions of the nerve within the skull at the foramen rotundum and foramen ovale, evulse the portions connected with the Gasserian ganglion and then interpose a piece of rubber tissue under the dura in such a way as to cover the foramina, thereby making a barrier to the regenerating nerves. Inasmuch as the return of pain after operation is usually dependent upon the regeneration of the nerve, which even an excessive amount of violence fails to prevent, it is clear that any method by which the nerve can be prevented from re-establishing its continuity fulfils the demand which this operation makes upon the surgeon. This the interposition of the rubber is said to accomplish.

An interesting case is reported of a man of forty-six, upon whom the Hartley operation was attempted, with such excessive hemorrhage that it was necessary to pack the wound a number of times before the nerves were satisfactorily exposed. The ganglion was not removed because of continued hemorrhage. The second and third branches were cut and destroyed as far as possible up to the ganglion, and to prevent the future union of the divided nerves a small sheet of sterile rubber was interposed under the ganglion, covering the two foramina. A good recovery followed, and now, at the end of six years, there has been absolutely no return of pain.

The presumption is that the rubber tissue has remained as placed at the time of the operation. A similar procedure has been successful in five cases.

Dr. Abbe very rightly claims several advantages for this operation as compared with the more radical ones in which the Gasserian ganglion is itself destroyed. There is less hemorrhage, less shock, less danger of injury of the temporal lobes of the brain, with an equal likelihood of permanent relief of pain. Statistics have shown that the Gasserian ganglion operation is by no means devoid of danger, particularly since the operation must often be undertaken with patients who are debilitated and often the victims of arteriosclerosis. For example, in a series of cases reported by Lexer and Türk, of seventeen fatal cases, eleven died from shock. Dr. Abbe believes that operations on the ganglion have been carried to an unnecessary degree of severity; that the interposition of rubber tissue may be relied upon to effect a complete relief of pain at least for six years, and that the method is simple, speedy and safe.

A wide experience must always be the final arbiter in such matters, but it certainly seems as if this operation should so far commend itself to other surgeons that the opportunity to gain this experience may not be long delayed. The mechanical conditions necessary to keep a foreign body in place could hardly be better in any other part of the body; if the rubber tissue remains fixed, and does not disintegrate before the nerve has lost its reparative power, the conditions of success are apparently assured.

STATE REGISTRATION OF NURSES.

A MASS meeting has recently been held in Boston by nurses and those interested in the cause of nursing for the purpose of influencing public opinion to the end of securing registration for nurses in the same general way that it is provided for physicians. A number of nurses spoke at this meeting, as well as laymen and physicians, with the consensus of opinion that a plan of organization looking toward state registration is highly desirable. It is undoubtedly true in nursing, as in all other professions, that men and women of very different attainments enter into it as a means of livelihood. It is desirable, therefore, that so far as possible a uniform standard of requirements be established, both for the protection of the nurses themselves and for the benefit of the community at large. So far as we understand the plan proposed, it is suggested that certain qualifications be demanded of nurses seeking registration, which will tend to establish a class of nurses who have a certain recognized attainment. To accomplish this end in a short period of time is naturally impossible, but it is maintained that any movement

looking toward the final establishment of a distinction between good nurses and inefficient nurses will be subverted by such legislation as is proposed. It is furthermore expected that through such a plan of registration the possibility of such occurrences as we have recently seen in the person of Jane Toppan will be unlikely, if not impossible. In general, we are of the opinion that the time may come for nurses to organize themselves as a profession and to seek legal recognition of this fact. A beginning has no doubt been made by the meeting to which we have referred.

MEDICAL NOTES.

INTERNATIONAL MEDICAL CONGRESS. — The Executive Committee of the Fourteenth International Congress of Medicine announces that the congress will be held on the date set, April 23 to April 30, inclusive. The exact program is in process of preparation, and the committee desires those intending to contribute to the congress to send as soon as possible titles of their communications to the secretary-general at Madrid, accompanied, if possible, by an abstract, preferably written in French. It is intended to have these abstracts printed and to use them to facilitate the discussions at the various sessions. Railway and boat fares have been reduced about fifty per cent for the benefit of those attending the congress.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 4, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 34, scarlatina 52, typhoid fever 7, measles 16, smallpox 0.

THE FAULKNER HOSPITAL. — The new Faulkner Hospital, at the corner of Centre and Allandale streets, Jamaica Plain, was opened to the inspection of the general public on February 25. It is a free hospital given to the old town of West Roxbury by the late Mrs. Abby L. A. Faulkner and her husband, Dr. George Faulkner. It contains at present twenty-five beds, which will be increased to fifty by later extensions. Dr. Henry Jackson has been appointed advisory physician, and Dr. Franklin G. Balch, advisory surgeon. The hospital is to be opened for patients on March 9.

DEATH FROM CHLOROFORM. — It is reported that a death took place lately in Ashmont from chloroform administered for purposes of surgical anesthesia to a young and healthy lad.

FAMOUS TRIPLETS. — It is reported that Mr. William A. Grant, one of three brothers who were triplets, died recently in Torrington, Conn., at eighty-one years of age. The other two brothers lived to be seventy-two and seventy-six years old respectively. The seventieth birthday of these men was celebrated in 1891, by a mass meeting in the town hall, and a banquet.

NEW YORK.

NEW BELLEVUE HOSPITAL BUILDING. — At a meeting of the Board of Estimate and Apportionment held Feb. 27 an appropriation of \$75,000 was passed for preliminary work on the proposed new buildings for Bellevue Hospital, the total cost of which is to be about \$3,000,000. It is understood that Messrs. Hynes and La Farge, whose designs were successful in the competition for plans for the Episcopal Cathedral of St. John the Divine, have been selected as the architects. A new building for Fordham Hospital, in the Borough of the Bronx, to be erected at a cost of \$500,000, was also determined upon. An appropriation had already been made for a new building for Harlem Hospital, and next month work on its erection is to be commenced. It is to be situated on Lenox Avenue, between 136th and 137th streets, and the plans contemplate a five-story brick structure in the form of a T, with a frontage on the avenue of 157 feet. Two ward wings will extend back from the main building 37 feet, and a central administration building, 200 feet. The estimated cost is \$300,000, and it will accommodate 150 patients. The extension of the two ward wings, which may be made later, would double this capacity.

MEDICO-LEGAL DECISIONS. — In accepting a plea of murder in the second degree in the case of William Hooper Young, a grandson of Brigham Young, who has been on trial for the murder of Mrs. Anna Pulitzer, Justice Merrick made an address to the jury in the course of which he said: "The man's mental condition was the cause for the action taken. You are aware that this man has been under medical observation. The experts reported him legally sane, but insane from a medical point of view. He is, therefore, supposed to know the difference between right and wrong, and should be held responsible. But as his insanity has been reported to me as being of the progressive order, it is difficult to tell where the one merges into the other. It seemed to me that, under the circumstances, the jury was not justified in inflicting the death penalty, and should be satisfied with a sentence which should confine this man to prison for life, rather than run the risk of putting to death

a possibly irresponsible man." Among the medical experts who investigated the mental condition of the prisoner were Drs. Austin Flint, C. H. Dana and Carlos MacDonald.

FILTRATION PLANT AT ITHACA.—On Feb. 27 there was signed a contract between the Ithaca Water Company and the Council of Cornell University, in which the latter agreed to furnish \$150,000 for the construction of a filtration plant. On the same day the board of health passed a resolution making it a misdemeanor to drink or serve to others unboiled water supplied by the local water system. Nine new cases of typhoid fever in Ithaca during the preceding twenty-four hours were reported to the board. On Feb. 28 nine additional new cases were reported. Several Cornell students who had gone away from the university have died from typhoid at their homes. One of these deaths occurred in Brooklyn on Feb. 22; one in Paterson, N. J., on Feb. 23; one in Watertown, N. Y., on the same date; one in Middletown, Conn., on Feb. 25, and one in Auburn, N. Y., on Feb. 28. Two others have died of the disease in Ithaca, one on the 22d and one on the 28th, bringing the total deaths among students up to eighteen.

POSSESSION OF IMPURE MILK NOT A CRIME.—The Appellate Division of the New York Supreme Court has handed down a decision in which it is held that the mere having of impure milk in one's possession, or the bringing of it into the city, does not constitute a crime, unless it be the intention to offer it for sale. The driver of a milk wagon for a large dairy company was one day loading milk cans on his wagon at a railway station, when a sanitary inspector opened one of the cans, the contents of which were shown to be below the legal standard of richness. The driver was arrested, and as the result of his trial in the Court of Special Sessions he was fined \$100 for having the milk in his possession. At the trial it was shown that it was his duty to take the milk from the station to the company's stables, where it was tested, and that the particular can which the inspector opened, as well as another out of the same lot, was sent back and was not offered for sale. The Appellate Division, in reversing the judgment and ordering a new trial, holds that the intention to sell is an essential element of the offence, and mere possession alone, apart from any such intention, is not inhibited by the provisions of either the sanitary code or the agricultural law.

INVESTIGATION AT BELLEVUE HOSPITAL.—An investigation has recently been made before Magistrate Pool of charges alleging certain cruelties on the part of the attendants in the alcoholic ward of Bellevue Hospital. They were entirely unsup-

ported by the evidence presented, and on Feb. 21 the district attorney requested that the court dismiss the action.

Obituary.

W. E. B. DAVIS, M.D.

DR. W. E. B. DAVIS died through an accident Feb. 24, in his thirty-ninth year. Dr. Davis, although still a comparatively young man, had identified himself with medical practice and the progress of medicine in the South. He was graduated from the Bellevue Hospital Medical College in 1884, and practiced and lived during the latter years of his life at Birmingham, Ala., devoting his attention chiefly to operative gynecology. He was a member of many medical societies, and had held various offices from time to time in the American Medical Association. He was honorary member of the British Gynecological Society, and one of the founders of the Alabama Surgical and Gynecological Association. Among his various services to his profession should be mentioned the fact that he and his brother were joint editors for two years of the first medical journal published in Alabama. He was also connected with the *American Gynecology Journal* in an editorial capacity. His writing was largely confined to abdominal surgery.

T. GAILLARD THOMAS, M.D.

DR. THEODORE GAILLARD THOMAS of New York, died suddenly of cardiac disease, on Feb. 28, at Thomasville, Ga., where he had gone for the enjoyment of the out-of-door life, rather than from any failure of his usual vigorous health. Dr. Thomas was born on Edisto Island, near Charleston, S. C., Nov. 21, 1831. His father was the Rev. Edward Thomas, a lineal descendant of the Rev. Samuel Thomas, who in 1700 was sent to South Carolina by the Church of England. His mother was Jane Marshall Gaillard, who traced her ancestry back to Theodore Gaillard, a Huguenot refugee, who went to South Carolina on the revocation of the Edict of Nantes. He was graduated from the Medical College of Charleston in 1852, and, after pursuing his professional studies for some time abroad, settled in New York. After a service as resident physician in the Bellevue and Ward's Island hospitals he became associated in practice with the late Dr. John T. Metcalfe, whom he always regarded with veneration and loving esteem, and after whom he named his oldest son. From his first entrance into the profession Dr. Thomas showed himself a young man of exceptional abilities and promise, and his clinics and diagnosis classes at Bellevue Hospital soon attracted a large and eager following of students. At the same time he was eminently successful as a general practitioner.

He gradually devoted his attention more particularly to obstetrical work, and when he received the appointment of professor of obstetrics and diseases of women and children at the College of Physicians and Surgeons, at once took the first rank as a teacher and consultant. Later he paid special attention to gynecology and abdominal surgery, giving up the chair of obstetrics at the college, but retaining that of diseases of women. As a clear and impressive clinical lecturer he had scarcely an equal, and his clinics, the most popular in any of the departments, were always more than crowded by an enthusiastic gathering of listeners, among whom were many practitioners, as well as students. As an operator he won no less distinction, and at the Woman's Hospital, founded by Marion Sims, where he was one of the attending surgeons, his brilliant work attracted world-wide attention. While still retaining his appointment at the Woman's Hospital he established a private hospital of his own, to which patients came for treatment from all parts of the country.

As a writer Dr. Thomas was no less eminent than as a teacher, operator and consultant. He was continually

contributing to medical societies and journals the rich fruits of his wide experience and mechanical ingenuity, while his systematic treatise on the diseases of women was at once recognized as a classic, and became the most popular work of its kind ever published in America or perhaps in the world. It ran through many successive additions, and was translated into a dozen languages, including Chinese. In the more recent editions he had as a collaborator the late Dr. Paul F. Mundé. A series of six lectures on "Abortion and its Treatment, from the Standpoint of Practical Experience," which he delivered at the College of Physicians and Surgeons after he became professor emeritus, and which was published by the Appletons, also had a wide vogue. Mention should also be made of his gifts as a public speaker. His voice was one of great richness and considerable power, and whenever he spoke in medical societies, or on the rare occasions when he made a public address, what he had to say was always expressed in the most carefully chosen and admirable English. The profession and the scientific world in general were always delighted to do him honor. Among the positions which he had held were the presidencies of the New York Obstetrical Society and the American Gynecological Society, and he received many honors from medical bodies all over the world. One of his most excellent characteristics was the willingness with which he was ever ready to extend substantial aid and encouragement to the younger members of the medical fraternity. Probably if at any time during the last few years a vote had been taken among physicians as to who was the most eminent and thoroughly representative man in the profession in New York, it would have been almost unanimously in favor of Dr. Thomas. One of the most notable occasions of the kind ever seen in the city was the great banquet tendered him in honor of his seventieth birthday, in November, 1901, when tributes were paid to him by Dr. James W. McLane, president of the College of Physicians and Surgeons; the Rev. Dr. Greer, rector of St. Bartholomew's Church; Judge Henry E. Howland, Dr. S. Weir Mitchell of Philadelphia, and Dr. George B. Shattuck of Boston.

With Dr. Thomas the love of the horse amounted to a passion, and he always drove and rode the finest animals. He was an enthusiastic equestrian, and attributed his fine health largely to his daily rides, which, when the weather forbade outdoor exercise, he took at the New York Riding Club, of which he was one of the originators and most prominent members. He was ever the courtly Southern gentleman, and his geniality and grace of manner rendered the noble traits of his character all the more attractive. No sketch of him would be complete without a reference to his summer life at Southampton, Long Island, where for many years, except when occasionally he went to Europe, he was accustomed to spend his vacation months. While there he threw off the cares of professional work, absolutely refusing all consultations, except it might be in some case of life and death, and enjoying to the full the delights of country life. With the members of his family or some guest he would gallop for miles over the windswept Shinnecock Hills in the morning, and in the afternoon take long drives. He was, in fact, the father of the summer colony at that charming seaside resort, and in its more primitive days built there a substantial cottage surrounded with double verandas, in the Southern style, the genial hospitality of which was celebrated in a novel, "Happy-go-lucky Hall," by the author of "Routledge." There he also took a warm interest in the affairs of the community, and was universally respected and beloved by the native inhabitants of the village, which is one of the oldest in the State.

At the time of his death he was professor emeritus of obstetrics and gynecology at the College of Physicians and Surgeons, consulting surgeon to the Woman's and French hospitals and consulting physician to the Nursery and Child's Hospital, the New York Infirmary for Women and Children, the New York Lying-in Hospital, and the New York Skin and Cancer Hospital. In 1899 he was one of the founders and incorporators of the Medical Association of the Greater City of New York. Dr. Thomas leaves a wife and two sons, the younger of whom, Theodore Gaillard Thomas, Jr., is a student at Harvard.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 21, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,445 | 404 | 18.65 | 14.53 | 3.11 | .27 | 1.31 | |
| Chicago . . . | 1,885,000 | 627 | 180 | 23.59 | 22.95 | 1.27 | .96 | .36 | |
| Philadelphia . | 1,378,527 | — | — | — | — | — | — | — | |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 210 | 60 | 30.00 | 13.81 | 2.38 | .47 | — | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 184 | 74 | 29.34 | 24.45 | 4.34 | 4.34 | .54 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 68 | 20 | 20.58 | 20.58 | 1.47 | 7.37 | 1.47 | |
| Boston . . . | 603,163 | 197 | 57 | 20.30 | 20.38 | 3.04 | 2.53 | 1.00 | |
| Worcester . . | 132,044 | 61 | 23 | 16.39 | 22.94 | 6.55 | 1.64 | — | |
| Fall River . . | 115,549 | 58 | 28 | 17.24 | 31.03 | 1.72 | — | — | |
| Lowell . . . | 101,959 | 41 | 12 | 14.63 | 17.07 | 7.31 | — | — | |
| Cambridge . . | 98,639 | 27 | 7 | 14.81 | 7.40 | 3.70 | 3.70 | — | |
| Lynn | 72,497 | 39 | 13 | 7.69 | — | — | 2.56 | — | |
| Lawrence . . | 69,766 | 23 | 10 | 26.09 | 17.39 | — | 4.35 | — | |
| Springfield . | 69,389 | 17 | 1 | 11.76 | 5.88 | — | — | — | |
| Somerville . . | 68,110 | 17 | 3 | 11.76 | 17.64 | — | — | 5.88 | |
| New Bedford . | 67,198 | 33 | 17 | 21.21 | 33.33 | 6.06 | 3.03 | 6.06 | |
| Holyoke . . . | 49,286 | 17 | 8 | 17.64 | 11.76 | — | — | — | |
| Brockton . . | 44,873 | 11 | 2 | 36.36 | — | — | 9.09 | — | |
| Haverhill . . | 42,104 | 6 | — | 16.67 | 33.33 | — | — | — | |
| Newton . . . | 37,794 | 11 | — | — | — | — | — | — | |
| Salem | 36,876 | 12 | 4 | — | 25.00 | — | — | — | |
| Malden . . . | 36,286 | 12 | 4 | 8.33 | 16.67 | 8.33 | — | — | |
| Chelsea . . . | 35,876 | 9 | 1 | — | — | — | — | — | |
| Fitchburg . . | 35,069 | — | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | 11 | — | 9.09 | 27.27 | — | — | — | |
| Everett . . . | 28,620 | 9 | 4 | — | — | — | — | — | |
| North Adams . | 27,862 | 4 | 1 | 25.00 | 25.00 | — | — | — | |
| Gloucester . . | 26,121 | 4 | 2 | — | — | — | — | — | |
| Quincy . . . | 26,042 | 11 | 2 | 27.27 | 18.18 | 9.09 | 9.09 | — | |
| Waltham . . . | 25,198 | 11 | 2 | 18.18 | 36.36 | — | — | — | |
| Brookline . . | 22,608 | 9 | 2 | 33.33 | 22.22 | — | — | — | |
| Pittsfield . . | 22,589 | 3 | — | 33.33 | 33.33 | — | — | — | |
| Chicopee . . . | 21,031 | 7 | 2 | 57.20 | 14.30 | — | — | 14.30 | |
| Medford . . . | 20,962 | 7 | 3 | 28.60 | 28.60 | 14.30 | 14.30 | — | |
| Northampton . | 19,883 | 1 | — | — | — | — | — | — | |
| Beverly . . . | 15,302 | 6 | 3 | 16.67 | 33.33 | — | — | — | |
| Clinton . . . | 15,161 | 4 | 1 | 25.00 | 50.00 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 6 | 1 | — | — | — | — | — | |
| Woburn . . . | 14,300 | 6 | 1 | 50.00 | — | — | — | — | |
| Hyde Park . . | 14,175 | 4 | — | 25.00 | 25.00 | — | — | — | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 4 | 1 | — | 25.00 | — | — | — | |
| Melrose . . . | 13,600 | 4 | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 6 | 1 | 16.67 | 33.33 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 2 | — | — | — | — | — | — | |
| Frammingham . | 12,534 | 3 | — | 33.33 | 33.33 | 33.33 | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 2 | — | — | 50.00 | — | — | — | |
| Weymouth . . | 11,344 | 1 | 1 | — | 100.00 | — | — | — | |
| Southbridge . | 11,268 | 3 | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 5 | — | 20.00 | 20.00 | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,258; under five years of age, 955; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 688, acute lung diseases 589, consumption 355, scarlet fever 33, whooping cough 37, cerebrospinal meningitis 5, smallpox 9, erysipelas 7, measles 22, typhoid fever 44, diarrheal diseases 49, diphtheria and croup 88.


From whooping cough, New York 4, Chicago 6, Baltimore 1, Pittsburg 8, Providence 5, Boston 5, and Worcester, Cambridge, Lynn, Lawrence, New Bedford, Brockton, Quincy and Medford 1 each. From erysipelas, Chicago 3, Baltimore 2, Boston 1, North Adams 1. From smallpox, Chicago 3, Pittsburg 6.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,023, for the week ending Feb. 7, the death-rate was 17.9. Deaths reported, 5,164; acute diseases of the respiratory organs (London) 315, whooping cough 162, diphtheria 88, measles 92, smallpox 14, scarlet fever 51.

The death-rate ranged from 7.4 in Bournemouth to 31.3 in Hanley; London 17.6, West Ham 14.4, Brighton 17.9, Portsmouth 13.6, Southampton 15.6, Plymouth 19.1, Bristol 17.8, Birmingham 18.2, Leicester 18.9, Nottingham 22.5, Bolton 14.7, Manchester 22.0, Salford 19.6, Bradford 22.5, Leeds 18.7, Hull 16.3, New-Castle-on-Tyne 23.0, Cardiff 16.0, Rhondda 17.9, Liverpool 23.3, Smethwick 17.7, West Bromwich 19.6.

METEOROLOGICAL RECORD.

For the week ending Feb. 21, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. |
|--|-------------|------------|--------------|------------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily max. | Daily min. | Daily max. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 15 30 18 | 28 | 34 | 22 | 48 | 73 | 60 | N W | W | 6 | 6 | O. | O. | O. |
| M . 16 29.58 | 28 | 31 | 25 | 100 | 90 | 95 | N | N | 12 | 14 | N. | N. | .58 |
| T. . 17 29.34 | 20 | 30 | 9 | 100 | 59 | 80 | N | W | 22 | 17 | N. | C. | 1.46 |
| W . 18 29.92 | 8 | 14 | 3 | 73 | 74 | 74 | S W | W | 14 | 8 | C. | C. | O. |
| T. . 19 30.29 | 8 | 12 | 4 | 67 | 53 | 60 | W | W | 12 | 9 | C. | C. | O. |
| F. . 20 30.39 | 16 | 26 | 6 | 78 | 56 | 64 | W | S W | 10 | 8 | O. | C. | O. |
| S. . 21 30.14 | 26 | 37 | 14 | 82 | 62 | 72 | S W | S | 3 | 8 | O. | C. | O. |
|  | 29.98 | | 26 | 12 | | 72 | | | | | | | 2.04 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

RESIGNATION.

DR. WILLIAM L. RICHARDSON has resigned his position as visiting physician to the Massachusetts General Hospital.

APPOINTMENTS.

DR. CHARLES L. SCUDDER has been appointed a visiting surgeon to the Massachusetts General Hospital.

COLUMBUS HOSPITAL. — The following appointments were made at the meeting of the Medical Board of the Columbus Hospital, New York, held on Feb. 2: Dr. Frank Farquhar Ferguson was transferred from visiting to consulting physician to the hospital; Dr. Frederick C. Keeler, assistant attending physician, was appointed attending physician; and Dr. Henry Hazen was appointed attending physician in children's diseases.

SOCIETY NOTICE.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — A meeting of the Boston Society for Medical Improvement will be held at the Boston Medical Library, 8 The Fenway, on Monday, March 9, at 8.15 o'clock, P.M.

The committee appointed at the last meeting to consider the feasibility of the union of the Improvement Society with the Boston Medical Library will report in favor of such union, and will present a plan.

A. K. STONE, M.D., Secretary.

543 Boylston Street.

PHILADELPHIA ACADEMY OF SURGERY.

THE SAMUEL D. GROSS PRIZE, TWELVE HUNDRED DOLLARS. — This prize will be awarded on Jan. 1, 1905. The conditions annexed by the testator are that the prize "Shall be awarded every five years to the writer of the best original essay, not exceeding 150 printed pages, octavo in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 219 South 13th Street, Philadelphia," on or before Jan. 1, 1905.

Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one

year, and reserves the right to make no award if the essays submitted are not considered worthy of the prize.

JOHN B. ROBERTS, M.D.,
WILLIAM L. RODMAN, M.D.,
WILLIAM J. TAYLOR, M.D.,
Trustees.

PHILADELPHIA, Feb. 1, 1903.

RECENT DEATHS.

GEORGE CLARENCE GAGE, M.D., of New York, died on Feb. 22, at the age of fifty-two years. He was graduated from the College of Physicians and Surgeons, New York, in 1872, and up to the recent closing of that department was an assistant surgeon in the throat department of the New York Eye and Ear Infirmary.

SAMUEL C. HANFORD, M.D., of Hempstead, Long Island, N. Y., died on Feb. 24, in his eighty-first year. He was a native of Greenfield, Saratoga County, N. Y., and was graduated from the medical department of the University of New York in 1845. For nearly fifty years he practised in the Eastern District of Brooklyn, and a few years ago removed to Hempstead.

SAMUEL G. GOODE, M.D., of Jersey City, N. J., died on Feb. 24 of pneumonia. He was born in Jersey City in 1871.

CAPT. FRANKLIN M. KEMP of the medical department of the army, formerly of New York, died in the Philippines on Feb. 23 of cardiac disease. He entered the service as an assistant surgeon in October, 1896.

ALEXANDER STANLEY HANCOCK, M.D., of New York, died on Feb. 28 of laryngeal tuberculosis. He was born in Derbyshire, England, and was sixty-five years of age. He was graduated from Trinity College, Toronto, and received his medical degree in Buffalo. For five years he was a surgeon on the Allan Line steamships.

BOOKS AND PAMPHLETS RECEIVED.

Diseases of the Skin, their Description, Pathology, Diagnosis, and Treatment, with special reference to the skin eruptions of children and an analysis of fifteen thousand cases of skin disease. By H. Radcliffe-Crocker, M.D. (Lond.). F.R.C.P. Third edition, revised and enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

A Textbook of Practical Medicine. By William Gilman Thompson, M.D. Second edition, revised and enlarged. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1902.

Diseases of Women. A Clinical Guide to their Diagnosis and Treatment. By George Ernest Herman, M.B. (Lond.), F.R.C.P. Revised edition. Illustrated. New York: William Wood & Co. 1903.

The Diagnosis and Modern Treatment of Pulmonary Consumption, with Special Reference to the Early Recognition and the Permanent Arrest of the Disease. By Arthur Latham, M.A., M.D. (Oxon.), M.A. (Cantab.) Illustrated. New York: William Wood & Co. 1903.

Physical Chemistry for Physicians and Biologists. By Dr. Ernst Cohen. Authorized translation from the German by Martin H. Fischer, M.D. Illustrated. New York: Henry Holt & Company. 1903.

A Manual of Practical Hygiene for Students, Physicians and Medical Officers. By Charles Harrington, M.D. Second edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1902.

Transactions of the American Ophthalmological Society. Thirty-eighth Annual Meeting. Vol. IX, Part III. New London, Conn. 1902.

A Course in Botany and Pharmacognosy. By Henry Krämer, Ph.B., Ph.D. Illustrated. Philadelphia. 1902.

Quiz-Compends. No. 14 A Compend of Diseases of Children. Especially adapted for the Use of Medical Students. By Marcus P. Hatfield, A.M., M.D. Third edition, thoroughly revised, with a colored plate. Philadelphia: P. Blakiston's Son & Co. 1903.

Surgical Diseases of the Kidney and Ureter, including Injuries, Malformations and Displacements. By Henry Morris, M.A., M.B. (Lond.). F.R.C.S. In two volumes. Illustrated. London, Paris, New York and Melbourne: Cassell & Co., Ltd.; Chicago: W. T. Keener & Co.

Twelfth Annual Report of the State Board of Medical Examiners of New Jersey for the year 1902.

The Annual Reports of the Boston Floating Hospital for the season of 1902.

Atlas and Epitome of Human Histology and Microscopic Anatomy. By Dr. Johannes Sobotta. Edited, with extensive editions, by G. Carl Huber, M.D. Authorized translation from the German. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1903.

Address.

ON THE EDUCATIONAL VALUE OF THE MEDICAL SOCIETY.¹

BY WILLIAM OSLER, M.D., BALTIMORE, MD.,

Professor of Medicine, Johns Hopkins University.

As the Autocrat remarks:

"Little of all we value here
Wakes on the morn of its hundredth year."

All the more reason to honor such occasions as the present in an appropriate manner. The tribute of words that I gladly bring—and that you may take as expressing the sentiments of your brethren at large—necessarily begins with congratulations that your society has passed into the select group of those that have reached a century of existence. But congratulations must be mingled with praise of the band of noble men who, in 1803, made this gathering possible. It is true they did but follow the lead of their colleagues of Litchfield County and their own example when, in 1784, the physicians of this county organized what is now one of the oldest medical societies in the land. In the introduction to the volume of "Transactions of this Society," published in 1788, the following brief statements are made as to the objects of the organization, which may be transposed from the parent to the child, and which I quote in illustration of the character of the men and as giving in brief the chief uses of a medical society: "This society was formed on the most liberal and generous principles, and was designed first to lay a foundation for that unanimity and friendship which is essential to the dignity and usefulness of the profession; to accomplish which, they resolved, secondly, to meet once in three months; thirdly, that in all cases where counsel is requisite they will assist each other without reserve; fourthly, that all reputable practitioners in the county, who have been in the practice for one year or more, may be admitted members; fifthly, that they will communicate their observations on the air, seasons and climate, with such discoveries as they may make in physic, surgery, botany or chemistry, and deliver faithful histories of the various diseases incident to the inhabitants of this country, with the mode of treatment and event in singular cases; sixthly, to open a correspondence with the medical societies in the neighboring states and in Europe, for which purpose they have a standing committee of correspondence; seventhly, to appoint a committee for the purpose of examining candidates for the profession, and to give certificates to the deserving." Changed conditions have changed some of these objects, but in the main they hold good today.

Some of the paragraphs have suggested to me the subject of my address—the educational value of the medical society. There are many problems and difficulties in the education of a medical student, but they are not more difficult than the question of the continuous education of the general practitioner. Over the one we have some control, over the other, none. The university and the

state board make it certain that the one has a minimum, at least, of professional knowledge, but who can be certain of the state of that knowledge of the other in five or ten years from the date of his graduation? The specialist may be trusted to take care of himself—the conditions of his existence demand that he shall be abreast of the times; but the family doctor, the private in our great army, the essential factor in the battle, should be carefully nurtured by the schools and carefully guarded by the public. Humanly speaking, with him are the issues of life and death, since upon him falls the grievous responsibility in those terrible emergencies which bring darkness and despair to so many households. No class of men needs to call to mind more often the wise comment of Plato that education is a life-long business. The difficulties are partly adherent to the subject, partly have to do with the individual and his weakness. The problems of disease are more complicated and difficult than any others with which the trained mind has to grapple; the conditions in any given case may be unlike those in any other; each case, indeed, may have its own problem. Law, constantly looking back, has its forms and procedures, its precedents and practices. Once grasped, the certainties of divinity make its study a delight and its practice a pastime; but who can tell of the uncertainties of medicine as an art? The science on which it is based is accurate and definite enough; the physics of a man's circulation are the physics of the water works of the town in which he lives, but once out of gear, you cannot apply the same rules for the repair of the one as of the other. Variability is the law of life, and as no two faces are the same, so no two bodies are alike, and no two individuals react alike and behave alike under the abnormal conditions which we know as disease. This is the fundamental difficulty in the education of the physician, and one which he may never grasp, or he takes it so tenderly that it hurts instead of boldly accepting the axiom of Bishop Butler, more true of medicine than of any other profession: "Probability is the guide of life." Surrounded by people who demand certainty, and not philosopher enough to agree with Locke that "*Probability supplies the defect of our knowledge and guides us when that fails and is always conversant about things of which we have no certainty*," the practitioner too often gets into a habit of mind which resents the thought that opinion, not full knowledge, must be his stay and prop. There is no discredit, though there is at times much discomfort, in this everlasting *perhaps* with which we have to preface so much connected with the practice of our art. It is, as I said, inherent in the subject. Take in illustration an experience of last week. I saw a patient with Dr. Bolgiano who presented marked pulsation to the left of the sternum in the second, third and fourth interspaces, visible even before the night-dress was removed, a palpable impulse over the area of pulsation, flatness on percussion, accentuated heart sounds and a soft systolic bruit. When to this were added paralysis of the left recurrent laryngeal nerve, smallness of the radial pulse on the left side and tracheal tugging, there is not one of you who would not make, under such circumstances, the diagnosis of aneu-

¹Remarks made on the occasion of the centennial celebration of the New Haven Medical Association, New Haven, Jan. 6, 1903.

alism of the aorta. Few of us, indeed, would put in the *perhaps*, or think of it as a probability with such a combination of physical signs, and yet the associate conditions which had been present — a small primary tumor of the left lobe of the thyroid, with secondary nodules in the lymph glands of the neck and involvement of the mediastinum and metastases in the brain with optic neuritis — left no question that the tumor causing the remarkable intrathoracic combination was not aneurismal but malignant. Listen to the appropriate comment of the Father of Medicine, who twenty-five years ago had not only grasped the fundamental conception of our art as one based on observation, but had labored also through a long life to give to the profession which he loved the saving health of science — listen, I say, to the words of his famous aphorism: “*Experience is fallacious and judgment difficult!*”

But the more serious problem relates to the education of the practitioner after he has left the schools. The foundation may not have been laid upon which to erect an intellectual structure, and too often the man starts with a total misconception of the prolonged struggle necessary to keep the education he has, to say nothing of bettering the instruction of the schools. As the practice of medicine is not a business and can never be one,² the education of the heart — the moral side of the man — must keep pace with the education of the head. Our fellow creatures cannot be dealt with as man deals in corn and coal; “the human heart by which we live” must control our professional relations. After all, the personal equation has most to do with success or failure in medicine, and in the trials of life the fire which strengthens and tempers the metal of one may soften and ruin another. In his philosophy of life the young doctor will find Rabbi Ben Ezra³ a better guide, with his stimulating

“Then, welcome each rebuff
That turns earth's smoothness rough,
Each sting that bids nor sit, nor stand but go!”

than Omar, whose fatalism, so seductive in Fitzgerald's verses, leaves little scope for human effort.

For better or worse, there are few occupations of a more satisfying character than the practice of medicine, if a man can but once get orientirt and bring to it the philosophy of honest work, the philosophy which insists that we are here, not to get all we can out of the life about us, but to see how much we can add to it. The discontent and grumbings which one hears have their source in the man more often than in his environment. In the nature of the material in which we labor and of which, by the way, we are partakers, there is much that

² In every age there have been Elijahs ready to give up in despair at the progress of commercialism in the profession. Garth says in 1639 (*Dispensary*),

“How sickening Physick hangs her pensive head
And what was once a Science, now 's a Trade.”

Of medicine, many are of the opinion expressed by one of Aken-side's disputants at Tom's Coffee House, that the ancients endeavored to make it a science and failed, and the moderns to make it a trade and have succeeded. Today the cry is louder than ever, and in truth there are grounds for alarm; but, on the other hand, we can say to the Elijahs that there are many more than 7,000 left who have not bowed the knee to this Bial, but who practice *caute et probe*.

³ See Browning's poem. A good little edition has just been issued (with an introduction by William Adams Stale) which I commend to young graduates.

could be improved, but, as Mrs. Poyser remarks, we must accept men as the Lord made them, and not expect too much. But let me say this of the public: it is rarely responsible for the failures in the profession. Occasionally a man of superlative merit is neglected, but it is because he lacks that most essential gift, the knowledge how to use his gifts. The failure in 99% of the cases is in the man himself; he has not started right, the poor chap has not had the choice of his parents, or his education has been faulty, or he has fallen away to the worship of strange gods, Baal or Ashtoreth, or worse still, Bacchus. But after all the killing vice of the young doctor is intellectual laziness. He may have worked hard at college, but the years of probation have been his ruin. Without specific subjects upon which to work, he gets the newspaper or the novel habit, and fritters his energies upon useless literature. There is no greater test of a man's strength than to make him mark time in the “stand and wait” years. Habits of systematic reading are rare, and are becoming more rare, and five or ten years from his license, as practice begins to grow, may find the young doctor knowing less than he did when he started and without any fixed educational purpose in life.

Now here is where the medical society may step in and prove his salvation. The doctor's post-graduate education comes from patients, from books and journals and from societies, which should be supplemented every five or six years by a return to a post-graduate school to get rid of an almost inevitable slovenliness in methods of work. Of his chief teachers, his patients, I cannot here speak. Each case has its lesson — a lesson that may be, but is not always, learnt, for clinical wisdom is not the equivalent of experience. A man who has seen 500 cases of pneumonia may not have the understanding of the disease which comes with an intelligent study of a score of cases, so different are knowledge and wisdom, which, as the poet truly says, “far from being one have oftentimes no connection.” Nor can I speak of his books and journals, but on such an occasion as the present it seems appropriate to say a few words on the *educational value of the medical society*.

The first, and in some respects the most important, function is that mentioned by the wise founders of your parent society — to lay a foundation for that unity and friendship which is essential to the dignity and usefulness of the profession. Unity and friendship! How we all long for them, but how difficult to attain! Strife seems rather to be the very life of the practitioner, whose warfare is incessant against disease and against ignorance and prejudice, and, sad to have to admit, he too often lets his angry passions rise against his professional brother. The quarrels of doctors make a pretty chapter in the history of medicine. Each generation seems to have had its own. The Coans and the Cnidians, the Arabians and the Galenists, the humoralists and the solidists, the Brunonians and the Broussaisians, the homeopaths and the regulars, have, in different centuries, rent the robe of Æsculapius. But these larger quarrels are becoming less and less intense, and in the last century no new one of moment sprang up, while it is easy

to predict that in the present century, when science has fully leavened the dough of homeopathy, the great breach of our day will be healed.⁴ But in too many towns and smaller communities miserable factions prevail and bickerings and jealousies mar the dignity and usefulness of the profession. So far as my observation goes, the fault lies with the older men. The young fellow, if handled aright and made to feel that he is welcomed and not regarded as an intruder to be shunned, is only too ready to hold out the hand of fellowship. The society comes in here as professional cement. The meetings in a friendly social way lead to a free and open discussion of differences in a spirit that refuses to recognize differences of opinion on the non-essentials of life as a cause of personal animosity or ill feeling. An attitude of mind habitually friendly, more particularly to the young man, even though you feel him to be the David to whom your kingdom may fall, a little of the old-fashioned courtesy which makes a man shrink from wounding the feelings of a brother practitioner,—in honor preferring one another; with such a spirit abroad in the society and among its older men, there is no room for envy, hatred, malice or any uncharitableness. It is the confounded tales of patients that so often set us by the ears, but if a man makes it a rule never under any circumstances to believe a story told by a patient to the detriment of a fellow-practitioner,—even if he knows it to be true!—and though the measure he metes may not be measured to him again, he will have the satisfaction of knowing that he has closed the ears of his soul to ninety-nine lies, and to have missed the hundredth truth will not hurt him. Most of the quarrels of doctors are about non-essential, miserable trifles and annoyances,—the pin pricks of practice,—which would sometimes try the patience of Job, but the good-fellowship and friendly intercourse of the medical society should reduce these to a minimum.

The well-conducted medical society should represent a clearing house, in which every physician of the district would receive his intellectual rating, and in which he could find out his professional assets and liabilities. We doctors do not "take stock" often enough, and are very apt to carry on our shelves stale, out-of-date goods. The society helps to keep a man "up to the times," and enables him to refresh his mental shop with the latest wares. Rightly used, it may be a touch-stone to which he can bring his experiences to the test and save him from falling into the rut of a few sequences. It keeps his mind open and receptive, and counteracts that tendency to premature senility which is apt to overtake a man who lives in a routine. Upon one or two specially valuable features of the society I may dwell for a moment or two.

In a city association the demonstration of instructive specimens in morbid anatomy should form as special feature of the work. After all has been

⁴As an indication of the leaven which is at work in our brethren of the homeopathic school, I may call your attention to the work on Clinical Medicine (Diagnosis), by Dr. Clarence Bartlett of the Hahnemann Medical College, Philadelphia. Accurate, thoroughly scientific and fully up to date, the students fed on such a diet will not be content with the husks of Hahnemann any more than the students of our regular schools are with the husks of Brown or Broussais, but they will practise as rational physicians, untrammelled by the shibboleth of any school.

done, many cases of great obscurity in our daily rounds remain obscure, and as postmortems are few and far between, the private practitioner is at a great disadvantage, since his mistakes in diagnosis are less often corrected than are those of hospital physicians. No more instructive work is possible than carefully demonstrated specimens illustrating disturbance of function and explanatory of the clinical symptoms. It is hard in this country to have the student see enough morbid anatomy, the aspects of which have such an important bearing upon the mental attitude of the growing doctor. For the crass therapeutic credulity, so widespread today, and upon which our manufacturing chemists wax fat, there is no more potent antidote than the healthy scepticism bred of long study in the post-mortem room. The new pathology, so fascinating and so time-absorbing, tends, I fear, to grow away from the old morbid anatomy, a training in which is of such incalculable advantage to the physician. It is a subject which one must learn in the medical school, but the time assigned is rarely sufficient to give the student a proper grasp of the subject. The younger men should be encouraged to make the exhibition of specimens part of the routine work of each meeting. Something may be learned from the most ordinary case if it is presented with the special object of illustrating the relation of disturbed function to altered structure. Of still greater educational value is the clinical side of the society. No meeting should be arranged without the presentation of patients, particularly those illustrating rare and unusual forms of disease. Many diseases of the skin and of the joints, a host of nervous affections, and many of the more remarkable of general maladies, as myxedema, cretinism, achondroplasia, etc., are seen so rarely and yet are so distinctive, requiring only to be seen to be recognized, that it is incumbent upon members to use the society to show such cases. A clinical evening devoted to these rarer affections is of very great help in diffusing valuable knowledge. The importance of a clinical demonstration was never better illustrated than at the International Congress in London in 1881, when Dr. Ord and others presented one morning at the Clinical Museum a group of cases of myxedema. There were men from all parts of the world, and the general recognition of the disease outside of England dates from that meeting. The physiognomy of disease is learned slowly, and yet there are a great many affections which can be recognized, sometimes at a glance, more often by careful inspection, without any history. The society should be a school in which the scholars teach each other, and there is no better way than by the demonstration of the more unusual cases that happen to fall in your way. I have gone over my history cards of private patients brought or sent to me by last-year physicians, in which the disease was not diagnosed though recognisable *de visu*. Gout, pseudo-hypertrophic muscular paralysis, hysterical lordosis, spondylitis deformans, preataxic tabes (myosis, ptosis, etc.), Graves' disease, Parkinson's disease, anorexia nervosa, Raynaud's disease, pernicious anemia, spastic diplegia, spastic hemiplegia and cyanosis of chronic emphysema were on the list. Some of these are rare diseases, but at an active society in

the course of a few years every one of them could be demonstrated.

The presentation of the histories of cases may be made very instructive, but this is often a cause of much weariness and dissatisfaction. A brief oral statement of the special features of a case is much to be preferred to a long, written account. The protocol or daily record of a long case should never be given in full. The salient points should be brought out, particularly the relation the case bears to the known features of the disease and to diagnosis and treatment. The volume of the Transactions of the New Haven County Medical Society, 1788, contains many admirably reported cases. I select one for special comment, as it is, so far as I know, the first case on record of a most remarkable disease, to which much attention has been paid of late, — the hypertrophic stenosis of the pylorus in children (see full discussion in the *Lancet* of Dec. 20, 1902). Dr. Hezekiah Beardsley reports a *Case of Schirrhosis of the Pylorus of an Infant*. Every feature of the disease as we know it now is noted — the constant puking, the leanness, the wizened, old look of the child are well described, and the diagnosis was made four months before death! The postmortem showed a dilated and hypertrophied stomach and "the pylorus was invested with a hard, compact substance or schirrhosity which so completely obstructed the passage into the duodenum as to admit with the greatest difficulty the finest fluid." If other men had been as accurate and careful as Dr. Beardsley, and if other societies had followed the good example set so early by the New Haven County Medical Association, not only would this rare disease have been recognized, but by the accumulation of accurate observations many another disease would have yielded its secret. But it illustrates the old story — there is no more difficult art to acquire than the art of observation, and for some men it is quite as difficult to record an observation in brief and plain language.

In no way can a society better help in the education of its members than in maintaining for them a good library, and I am glad to know that this is one of your functions. It is most gratifying to note the growing interest in this work in all parts of the country. In the last number of the *Bulletin* of the Association of Medical Librarians there is a list of twenty-five societies with medical libraries. An attractive reading-room, with the important weekly journals, and with shelves stocked with the new books in different departments, becomes an educational center in which the young man can keep up his training and to which the older practitioner can go for advice when he is in despair and for reassurance when he is in doubt. The self-sacrifice necessary to establish and maintain such a library does good to the men who take part in it; harmony is promoted, and, in the words of your fathers, the dignity and usefulness of the profession are maintained.

Why is it that a large majority of all practitioners are not members of a medical society? Dr. Simmons estimates that there are 77,000 physicians in the United States who do not belong to any medical society whatever! In part this is due to apathy of the officers and failure to present an attractive program, but more often the fault is in the men. Per-

haps given over wholly to commercialism a doctor feels it a waste of time to join a society, and so it is if he is in the profession only for the money he can get out of patients without regard to the sacred obligation to put himself in the best possible position to do the best that is known for them. More frequently, I fear, the "dollar-doctor" is a regular frequenter of the society, knowing full well how suicidal in the long run is isolation from the general body of the profession. The man who knows it all and gets nothing from the society reminds one of that little dried-up miniature of humanity, the prematurely senile infant, whose tabetic marasmus has added old age to infancy. Why should he go to the society and hear Dr. Jones on the gastric relations of neurasthenia when he can get it all so much better in the works of Einhorn or Ewald. He is weary of seeing appendices, and there are no new pelvic viscera for demonstration. It is a waste of time, he says, and he feels better at home, and perhaps that is the best place for a man who has reached this stage of intellectual stagnation.

Greater sympathy must be felt for the man who has started all right and has worked hard at the societies, but as the rolling years have brought ever-increasing demands on his time, the evening hours find him worn out yet not able to rest, much less to snatch a little diversion or instruction in the company of his fellows whom he loves so well. Of all men in the profession the forty-visit-a-day man is the most to be pitied. Not always an automaton, he may sometimes by economy of words and extraordinary energy do his work well, but too often he is the one above all others who needs the refreshment of mind and re-creation that is to be had in a well-conducted society. Too often he is lost beyond all recall, and, like Ephraim joined to his idols, we may leave him alone. Many good men are ruined by success in practice, and need to pray the prayer of the Litany against the evils of prosperity. It is only too true, as you know well, that a most successful — as the term goes — doctor may practice with a clinical slovenliness that makes it impossible for that kind old friend, Dame Nature, to cover his mistakes. A well-conducted society may be of the greatest help in stimulating the practitioner to keep up habits of scientific study. It seems a shocking thing to say, but you all know it to be a fact that many, very many men in large practice never use a stethoscope, and as for a microscope, they have long forgotten what a leucocyte or a tube cast looks like. This in some cases may be fortunate, as imperfect or half knowledge might only lead to mistakes, but the secret of this neglect of means of incalculable help is the fact that he has not attained the full and enduring knowledge which should have been given to him in the medical school. It is astonishing with how little outside aid a large practice may be conducted, but it is not astonishing that in it cruel and unpardonable mistakes are made. At whose door so often lies the responsibility for death in cases of empyema, but at that of the busy doctor, who has not time to make routine examinations, or who is "so driven" that the urine of his scarlet fever or puerperal patients is not examined until the storm has broken?

But I hear it sometimes said you cannot expect the general practitioner, particularly in country districts, to use the microscope and the stethoscope—these are refinements of diagnosis. They are not! They are the essential means which can be used and should be used by every intelligent practitioner. In our miserable, antiquated system of teaching we send our graduates out wholly unprepared to make a rational diagnosis, but a man who is in earnest—and, thank heaven! most of the young men today in the profession are in earnest—can supply the defects in his education by careful study of his cases, and can supplement the deficiency by a post-graduate course. A room fitted as a small laboratory, with the necessary chemicals and a microscope, will prove a better investment in the long run than a static machine or a new-fangled air-pressure spray apparatus.

It is not in the local society only that a man can get encouragement in his day's work and a betterment of mind and methods. Every practitioner should feel a pride in belonging to his state society, and should attend the meetings whenever possible, and gradually learn to know his colleagues, and here let me direct your attention to an important movement on the part of the American Medical Association, which has for its object the organization of the profession throughout the entire country. This can be accomplished only by a uniformity in the organization of the state societies, and by making the county society the unit through which members are admitted to the state and national bodies. Those of you interested will find very instructive information on this subject in the *Journal* of the association in a series of papers by Dr. Simmons, the editor, which have been reprinted in pamphlet form. As now managed, with active sections conducted by good men from all parts of the country, the meeting of the National Association is in itself a sort of brief post-graduate course. Those of you at the receptive age who attended the Saratoga meeting last June must have been impressed with the educational value of such a gathering. The Annual Museum was itself an important education in certain lines, and the papers and discussions in the various sections were of the greatest possible value. But I need say no more to this audience on the subject of medical societies; you of New England have not "forsaken the gathering of yourselves together as the manner of some is," but have been an example to the whole country.

In the dedication of his "Holy War," Thomas Fuller has some very happy and characteristic remarks on the bounden duty of a man to better his heritage of birth or fortune, and what the father found glass and made crystal, he urges the son to find crystal and make pearl. Your heritage has been most exceptional, and, I believe, from all that I know of the profession in this city and State, that could your fathers return they would say that of their crystal you had made pearl. One cannot read their history as told by Bronson, or as sketched by your distinguished citizen, my colleague, Dr. Welch, without a glow of admiration for their lofty ideals, their steadfastness and devotion, and for their faith in the profession which they loved. The times have changed, conditions of practice have altered and are altering rapidly, but when such a celebration takes

us back to your origin in simpler days and ways, we find that the ideals which inspired them are ours today—ideals which are ever old, yet always fresh and new, and we can truly say in Kipling's words: "The men bulk big on the old trail, our own trail, the old trail, They're God's own guides on the Long Trail, the trail that is always new."

Original Articles.

LIMITATIONS OF THE UHLENHUTH TEST FOR THE DIFFERENTIATION OF HUMAN BLOOD.¹

BY A. E. AUSTIN, M.D., BOSTON.

SINCE the discovery of Uhlenhuth that a rabbit or guinea pig injected several times with human blood would give a serum containing a precipitin for human blood, many suggestions have been made for procuring a constant and permanent preparation of this humanized rabbit serum. It has been suggested that strips of filter paper could be soaked in the serum and preserved dry. Ziemke precipitated the globulin of the humanized blood by magnesium sulphate, and redissolved the dry precipitate as he wished to use it, but decided that its efficacy was very much diminished. Chloroform was suggested by the discoverer of the test as a preservative, but decided by the latter author to weaken decidedly the activity of the serum. Owing to the difficulty of always procuring fresh blood for the injection of animals, this ability of preserving the precipitin once formed becomes a matter of much importance, and if it can be acquired adds very much to the efficacy and usefulness of the test. My interest was aroused by these efforts to preserve this precipitin, and in order to carry this matter further, a number of rabbits were injected exactly according to the directions of Uhlenhuth, when, much to my surprise, I found that the test was not as fully applicable as had been represented, and that only under the most limited conditions could it be employed; that other fluids of the human body, like effusions and exudates, were of little value, and that the fluid from placentas could only be used when it was strictly fresh, and that much longer time and more repeated injections were necessary than we had been led to suppose from the first oversanguine reports of the earlier investigators.

Perhaps it would be wiser, however, to describe the experiments which were performed, and then return to the discussion of results.

EXPERIMENT I. A black rabbit of 2,505 gm. weight was injected Nov. 15 with 10 cc. of a pleuritic fluid, removed by Dr. Knowlton on Nov. 10, which was suspected to be of tuberculous origin, and which had been carefully preserved on ice. This injection was made into the cellular tissue of the flank, avoiding the peritoneal cavity. On Nov. 21 a similar injection was made, and on Nov. 26 another of similar amount.

On Nov. 29, 10 cc. of blood were withdrawn from the jugular vein, allowed to stand on ice until the serum had been well squeezed out of the clot, and the serum, which was slightly blood-stained, used for the tests. The rabbit did not seem to be injured in any way, nor did it acquire tuberculosis. Three blood stains were prepared on filter paper: (a) from blood of a subject in the dissect-

¹ From the Medical Chemistry Laboratory, Tufts College.

ing room, which, of course, had been injected with preserving fluid; (b) from fresh ox blood, and (c) from fresh human blood. All these were soaked out with .8% sodium chloride solution for a period of twenty-four hours, so that after filtration into three test tubes there were 10 cc. of each. To each one of these five drops of the humanized rabbit serum were added. There was no precipitate in either three hours after, but twenty-four hours after in all of the tubes, which in the meantime had been kept on ice, there was a perceptible precipitate.

EXPERIMENT II. Blood was obtained from a human placenta which, while not strictly fresh, had been kept on ice for a few days, and had no perceptible odor, by squeezing in a hand press, and enough was secured for three injections of 10 cc. each. These were given on Jan. 11, 16 and 20, while the 10 cc. of blood were taken from the animal on Jan. 25. At that time blood from the above placenta was mixed with four volumes of physiological salt solution, centrifuged for five minutes, and the clear supernatant fluid poured off for use. Four test tubes of this were prepared, containing respectively 5, 6, 7 and 8 cc., and to each of these one drop of the humanized blood was added. There was a cloudiness in all in twenty-five minutes, which in two hours was changed to a precipitate. An old blood stain from a cadaver, extracted with the same salt solution, gave a precipitate with a drop of this serum in thirty minutes. Of stains of fresh cat's, dog's, human and rabbit's blood extracted in the same way, both the rabbit's and the human blood gave precipitates with the rabbit serum in ten minutes.

EXPERIMENT III. A brown rabbit, whose weight was 1,320 gm., was injected Jan. 23 with 10 cc. hydrocele fluid, obtained through the courtesy of Dr. Gardiner W. Allen, which act was repeated on Jan. 29, and again Feb. 3. On Feb. 8 the animal was bled to the extent of 10 cc., which was placed on ice and allowed to coagulate, as usual. With the serum the following tests were made: 0.1 cc. of a mixture of saliva and blood, obtained from a tonsil operation, was mixed with 20 cc. .8% salt solution, and the whole centrifuged. In each of two tubes 5 cc. of this clear supernatant fluid was placed, and in a third tube 5 cc. of the same salt mixture, and to the first and third tubes two drops of rabbit serum were added. The first showed a cloudiness in thirty minutes, while the other two remained clear for twelve hours, when the second showed a slight cloudiness.

EXPERIMENT IV. A brown rabbit, weighing 1,780 gm., was injected Feb. 20 with a mixture of saliva and blood, obtained from an operation upon a tonsil, 10 cc. being used, and again on Feb. 25 with a similar amount. On Feb. 27 the animal died with the snuffles, and the heart, lungs, liver and kidneys were chopped finely and extracted with the customary salt solution and centrifuged for ten minutes. Ten cubic centimeters of this clear fluid were added to the same amount of extract from human blood stains, with negative results. The same amount was also added to an equal amount of an extract of rabbit's blood stain, with similar negative results.

EXPERIMENT V. Injection, March 17, with 10 cc. of a bloody effusion from the pleural cavity of a patient whom a later autopsy showed to have died of cancer of the lung, and on March 22, 25 and 29, similar injections of like amount were made. On April 1 the animal was bled to the extent of 10 cc., and the blood placed on ice for coagulation, as usual. The next day stains of fresh dog's, cat's, rabbit's and human blood on filter paper were soaked out with physiological salt solution, and to a total of 10 cc. in each tube four drops of the clear serum were added. After two hours there was no precipitate nor cloudiness in either tube, but after eighteen hours the tube containing the human blood was cloudy, while the others were clear.

By referring to these experiments severally, we learn from the first and third that pleuritic and hydrocele fluids produce but slight if any specific action upon the rabbit, unless, as in Case V, a certain amount of blood is mixed with such fluid. What the blood loses on this separation from the blood current, apart from the red corpuscles, cannot be told,

for chemically the exudate at least does not differ from blood except in this one factor. The transudate, of course, is much more deficient in the albuminous material, particularly in the globulins, one of which is supposed to carry the immunizing material, as in the so-called antitoxins. In all these experiments a more active antiserum was obtained when the blood in its entirety was used instead of the serum alone for injection, nor is it impossible that the serum had dissolved out from the corpuscles some element where the serum alone was used for immunisation, after it stood long enough for the corpuscles to settle, since Heinrich Schur² has shown that spontaneous hemolytic action can take place when blood corpuscles remain for any time in contact with their own blood serum, even after coagulation has taken place. It would be extremely interesting to learn whether isotonic salt solution by its spontaneous hemolytic action on corpuscles, entirely freed from serum by centrifugation and washed, could extract an immunizing principle from them of sufficient strength to produce precipitation in a rabbit. Hence it is not at all impossible that the precipitating principle may be found in the red or white corpuscles, and be soaked out by the serum in which they are suspended. At least in the fifth experiment a positive result followed the use of a similar fluid (pleuritic exudate) which had failed in the first, except that the latter was highly tinged from the red corpuscles and dissolved hemoglobin which it contained. It is also difficult to free immunized rabbit serum fully from a certain amount of hemoglobin which is dissolved out from the corpuscles during the process of coagulation. Another reason for thinking that it is the hemoglobin and not the serum which contains the precipitin or composes it, is that the hemoglobin of various animals differs so decidedly, especially in its crystalline form, while chemically the sera differ but very little. We have only the earlier efforts of Uhlenhuth, Wasserman and Schuelze in which the serum alone was used for injection, nor can I find any account of how carefully it was freed from coloring matter; in later attempts the defibrinated blood was used instead for immunization. If the hemoglobin has nothing to do with the production of the precipitin, it is difficult to explain why an exudate containing hemoglobin is so much more effectual than one without.

Again, when we dissolve out an old blood stain with salt solution, we obtain the hemoglobin, or met-hemoglobin, its modification, as can easily be shown by the spectroscope. We know further that the hemoglobin is the most resistant to putrefactive agencies, while the albumens of the serum fall an easy prey to such decomposition. Hence we have a clear sequence which points to the coloring matter, rather than the serum or any of its constituent parts, as causes of the precipitin. Ziemke³ attempted to isolate the globulin by magnesium sulphate, thinking that this would carry the agent, but found it only slightly active even when obtained from a very active serum. It seems also that after six or eight hours all sodium chloride extracts of blood stains will become cloudy or even deposit precipitates. This cannot be due to bacterial action, for it occurred with equal readiness when they were kept upon ice.

²Beitraege zur physiolog. und patholog. Chemie, vol. III, p. 100.

³Deutsche med. Woch., Oct. 17, 1901.

In the first experiment it will be seen that precipitates were found in all the solutions in twenty-four hours, though the serum, as was shown, was in no way specific for human blood, and yet this is not true in all cases, for in the fifth, after eighteen hours, all were clear except the human blood, which had shown no cloudiness after two hours. This probably indicates a serum not over strong in antitoxic bodies, or possibly too dilute a solution of the various blood stains. This spontaneous precipitation cannot be due to the blood corpuscles which settle out, for, in the second experiment, the contents of the second tube were thoroughly shaken down with the centrifuge and the supernatant fluid which was poured off was absolutely free from corpuscles of any kind. As is well known, serum globin requires a 10% salt concentration for its solution, and as we use less than a tenth of this for soaking out the blood stains, it is possible that by some molecular change the globulin, or, as I suspect, the conjoined hemoglobin, falls out of solution. Until the causes of this spontaneous precipitation of albuminous bodies are more accurately determined, the value of this test will depend very largely on the control, and we can never say positively that we do, or do not, have a precipitin until the tube prepared in a similar way, but without the serum to be tested, has passed a period of at least two hours without spontaneous cloudiness; then, and then only, may we consider that a precipitating agency is present, if at this time the other tube has a cloudiness or precipitate.

The second experiment presents another surprise, in that a supposedly immunized rabbit serum to human blood gave precipitates with both human and rabbit blood stains. Both tests showed cloudiness rather than a distinct precipitate, which would lead one to think that the specific serum was weak in precipitin, yet the same fact, also noted by G. Strube,⁴ who found that a serum supposedly specific for human blood gave precipitates with the blood of monkeys, guinea pigs, hens, calves, goats, dogs and sheep, was explained by him as meaning that a serum unusually strong in specific power over human blood would also react weakly with somewhat allied bloods. My own explanation was that a rabbit only partially immunized might furnish a serum which was antagonistic to both the peculiar natural blood of his kind and also to human blood, and hence produce a precipitate in both. Contrary to Strube's results, also, my serum had no effect on the other bloods tried. He goes on further to say in regard to these double results that various animals contain albumins which are not identical but which are very closely related, and that anti-bodies act with energy upon specific albumins and more weakly upon non-homologous ones.

In Experiment Four we have shown that this active agent must be in the blood instead of in the organs, at least, if present in the latter, in such a form that it cannot be extracted by the salt solution. It is possible, of course, that owing to the interruption of the injections by the death of the animal it was not fully immunized. It was our experience also, that the serum which contained the active principle could not be preserved on slips of filter paper, and an active serum which had been kept for a long time

in the refrigerator had also lost the greater part of its efficiency and acted only weakly if at all upon human blood stains. In this the precipitin differs very decidedly from the other antitoxic bodies, which, as is well known, preserve their activity for long periods and are not affected by a small percentage of preservatives.

From this can be seen at a glance the restrictions that surround this test, and that only when all of these have been strictly observed can we say with any degree of surety, *this is human blood*.

REPORT OF A SERIES OF CASES OF MOVABLE KIDNEY.¹

BY H. D. CHADWICK, M.D., WALTHAM, MASS.

DURING the past three years twenty-eight patients have come under my care suffering from symptoms referable to a movable kidney. Of this number twenty-four were females and four were males. In one man and three women the left kidney was the one affected; in twenty-four the right kidney, and in one woman both were freely movable, and each gave rise to symptoms. Ten of these women were married, and of this number eight had borne children. Occupations were as follows: eleven were housekeepers; eleven, factory employees; two, domestics; one, bookkeeper; one, postman; one, reporter; one, farmer. Nineteen of this series had been previously treated symptomatically without a correct diagnosis having been made. Most frequently the patient was told that it was some form of indigestion, acute or chronic, as the case may have been. Other diagnoses were enlargement of the liver, spinal disease, colic, heart disease, chronic appendicitis, pleurisy, inflammation of the pelvic organs, malposition of the uterus, — and one woman was told her trouble was due to a "sore on the liver." Several of those in whom the symptoms resembled indigestion had made the rounds of several physicians, taken all the domestic and patent sure cures, and tried diets of varied kinds without relief. One had had her uterus suspended because it seemed to the surgeon whom she consulted that the backache, which was her most prominent symptom, was due to a retroversion which was present. She consulted me one year after her operation because she had not been relieved of her backache and nervous symptoms. She felt sure the operation had not been successful and that her uterus was as badly misplaced as before. A vaginal examination showed that the uterus was in perfect position and that the other pelvic organs were normal. Close questioning brought out the fact that she at times felt pain in her left loin, especially when doing hard work or after much walking. The abdomen was then palpated and the left kidney was found freely movable and tender to pressure. Another patient of interest to you has recently come under my care. She gives the following history: Four or five years ago she rode a bicycle a great deal; tried to follow her husband in hill climbing and long-distance runs. Began then to have backache at intervals. These attacks caused her to give up riding, and then she found that walking soon gave her the same discom-

⁴ Deutsche med. Woch., June 12, 1902.

¹ Read before the Obstetrical Society of Boston, Dec. 16, 1902.

fort. Recently backache has been almost constant, frequently accompanied by nausea. Six months ago she consulted a physician and was told that she had displacement of the uterus and that she ought to have an operation. She objected to that method of treatment, and the physician kindly consented to use tampons three times weekly for the next three months. The benefit derived was so little that her scruples against an operation were removed and arrangements to have it performed were made. This plan was not carried out because of the illness of her husband. Her symptoms continued and she became very nervous and despondent; was afraid to leave her home, as walking brought on the distress with greater intensity; loss of weight was considerable, as her appetite was poor, and she could not sleep well. I was called to see her, and from the description of her condition I thought that her symptoms were those of a retroverted enlarged uterus. At my request she came to my office, that a more careful examination might be made. Much to my surprise, the uterus and appendages were normal in every way. She then, in answer to my questions, said that she at times had attacks of pain in the right hypochondrium, which she thought due to indigestion; that she was also annoyed by a sensation of tingling or burning about the crest of the ilium. The right kidney was easily felt by palpation, and it descended about two inches with each inspiration. She has now decided to have her kidney suspended instead of her uterus.

A third case will be described in detail because of several interesting features. This married woman was about thirty years old. Thirteen years ago she fell and caused some internal injury which produced abdominal pain and, at the time, soreness. Soon after this she began to have attacks of pain in the right hypochondriac region which increased in frequency. About three years later she could sometimes feel a bunch in the right side which moved with the respiration. She was told by her physician at that time that it was a movable kidney, which could only be cured by an operation. During the past year she has felt similar pain in her left loin. Sweeping or walking caused increased pain, which was often referred to the region of scapula, backache was frequent and relief could be obtained only by lying down. The last few months she has had pain every day—frequently so severe that she would have to leave her work in the watch factory to go home and lie down. She had lost flesh rapidly, was intensely nervous, irritable and despondent. Examination at this time showed that the right kidney would move about three inches with deep inspiration, was tender to touch and pressure produced a feeling of nausea. The left kidney was movable to about half this extent and pressure caused similar symptoms. An operation was done March 6, 1900, and both kidneys were sutured to the lumbar fascia. A good recovery was made, and her gain in flesh and strength was rapid. Her backaches and attacks of lumbar pain were entirely relieved. The following December she missed her menstrual period, and soon after began to have morning nausea characteristic of pregnancy. Vomiting soon became troublesome, and she could not retain sufficient nourishment. Occasionally she complained of brief attacks of

pain in the abdomen, especially along the course of the ureters. During the first week in January she began to flow and had characteristic labor pains. This continued four days without any cessation. Her temperature was taken during this time and found to vary from 99° to 100° each evening. Cur- etting was then decided upon. The os was found to be patulous, the uterus a little enlarged, no placental tissue was brought out by the curette, although the whole cavity of the uterus was supposed to have been gone over.

The temperature dropped to normal three days later, but remained there only a few days, when it again began to show the same evening elevation. All nausea and vomiting stopped and her appetite returned. Her strength, however, did not return, but instead she became gradually weaker during the next four weeks. Dr. Worcester saw her with me, and an exploratory laparotomy was decided upon. This was done Feb. 5. The uterus was moderately retroverted, somewhat enlarged and felt like one that was pregnant. The peritoneum covering the uterus, tubes and ovaries was thickly studded with red and fresh tubercles. Neither the parietal peritoneum nor the other abdominal organs showed evidence of tuberculous lesions.

The uterus was suspended and the wound closed. Nine days later labor pains came on and an ovum of about six weeks was expelled entire. A good recovery was made from the operation, and after the miscarriage the temperature dropped to normal and has remained so since. Her summer has been spent in Canada, and now she is again back at work in the factory, feeling well in every way. It is an interesting fact that she had become pregnant five years before and miscarried at the end of three months. During that whole period her temperature was elevated, as it was during the last pregnancy, and nausea and persistent vomiting were constant. It seems probable that the tuberculous lesions were then present and did not light up into activity until the uterus again began to enlarge.

The other cases may be arbitrarily divided into acute and chronic.

In the first class are put those who have occasional severe paroxysmal attacks of severe pain, accompanied by chills, nausea and prostration, spoken of as Dietl's crises. Into this class six of these series could be placed. The attacks came on after some unusual or continued exertion, but sometimes also when no cause can be assigned. The patient is seized with intense colicky pain in the hypochondriac and lumbar regions. This pain sometimes extends along the course of the ureter and again in some cases upward to about the level of the scapula. Chills and nausea or vomiting sometimes accompany these paroxysms. The victim of such an attack gets some relief by lying down with the thighs flexed. Physical examination shows great tenderness in the loin, most marked when an attempt is made to palpate the kidney. The muscular rigidity is so great, however, at such times that the kidney can seldom be felt. This acute condition gradually subsides with rest in bed and hot fomentations; morphine will be demanded in considerable doses. The temperature may rise to 100°, and gradually subsides in a few days as the congestion is relieved. After a few days the patient

recovers and is free from pain until another attack comes on; the duration of this immunity depending upon the occupation of the patient and also upon the extent of the abnormal mobility of the kidney.

In the other group of chronic cases the attacks of pain are of more moderate severity but more frequent occurrence. The patient soon learns that when the pain is severe a few hours, as in some cases, a few minutes' rest in bed, lying on the back, will relieve the acute pain. Constant or frequent backache along the lumbar spine is almost always complained of by these patients. This pain is similar in character and position to that which is so often produced by retroversion.

This is oftentimes the prodromal symptom of a loose kidney. Then a feeling of discomfort in the epigastrium or hypochondrium becomes frequent. This is almost invariably supposed to be due to indigestion, but is uninfluenced by diet or anti-dyspeptic remedies. Various forms of indigestion may, of course, coexist, due to gastropexia or similar causes. Seven of my series first consulted me for what they thought was chronic dyspepsia, and they considered that the attacks of renal pain were due to acute indigestion. Flatulency and constipation are almost always present, due probably to the abnormal influence of the kidney exerted through the sympathetic nerve plexus. The third most frequent symptom is one which, when present, seems to me pathognomonic of a movable kidney. It is a peculiar sensation, which is frequently spoken of as like that made by searing the flesh with a hot iron,—neither a pain nor an ache, but a burning and prickly feeling over the skin supplied by the ilio-hypogastric nerve. Especially is this felt about the crest of the ilium and outer surface of the hip. One patient came to me for relief of this uncomfortable sensation along the outer surface of her right ilium. Thinking that it was a symptom of movable kidney, I examined her and found that such was the case. She also thought she was suffering from indigestion. Loss of flesh is also the rule in the chronic cases. The various forms of neurasthenia can all be found in these patients. In the severe chronic cases a depression bordering on melancholia exists. Another typical symptom is often spoken of. A person finds that they feel worse after going to bed and have difficulty in going to sleep. If they go to sleep, they are soon awakened with distress about the stomach and upper part of the abdomen, which is ill defined in location but makes them nervous and restless; they have frequently to get up and walk about. This has been complained of by my patients as occurring soon after going to bed. The only explanation for this seems to be that removal of the clothing allows the kidney greater freedom of movement.

The proper treatment of this affection seems to depend upon the severity of the symptoms rather than upon the amount of inability. A movable kidney is not infrequently found, while making physical examinations, which has never produced troublesome symptoms. When, however, the abnormal inability becomes a menace to a person's health or limits his usefulness, there is in my opinion only one treatment that will give relief or produce a cure. That is fixation.

Palliative treatment by pads and bandages has in my hands been of no value. It does not seem logical that effectual pressure can be made upon an abdomen containing a movable object like the kidney with other effect than added discomfort to the patient. Rest and tonic treatment will relieve and diminish the frequency of the attacks, but when labor is resumed the kidney symptoms will invariably return.

Nephropexy, on the other hand, if thoroughly done, will produce a radical cure. The good results are as certain to be permanent as are those obtained when a retroverted uterus is corrected by suspension.

An operation was performed on fifteen of this series of cases, one of them a double nephropexy. The results obtained have been very satisfactory, with the exception of one case. That was one of my earlier cases, and after a few months the kidney again became movable. I suppose that I did not split the capsule enough for adhesions to form, and when the stitches gave way the former conditions returned. One other developed chronic appendicitis soon after her kidney operation, which became so troublesome that the appendix was removed. Another case has similar symptoms now, which are probably due to an inflamed appendix. The frequency of this condition in patients with a movable kidney is supposed to be due to the chronic congestion caused by the misplaced kidney.

I realize, gentlemen, that I am in danger of being looked upon as one having the kidney fad, but I am willing to run that risk if by so doing some of the persons who have been going about from one office to another, having many of the characteristics of a neurasthenic, may be recognized and cured. Some of them are the victims of a pathological condition which can be easily remedied, and are not hypochondriacs, whose delusions must be endured.

THE COMPOSITION AND ALCOHOLIC CONTENT OF CERTAIN PROPRIETARY FOODS FOR THE SICK.

BY CHARLES HARRINGTON, M.D., BOSTON,

Assistant Professor of Hygiene in the Harvard Medical School.

In presenting this brief communication I propose to discuss neither the question of the food value of alcohol nor the advisability of the use of that agent as a remedy in the treatment of disease. It is my intention merely to offer the results of my examination of a number of preparations which are extensively advertised, and, inferentially, widely used, as foods for the sick and for convalescents, and to leave the question of their true nutritive and therapeutic value a matter for independent judgment.

My attention was drawn to this class of preparations by the fact that an invalid who was faithfully following the directions accompanying one of them was observed to be more or less constantly in a state of marked intoxication, for which condition no cause could be assigned, until the suspicion was directed to the food, which proved, on analysis, to contain a fairly large percentage of alcohol; and this suggested the advisability of obtaining specimens of other preparations for investigation.

Among those examined were a number which

proved to be almost or wholly non-alcoholic, and although their food value was shown to be very slight when their cost was taken into account, they will be passed by without mention.

Of those which I report, it will be noted that the analyses made were not exhaustive, the determination having been restricted to the percentage of alcohol, total solids and mineral matter. The yield of total solids was such in each case as not to warrant the expenditure of the time necessary for an investigation of the nature of the several constituents, and for our present purpose we may concede that the total residue of each preparation is wholly absorbable.

Following are those which were found to contain appreciable amounts of alcohol:

"Liquid Peptonoids."—Beef, milk and gluten, perfectly digested" is said to contain the albuminoid principles of beef, milk and wheat. "In cases of feeble digestion and wasting diseases," its effects are said to be "immediate and pronounced."

Dose: For an adult, one or two tablespoonfuls, three to six times daily; children in proportion.

The maximum amount recommended for an adult will yield less than an ounce of nutriment and the alcoholic equivalent of 3.50 oz. of whisky per day.

Analysis shows 23.03% by volume of alcohol, 14.91% of total solids, and 0.17% of mineral matter.

Panopepton.—This is said to contain "the nutritive constituents of beef and wheat in a soluble and freely absorbable form." "A nourishing, restorative, stimulant, liquid food of incomparable value for the nutrition of the sick"; "the best food in acute diseases, fevers, etc., in convalescence"; "a restorative from fatigue"; "a special resource against insomnia."

Directions: "For adults, a dessertspoonful to a teaspoonful several times a day and at bedtime; for infants, a few drops to a half teaspoonful according to circumstances, as directed by the physician."

It yields 17.99% of solid matter (including 0.97% of mineral matter) and 18.95% by volume of alcohol.

Hemapeptone.—This is said to be a preparation of "albumose-peptone," "the end product of digestion of albumin and hematin, a true organic iron."

One is advised to take a teaspoonful, increasing to a tablespoonful as needed, after each meal.

Analysis: Alcohol by volume, 10.60%; total solids, 19.54%; mineral matter, 0.37%.

Nutritive Liquid Peptone.—This is said to be "a valuable combination containing the nutritive constituents of beef and malt, predigested and ready for assimilation," and to possess "the properties of a gentle and refreshing stimulant."

No dose is given. The analysis shows: Alcohol by volume, 14.81%; total solid nutriment, 15.20%; mineral matter, 0.69%.

Hemaboloids.—The nutriment in hemaboloids is said to be "partially digested and vitalized by treatment with nuclein, rich in iron and phosphorus-producing elements." It is said to enrich the blood,

to increase weight and the number of red blood cells, and to enhance nerve action. The preparation is said to consist of vegetable nucleo-albumin, reinforced by beef marrow extract and beef peptones, and is to be used in all impoverished conditions of the blood, such as anemia, general debility and in convalescence from all diseases.

The dose recommended is one-half to one teaspoonful three to four times daily in a little water, plain or aerated, or with cracked ice. "If necessary, increase to two tablespoonfuls."

The maximum recommended yields about a quarter of an ounce of nutriment, and the alcoholic equivalent of about an ounce and a half of whisky daily.

Analysis shows 6.36% of total solids (about half as much as is contained in milk of fair quality) and 15.81% by volume of alcohol. The mineral matter, which is largely iron, amounts to 0.62%.

Tonic Beef.—Tonic Beef is said to contain "the nutritive constituents of beef, wheat and fresh eggs in a soluble, predigested and hence readily absorbable form." One is led to believe that the beef is carefully selected, and that the blending of the constituents of these three very important foods, and their flavoring and aging (whatever that may mean in connection with eggs), have been conducted on most scientific principles. After being treated to an imposing array of facts concerning the value of the preparation, we are informed that "besides being a nutritive, Tonic Beef is a delightful stimulant." Adults are advised to take from half to one tablespoonful every four hours and at bedtime; infants and children should be given from ten drops to a teaspoonful, according to age.

A tablespoonful every four hours will yield to the consumer in the course of a day about a half ounce of nutriment and the alcoholic equivalent of an ounce of whisky, for analysis shows 15.58% by volume of alcohol and 18.16% by weight of residue, including 1.04% of mineral matter.

Mulford's Predigested Beef.—"A concentrated predigested food containing the entire nutritive value of beef in a completely digested form, ready for immediate absorption into the system."

It is claimed for it that "it is a complete natural food product, containing sufficient nutritive materials to maintain normal nutrition of the body," and that it is "indicated as an exclusive diet in typhoid fever, la grippe, tuberculosis, nervous exhaustion and all conditions of the system associated with enfeebled digestion and malnutrition."

Dose: One to two tablespoonfuls in water every two or three hours, or as needed; children in proportion to age.

Analysis shows 19.72% by volume of alcohol, 10.39% by weight of total solids, which yield 0.20% of mineral matter.

The maximum administration recommended, that is, two tablespoonfuls every two hours, disregarding the proviso "or as needed," would yield daily about 1.25 oz. of nutriment and the alcoholic equivalent of about 6 oz. of whisky, which might well be regarded as hardly adequate as an exclusive diet in the diseases above mentioned or in any other condition of the system.

Clinical Department.

A CASE OF HABITUAL DISLOCATION OF THE SHOULDER JOINT.

BY J. COLLINS WARREN, M.D., BOSTON.

The following case is reported in order to put on record another successful result following the operation described by Burrell and Lovett¹ for the cure of this affection.

The patient, a house-lather by trade, was twenty-two years old. Four years before entering the hospital he had fallen on the ice and dislocated his left shoulder joint. The dislocation was reduced and the joint gave him no trouble for about six months, when he again dislocated the joint while swimming. Since then it has been dislocated some ten or twelve times, the raising of the arm while plastering favoring the slipping of the bone from its socket. On examination the left arm was found to be less muscular than the right. There was slight atrophy of the deltoid, but no restriction of motion.

The operation was performed Oct. 19, 1901. An incision four inches long was made from the coracoid process downward and outward along the inner border of the cephalic vein. This vessel and the deltoid muscle being drawn outward, the tendon of insertion of the pectoralis major was exposed and divided in the greater portion of its extent. The coraco-brachialis and the short head of the biceps were drawn inward by a retractor.

The head of the humerus being rotated outward, the insertion of the subscapularis was brought into view. By dropping the head of the bone backwards this muscle was relaxed and its lower edge could be differentiated from the capsule. By freeing the lower edge of this muscle the capsule was exposed, a piece of the capsule one inch in length by three-quarters inch in width was excised, and the wound thus made was closed with silk sutures, putting the capsule on the stretch. The divided tendon of the pectoralis was united by a buried silk suture and the skin was brought together by silkworm gut sutures.

The wound healed by first intention, and the patient was discharged well on Nov. 2, two weeks after the operation.

In answer to a letter of inquiry the patient writes under date of Feb. 19, 1903, that is, over two years after the operation, that there has been no dislocation since the operation, and that his present occupation does not require so much upward use of the arm as it did before, "still I have used it as much as the ordinary person." He has, however, had no trouble whatever with his shoulder, and he regards the operation as a success in every way.

ACCORDING to *American Medicine*, Dr. A. S. F. Grünbaum has been appointed director of Cancer Research, for which Mr. Sutton Timmis of Liverpool recently gave a donation of \$50,000. The work will be carried on in connection with the University College and the Royal Infirmary of Liverpool.

¹ Am. Journ. Med. Sc., August, 1897.

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

COMPULSORY NOTIFICATION OF TUBERCULOSIS.

AFTER a free discussion of the question *pro* and *con*, a committee of the Society of Public Medicine consisting of Vallin, Berthod and others reported as follows:¹

"Notwithstanding the arguments which practicing physicians propose in opposition to the plan of notification of cases of tuberculosis, and taking into consideration the burden imposed by a sanitary law making the attending physician responsible for neglect or refusal to report such cases, the committee, while favoring the adoption of the principles, and not doubting for a moment that obligatory notification would prove an excellent and a desirable means in staying the spread of consumption, nevertheless hesitates to demand that this disease should be placed upon the list of contagious diseases. The committee believes that the time has not yet arrived to adopt this course. They also believe that the desired result can be attained and the task of the physician relieved by educating the public as to the nature of the disease, before placing it on the list of unquestionably communicable diseases."

OYSTERS AND TYPHOID FEVER.

Remlinger² reports the results of investigation of 34 cases of typhoid fever received at the French Hospital at Constantinople, from Jan. 15 to June 15, 1902, 17 of which had eaten oysters within the recognized incubation period of the fever.

The shores of the Bosphorus abound in oyster beds, very many of which are in regions foully polluted by sewage. As one French writer states, "*L'oeil est inutile; le nez suffit*" to distinguish the polluting causes.

The oystermen of London have held a meeting³ at which resolutions were adopted calling for measures to be taken to prevent the sale of oysters from beds known to be contaminated with sewage, and also to prevent the discharge into rivers, estuaries and any part of the seacoast.

Dr. Fraser, medical officer of health, of Portsmouth, England, where outbreaks of typhoid fever traceable to oysters have occurred, lays down the following propositions⁴ as essential to make out a satisfactory case against the oyster:

(1) That the oysters had been eaten at such a date previous to the onset of the disease as would be consistent with what we know as to the time typhoid fever takes to develop in man.

(2) That there was no other condition common to all or a large proportion of the cases which could be regarded as playing a causal part in the disease.

(3) That the oysters had not only been exposed to sewage contamination, but that this sewage actually contained the specific infection of typhoid fever.

Dr. Fraser says it is unreasonable to suppose that every oyster would be infected, and it is quite pos-

¹ Rev. d'Hygiène, May, 1902, p. 460.

² Rev. d'Hygiène, October, 1902, p. 872.

³ Brit. Food Jour., January, 1903, p. 3.

⁴ Brit. Food Jour., January, 1903, p. 4.

sible that only those people were affected who were subject to one or other of the following conditions:

(a) They may have eaten a specially large number of oysters, and so have had a large quantity of the typhoid poison.

(b) They may have eaten only a few, but these few may have been contaminated with a large amount of the typhoid poison.

(c) They may have been in a delicate state of health, or have been constitutionally very susceptible to the disease.

WATER CRESSSES AND TYPHOID FEVER.

The London *Daily Telegraph* (November, 1902) calls attention to the danger of transmission of typhoid fever by means of water cresses which have been grown in streams more or less polluted by sewage. Water cress not only grows in water, but is brought to market thoroughly drenched, and is kept in water till it is sold, and is then eaten raw. These conditions favor the growth of disease germs. The producers or growers "are under moral obligation to spare no trouble in ensuring that the water they are in is free from pollution, while the local authorities in the districts where cresses are grown ought to enforce stringently the sufficiently severe laws against stream pollution." The writer concludes with the timely observation that "of typhoid fever it is particularly true that prevention is better than cure, and prevention is only a question of energy and efficiency on the part of the sanitary authorities, who might occasionally spare a thought for a vegetable with so many chances of working mischief as water cress."

VIABILITY OF THE TYPHOID BACILLUS.

Majors Frith and Horrocks⁵ give the results of experiments which they had made to determine the length of time the typhoid bacillus may survive in soils and on fabrics, and recently Professor Pfuhr of Berlin⁶ has published the results of similar experiments. The figures given are respectively: from moist garden earth the bacillus was recovered after 74 and 88 days, from dry sand after 25 and 28 days, from moist peat after 13 and 21 days, and from dried linen after 74 and 97 days. These observers practically confirm each other.

PROGRESS OF THE PLAGUE.

Low⁷ records chronologically and topographically all recent manifestations of plague throughout the world. He has given special attention to the rôle of the rat in the distribution of plague, and though the records which he has collected go to confirm the belief that, as regards plague, man and the rat are reciprocally infective, they fail completely in affording sufficient data for determining the degree to which man is in danger through the rat. So far as plague on land is concerned, it would appear that in particular localities man and the rat suffered from plague coincidentally; that in other localities man suffered before the rat; and that in others the rat suffered antecedently to man. It would also appear that when, in a particular district, the one (man or the rat) has contracted plague before the other, the

interval between invasion of the first and of the second species has been often a long one—extending sometimes over weeks and months. Again, it would appear that plague may prevail largely among men without rats becoming conspicuously affected; and conversely that the disease may cause large mortality among rats of a locality, while neglecting to attack its human inhabitants.

As regards plague on board ships there are similar facts. The disease does not under conditions of sea transit appear to be at all readily conveyed from the rat to man, or from man to the rat. On the one hand, ships infected with plague for several weeks in the persons of crews or passengers have come into port with the rats on board apparently altogether exempt from the disease; and, on the other hand, ships infected with plague-smitten rats have, after voyages of considerable duration, arrived at their destinations wholly free from plague as regards crew and passengers.

BERI-BERI ON SHIPBOARD.⁸

Out of a total of more than 4,000 ships arriving at the port of Falmouth, England, in the six years 1896–1901, 43 had crews more or less affected with beri-beri. Of this number 28 were Norwegian ships. The disease was rarely found on steamers making short voyages. With regard to the sanitary condition of ships of different countries the observer found that of German ships to be the best, and of the Norwegian he makes the following comments:

They are,—

- (1) In a worse sanitary condition.
- (2) Oftenest undermanned.
- (3) Worst fed and found.
- (4) Oftenest carry deck cargoes.
- (5) Oftenest carry wood cargoes.
- (6) Smallest vessels that go on long voyages.
- (7) Worst regulated scale of diet.

He carefully investigated the water supply of the ships and every item of the food supply without finding definite causes for disease. The question of the presence of arsenic in food was also carefully examined with negative results.

ANCHYLOSTOMIASIS AMONG MINERS AND TUNNEL WORKERS.

Dr. J. S. Haldane, in a report to the British government,⁹ describes an outbreak of anchylostomiasis in a Cornish copper and tin mine. There had been among the workers in this mine 115 cases of severe but unexplained anemia since 1893. He says in one part of the mine "practically every one employed in this part of the mine seems to have been more or less affected, as well as the manager and nearly all the officials employed underground." These mines are specially exposed, "owing to the fact that Cornish miners are continually returning from tropical countries, and men known to have been infected are scattered over the district. It should be clearly understood that many of the men who are only slightly infected show no symptoms at all, as the presence of a few anchylostomes in the intestine may produce no symptoms. Such men may con-

⁵ Brit. Med. Journ., Sept. 27, 1902.

⁶ Zeitschr. f. Hygiene u. Infectiouskrankheiten, 40, 3, p. 455.

⁷ Reports and Papers on Bubonic Plague, London, 1902.

⁸ Notes on Beri-Beri at Falmouth, by Dr. C. Bullmore, Medical Officer of Health. Public Health, January, 1903.

⁹ Report to the Secretary of State, on an Outbreak of Anchylostomiasis in a Cornish Mine, by J. S. Haldane, M.D., F.R.S., 1902.

tinue for years to be a source of possible infection, owing to the presence of ova in the feces."

By the use of disinfectants, and the pail system for collection of excuta, the epidemic was greatly diminished.

Close upon the publication of this report comes the statement¹⁰ in another country of the prevalence of the same disease among the Swiss tunnel workers. During the construction of the St. Gothard Tunnel several hundred men became incapacitated from the same cause. To minimize the infection the Hungarian University of Agriculture and Mining has issued instructions that all laborers engaged in tunnel work (especially those from other districts) must be medically examined for anchylostomiasis, and preventive measures must be taken to prevent the spread of the disease, such as iron earth closets fitted with tight lids, the contents to be removed to the open air daily and buried after being treated with quicklime. Great care must also be taken to provide a supply of perfectly pure drinking water, stored in clean vessels.

Similar regulations were also adopted in the Simplan and Arlberg tunnels with good effect.

(See, also, Dr. Stiles' excellent paper in Report of Bureau of Animal Industry for 1901, entitled "The Significance of the Recent American Cases of Hookworm Diseases [Uncinariasis, or Anchylostomiasis] in Man," p. 183.)

THE STERILIZATION OF VACCINATING INSTRUMENTS.

Sagranti, surgeon of the Eleventh French Dragons, has invented for use in vaccinating large numbers of people — regiments, schools, etc. — vaccinostyles or small metallic lances, one for each person vaccinated. These are sterilized by placing them to the number of fifty or more in racks in a small metallic cylinder, which is put into a large cylinder containing a 2% solution of carbonate or borate of soda, which is kept at the boiling point for ten or fifteen minutes by means of a spirit lamp. The advantages of this method are the greater rapidity in the vaccination of large numbers of persons, and the sterilization of the vaccinating instruments.

(To be continued.)

Reports of Societies.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

STATED meeting, Feb. 9, 1903, the president, ANDREW H. SMITH, M.D., in the chair.

DISCUSSION ON THE ADDRESS BY DR. WILLIAM H. THOMSON, AT THE ANNUAL MEETING, JAN. 12, ON "THE TREATMENT OF UREMIA." (See page 183.)

Previous to the discussion, Dr. Leonard Weber presented a young man twenty-one years of age, the subject of chronic Bright's disease, who had had the Edebohls' operation performed on him. The patient suffered from what might be called chronic uremia, and early in 1902, despite the most active treatment, his condition became very bad.

¹⁰ *Zeitschrift des Oesterreichischen Ingenieur*, 1902, p. 542.

He was sent to the Post-Graduate Hospital on May 5, and on May 12 renal decapsulation was done by Dr. Edebohls. Although the disease had then existed for eleven years, there was no atrophy of the kidneys, these organs, which were of the mottled variety, being found to be about twice the size of ordinary kidneys. He remained in the hospital one month, and on June 7 again came under Dr. Weber's care. Since then there had been no uremia whatever and no anasarca, and he felt so much better that he was able to do light work. The specific gravity of the urine still continued as low as before, however, and albumin was still abundant in it (specimens exhibited). Dr. Weber referred to two other patients, brothers, who had been in almost exactly the same condition as this one, both of whom had died in uremic coma shortly before being operated on, and said that at the time the operation was performed it seemed in his case, also, that the end must come very soon. Dr. Edebohls exhibited the cicatrices left by the operation, and said that the wounds always healed by primary union. No weakness of the back or other parts resulted from the operation.

The discussion of the evening was opened by Dr. GEORGE M. EDEBOHLS in a paper entitled,

THE TREATMENT OF CHRONIC BRIGHT'S DISEASE BY RENAL DECAPSULATION: A REPORT OF PROGRESS.

He first gave a *résumé* of the history of this procedure as done by himself and other surgeons, the last publication of his own on the subject having appeared in the *New York Medical Record* of April 26, 1902. He then said that by painstaking effort he had been enabled to see or get word from all the patients operated on by himself, so that he could present the status up to date.

Analysis of cases. — From 1892 to 1901, inclusive, he operated on 19 cases, and during the year 1902, on 32 cases. Of the 51 cases, 29 were in males and 22 in females, and the average age was thirty-four years. In 32 cases the Bright's disease was far advanced, and nearly all the cases were attended by cardiac or other complications. Of the 51 cases, 29 were of chronic interstitial nephritis, and in all but 9 only one kidney was decapsulated; 14 were of diffuse nephritis, and 8 of parenchymatous nephritis. If only one kidney were affected, he said, the patient suffered very little, and the renal disease might be discovered only accidentally.

Preparation for the operation. — The chances of success are enhanced by the patient's remaining in bed for a week before the operation. This gives the heart a rest if cardiac complications are present, and affords the best facilities for any preliminary treatment that may be required, as well as for the systematic investigation of the quantity and condition of the urine.

Conditions affecting the difficulty or ease of the operation. — (1) Great length and obliquity of the twelfth rib. This difficulty must be overcome by posture and a modification of the incision. (2) Mobility or firm adherence of the kidney. When there is firm fixation it is generally necessary to incise the capsule at any point that can be reached. (3) The firm or more or less weak attachment of the capsule. Great caution and gentleness should

characterize all attempts at decapsulation. In this operation there is often considerable danger of destroying some of the already diminished working tissue of the kidney, and it should never be performed except by surgeons who are already more or less familiar with renal surgery in general.

Danger and anesthetics. — The danger is always greater from the condition present than from the operation itself. One hour should be the limit of time for decapsulating two kidneys, and half that time is often sufficient for operating on both. In all but three of the operations ether was used, preceded by nitrous oxide gas. In three, nitrous oxide and oxygen were administered by Dr. T. L. Bennett. In one of these ether had to be used afterward, and finally chloroform, to prevent death on the table. This patient died twelve hours after the operation from acute dilatation of the heart.

Results. — Of the 51 patients operated on, 14 died, and the time of death after the operation ranged from twelve hours to eight years. Five died from uremia and three from acute cardiac dilatation. Others, one of whom at least was cured of the nephritis, died from different diseases. Of the 14 cases, 7 lived for periods ranging from two months to eight years, the average being nearly three years. The mortality shortly after the operation was 13 $\frac{3}{4}$ %. Dr. Edebohl said that for one reason or another (the patients often begging him to operate) he had felt compelled to accept a number of cases in which death seemed a foregone conclusion. He gave them the benefit of the doubt, however, as surprisingly good results had been obtained in some other cases of the same kind. Some of these patients were physicians, who urged the operation at all hazards. He thought, however, that in future the procedure should be limited to more favorable cases. In advising for or against operation each case must be judged on its own merits. Derangements of the heart and vascular system must always be taken into careful consideration. If cardiac hypertrophy be not too marked or too greatly complicated by other conditions, it is not a contra-indication.

Therapeutic results. — He divided the 51 cases into two categories; those operated on up to July 1, 1902, and those since that date. In the first class 24 cases were available for the study of results. To prove that a cure or substantial amelioration of the condition has been effected it must be shown: (1) that there is a practical improvement, (2) that it is lasting, and (3) that it is steadily progressive. Only two of the 24 cases have resulted unsatisfactorily. One of these is that of a lady who remained without any evidences of nephritis for nearly four years. Four years and ten months after the operation (when one kidney alone was decapsulated), albumin and casts reappeared in her urine. Notwithstanding this, however, she feels quite too well at the present time to think of subjecting herself to another operation.

The second case is that of a young married woman, both of whose kidneys were operated on in 1901. For eight months she showed considerable improvement, but after that she had an attack of diphtheria, followed by a succession of colds, and there has since been no gain in her condition. Of the other cases, 10 have been radically cured and 12

greatly improved. Specimens of urine have been obtained from all but two of the patients.

Urine. — As a result of the operation a steady improvement in the condition of the urine is observed. Thus, there is an increased daily output of urea. Of the casts, the first to disappear are those of the tubules; later the granular and hyaline casts also disappear. The albumin, which also finally disappears, remains for a long time after the casts cease to appear. Dyspnea and circulatory disease likewise improve in varying degree.

Cases in physicians. — Of eight medical men operated on, three died; in two there was only moderate improvement, and in three the results were most gratifying. Letters were read from the last three, in which they described their cases and the results following the operation.

Cures. — In order that a case may be pronounced cured, fullest verification must be had of the disappearance from the urine of all albumin and casts for a period of at least six months. Among the cases cured there was one accidental death one year after the operation. The average period since operation is four years. Eight of the patients suffered from chronic interstitial nephritis. The cases of 1902 were, as a rule, of great severity.

Dr. F. P. KINNICUTT laid stress on the point that any success in the treatment of the varied symptoms of uremia must be based upon an exact study of the clinical conditions in each individual case. A routine treatment for all cases, or even one method for the same patient in all attacks, is not only unscientific but inefficient and often harmful. Uremic dyspnea is most common in the interstitial forms of renal disease, probably from the almost constant arterial changes present. When the predominating conditions are endarteritis and hypertrophy of the left ventricle of the heart, success in relieving the dyspnea will be found largely proportionate to an ability to dilate the arteries. For this purpose nitroglycerin is the most available agent, but occasionally chloral hydrate will prove efficient when this fails, and the combination of morphine, given hypodermatically, with the vasodilators, will sometimes be more useful than the dilators alone. The limit of dosage with nitroglycerin should be the production of the physiological effect of the drug, but that effect must be obtained in order to render it efficient.

He next spoke of uremic vomiting, and, having referred to the varied pathological conditions on which this symptom may depend, he said that where there is catarrh of the gastric mucosa, and even in cases in which the vomiting is evidently due to toxemia, lavage often gives the greatest relief. Where it is associated with high arterial tension, the vasodilators alone are often efficient. In speaking of uremic convulsions he said that, omitting a consideration of puerperal eclampsia, convulsions may occur in acute nephritis, as well as in both the parenchymatous and interstitial forms of chronic Bright's disease. When they are met with in acute renal disease, whether in adults or children, venesection gives the most prompt and enduring results. As this phenomenon is associated with a high arterial tension, nitroglycerin and chloral are useful. When the urine is markedly diminished, intestinal irrigation with a normal salt solution of low temperature

(100° to 105°) may also be of service. It is Dr. Kinnicutt's practice to follow venesection by an intravenous injection of a saline solution of such a temperature, of double the amount of the blood withdrawn. In the convulsions of chronic parenchymatous nephritis the heart's action is usually feeble and the arterial tension low; so that vasodilators are contraindicated, and the best results can be obtained by the combined use of cardiac stimulants, intestinal irrigations, with salt solutions of a high temperature (115° to 120°) and hot packs daily for considerable periods. The convulsions occurring in chronic interstitial nephritis are usually associated with high arterial tension and hypertrophy of the left ventricle, often with endarteritis, and the arterial dilators, in combination with small hypodermatic doses of morphine, in his experience, constitute the best treatment.

DR. HOMER WAKEFIELD said that the Edebohls operation increased the blood supply of the kidneys, and he had no doubt that the increased amount of oxygen had much to do with the good results obtained. He had treated uremia largely in connection with heart disease, employing oxygen and the Schott treatment, which acted to a considerable degree like the nitrites; the aim being to increase the renal blood supply. He had also found the increasing of the alkalinity of the blood by means of colon injections of a saturated solution of sodium bicarbonate of great service. This, moreover, had a beneficial influence upon the heart and its action. He mentioned a case of general anasarca with uremia, in which the patient in three days was completely relieved of the uremic and other symptoms by the use of such injections.

DR. LEONARD WEBER said that although the patient presented by him this evening had had chronic uremia for a year or more previously, he ceased to present the symptoms of it immediately after decapsulation of both kidneys, and had had no return of them since, notwithstanding the fact that his urine still remained as full of albumin as ever. How had such improvement been brought about by decapsulation in this and other cases? In his opinion by the rapid growth of a vascular network spreading from the arteries of the fatty capsule upon and over the surface of the denuded kidney, and thus relieving the cramped and more or less obstructed circulation within the cortical substance, and collaterally carrying off venous blood and lymph through other channels than the renal vein. Whatever of regeneration of morbid epithelia in the glomeruli and tubules may take place after decapsulation will occur in consequence of the relief which the hyperemic kidney obtains by the newly established collaterals at its periphery. With the theory that an improved supply of arterial blood by the ingrowth of arteries from the fatty capsule more or less deeply into the renal cortex will regenerate the diseased kidney, Dr. Weber said he was not able to agree. His patient had not been cured of his nephritis, and he never would be. He also expressed his disbelief in the existence of such a thing as unilateral Bright's disease.

The president said that in chronic Bright's disease there was a deposit in the kidney all the way from the pelvis to the glomeruli. Consequently, the circulation from the center towards the periph-

ery was very greatly impeded, as the blood had to be driven through vessels compressed by the deposit around them. But as the result of decapsulation the blood was brought from the exterior directly to the glomeruli, and the ischemia of the organ was thus relieved. It seemed to him that the benefits to be derived from this procedure had as yet only been foreshadowed. As soon as the profession came to understand that the operative mortality from it amounted to practically nothing, it would be undertaken earlier and with much better chances of success; so that he could not but believe that the Edebohls operation had a wonderful future before it.

DR. WILLIAM H. THOMSON said that when he read Dr. Edebohls' paper published in December, 1901, it seemed to him that this operation marked an epoch in medical history. He could not think that the relief afforded by it was due simply to the removal of the pressure caused by the capsule. On the other hand, he did believe that by bringing in from the exterior a new blood supply a means was afforded of carrying off waste material; the condition thus established being comparable to that in the lungs, where, on account of the presence of the pulmonary and the bronchial arteries, there is normally a double blood current.

DR. EDEBOHLS said that the whole matter must resolve itself into one of experience. Before it is a settled thing, three, four or five years may be required. In the meanwhile, if those who have the opportunity to operate will follow up their cases with care, and if physicians will co-operate with the surgeons in the matter, the desired end will be the more successfully and quickly attained. After the operation the patients pass again into the hands of their medical attendants, and on the latter the obligation rests to study the subsequent course of the disease. If such studies are adequately carried out, it ought not to take many years before a just estimate of the value of the procedure can be arrived at.

THE OBSTETRICAL SOCIETY OF BOSTON.

BY MALCOLM STORER, M.D., SECRETARY.

MEETING of Dec. 16, 1902, DR. G. J. ENGELMANN in the chair.

DR. H. D. CHADWICK, by invitation, reported

A SERIES OF CASES OF MOVABLE KIDNEY.¹

DR. G. J. ENGELMANN: The paper of Dr. Chadwick is open for discussion. It is indicative of the progress in surgery that the pads and other appliances upon which we relied so entirely a few years ago are hardly referred to.

DR. J. G. BLAKE: I should like to ask Dr. Chadwick what is his explanation of the pain so generally seen in these cases?

DR. CHADWICK: I think that the most probable explanation is that it is due to kinks in the ureter.

DR. J. G. BLAKE: I have seen many such cases, especially among the Italians, who are racially inclined to submit to operation, with whom some form of apparatus must be used.

DR. G. J. ENGELMANN: Did I understand Dr.

¹ See page 281 of the JOURNAL.

Chadwick to state that the most annoying symptoms are due to kinks in the ureter and back pressure of urine?

DR. H. D. CHADWICK: I only mean to say that the crises of pain with tenderness and vomiting lasting two or three days are probably due to this cause.

DR. ENGELMANN: I think I have seen a number of these crises in which there was no urinary difficulty.

DR. J. G. BLAKE: I suppose that when a kink occurs there may be pain from pressure on the nerves and vessels as in a twisted ovarian tumor without any interference with the passage of urine.

DR. H. D. CHADWICK: Very likely this pain may be due to congestion. As to my technique, I have always used silk, as being less liable to cut through the capsule than silkworm gut. I have had but little hematuria. I do not cut into the substance of the organ, but split its capsule, bringing one flap up through a split in the quadratus muscle, while a fasciculus of muscle is brought into contact with the raw surface of the kidney. The substance of the kidney I regard as too friable to give good hold to a suture.

DR. E. REYNOLDS: I have done rather few nephrorrhaphies, as I have not been an especial believer in the necessity of the operation. The condition is generally due to loss of fat, and such patients usually do well on high feeding. I have limited my operations to cases in which the descent was sufficient to cause axis rotation. Of course one never explores a kidney without suspending it. I have generally used silk passed through the kidney substance. I have had only one failure, in which case a subsequent operation, combined with an appendectomy, cured the patient.

DR. F. A. HIGGINS: I should like to ask whether in all these cases Dr. Chadwick has been able to palpate the kidney, and whether he feels that a kidney that can be palpated should be operated upon?

DR. H. D. CHADWICK: I felt the kidney in all but one case. I do not by any means feel that all kidneys that can be felt should be operated upon. The right kidney can often be felt without there being any symptoms present.

DR. G. J. ENGELMANN: Dr. Chadwick has certainly seen an unusual number of these cases in a short time. I question whether some of them were not associated with general enteroptosis and whether relief of the general conditions would not have relieved the symptoms on the part of the kidney. While I have seen two striking cases in which the crises were evidently caused by distention of the kidney from backed-up urine due to a kink in the ureter, in many other cases the nervous crisis could not be regarded as due to obstruction.

DR. M. STORER: As an argument against the use of pads I believe it was Edebohls who said, as a transient hematuria follows even palpation of the kidney, it was only reasonable to suppose that a pad acts as a constant irritant. I have had the curiosity to examine the urine of a number of patients after palpating their kidneys, and in every case have found a very slight hematuria present for a few days. I should like to ask Dr. Chadwick whether this is also his experience. I cannot believe that pads always do harm, as I have seen a

number of patients much helped by them, with no gross evidence of irritation of the kidney.

DR. CHADWICK: My examination of the urine of patients after palpation of the kidney has not been systematic enough to be of any value. As to the question of the desirability of operation in these cases of movable kidney with nervous symptoms I can only say that I am in favor of operation because those operated upon have got relief, while in those not operated upon, rest, etc., has given relief but no cure; however, in certain cases in which the crises are infrequent, rest is well enough, I do not deny. All my cases were either chronic invalids or were every little while disabled for a longer or shorter time. Under such conditions it seems to me that an operation is indicated. I wish to reiterate that I think splitting the capsule a most important step in the operation; it certainly increases the chance of the kidney remaining in place if you can give it the two anchors afforded by the flap or capsule and the adhesions to the raw kidney surface.

DR. EDWARD REYNOLDS presented a paper entitled, —

A CASE OF INTESTINAL OBSTRUCTION FROM EXTREME DISPLACEMENT OF THE CECUM.

Recent Literature.

Practical Dietetics, with Special Reference to Diet in Disease. By W. GILMAN THOMPSON, M.D., Professor of Medicine in the Cornell University Medical College in New York City, Visiting Physician to the Presbyterian and Bellevue Hospitals. Second edition, enlarged and thoroughly revised. New York: D. Appleton & Co. 1902.

There is much that is good in this book, but at the same time much that is poor. It is certainly practical as well as interesting. The revision, however, has not been so complete as the medical public has the right to expect after a lapse of seven years. In many ways the book lacks a scientific spirit. Too often the *avoirdupois* system of weights and measures is employed, to the total exclusion of the metric. This is particularly unfortunate, for ready calculation is seriously hampered and the reader fails to become at home with the nutritive value of foods. The English system may apply to the older generation of doctors, but the students now leaving our schools are brought up in another way. Perhaps this is the explanation why the "calorie" occurs so rarely on the pages of this volume. Where it does occur it is frequently only as a citation from some other authority. In the long article on diabetes, for example, no mention is made of the calorie value of those foods so essential to the diabetic. Though the nutritive value of alcohol is frequently considered, if there is any mention of the actual calorie value of alcohol it has certainly escaped our attention. There is frequent mention of modern research, but one fails to gather the impression that the articles on the dietetic treatment of digestion were written with the work of Pawlow, v. Noorden, Moritz and v. Mering well in mind.

Gelatin given in large quantity can replace a portion of the albumin necessary for nitrogenous

equilibrium, but this fact is not mentioned, and, though this is perhaps excusable, the statement that "alcohol undoubtedly can be given the first place among the cardiac stimulants" is not. No consideration is given to v. Noorden's ideas on the treatment of Bright's disease.

There is not space to point out many statements at direct variance with the commonly accepted principles of medical treatment today, but the following will serve as examples:

(p. 670). A sudden change of diet is advised in diabetes! and no mention made of the danger of coma arising thereby. Nothing is said of the use of alkalis as medicine or in the food as a means to ward off coma. (p. 671). We believe diabetic patients react much more quickly to changes in the diet than the writer would lead us to conclude. We cannot see why cocoanuts (p. 674), containing 31.5% carbohydrates, are allowed diabetics, and cauliflower, containing 4.7%, Brussels sprouts 3.4% and rhubarb 3.6%, are excluded. The exclusion of liver (p. 675) is simply a repetition from the older textbooks. Liver from beef contains but 1.5%, that from veal 5.3% sugar-forming material. Nor do we understand why (p. 676) well-browned bread crust should be at all countenanced. The browning simply changes the starch to a body more nearly resembling sugar than itself. We are sorry the author does not state that skimmed milk and buttermilk have lost in their preparation that component of milk—fat—which is of greatest value to the diabetic, but retained that which is most harmful,—the sugar.

A Manual of Materia Medica and Pharmacology.

Comprising all organic and inorganic drugs which are or have been official in the United States Pharmacopeia, together with important allied species and useful synthetics. Especially Designed for Students of Pharmacy and Medicine, as well as for Druggists, Pharmacists and Physicians. By DAVID M. R. CULBRETH, Ph.G., M.D., Professor of Botany, Materia Medica and Pharmacognosy in the Maryland College of Pharmacy; Professor of Materia Medica and Pharmacognosy in the University of Maryland Medical and Dental Schools. Third edition, enlarged and thoroughly revised, with 473 illustrations. Philadelphia and New York: Lea Brothers & Co. 1903.

Strictly speaking, this work cannot be considered as a textbook of pharmacology because the actions herein described are incomplete, antiquated and occasionally inaccurate. It is, however, a fairly good textbook of materia medica. The author gives a very good description of the principal plants and of the inorganic drugs used in materia medica. His division of the coal tar derivatives is a little confusing. The book is better adapted for pharmaceutical than for medical students, as the larger portion of the book is occupied with technical methods for the preparation of drugs. This division is never extensively taught to medical students nowadays, because of its inapplicability to present medical practice and because the time spent on the memorizing of technical processes can be employed to much better advantage in the thorough mastery of the action of drugs.

M. V. T.

THE BOSTON

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CONTROL OF THE BLOOD PRESSURE, THE CONTROL OF LIFE.

"No more strychnia in the treatment of shock" is the logical deduction to be drawn from the series of experiments by Dr. George Crile of Cleveland, whose remarkable report upon "The Means of Controlling the Blood Pressure" was read at the Boston Medical Library meeting on Jan. 19, 1903, and published in the last issue of the JOURNAL. Dr. Crile's industry in physiological problems has already been demonstrated by his monograph on surgical shock,¹ and the conclusions which he drew from this first series of experiments awakened the greatest interest. Dr. Crile believes that the essential feature of shock is the exhaustion of the vasomotor center which controls the tone of the peripheral circulation. In his last communication, however, he approaches so closely to the ultimate phenomena of life and death and with such startling and hitherto unexpected results, that the general medical world may properly await the confirmation of other experimenters before accepting and putting in practice any revolutionary method of treatment based upon these observations.

To the surgeon of today the essential fact brought out by Dr. Crile's work is that strychnia, the stimulant most universally employed in the treatment of shock, is of practically no value, and may even increase the condition it is intended to relieve. Dr. Crile's distinction between collapse and shock, by which he postulates a temporary inhibition of the vasomotor centres in collapse as opposed to an exhaustion of these centers in shock, seems justified by his experiments. Outside of the laboratory, however, pure collapse and pure shock in the experimental sense are of comparatively rare

¹ "Surgical Shock." J. B. Lippincott Company, Philadelphia, 1899.

occurrence, while combinations of the two in greater or less proportion are the rule. It is for this reason, perhaps, that strychnia has obtained a stronger position in the empirical treatment of the two conditions than would seem to be justified by the results of these experiments.

One adverse criticism which may be applied to Dr. Crile's work is that the phenomena of shock which he has studied in the laboratory and the methods of control of the blood pressure which he has devised, are all on what might be called an exaggerated scale. This exaggeration is not necessarily an essential feature of the experimental study of diseased conditions, but allowance must be made for it, nevertheless, in the practical application of the results. In this fact, perhaps, lies the apparent discrepancy between the clinical and the experimental determination of the value in treatment of strychnia, alcohol and other stimulants. The exposition of the temporary nature of the effects of saline infusion, on the contrary, will be readily accepted by the profession. Although a popular method of treatment, it has generally been found to act with more beneficial effect in cases of hemorrhage than in cases where the element of shock was more pronounced.

Dr. Crile's experiments can be criticised intelligently only by the trained physiologist, and such a criticism the medical world most eagerly awaits. The significance of his work, however, can be appreciated by the general medical public, and by no one more than the surgeon who comes in contact with this baffling phenomenon in the course of his daily work.

Our debt to Dr. Crile does not end with the results of his experiments. Advance in medical science proceeds by devious ways. One discovery by a new method of investigation brings in its train others of greater or less importance. These experiments have opened up to us a store of magnificent possibilities, and the domain of "surgical physiology" will soon be as diligently covered as that of "surgical pathology" in the few years just gone by. Even the student in the medical school will bring a greater interest to his work in the physiological laboratory by reason of this brilliant application to a practical problem of the very methods of observation in which he is being trained.

Supported by similar results obtained by other observers, Dr. Crile's work will revolutionize the treatment of surgical shock, and become an epoch-making advance in medical science. The prosecution of such confirmatory experiments, and their prompt publication, we clearly owe to Dr. Crile.

Dr. Harvey Cushing's paper on the Routine "De-

termination of Arterial Tension in Operating Room and Clinic," which accompanied Dr. Crile's report, indicates another step in progress along a line which is nearly parallel. The need for an accurate and numerical estimate of the condition of the arterial tension, to take the place of the vague and inaccurate impression given to the palpating finger of the more or less expert observer, has been appreciated for many years. Many forms of apparatus have been devised to serve this purpose, but up to the present time not one has obtained more than a local popularity. Objections on the score of inaccuracy, inconvenience, the need of long training or great skill in the use of the apparatus or on some other more obvious account, have been brought forward against them all. The Riva-Rocci instrument, which has been in use since 1896 in Italy, and which was introduced into this country in 1900, seems to have fewer defects and more advantages than any of the other instruments offered to our attention. It is not to be denied that errors occur in connection with the use of the Riva Rocci instrument. It registers only the systolic pressure and cannot be readily adapted to the accurate estimate of the minimum pressure. For this reason, fluctuations in the mean pressure may escape the notice of the observer. It is influenced even to the extent of 20 or 25 mm. of mercury by differences in the volume and consistency of the soft parts of the arm in different individuals. In the main, however, the apparatus is simple, easily made and repaired, and eminently practical. No special training is necessary in order to make observations with it, and so far as successive observations on the same patient are concerned, its accuracy is probably sufficient for clinical purposes.

The Riva-Rocci instrument in one form or another has come into general use. The interpretation of its figures, however, demands the analysis of large numbers of charts and the observation of an enormous number of cases. We are glad to know that a movement is on foot on the part of the Surgical Department of the Harvard Medical School to obtain a series of parallel observations on patients at the Massachusetts, City and Children's Hospitals, in order that such an analysis of the blood-pressure charts of surgical patients may be obtained.

In cerebral surgery, as pointed out by Dr. Cushing, precise information upon the arterial tension is of enormous value. In cases of collapse from hemorrhage, in shock, and during the course of severe abdominal operations, there is little doubt that similar information will be of value to the surgeon. If other surgical cases can be treated to greater advantage by reason of data provided by the Riva-Rocci apparatus, the fact will probably

appear as a result of this investigation. It may be that Dr. Cushing takes an enthusiastic view of the matter in his prediction that in appropriate cases the routine observations upon blood pressure will soon come to occupy the same position that pulse and temperature observations occupy at present, but enthusiasm is necessary to the introduction of every new procedure in medicine, and for this enthusiasm we are duly grateful.

THE ROCKEFELLER INSTITUTE.

EVEN in these days of munificent bequests and large opportunities for scientific investigation, we cannot but be impressed with the plans and scope of the perfected Rockefeller Institute for Medical Research. The outline of the general scheme, as now made public, we have given in our issue of Feb. 26. No doubt to many persons the Rockefeller Institute, although it has been in existence about two years, comes as a new name and a new enterprise in the widening field of medical research. As a matter of fact, the plan, started somewhat modestly, as such things are now estimated, has been justifying its existence for the past two years. Grants of money have been made to promising students in various parts of the country who have been carrying on their researches more or less independently. A careful study of the general situation has now led the directors to the conviction that a central institute, with its own buildings and under the immediate jurisdiction of a single person, will best subserve the scientific needs of the future.

The novelty of the plan lies in the establishment of an institution the sole work of which will be investigation; in the separation of such work from the professional schools in connection with universities; in the severance of investigation from systematic teaching; in the adequate endowment which will render it possible to secure highly competent men both for heads of departments and for subordinate positions. In all of these ways the new plan marks a definite departure from hitherto recognized plans of medical investigation.

In this country so far as we know no systematized attempt has been made hitherto to maintain an institution solely for the comprehensive study of medical problems. Recently a single professorship in physiology has been established at the University of California, the incumbent of which is not obliged to teach, and in foreign countries a small number of laboratories and institutes are prosecuting research as a primary object. In general, however, both here and in Europe, the body of scientific workers have been associated with the universities, combining the functions of teaching

and research as their tastes and capacities dictated. The development of the situation represented by the Rockefeller Institute has been natural and inevitable. Many professorships in our best medical schools have been endowed or otherwise provided for and their functions separated from medical practice, but not from teaching, which has naturally remained of paramount importance. Freed from the exigencies of practice, the holders of such professorships have been in a measure free to prosecute original study, and such study has rightly been expected if not demanded of them. This compromise with research has very naturally yielded to the popular demand that research be made an object in itself, unhampered by the claims of teaching. The final result must be institutions of the Rockefeller type, from which the elementary student is excluded. The university schools may provide trained workers, but until they are far more abundantly endowed than at present they cannot sustain co-operative investigation for its own sake. This the Rockefeller Institute purposes to do, and by its organization and proposed endowment is amply able to do.

The severance of research from teaching is the step of importance in this new movement, and it is worthy of very serious consideration. In the first place, the universities are sure to suffer, unless they can attract men by the same means. This is at least unlikely for many years to come, nor is it obvious that such a perversion of the original aims of a university is in all respects desirable.

Commenting on Dr. Simon Flexner's appointment as director of the Rockefeller Institute, the *Philadelphia Medical Journal* regrets his departure from the University of Pennsylvania, and sees in it an ominous sign for the future greatness of university medical schools.

"It begins to look, indeed, as though our old established schools are to have rather formidable rivals in some of the great new institutes which our multi-millionaires are founding. What with the immense financial resources of these new endowments, and their consequent ability to pick off the very best men in the scientific field, it looks as though the older schools and universities will be the sufferers."

This is unquestionably true; however we may look at it, the universities must take a second place as centers of research if such institutes are to be established with practically unlimited resources at their command. Productive scientific men are rare; there are by no means enough to go round, and they are naturally inclined to accept those positions which offer them the necessary financial inducement with the means of untrammelled investigation.

This is not in any way to be regretted; the universities must simply adjust themselves to the new situation.

THE ENDOWMENT OF TEACHING.

IN view of what we have just said relative to the Rockefeller Institute for Medical Research, it is at once evident that university medical schools must provide endowments for the maintenance of a high standard of teaching and for the support of research, if they are to maintain their prestige.

The present situation is sufficiently deplorable. In our oldest established medical schools a certain number of professorships are more or less sufficiently endowed, and therefore throw no burden, or only a modified burden, upon the general university funds. Many others have no endowment whatever, and the great majority of medical teachers are so inadequately remunerated for their services that it is wholly impossible for them to give this teaching or investigation the place of importance it deserves, and equally unreasonable for the university to expect more than a partial allegiance. So long as men hold positions as teachers in medical schools for the purpose of gaining practice thereby, and the university authorities, through choice or necessity, encourage this attitude, teaching will suffer. Teaching must be made an end worthy of the best efforts of those who undertake it; it must be recognized as a difficult art to attain, and when attained it must be regarded as worthy of financial acknowledgment. The dignity of teaching and the enthusiasm of teachers cannot be upheld by any other method. Teachers should be remunerated according to their capacities and experience, and should, in proportion, be required to subordinate outside interest to the work of teaching. If abstract research is to be liberally endowed it is more than time that teaching in all its branches should also receive recognition. The vitality of an institution of learning must always ultimately be dependent upon the enthusiasm of its teachers, whatever their grade may be.

This problem of endowment is facing all of our medical schools. Its importance has again and again been insisted upon, but there remains a popular impression that when buildings and equipment are provided, the work of medical teaching and investigation will somehow go on as it has hitherto. It must, however, be remembered that new buildings, new equipment and expanding knowledge bring renewed responsibility, and that if our university medical schools are to compete in productivity with adequately endowed institutes of research, they must look to the resources available

for the encouragement and maintenance of teaching and investigation.

Very recently, through Dr. H. P. Bowditch and Dr. J. Collins Warren, for the Faculty of Medicine of the Harvard Medical School, a statement in circular form has been issued, setting forth the needs of the school in the immediate future. It is stated that the opportunities for work in the new buildings soon to be erected cannot be fully utilized with the amount of money likely to be at the disposal of the faculty. Appended is a list of professorships still remaining unendowed, for which amounts ranging from \$100,000 to \$30,000 are needed. It is urged that money given to this end will serve as a lasting memorial to the donor and be of the very greatest use to the school by freeing funds which could thereafter be devoted to other necessary uses. Smaller sums of money may advantageously be given for the endowment of departments, for the maintenance of libraries, the purchase of apparatus and other necessities of departmental work. Finally the foundation of scholarships is a welcome type of gift, calling for a relatively small amount of money.

However considered, the desirability and increasing necessity of generous endowment of medical education is becoming more and more apparent each year. With the increasingly high standards of admission to medical schools, with the limit which must finally be set to the number of students, with the more elaborate systems of clinical teaching now in vogue, and, above all, with the rapidly widening field of the medical sciences, must come a tax upon the resources of institutions which is already felt, but which is likely to increase enormously in the future. This exigency must be met by liberal endowment. There is no more pressing need in the present state of medical education.

TYPHOID IN MASSACHUSETTS.

IN contrast with the typhoid epidemic in Ithaca, N. Y., it is of interest to note the number of cases of typhoid at present in Massachusetts, and the effect which public control of the water supply has had in controlling this disease. Within seven days, recently, there were only thirty-six cases of typhoid fever in Massachusetts, of which six were in Cornell students who had contracted the disease in Ithaca. Seven of the cases occurred in Lowell, where it is said that the mills take their water supply from polluted sources, and that the employees, having access to it, drink the water.

The number of deaths from typhoid fever in 1901 in Massachusetts was smaller than in any single year since 1842, when registration was begun. In 1901,

in thirty-three cities, the death-rate from typhoid was slightly more than one fourth as large as it was in the same cities thirty years ago. In the decade ending 1865, only 25% of the population used water over which the authorities exercised control, and the death-rate from typhoid fever in those years was 92.9 per 100,000 inhabitants. In 1875, 41% of the population had public water, and the death-rate was 80% per 100,000. Thus the death-rate decreased with the extension of the public water system, until, in 1901, 90% of the people of Massachusetts were supplied through well-kept public water systems, and the death-rate was 19.5 per 100,000. With continued and increasing care of the public water, it may be confidently expected that typhoid fever as well as other water-borne diseases will become medical curiosities.

MEDICAL NOTES.

A HIGH BIRTH-RATE AT CHICAGO. — According to the bulletin of the Chicago Health Department, all available trustworthy data most conservatively handled go to demonstrate that, while the birth-rate of the whole United States increased, according to the twelfth federal census, only 1.11% in the intercensal period 1890–1900, the birth-rate of Chicago increased *five times* as much, or more than 5.3% during the same period.

TENTS FOR TUBERCULAR PATIENTS. — To avoid the necessity of waiting for a considerable time in order to erect hospital buildings for the accommodations of tuberculosis patients among the poor of the city, the president of the New York (City) Health Department has submitted to the mayor for his approval a plan proposed by Dr. H. M. Biggs, the chief medical officer of the department. This consists of the erection of tents, with wooden sides about three feet high, each tent to be some twenty-five feet square and to accommodate two patients. In front of each tent there would be a veranda, sheltered with lattice work, allowing the patients to sit outdoors; the whole could be erected at a small expense.

HANGING FOR TYPHOID FEVER. — If the dictum of the zealous sanitarian that "for every case of typhoid fever some one should be hanged" is to be accepted, then the hangman is overdue at Ithaca, N. Y., where at last reports typhoid continued to claim an unabated list of victims.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 11, 1903, there were reported to the Board of Health of Boston

the following cases of acute infectious diseases: Diphtheria 27, scarlatina 37, typhoid fever 3, measles 18, smallpox 1.

THE EDUCATIONAL VALUE OF THE MEDICAL SOCIETY. — The New Haven Medical Association lately celebrated its one hundredth anniversary, and received congratulations. It seems to be useful and active notwithstanding its age and the prevailing scepticism among the younger brethren as to the value of anything not bearing the title of Academy.

Dr. Osler's address on the occasion, in this issue of the JOURNAL, is a very felicitous contribution to the subject he chose.

BEQUESTS TO HOSPITALS. — By the will of the late Jacob H. Hecht, among many others the following bequests are made: \$5,000 each to the Massachusetts General Hospital and the Boston Lying-in Hospital; \$500 to the Industrial School for Deformed and Crippled Children, and smaller amounts to various other hospitals and similar charities.

Mr. F. F. Ayer has given to the Lowell General Hospital \$100,000, and \$5,000 more to pay the floating debt, provided the balance needed for that purpose is raised.

The Misses Schurz of New York have given \$3,000 as a Schurz Memorial Fund for the care of needy students at the Stillman Infirmary, Cambridge.

RESIGNATION OF DR. GAGE. — Dr. Thomas H. Gage has resigned from the Board of Trustees of the Worcester Insane Hospital, after a continued service of twenty-seven years. The resolutions of regret adopted by the trustees on his resignation ascribe in large measure to his advice and attention the great development of the institution.

LECTURES TO THE BOSTON CITY HOSPITAL NURSES. — A course of four lectures on sociological topics is being given this month to the third-year pupils in the Boston City Hospital Training School for Nurses. The following are the subjects: On March 6, "The Five Great Duties of the Twentieth Century," Rev. E. E. Hale, D.D.; on March 13, "Spiritual Principles and Social Progress," Rev. George Hodges, D.D.; on March 20, "Industrial Training for Deformed and Crippled Children," Dr. R. W. Lovett, Mr. F. I. Cotting and Miss Mary M. Perry; on March 27, "Sociological Aspects of Sanitation," Prof. W. T. Sedgwick.

NEW YORK.

DEATH RATE IN FEBRUARY. — The mortality in the city during the month of February represented

an annual death-rate of 20.81 against 19.32 in January and 21.79 in February, 1902. The corrected death-rate, excluding non-residents, and infants under one week old, was 19.49. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from scarlet fever increased from 14.75 in January to 18 in February; of deaths from measles, from 7.75 to 11; from typhoid fever, from 8.75 to 10.5; from influenza, from 5.25 to 34.25; from pneumonia, from 158.75 to 196.5; from bronchopneumonia, from 84 to 90.75; from acute bronchitis, from 37 to 49; from pulmonary tuberculosis, from 169.5 to 182.25; and from organic heart diseases, from 104.25 to 108.25. Influenza is decidedly more prevalent and fatal this season than last. Thus, while in the last week of February 52 deaths were accredited to it, during the corresponding week of 1902 there were only 10. A considerable proportion of the deaths from pneumonia are also no doubt to be attributed indirectly to influenza. There were very few diseases which showed a decline in mortality, although there were no deaths from smallpox during the month, while in January there were two. The weekly average of deaths from diphtheria and croup decreased from 49.75 to 44.75, and of deaths from Bright's disease and nephritis, from 134.75 to 125. The weekly average of deaths from cancer was one less.

APPOINTMENTS. — At a meeting of the trustees of Columbia University, held March 2, the resignation of Dr. George L. Peabody, Professor of Materia Medica and Therapeutics in the medical department, was received and accepted, the resignation to take effect at the close of the college year. It was announced that the work in physical training throughout the university was to be unified and placed under the direction of Dr. Thomas D. Woods, now occupying the chair of physical education in Teachers' College. Dr. Livingston Farrand, Adjunct Professor of Psychology, was promoted to the chair of anthropology, and Charles A. Strong, for several years Lecturer on Psychology, to the chair of psychology. Both these professorships are in the Faculty of Philosophy.

METHODIST EPISCOPAL HOSPITAL, BROOKLYN. — At the services in the Hanson Place Methodist Episcopal Church, Brooklyn, on February 22, \$20,000 was subscribed by members of the congregation for the Methodist Episcopal Hospital in that borough founded by the late Mr. Seney. This is the first step towards the raising of a fund of \$500,000 for the hospital, the securing of which Mr. and Mrs. William Halls, Jr., have made a condition for a proposed gift of \$125,000 to the institution.

A NEW SANATORIUM FOR CONSUMPTIVES. — It is announced that the Stony Wold Sanatorium for women and children suffering from incipient tuberculosis, an institution in the Adirondacks which many New York people are interested in, is to be opened in August next. It is situated at Lake Kushaqua, where 1,200 acres has been secured, and a central building and one dormitory are now nearly completed, while the foundation for a second dormitory has been laid. The estimated cost of the sanatorium is \$200,000, and of this, \$140,000 has been raised.

THE EPIDEMIC AT ITHACA. — Up to March 5 the number of cases of typhoid fever in Ithaca is said to have been about six hundred, while there were probably two hundred cases elsewhere which had been contracted there. The number of deaths was given as forty. On March 2 seven new cases were reported for the preceding twenty-four hours, and another Cornell student died of the disease at Auburn, N. Y. At the election on that day the citizens of Ithaca decided in favor of municipal control of the water supply by a vote of 1,335 to 30. Eight new cases of the fever were reported on March 3 and three new cases on the 7th. A bulletin issued by the State Department of Health on March 4 has the following reference to the causation of the epidemic: "By what means either of the three small streams furnishing the water supply became infected thus to produce this abrupt, unseasonable outbreak has not been determined to full satisfaction, but of unusual conditions, there was emptied upon the ravinelike banks of one a body of foreign laborers during the autumn and early winter, building a dam, who departed with the advent of frost. Among them there were probably carriers of typhoid germs, which the first soft weather carried into the stream." From a report recently made by inspectors of the local board of health, after an examination of the watershed from which the Ithaca water company derived its supply, it seems evident that the city's water sources have been used as sewers for the adjacent rural districts. A prominent citizen of Ithaca is quoted as saying: "When the board of health published that report, it signed, sealed and delivered its own indictment, and it published the record of its own everlasting shame."

DIPHTHERIA AT MORRISTOWN, N. Y. — A severe outbreak of diphtheria, in which more than twenty deaths have occurred, is reported at Morristown, N. Y., a small village eleven miles from Ogdensburg, and situated on the banks of the St. Lawrence at a point where many travelers cross to and from Canada.

GOVERNOR ODELL'S CENTRALIZING POLICY.—In the thirteenth annual report of the State Charities Aid Association, just issued, lack of confidence in Governor Odell's centralizing policy is expressed in very plain language. It describes the amendments made last year to the insanity law and to the state charities law, and in speaking of the latter says: "Before the amendments were introduced, two conferences were held between the governor, the State Board of Charities, and the special legislative committee appointed to draft the proposed amendments. The result of these conferences was that the changes originally planned were much modified and the bill when finally introduced proved to be less radical than had been feared. Only one of the eleven articles of the state charities law was amended, and this was the article on the regulation of the finances of the state charitable institutions." The report then goes on to say: "Here, as in the amended lunacy law (the changes in which abolished the boards of managers and transferred their powers to the state commission in lunacy), the chief innovations are the new forms and responsibilities conferred upon the governor. . . . It is not believed that this extreme centralization of power will be of benefit. It would seem that the governor of the state should appoint as members of the State Board of Charities and the State Commission in Lunacy men who could be trusted to attend to the affairs of their departments with intelligence and integrity. To require that all questions of importance be submitted to the governor is to discourage able men from accepting positions in which little real responsibility or authority is allowed them."

WADLEIGH HIGH SCHOOL FOR GIRLS.—In the last week in February there was publicly opened by the mayor and board of education the Wadleigh High Schools for Girls, a model structure which offers a pleasing and remarkable contrast to the schoolhouses of former days. Its appointments include an auditorium seating more than twelve hundred persons, and believed to be one of the finest in the country, one very large and fully equipped gymnasium, with adjoining locker rooms and shower baths, on the fifth floor, and two smaller gymnasia on other floors, one cooking room, four physical laboratories, two chemical, two physiological, and three biological laboratories; besides physical, chemical, and other lecture rooms well furnished with apparatus. In the basement there are a lunch-room with an air-space of 10,500 cubic feet, light, airy, and attractive, where the pupils may eat their luncheons brought from home, or obtain an excellent meal at reasonable rates, and a teachers' dining-room, kitchen, and retiring-rooms.

Correspondence.

THE STUDY OF OPHTHALMOLOGY IN FREIBURG.

FREIBURG IN BREISGAU, March, 1903.

MR. EDITOR: Thinking that a description of the Freiburg Augenklinik may interest some of your readers, I send the following. The building is not new and is considered by some of the staff to be somewhat inadequate to the demands made on it. To my eyes, however, it seems, with one or two small exceptions, very complete. The ground floor contains a large hall which is used as a place for the Poliklinik and also for lecturing purposes; a dark room for ophthalmoscopy and skiascopy; a large room for the examination of private cases, where the more delicate instruments are kept and adjoining which is the operating room. Attached to the operating room is a small antechamber used for anesthesia and for the large sterilizer. On the other side of the Poliklinik is the matron's room, the waiting room, the professor's private office and the laboratory. Upstairs in the first story are several large and small rooms containing beds for some thirty-five patients, and in the second story are a number of rooms for private cases.

Directly opposite the Klinik is the main hospital building; and on either side are the surgical, nose and throat, and ear departments.

The staff consists of a professor and three assistants, the first being a privatdocent; in addition there are usually one or two volunteer assistants and also a couple of students. During the summer semester work begins with a lecture at 7.15 A.M., which lasts exactly forty-five minutes; after this the ward visit is made and the various house patients examined and treated. Operations are performed twice a week. At 9.30 the Poliklinik begins and the patients are usually not disposed of until between twelve and one. In the afternoon there is usually a course in refraction or ophthalmoscopy, the new admissions are examined and laboratory work is done. In every branch of the work one feels the influence of the chief, Professor Axenfeld. He was made full professor at the age of thirty-one (it is said that at that time he was the youngest professor in Germany), and was called to Rostock, which place he left in October, 1901, to take charge of the more important Freiburg Klinik. Although now only ten years an ophthalmologist, he is a recognized authority, and his original work and that of his scholars covers a vast variety of subjects and would fill several volumes. Of a most progressive mind, he keeps abreast of medical progress, and only the latest scientific apparatus and methods will satisfy him. The large Zeiss corneal microscope is in constant use; the new Volkmann magnet, a great improvement on the giant magnet of Haab, has been recently installed and has given the greatest satisfaction. The sideroscope, for and against which so much has been written, has been of great practical advantage here. For the demonstration of the fundus the Thorner apparatus is in use, and to illustrate the lectures a magnificent new projection apparatus has recently been secured. This is equally good for mounted specimens and for drawings. For refraction the Hess skiascope has been found convenient, and it may interest American critics of foreign methods to learn that mydriatics are employed in refraction work and young children thoroughly examined. The teaching consists in clinical lectures three times a week, illustrated with the projection apparatus, clinical instruction in ophthalmoscopy three times a week, and refraction twice a week. In addition, during the winter semester, there is a free course of lectures on the relation of the eye to general medicine. Every graduate of medicine in this, as in other Continental countries, is trained in the use of the ophthalmoscope. The operative asepsis is good, although not so rigid as in general surgery, the hands are carefully prepared and the instruments are boiled five minutes. The patient is scrubbed with soap and water, and the conjunctival sac wiped out with sterile salt solution. Although after extraction, iridectomy and discission, the bandage has been largely replaced by the wire protector, Professor Axenfeld uses it frequently in other cases, and is a firm believer in the advantages of bed treatment.

The laboratory consists of two rather small rooms, containing desks for twelve, and is fitted with all the necessary apparatus. During my stay I saw the places occupied by representatives of many nations — four Germans (one of Austrian birth), two Italians, two Russians, two Japanese, one Canadian and one American. In addition there were visitors from France, England and Roumania. In the laboratory there is always excitement and activity — some one has just published his investigations or is about to publish them; the professor has assigned to some one a case of unusual interest, or perhaps a new bacterium has been found. In fact, a thousand things of interest happen daily. Here the professor presides and devotes several hours each day to the various lines of investigation which are being carried out under his direction. Every case of conjunctivitis is examined bacteriologically and carefully recorded, the most frequent cause in this region being the diplobacillus of Morax and Axenfeld. The Koch-Weeks bacillus and the pneumococcus are also not infrequently found. Gonorrheal ophthalmia is not a common disease here, and trachoma is rare, occurring mostly among the Italian laborers. A form of subacute irido-cyclitis of doubtful etiology is frequently observed among the inhabitants of the Black Forest, on the border of which Freiburg lies. In addition to his other duties Professor Axenfeld is editor of the *Klinische Monatsblätter für Augenheilkunde*. Almost once in two weeks he holds a *Referirabend*, to which he invites his assistants and co-workers, as well as the assistants from the allied clinics. A simple supper is served and one or two hours are devoted to the reporting of recent monographs and to the discussion of subjects of interest.

Taking it as a whole, it would be hard to imagine a more satisfactory place than this for the student of ophthalmology. The larger clinics demand so much of the professor's time that the student gets but little individual attention. Here in Freiburg, however, one comes in contact with the best type of the German man of learning, whose mission in life is teaching and investigation, and who goes out of his way to instruct and help those who are working under him.

For leisure hours the hills and valleys of the Black Forest offer a great variety of pleasant excursions.

Very truly yours,

GEORGE S. DERBY, M.D.

PROPHYLAXIS OF VENEREAL DISEASES.

NEW YORK, March 4, 1903.

MR. EDITOR: At the last (fifty-third) meeting of the American Medical Association, held at Saratoga Springs, June 10-13, 1902, a joint resolution from the Sections of Cutaneous Medicine and Surgery and Hygiene and Sanitary Science was introduced in the House of Delegates as follows:

"Whereas, There is a burning necessity to check the spread of venereal diseases, and, assuming that the States cannot with impunity ignore the condition, it lies in the province of the medical profession to discuss and recommend to the respective State legislatures and municipalities means not regulative, but social, economic, educative, and sanitary in their character, to diminish the danger from venereal diseases.

"Resolved, That this Section on Cutaneous Medicine and Surgery of the American Medical Association invite the Section on Hygiene and Sanitary Science to co-operate with the Section on Cutaneous Medicine and Surgery in bringing about a propaganda in the different States looking toward a proper recognition of the dangers from venereal diseases, and to arrange for a national meeting under the auspices of the American Medical Association for the Prophylaxis of Venereal Diseases, similar to the International Conference for the Prophylaxis of Venereal Diseases, which meets again this year at Brussels, under the authority of the Belgian government."

This was later submitted to the House of Delegates, which endorsed the action of Section, and adopted the following:

"Resolved, That a joint committee of six from the Sections on Hygiene and Sanitary Science and Cutaneous Medicine and Surgery be appointed by the president to

stimulate study in and uniform knowledge of the subject of the prophylaxis of venereal diseases, and to present to the American Medical Association a plan for a national meeting, similar to the International Conference for the Prophylaxis of Venereal Diseases, which meets again this year in Brussels, under the auspices of the government of Belgium."

The Committee on Prophylaxis of Venereal Diseases consists of:

Dr. Henry D. Holton, chairman, Brattleboro, Vt.; Dr. Ludwig Weiss, secretary, 77 East Ninety-first Street, New York; Dr. George M. Kober, 1600 T Street, Washington, D. C.; Dr. W. H. Sanders, Montgomery, Ala.; Dr. L. Duncan Bulkley, 531 Madison Avenue, New York City; Dr. Frank H. Montgomery, 100 State Street, Chicago, Ill.

The peculiar social, racial and political conditions of our country are so different from those on the continent that they necessitate an expression of solely American ideas on this mooted question, both from a socio-economic and sanitary point of view.

The committee desires the support of the medical profession and the aid and powerful collaboration of the medical press of the country to help them in this work. It takes the liberty of soliciting expressions and views editorially and otherwise, and would be glad of personal correspondence from those supporting the movement and who will contribute by papers, etc., to make it a success in case the House of Delegates should favor the holding of such a congress.

By giving this a place in your esteemed paper the committee feel that you will have aided materially in forwarding the work entrusted to them.

I remain, with thanks, very truly yours,

LUDWIG WEISS, M.D.,
Secretary of Committee
on Prophylaxis of Venereal Diseases.

Miscellaneous.

RESOLUTIONS ON THE DEATH OF ERNEST GIBBORN BURKE, M.D.

In the death of Dr. Ernest Gibborn Burke, the Fellows of the Norfolk South District Medical Society feel a deep sense of sorrow, and adopt the following memorial: —

Although Dr. Burke's medical career was of short duration, yet it gave promise of entire success. Enjoying the best means of education in college and medical school, he faithfully applied himself to laying a solid foundation for his chosen profession. Upon this foundation he was not, in the providence of God, permitted to build high, but he built well. His keenness of discernment, his patience in deliberation and his wide knowledge, the fruit of a concentrated experience, gained for him the confidence of his fellows, while at the same time he endeared himself to his patients by his sincerity, sympathy and genuine kindness.

To all who knew him were revealed in him the qualities of the scholar, the gentleman and the true man; we can truly add with pride that the spectacle, pathetic but inspiring, of his manly struggle with the inevitable, offers an example and a lesson by which each one may profit. Such a life, however short, cannot be lost to the world, but must be remembered with the deepest satisfaction.

The members of this Society offer to his bereaved family and relatives their heartfelt sympathy in this irreparable loss and their deep affliction.

Resolved, That this memorial be entered upon the records of this Society, that a copy of the same

be forwarded to the family of Dr. Burke, and that a copy also be furnished for publication to the Quincy papers and to the BOSTON MEDICAL AND SURGICAL JOURNAL.

S. W. ELLSWORTH, *Secretary*.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

At a conference on the organization of the medical profession in the Southern States, recently held in New Orleans, with reference to the next meeting of the American Medical Association in that city, Dr. George H. Simmons of Illinois, secretary-editor of the Association, made in his address some suggestions which deserve notice. He stated that nearly 80,000 physicians in the United States do not belong to medical societies; this means two thirds of the medical profession. Reorganization, he said, should be done on business and logical principles. We must know how many physicians there are in each state and their relation to the ethical profession. At present we have no way of knowing the number of physicians in this country, as the directories carry names of dead men, horse doctors, and the same man may be registered from several states at one and the same time. The American Medical Association should be the Bureau of Information in this field. We cannot have all men in the societies, but we do want the list of them. Licensure does not mean qualification, and many a man practices medicine who has no right to do so.

In order to perfect the organization in the territory covered, it should be districted, and the profession should advise itself of every man privileged or not to practice medicine. The medical history of every man should be kept, and such information should be filed for reference in every state.

With the idea of weeding out evils, it is the purpose of the Association to drop 1,000 names before March 1. This includes those who are known to have forfeited the rights of membership through irregular practice. The only way in which quacks can be detected and expelled is through the local and state societies.

Further he stated that eleven states had already adopted the constitution proposed by the Association, and have found its provisions adequate. Michigan has raised its membership from 400 to 1,600 on this account, and Ohio has done as well. Arkansas is in line, and Alabama has for some time been using the delegate system.

When states are districted, this should be done according to accessibility. The councilors must see that county societies are kept alive and that all eligibles are brought into line.

THYROID EXTRACT IN A CASE OF HEMOPHILIA.

An interesting case of severe hemophilia, treated with thyroid extract, is reported in *The Medical News* of February 28. The patient was a fifteen-year-old Hebrew. Four of his mother's brothers had bled to death after circumcision, and two of his own

brothers had died in a similar manner. His only sister had always been well. The patient had never been strong; in childhood he had had frequent symptoms of hemophilia—severe nose bleeds, alarming hemorrhages with the falling out of his first teeth, repeatedly swollen joints, and extensive subcutaneous hemorrhages following blows. On account of the family history, he had never been circumcised.

He came under treatment for spontaneous severe attacks of hematuria of a year's duration, accompanied by occasional renal colics, produced by clots passing through the ureter. Microscopical examination excluded hemoglobinuria.

The boy, on his first visit to the Post-Graduate Hospital, was extremely cachectic, short of breath, and had a very weak pulse of 130. The usual internal styptics were employed without avail for two or three weeks; and the boy was thought by his parents to be dying. As an experiment, thyroid extract was then ordered, five grains three times a day, all other medication being stopped. Improvement set in at once, and at the end of a week the boy was brought to the clinic with a fair color and better strength than he had known for a long time; he had normal urine and a fairly full pulse of 100.

The improvement thus begun continued uninterrupted for the next nine months, or as long as the case was followed. During this period, the boy took thyroid extract continually; he had no return of hemophilic symptoms; he grew considerably, and was relatively stronger and mentally more alert than he had been for years.

A case of continued bleeding from granulation tissue in the prostatic sinus, in a patient with nephritis, is reported by Dr. Fuller in the same article. Severe secondary hemorrhage following curettage of this tissue was controlled promptly by thyroid extract, and the patient left the hospital, with clear urine; the nephritis, however, continued to progress.

A STATE SANATORIUM ACT VETOED.

In November, 1902, Governor Bachelder of New Hampshire was presented with the report of the committee previously appointed by him to consider the question of the establishment of a state sanatorium for consumptives. The committee consisted of Drs. Ezra Mitchell, president, of Lancaster; Nathaniel G. Brooks of Charlestown, and Irving A. Watson of Concord as secretary. Their report led to the passage by the legislature of a bill appropriating \$50,000 for such an institution. Governor Bachelder has now vetoed the bill, stating, in his message, that the home, once established, cannot be abandoned by the state, and cannot be made self-supporting; and that, with the appropriations of the present legislature exceeding those of any previous year, he is not justified in adding those necessary for a sanatorium, which is certain to require greater appropriations in the near future. At best, the home could accommodate but a very small proportion of the consumptives of the state, while all others, as well the subjects of all other diseases, would be taxed to maintain a favored few.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 28, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,563 | 463 | 20.72 | 23.03 | 2.69 | .77 | .89 | |
| Chicago . . . | 1,885,000 | 713 | 193 | 23.97 | 22.71 | 1.82 | 1.68 | 1.40 | |
| Philadelphia . | 1,378,527 | 639 | 186 | 18.47 | 16.90 | 2.03 | 1.09 | .63 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 212 | 66 | 16.98 | 20.75 | .94 | — | .47 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 136 | 59 | 34.56 | 23.53 | 4.41 | 9.55 | — | |
| Cincinnati . . | 335,146 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 112 | 34 | 14.28 | 31.25 | — | 4.46 | — | |
| Boston . . . | 603,163 | 240 | 47 | 16.67 | 21.25 | .83 | .83 | .83 | |
| Worcester . . | 132,044 | 35 | 15 | 14.28 | 28.57 | — | — | — | |
| Fall River . . | 115,549 | 44 | 25 | 11.36 | 40.89 | — | — | 2.27 | |
| Lowell . . . | 101,959 | 43 | 15 | 23.25 | 20.92 | 2.32 | 4.65 | 2.32 | |
| Cambridge . . | 98,639 | 30 | 6 | 16.67 | 16.67 | — | — | 6.67 | |
| Lynn | 72,497 | 24 | 4 | 12.50 | — | — | — | — | |
| Lawrence . . | 69,766 | 21 | 11 | 14.28 | 4.76 | — | — | — | |
| Springfield . | 69,389 | 10 | 2 | 20.00 | 10.00 | 10.00 | — | — | |
| Somerville . . | 68,110 | 24 | 6 | 16.67 | 25.00 | 4.16 | 4.16 | — | |
| New Bedford . | 67,198 | 35 | 14 | 34.28 | 17.14 | 2.85 | — | 14.28 | |
| Holyoke . . . | 49,286 | 14 | 7 | 7.14 | 21.42 | — | — | — | |
| Brockton . . . | 44,873 | 12 | 4 | 25.00 | — | — | — | — | |
| Haverhill . . | 42,104 | 10 | 3 | 20.00 | 20.00 | — | — | — | |
| Newton . . . | 37,794 | 6 | 1 | 16.67 | 16.67 | — | — | — | |
| Salem | 36,876 | 12 | 3 | — | — | — | — | — | |
| Malden . . . | 36,286 | 8 | 2 | — | 12.50 | — | — | — | |
| Chelsea . . . | 35,876 | 12 | 3 | 25.00 | 8.33 | — | — | — | |
| Fitchburg . . | 35,069 | 13 | 8 | 7.70 | 15.46 | — | 7.70 | — | |
| Taunton . . . | 33,656 | 9 | 2 | 11.11 | 22.22 | — | — | — | |
| Everett . . . | 28,620 | 8 | 1 | 50.00 | — | 12.50 | — | 12.50 | |
| North Adams . | 27,862 | 7 | 1 | — | 28.60 | — | — | — | |
| Gloucester . . | 26,121 | 8 | 1 | 25.00 | — | 12.50 | — | — | |
| Quincy . . . | 26,042 | 6 | 1 | — | 66.68 | — | — | — | |
| Waltham . . . | 25,198 | 10 | 3 | 20.00 | 10.00 | — | 10.00 | — | |
| Brookline . . | 23,608 | 9 | 4 | 33.33 | 11.11 | — | — | — | |
| Pittsfield . . | 22,589 | 5 | 1 | — | 40.00 | — | — | — | |
| Chicopee . . . | 21,031 | 10 | 7 | — | 40.00 | — | — | — | |
| Medford . . . | 20,962 | 7 | 2 | — | 28.60 | — | — | — | |
| Northampton . | 19,883 | 5 | 0 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 3 | 1 | — | 33.33 | — | — | — | |
| Clinton . . . | 15,161 | 3 | 2 | — | 33.33 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 13 | 3 | 15.40 | 23.10 | — | — | — | |
| Woburn . . . | 14,300 | 5 | — | — | 40.00 | — | — | — | |
| Hyde Park . . | 14,175 | 9 | 3 | 22.22 | 33.33 | — | — | 11.11 | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 3 | 2 | 33.33 | 66.67 | — | — | — | |
| Melrose . . . | 13,600 | 1 | — | — | 100.60 | — | — | — | |
| Westfield . . | 13,418 | 6 | — | — | 16.67 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 4 | 2 | 25.00 | 25.00 | — | — | — | |
| Framingham . | 12,534 | 4 | 1 | 25.00 | 50.00 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 8 | 0 | — | 62.50 | — | — | — | |
| Southbridge . | 11,268 | 6 | 3 | — | 33.33 | — | — | — | |
| Watertown . . | 11,077 | 2 | — | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 4,119; under five years of age, 1,222; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 831, acute lung diseases 900, consumption 429, scarlet fever 42, whooping cough 56, cerebrospinal meningitis 10, smallpox 10, erysipelas 4, measles 32, typhoid fever 62, diarrheal diseases 94, diphtheria and croup 84.

From whooping cough, New York 12, Chicago 12, Philadelphia 7, Pittsburg 13, Providence 5, Boston 2, Lowell 2, Somerville, Fitchburg and Waltham 1 each. From erysipelas, Chicago 3, Pittsburg 1. From smallpox, Chicago 3, Philadelphia 1, Pittsburg 6.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Feb. 14, the death-rate was 17.1. Deaths reported, 4,948; acute diseases of the respiratory organs (London) 267, whooping cough 131, diphtheria 70, measles 91, smallpox 9, scarlet fever 59.

The death-rate ranged from 5.7 in Kings Norton to 28.8 in Tynemouth; London 17.0, West Ham 15.4, Brighton 16.6, Portsmouth 16.3, Southampton 20.8, Plymouth 16.8, Bristol 18.9, Birmingham 17.9, Leicester 13.5, Nottingham 17.8, Bolton 18.0, Manchester 23.1, Salford 19.1, Bradford 16.0, Leeds 17.0, Hull 19.2, New-Castle-on-Tyne 21.4, Cardiff 14.5, Rhondda 18.3, Liverpool 19.6, Bournemouth 9.1, Hanley 26.4.

METEOROLOGICAL RECORD.

For the week ending Feb. 28, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | Wet'th'r * | | Rainfall in inches. |
|-----------|-------------|-------------|--------------|----------|--------------------|-----------|-------------|--------------------|-----------|-------------------|-----------|------------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| M. . . 22 | 30.23 | 28 | 34 | 21 | 75 | 64 | 70 | W | W | 14 | 12 | C. | C. | O. |
| S. . . 23 | 30.31 | 31 | 43 | 19 | 63 | 54 | 58 | W | W | 9 | 9 | C. | C. | O. |
| T. . . 24 | 30.18 | 34 | 39 | 30 | 65 | 75 | 73 | NW | SW | 12 | 12 | C. | C. | O. |
| W. . . 25 | 30.24 | 30 | 37 | 24 | 63 | 55 | 59 | W | W | 12 | 12 | C. | C. | O. |
| T. . . 26 | 30.34 | 36 | 46 | 26 | 45 | 39 | 42 | W | SW | 7 | 15 | C. | C. | O. |
| F. . . 27 | 30.28 | 47 | 57 | 37 | 31 | 74 | 55 | W | SW | 4 | 15 | C. | C. | O. |
| S. . . 28 | 29.56 | 52 | 62 | 43 | 92 | 77 | 74 | SW | W | 24 | 29 | O. | F. | .30 |
| Mean | 30.16 | | 45 | 29 | | | 66 | | | | | | | .30 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Mean for week.

RECENT DEATHS.

DR. ALBERTUS L. VANDEWATER, one of the medical examiners of the New York Life Insurance Company, died on March 2, at the age of fifty-three. He was born in New York City and was graduated from Bellevue Hospital Medical College in 1870.

FRANK FONTELLE BRIGHAM, M.D., M.M.S.S., died in Lynn, March 10, 1903, aged thirty-nine years.

Dr. Brigham was born in Westboro, Mass., in 1863, was graduated from Brown University in 1882 and from the Harvard Medical School in 1885, and served thereafter in the Lynn Hospital and had lived there, actively practising his profession up to the time of his death. From 1888 to 1891 he was a member of the Board of Health and held various other positions of trust and responsibility. He was particularly interested in compulsory vaccination, undertaken recently by the Board of Health, and it is thought that his activity in this work hastened his death from disease of the heart consequent on rheumatism.

SOCIETY NOTICE.

RECEPTION TO DR. WILLIAM OSLER.—The Medical Club of Philadelphia holds a reception in honor of Dr. William Osler of Baltimore, at the Hotel Bellevue on Friday evening, March 27.

APPOINTMENTS.

DR. E. H. BRADFORD has been appointed visiting orthopedic surgeon to the Long Island Hospital, Boston Harbor.

DR. H. A. GATES of Delhi, N. Y.; Dr. Grant C. Madill of Ogdensburg, N. Y., and Dr. Frank Walker Sears of Binghampton, N. Y., have been appointed as consulting surgeons to the New York State Hospital for the care of crippled and deformed children at Tarrytown, N. Y.

RESIGNATIONS.

DR. J. E. GOLDTHWAIT has resigned from the Children's Hospital, Boston.

DR. GEORGE L. PEABODY has resigned his position as professor of materia medica and therapeutics in the Medical Department of Columbia University, after a service of seventeen years.

BOOKS AND PAMPHLETS RECEIVED.

Safeguarding the Insane. By William Church Osborn, Ex-Commissioner in Lunacy.

Atlas and Epitome of Diseases of the Mouth, Pharynx and Nose. By Dr. L. Grünwald. Second edition, revised and enlarged. Authorized translation from the German. Edited, with additions, by James E. Newcomb, M.D. Illustrated. Philadelphia and London: W. B. Saunders & Co. 1903.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Vol. I, March, 1903. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Original Articles.

AN ACCOUNT OF DR. THADDEUS MACCARTY.

A NEW ENGLAND COUNTRY DOCTOR OF PRE-REVOLUTIONARY DAYS.¹

EDITED BY BURNSIDE FOSTER, M.D., ST. PAUL, MINN.

DR. THADDEUS MACCARTY, the oldest surviving son of the Rev. Thaddeus Maccarty, was born in Worcester, Mass., Dec. 19, 1747 (old style). As his father was a country parson with a growing family and small salary, it was wholly out of his power to educate any of his children at a university by any means of his own, but he had an uncle Greenough, the brother of his mother, resident at New Haven, who was in quite affluent circumstances for those times. This uncle generously offered Mr. Maccarty that if he would fit one of his sons for college he might be sent to New Haven, board with him, and that he would defray all the expenses of his education. Mr. Maccarty accordingly hesitated not to accept this kind offer, and his son Thaddeus was put to his Latin. No less a man than John Adams, who kept a school in Worcester some portion of the time he was reading law in the office of Colonel Putnam, was one of his first instructors. But according to the doctor's account given long afterwards, this truly great man was not one of the best of school-masters. He used to sit at his desk, the doctor said, nearly all his time, engaged in writing something which the doctor then supposed to be sermons, but as Mr. Adams was engaged in the study of the law and not the gospel, this was probably a mistake. He seemed when not actually writing absorbed in profound thought and abstracted from everything about him, and he kept his school along by setting one scholar to teach another; this is the doctor's account given forty years afterwards. How far the doctor's preparation to enter college was made at this school or any other school within the town I was never informed, but it was finished in the family of a certain Mr. Hutchinson, a minister of some one of the neighboring towns. Being thus prepared, he proceeded to New Haven and entered the Freshman class of 1762, and after a residence of four years took his degree of A.B., and returned to his father's house with the reputation of being one of the best classical and mathematical scholars of his class. The following winter he taught a school either in the town of Ward or that part of Worcester adjoining Ward. In the spring of 1767, having chosen the science of medicine for a profession for life, he proceeded to the town of Rutland in this county and entered himself a student of medicine and surgery under the auspices of the late Dr. John Frinke, then one of the most eminent physicians in this portion of the country. He had for a companion and fellow-student Dr. Cutler, afterwards a physician of some note in the town of Rockingham and State of Vermont. How long he continued at Rutland with Dr. Frinke I do not exactly know, but I suppose about three years. The Massachusetts Medical Society at this time was not formed; there were therefore no officers to examine and license a

young physician as in our days. Upon the completion of his studies, however, Dr. Frinke gave him a certificate recommending him in very high terms as fully qualified to commence the practice of physic and surgery. The first field of the doctor's labors in his new profession was in the town of Dudley in this county.

On the 25th of July, 1770, he entered into partnership with Dr. Ebenezer Lillie, a physician already in full practice in that town and vicinity. Here the doctor labored three full years, having as much as he could possibly do both night and day; this was a very fortunate chapter in the doctor's life, for besides the opportunity it afforded of making some money, of which he at that time stood in great need, what is of vastly more consequence, it gave him at once, by his union with an established physician in full practice, an opportunity to thus fit himself for the field of his future labors. At the expiration of the three years he closed his connection with Dr. Lillie and soon afterwards repaired to Fitchburg, and took up his residence there, as he then thought and intended, for life. Here was a field as large and extended as any young man, however ardent and ambitious, could wish to enter. The doctor found himself immediately in full and very laborious practice; there was no physician at that time, himself excepted, in Fitchburg and five other towns adjacent. Doctor Shattuck of Templeton, the father of the distinguished gentleman of that name, now in Boston,² was the nearest of any note, and he was laboring in a field as large. It is scarce possible at this day of improvement in all things to form any adequate idea of the labors of these men. There were no roads anywhere fit to be so named. The doctor kept four or five horses, and, having constant calls, kept both himself and them in perpetual motion. I have often heard him in after life relate the toils and adventures of this period, and how many narrow escapes he had of broken neck and limb. In one instance, he said, when his horse was in full trot on a winding road through the woods, and in a very dark night, he ran his head full butt against a tree; this sudden interruption of rapid motion effectually separated man and horse, and prostrated both upon the ground rather more suddenly than either thought desirable. When hearing the doctor relate these toils and dangers of his early life, I little thought that forty years afterwards I should be taxing a worn-out memory to call them into being again.

In the month of January, 1775, the doctor was united in marriage to Miss Experience Cowdin, oldest daughter of Thomas Cowdin, Esq., of Fitchburg. This proved a very fortunate and happy event in the doctor's life. She was a woman of good understanding and of a kind and amiable disposition, possessing all the virtues to adorn and render happy that very important relation in human life, the married state. This choice was highly approved by all the doctor's numerous friends and relations, who always held her in the highest esteem, until by an early death she was removed from this to a happier world, lamented and held in affectionate remembrance by all who knew her.

In the spring of this year the smallpox was making fearful ravages, not only in the army, but in

¹ This account was written in 1836 by Dr. Maccarty's son-in-law, John W. Stiles of Worcester, Mass., and is here published for the first time by Dr. Maccarty's great-great grandson.

² 1836.

all parts of the country. Everybody was exposed, and the doctor, who had not had it, among the rest. Something must be done; although with much difficulty, the doctor finally concluded to leave his family and business at once, go to some hospital and have it. At this time there was a hospital of high repute in Great Barrington, and another in Claverdale in the State of New York, both under the superintendence of a certain Dr. Latham, who managed that terrible disease with great success according to the Suttonian method, then a profound secret, and, for aught I know, is to this day, except to those who purchase the important secret. The doctor lost no time in repairing to Great Barrington, was inoculated and came off victorious, having the disease very lightly. As this was an important affair to the doctor afterwards, perhaps it may not be amiss to say a few words about it, which can best be done in Latham's own language as follows:

"Whereas, William Sutton of Kensington Lane, in the County of Surrey, in England, hath found out and discovered a method or art of inoculation for the smallpox, and hath also discovered and prepared certain medicines, preparatory and effectual in the cure of that distemper, and, whereas the said William Sutton, in order to extend the benefit of this method to America, did, upon certain conditions, take James Latham into partnership for the carrying on and practising of this said method, art or mystery, and inoculation with the medicines aforesaid in certain districts in America, with power to depute under him other persons within said districts under certain terms and conditions," etc.

This James Latham was surgeon to his majesty's Eighth Regiment of Foot, or had been, for so he styles himself, and then resided at Livingston Manor, New York.

Dr. Maccarty got through the disease himself, entered into partnership and Articles of Agreement with Dr. Latham, dated July 24, 1776, for the purpose of establishing a hospital in Fitchburg, and he was thereby duly appointed Dr. Latham's deputy within that town for the term of twenty-one years, promising and engaging, however, not to practise said art in any other place whatever, beyond the limits of said town, without a license first had been obtained in writing from said Latham. Dr. Latham was to have one half of all moneys received in the work of the business until his portion should amount to three hundred pounds, after which he was to receive one third. Latham was to furnish the medicines from time to time, ready prepared, but was not to be obliged to disclose or discover to Dr. Maccarty the method, art or mystery of preparing and making up the said medicines or the contents or composition thereof; and Dr. Maccarty on his part solemnly promised and engaged "to render an account every three months of all persons inoculated by him, not to dispose of, or sell any of the medicines or use any other than such as he would receive of said Latham except in case of necessity, and especially not to analyze or otherwise try to discover the composition of the said medicines or permit it to be done by others." In addition to these articles of agreement Dr. Maccarty received from Latham an extension of his powers and a letter, of which the following is a copy:

GREAT BARRINGTON, 24th July, 1776.

Sir,—During the absence of Dr. Paine, you may inoculate and attend the natural smallpox in any part of

the county of Worcester until his return, and as also inoculate and attend the natural smallpox in Middlesex County until such time as I appoint partners there, or that you hear from me contradicting this license and to take what sum you can get from each. I am your most humble servant,
JAS. LATHAM.

It seems from this document that the late Dr. William Paine of Worcester had already been appointed by Latham to treat the natural smallpox in this county, according to the Suttonian method, if not to inoculate, and that being absent, Dr. Maccarty received this additional authority.³

This business being concluded, the doctor lost no time in returning to his family. On his arrival at Fitchburg, an incident occurred, which, without the greatest prudence on his part, might have blasted his hopes and ruined his business if not himself forever. It seems at this period the doctor was strongly suspected by the good people of Fitchburg of Toryism, and the "Committee of Safety" had just had a meeting, and agreed to arrest Dr. Maccarty as soon as he should return, then hourly expected, and subject him to a severe examination, and if not fully satisfied to forthwith, according to the statutes of Judge Lynch, adorn him with a robe of tar and feathers. Fortunately for the doctor a fast friend of his was in the secret, and was on the watch for the doctor's return. He arrived in the evening about the last of July and was immediately informed by his friend of the whole affair and the discipline prepared for him, and that he might expect to be arrested as soon as his arrival should be known. However, the doctor rested in peace that night. The next morning early, the doctor observed Deacon Ebenezer Goodridge, one of the Committee of Safety, riding by, and immediately went out and addressed him thus: "Deacon Goodridge, I got home last evening and have understood that the Committee of Safety have some business and wish to see me. If you will tell me where they meet I will do myself the pleasure of calling on them immediately." This open and fearless frankness disarmed the good deacon of all his patriotic wrath, who soon afterwards made a favorable report to his brethren, saying: "The doctor, he believed, was a pretty good man and meant well, that he was a good doctor and they could not do without him, and that he thought they had better admonish him and let him go." So when the doctor met the committee, this favorable speech of Deacon Goodridge, together with his own prudent management, removed their suspicions in a great degree, so that after a little Whig lecturing the doctor was permitted to depart in peace and escape the tar and feathers.

The doctor returned to his regular business, and in pursuance of his contract with Latham made application to the General Court of Sessions of the Peace, agreeably to an act of the General Court then lately passed, and at a special session held at Worcester on the 15th of August, 1776, was duly authorized "to erect a smallpox hospital in the town of Fitchburg, subject to the orders and regulations of said court." On the 1st of October following the doctor entered into partnership with Dr. Israel Atherton of Lancaster, and in conjunction

³ The original documents relating to the business relations between Latham and Dr. Maccarty were presented by me to the Boston Medical Library, where they now are.—B. F.

with him proceeded immediately to carry into effect his contract with Latham. A hospital was erected, and all necessary preparations being made, it was soon filled with subjects for inoculation. How long it continued in operation, I am not informed, but long enough, as I have heard the doctor say, to carry through eight hundred persons with the loss of only five by death. This it would seem was good evidence of the goodness and efficacy of Dr. Sutton's system.

After the termination of the smallpox concern with Dr. Atherton, Dr. Maccarty continued his regular practice in Fitchburg and the neighboring towns without any particular event worthy of notice until the year 1780, when his father's health being in a declining state he made very frequent visits to him in Worcester. Indeed, his father could not feel satisfied without seeing him twice a week. This took up so much of the doctor's time that it began sensibly to injure his business. People were continually after him, and he was gone to Worcester. Sickness cannot wait, another physician must be had. Dr. Locke, a young physician, had come into town. Dr. Haskell had settled in Lunenburg, was rising in reputation and afterwards was very distinguished. Dr. Whiton had taken his stand in Winchendon, and was highly approved. These all occupied the ground of Dr. Maccarty's former labors, and if Dr. Maccarty could not be had, because absent in Worcester, some one of these others could. Thus his practice fell away. In this state of things, his father advised, nay, urged him, to close his concern in Fitchburg and move to Worcester as soon as possible and commence practice in this town. In an evil hour for him he accepted this advice, and in the month of June, 1781, returned to his native place, and although he did, a portion of the time he remained here, a tolerably fair business, it never was anything compared to what he had left at Fitchburg. In a few years he buried both his parents, his mother dying Dec. 28, 1783, and his father, worn out by a long sickness, July 20, 1784. The doctor until this time had lived about a mile out of the street, which was a great inconvenience, and indeed an injury to his business, and on the death of his father he moved into his house on the south side of the common. After his removal the doctor's business rather improved for a season. On the 1st of June, 1785, he was elected a fellow of the Massachusetts Medical Society. Nothing from this time worthy of note occurred that I know of, except the formation of the Second Religious Society in Worcester, in which the doctor was heart and hand engaged; he was a great admirer and fast friend of Dr. Bancroft, nor did he lose his attachment and respect for that gentleman years afterwards, when the inhabitant of another State. I have often heard him mention Dr. Bancroft as the only minister in this vicinity who preached the gospel according to his understanding. This was forty years ago, when I had never seen Dr. Bancroft, and never expected to.

In January, 1789, the doctor was unfortunate enough to lose his excellent wife, the greatest of all possible losses to him; her health had been declining for some time, and on the 24th of this month she took her departure from this scene of trouble and suffering with perfect resignation to the

will of Him who disposes all events, and regretted by all who knew her.

At this time also the doctor's own health was in a feeble and uncertain state; he was ill able to attend to any business, nor was he free from pecuniary embarrassments. His two brothers, Nathaniel and William, were engaged in trade at Petersham and they advised the doctor to give up his profession at once, as ill suited to his poor state of health, or any chance of recovery, and to go into trade, and they recommended Keene in the State of New Hampshire as a suitable place for that purpose. This advice prevailed, and in June, 1789, the doctor once more broke up his whole establishment and translated himself to Keene and took his stand behind the counter, a place for which he was poorly qualified and where he always disliked to be. The doctor at this time had three children, a daughter and two sons. Upon breaking up at Worcester, these were distributed among his connections. The daughter went to Fitchburg, and resided with her mother's connections; his two brothers adopted the two sons, who had been named for them. William Maccarty this spring removed from Petersham to Boston and took the doctor's oldest son William with him, and Nathaniel Maccarty took the youngest son to Petersham, a little boy of about three years; thus they appear to be happily disposed of. But the doctor was doomed to farther trials; his little son in Petersham died in about a year very suddenly of the croup, and before the doctor could possibly arrive there, and his brother William after a long and tedious illness died at Billerica in the summer of 1791. The doctor's eldest son thus lost his home and followed his father to Keene.

In Keene the doctor continued his mercantile business, practising physic occasionally, which, however, gradually increased as he became more known; he was often called in to advise the attending physician and not infrequently at a considerable distance in many of the neighboring towns. The winter of 1791 he spent in Boston attending his brother William in his last sickness. Here he became acquainted with the late Dr. Jeffries, who had attended his brother. This acquaintance led to a correspondence which was continued long afterwards upon the various subjects connected with medical science. In the spring of 1793 the doctor was again called upon to try the efficacy of his old friend, Dr. Sutton's secret medicines. The smallpox had broken out the year before, and was in all parts of the country. Dr. Hastings had established a hospital in Charlestown, N. H., and not being acquainted with the disease called upon Dr. Maccarty to assist him. The doctor repaired to Charlestown and stayed some time, long enough to assist in carrying through a large class without the loss of a patient. Some years afterwards he had a similar application in Keene with a like success; none died, except two or three who took the disease the natural way.

In the year 1796, if I mistake not, the doctor was called to a new, and until then unheard of, mode of curing diseases; it was sufficiently secret for Dr. Sutton himself and for a while as efficacious. I mean nothing more or less than the celebrated tractors of Dr. Elisha Perkins. He called on Dr. Maccarty to obtain his aid in introducing them into that part of

the county, to induce him, if possible, to make use of them professionally, and accept of a general agency in the sale of those marvelous things. I happened to be present when Dr. Perkins arrived, heard him state the object of his visit, saw the little magic pointers opened, heard him explain their use and mode of application, the wonders they had done, the greater wonders they would do, the principle on which they acted, in which he took care, however, to conceal it, and I never shall forget the concluding remarks of all this great learning. He expected opposition, he said, from ignorance, bigotry and prejudice, but the time would come when it would be acknowledged by all that the tractors were the greatest discovery of modern times, and raised us one step nearer to Him who knoweth all things; these may not be his exact words, but they are substantially. I stood with amazement and verily thought that if all Dr. Perkins said was true, the gods had come down to us in the likeness of men, as the good people of Lystra did on a more important occasion. Dr. Perkins had all the appearance of having full confidence in the complete efficacy of the tractors. Dr. Maccarty was apparently as much amazed as I was, they were entirely new to him and indeed he knew not what to say, and therefore said but little. I went to my business and left the doctors together, and when I came home at night Dr. Maccarty informed me that he had accepted the agency and had twenty or thirty sets of tractors left for sale at \$20.00 per set, he to return \$16.00 for all he should sell, and Dr. Perkins had made Dr. Maccarty a present of one set. A pompous advertisement was prepared, I believe, beforehand, setting forth their wonderful power, and it was not long before the tractors rose into marvelous reputation. Dr. Maccarty had abundance of employment, some came and purchased them, particularly all the doctors in the vicinity. Some came for the doctor to go and use them. Great cures were wrought; the very chiefest apostle of animal magnetism could not do more. All the good women, old and young, whose nerves were a little disturbed, came and were healed, or fancied themselves so, which was just as well. Many a time when Dr. Maccarty returned from using them, and related what he had done and seen, he appeared evidently to have worked himself into faith, and this delusion continued, if I remember right, as much as two years, without much abatement. The doctor sold all his tractors, and afterwards received fifty sets more; how many of these he sold I never knew, as not long afterwards I left his employment. From a letter from Dr. Perkins to Dr. Maccarty now lying before me, dated Plainfield, Dec. 14, 1797, I make the following extract: "We have continually increasing testimonies, and from respectable quarters of the efficacy of the tractors. Their general efficacy is now established to the confusion of the envious, the ignorant and the bigoted, who always have and ever will oppose useful discoveries and improvements." But in about two years from their introduction into Keene, the tractors began to lose ground, and in the course of another year sank with remediless disgrace. Christopher Caustic, however, has saved them from oblivion.⁴

In February, 1799, Dr. Maccarty was appointed a justice of the peace for the county of Cheshire, and in February, 1802, a justice of the Quorum. This circumstance is perhaps hardly worth mentioning, such offices are now so common and so cheap, but it was an important thing to the doctor, as he did a great deal of profitable business in that capacity. He was also one of the Board of Selectmen, and chairman of that body some years.

The doctor had been preparing his only son William for a collegiate education for some years, and in 1796 he repaired to Hanover with him at the general commencement, and his son was entered in the Freshman class, but being so young it was not the doctor's purpose to keep him there under another year. But, alas, how vain are all human calculations built on future and uncertain events! The doctor was doomed once more to disappointment in all that lay nearest his heart; this son, this only son, this only male child surviving of the whole race, was soon to be gone. He sickened in the fall, grew weaker and weaker, but without pain, and expired on the 4th of February, 1797, of a diabetes, in the fourteenth year of his age. This event affected the doctor more than all others since I had known him.

Perhaps before I close this imperfect sketch I ought to say something of the doctor's theological and religious sentiments. But this is the most difficult part of the whole. I heard him converse for four years on religious subjects more than on all other subjects put together, and yet it was as difficult to ascertain what he really believed as to find out the longitude of perpetual motion. I have already mentioned what he said of Dr. Bancroft, but when that is compared with what I have heard him say on many other occasions it would seem to be the man he loved quite as much as any particular system of doctrines. I don't know but I do wrong to say anything about it. I know his friends and particularly Mr. West, his brother-in-law, considered him a deist. But the doctor never acknowledged himself one to my knowledge. He mentioned, however, several times that in his younger days he had been much conversant with deistical writers, which gave his good father much uneasiness. He used to mention Hobbes, Spinoza, Dr. Tindall and Annat as authors he had read. But he had no such books in his own library, and I never saw a deistical book in his house or knew him to read one all the time I lived with him, nor did I ever hear him defend such sentiments. The doctor was very familiar with the scriptures, and very fond of controversy.

He knew all the clergymen in the vicinity and they often called upon him, and rarely separated without a dispute, but they were always conducted with good temper, and I never saw any feverish excitement on either side. But the doctor could argue on all sides and with equal force, and he did this so often that I rarely felt sure that he was really of the opinion which he defended. But in all his discussions it was always taken for granted that the scriptures were true in some sense. The doctor read Greek and Latin with the greatest facility, and his knowledge of Greek was always one chief dependence in his disputes with the ministry; very few in that neighborhood knew much Greek, from long disuse it had faded from the mind. When, therefore, a text

⁴Terrible Tractoration, a Poetical Petition against Galvanizing Trumpery and the Perkinistic Institution, by Christopher Caustic, M.D., LL.D., Ass., London, 1803.

was produced which the doctor could not evade in any other way, he would contend for a different translation, quote the Greek and render for himself. This was often decisive, for it would silence if not convince. There was one clergyman in the vicinity whom the doctor highly respected and who was really an able man, the Rev. Mr. Goddard of Swansea, and they rarely parted without an oral combat. I will just briefly refer to one of these, and with it finish this subject. The question was the eternity of future punishment. Mr. Goddard was, of course, for the affirmative, and the doctor took the other side. Mr. Goddard quoted many texts which he supposed supported his position, two of which I will mention, Matthew, chap. 26, v. 24: "It had been good for that man if he had not been born," that is, Judas. Mr. Goddard contended that if after ever so long and severe a punishment happiness were then to commence, as it would continue forever, it could not be true, that in such case it be better for Judas not to have been born, for he considered existence so great a blessing that no rational man would refuse it, though subject to ages of suffering, if eternal happiness was to follow. The doctor fully admitted this consequence, but he contended that the verse was improperly rendered and the sense perverted or destroyed by reversing the order of the words in the Greek text, in the translation, and that it should be rendered thus: "It had been good for him if that man had not been born," and that as "the son of man" was the last antecedent before "him," it evidently referred to "him," and then the sense would be, "It would have been good for the son of man if Judas had not been born," for then he would not have betrayed him, etc.; and this construction the doctor said was supported by the prayer "that if it were possible that cup might pass away from him," etc. Mr. Goddard also quoted Acts, chap. 1, v. 25: "That he may take part of this ministry and apostleship from which Judas by transgression fell that he might go to his own place." Here the doctor was ready with a new translation, the last clause of the verse, he said, was evidently erroneous and that the true meaning of the Greek was utterly destroyed. The real meaning of it was, he said, not that Judas should go to his own place, but that the new apostle should take Judas' place in the ministry, that is, "go into his place," and this correction I really think the doctor was serious in, whatever he was in the other, for I heard him mention it on several other occasions.

In the month of June, 1802, the doctor came to Templeton to visit my family, and likewise visited his brother at Petersham, but he said to me on the morning of his departure, "I am going to die." A few weeks afterwards I visited him at Keene. I found him reading the Septuagint version of the scriptures; he told me he had been engaged in it a whole year, and had been critically comparing it with the English version. He made many observations upon the various readings, and the difference in the sense of many passages in the two versions, as compared with each other. One of these may be mentioned, as it is often quoted and relied on for the establishment of a particular doctrine, had no corresponding words in the Septuagint, but were entirely wanting. The doctor said more upon the subject of religion, *seriatim*, and upon its general

importance, than I had ever heard from his lips before, and he finally concluded by saying he "was sorry he had disputed so much about it."

I visited the doctor again in September and found he had greatly altered; that hereditary disease which has afflicted all his family in some form, and which some of them have called the gout and some have not known what to call it, had fixed itself upon his lungs, and was fast wasting him away. Still he was able to do business, and as the settlement of his concerns would, he knew, eventually devolve on me, he gave a minute explanation of everything which he thought would be otherwise unintelligible to me, pointed out how he would have them adjusted and especially in some settlements where small mistakes had been made and several sums were due from him to others which no mortal but he could ever know. He pointed them all out and gave me strict injunctions that they should all be carefully rectified. From this time his health rapidly declined, and the last few weeks he was confined to his bed. He continued wasting, but without much pain, until Saturday night the 21st of November, 1802, when he closed the,—

"Last scene of all,
That ends this strange, eventful history."

The doctor left but one child, a daughter, who was married in November, 1801. She has two children only, one of them was married in 1828 and has three. Thus, although the Rev. Thaddeus Maccarty had a very large family, even fifteen children, there now survive of all his posterity only one grandchild, two great-grandchildren and three great-great-grandchildren.

"Like leaves on trees the race of man is found
Now green in youth, now withering on the ground;
Another race the following spring supplies,
They fall successive and successive rise;
So generations in their course decay;
So flourish these when those are passed away."

LIPOMA ARBORESCENS.

BY CHARLES F. PAINTER, M.D., AND WILLIAM G. ERVING, M.D.,
OF BOSTON.

From the Orthopedic Clinic of the Carney Hospital.

THE occurrence of fatty growths in the joints is not very uncommon, though comparatively few have attracted enough attention to merit publication. They have usually been associated with the existence of tuberculosis or arthritis deformans. They occur as overgrowths of the synovial villi of the joint or as true lipomata¹ that have pushed in from the subserous fat as the result of laceration of the fibrous capsule.

As more cases are being studied, it becomes evident that the etiology is not as limited as was at first supposed. Many conditions may cause the hypertrophy of fringes. Under some circumstances the result is a general villous enlargement, and under others it is confined to one or at most a very few villi. The knee joint is the one most commonly affected, though others are not exempt. In this series the cases are all operative, and have come under observation during the past year.

The seven cases here to be reported in detail are

¹Stieda (Beitrag. f. Klin. Chir., xvi, p. 1896) reports twelve cases of true lipoma in the joints.

selected from a series of sixteen cases of hypertrophied synovial villi, recently removed at operation, because they seemed to represent distinct tumor formations, and not simply the arborescent overgrowths of the synovial membrane, which are so commonly seen. Doubtless this condition of apparent tumor formation is nothing more than the end result of the villous hypertrophy, but clinically this condition is much the more important to recognize, for the removal of the growth not only rids the affected joint of the cause of its symptoms, but removes from it a source of internal trauma, which would permanently impair the function of the joint if allowed to remain. It is of great importance, then, to recognize these growths in the joints, and in view of the failure to find tuberculosis as the cause for the hypertrophy in any of the following cases, it seems reasonably certain that isolated villous hypertrophies, without more symptoms of joint disease, will not be found to be due to tuberculous infection, and consequently the radical operations, which the literature shows have been resorted to in certain cases, are not indicated because one finds villous hypertrophy on opening the joint. The clinical symptoms given are those of a foreign body in the joint, and not of disease of the bones or soft parts.

CASE I. M. C., a woman aged twenty-one years. Had always been well until July, 1901, when she first had pain referred to the left knee, accompanied by swelling, but no redness; unable to work. Entered the Boston City Hospital in July, and was treated with a splint for two weeks without effect. In August again entered hospital, and remained six weeks without relief. In January visited the Carney Out-Patient Clinic, at which time the left knee was held flexed about 10°; complete extension was not permitted; attempts at this caused much pain. Over the outer side of the joint at the level of the outer border of the patella was a very tender spot, the size of a ten-cent piece. Motion allowed in flexion without spasm. A quarter to one-half inch atrophy of the thigh and calf; no enlargement of the knee joint itself; no thickening of the capsule. A positive diagnosis could not be made; x-ray taken.

Operation, March 17, 1902. An incision 10 cm. long was made on the outer side of the joint, exposing the capsule, which was not thickened. On opening the joint a fatty mass was found attached to the fossa above the external condyle, from which it extended well up into the suprapatellar pouch, attached all about its margin, and fed by vessels from its under surface. The blood supply was quite good. When this growth was removed it was as large as the palm of an adult hand. March 24th stitches were removed, joint manipulated; no adhesions.

The specimen removed consisted of an irregular mass of fatty tissue, more or less lobulated. This was inclosed in a capsule and interspersed by a meshwork of fibrous tissue, giving to the mass a firmer consistency than is common to ordinary lipomata.

Microscopically the tissue was found to consist of bands of fibrous tissue, usually narrow, irregular and loosely woven together. Throughout this fibrous tissue were numerous blood vessels with thickened walls. Separating these fibrous areas were masses of adipose tissue of varying size, scattered throughout which were many small blood vessels, their lumina almost or quite obliterated, forming small islands in the surrounding fatty tissue. Scattered throughout the specimen were large areas of fibrous tissue, taking up the eosin stain but little and with but few staining nuclei; the fibers in many cases being broken up into small fragments, and in places forming an almost homogeneous mass.

CASE II. L. F., male, aged thirty-five years. Five years ago noticed swelling of the right knee, which was slightly painful and reddened. The knee felt feverish for two or three months. Later began to walk lame;

visited the Hot Springs without relief. Redness subsided and swelling remained. Two years later left knee began to swell, and one year ago the left ankle. Left knee was operated upon at the Massachusetts General Hospital in February, 1900, with relief for two or three weeks, after which symptoms recurred.

Examination.—Left knee slightly swollen, half an inch larger than right; 45° of motion in flexion, and within 5° of complete extension possible. Marked thickening of the capsule of the joint, particularly on either side of the patellar tendon. No spasm on motion; no surface temperature or redness; apparently condition of proliferated synovial fringes.

Operation.—Incision 5 cm. long, on inner side of the joint, exposing the capsule, which was very much thickened and quite vascular. On opening the joint the synovial surface was found to be congested, and the villi were much proliferated. Some cloudy fluid escaped. In it were fibrinous clots. The greatest proliferation of the villi was in the region of the ligamentum alae. An opening was made over the outer side of the joint; several large villi immediately presented in the wound; on the upper and outer side of the capsule of the joint was a fatty growth suspended from the synovial membrane, apparently a degenerated villus. This was the size of an English walnut. The fringes were removed and the lipoma dissected out. Convalescence has been uneventful since the operation was performed. Six months after the operation the function of the joint was practically normal, and the patient had been at his work as a street car conductor for some time.

The specimen consisted of several fringes removed from the synovial membrane close to the patella and on either side of the joint. They varied in length from 1 to 2.5 cm., and in thickness from .5 to 1 cm. Dark purple in color and very vascular. There was also a sessile mass, fatty in character, which was removed from the synovial membrane of the upper and outer portion of the joint. This was some 3 cm. in diameter, and appeared to be a fringe which had undergone fatty degeneration.

Microscopically the specimen was found to consist of adipose tissue interspersed by broad and more or less regularly arranged bands of connective tissue. In both varieties of tissue were numerous vessels, the larger being found for the most part in the latter, the smaller in the former tissue. The larger vessels showed marked thickening of their walls, the smaller were often wholly obliterated.

CASE III. A. S., a woman aged twenty-three years. For the past six months has complained of the left knee "catching" when in certain positions; not enough to throw her and not causing any acute signs of joint trauma, but enough to be of considerable annoyance, and making her feel uncertain in the use of the leg. These symptoms were gradual in their onset, and not connected with any known cause.

Examination.—A well-developed girl; over the outer side of the left knee joint can be felt a distinct fringe which seems fibrous and which the fingers slip over in palpating the joint. Joint motions perfectly free; one-half inch enlargement of the left knee; no atrophy of thigh or calf; no signs of acute disease.

Operation, Feb. 28, 1902. An incision was made over the outer aspect of the joint; no thickening of the capsule; no increase in vascularity. On incising the capsule a large fatty growth presented in the upper part of the joint, apparently growing from the synovial membrane and projecting well down under the upper half of the patella when the joint is flexed; also extending well over to the inner side of the joint. The vessels supplying the nourishment seemed to come from the parietal layer of the synovial membrane. This mass was dissected out and the wound closed with silk worm gut.

March 24, 1902, normal motions in the joint; no symptoms of the old trouble. The functional use is entirely restored.

The specimen consisted of a lobulated irregular mass of fatty tissue, the lobules held together by a meshwork of fibrous bands, giving the tissues a firmer consistency than is usual in lipomata. Markedly vascular.

Microscopically the specimen was found to consist of areas of adipose tissue traversed by bands of connective tissue, for the most part regular in arrangement and stain-

ing deeply, but there were some areas where the arrangement was loose and the staining feeble. The cortical portion contained well-defined areas densely infiltrated with small, round cells, which were entirely absent in the central portion.

CASE IV. Aug. 28, 1902. F. B. For about a year has had trouble with pain and swelling in the right knee. Came on gradually—all the symptoms coming at about the same time but without known cause. Condition has been much worse since a fall on Thanksgiving Day, 1901. Pain at any time independent of use, but is made worse by damp weather. Keeps her from sleeping sometimes. General health good. No trouble in the other joints except that the cervical spine has been annoying her some of late. The joint "catches" at times in a flexed position so that it cannot be straightened.

Examination.—Right knee one inch larger than the left. Joint capsule thickened and relaxed particularly below and on either side of the patella. Sensation of slipping in the joint over the inside of the patella above the line of the joint. Suggests either a fringe or the cartilage, probably the former. In bed at times the joint locks and the cords become tense.

Plaster for two weeks.

Sept. 11, 1902, soreness still persists. Swelling has gone down very much. Circumference over patella 43 cm.— $\frac{1}{2}$ cm. less in circumference than at last note.

Sept. 28, 1902. Since last note knee has been quite painful and there has also been some pain in other knee and a sensation of slipping. Right knee as seen today shows no increase of joint fluid. The thickening of the synovial membrane in the lower part of the joint quite apparent, and motion is made very gradually with only 45° of flexion from a straight line possible.

December, 1902. Incision made through the inner side of the right knee. Large fringe removed from ligament over the line of the joint. No other fringes on inner side but a small lipoma, the size of a pullet's egg, removed through a second incision through the outer side of the joint. Upon this was a smaller one attached to the parietal wall. The left knee shows a similar condition. Recovery from operation has been uneventful.

The specimen removed consisted of two separate outgrowths: the first a flat, vascular fibrous tab of tissue, 2 by 5 cm., which was attached to the synovial membrane beneath the patella; the second a fatty lobulated mass, quite vascular, but not dark in color, 6 by 3 cm., which was attached to the synovial membrane by a narrow pedicle. Microscopic examination of the second showed a thin cortical layer of connective tissue, densely infiltrated with small, round cells, with the appearance of granulation tissue. The remainder of the specimen consisted of adipose tissue through which ran strands of fibrous tissue, staining feebly, and usually in the immediate neighborhood of vessels, the amount varying directly with their size. These vessels are very numerous, and endarteritic changes are the rule.

CASE V. A. R. Patient is a nurse thirty-three years old, who has been troubled for one and one-half years with a swelling of the left knee. This has not been constant, but came on at intervals without any apparent cause. The frequency with which it was causing trouble has been increasing. The family and personal history were negative, and there has been no injury to the knee other than hard use at her occupation.

Examination.—The left knee is much swollen, 3 cm. greater in circumference both over the lower border of the patella and above that bone; this swelling being due to an increase of fluid in the joint. Motions not restricted except in the extreme of flexion. No increase of surface temperature; no redness. No interarticular thickening could be felt.

Operation, Jan. 24, 1903. Incision 6 cm. long over inner aspect of joint. Capsule not thickened or abnormally vascular. Membrane not congested or hypertrophied, except in the place to be mentioned. About 6 oz. of clear, straw-colored fluid evacuated.

On lifting the patella up, with the knee flexed about 20°, a good-sized synovial fringe presented, coming from the membrane just in front of the anterior-inferior border of the patella, and dropping down between it and the femoral condyles, and probably between the tibia and femur. The free end of this was quite congested and granu-

lar in appearance, and the whole mass of tissue was perhaps 2.5 cm. in length by from .7 to 1 cm. in width at its base before it was cut off. There was a smaller though a much swollen one over the external condyle of the femur. In consistency the growth felt very soft, as though more fatty than fibrous. Otherwise the joint membrane and the cartilages and bones seemed normal in appearance.

Capsule closed with interrupted silk, and skin with silk-worm gut. Dry dressing and plaster of Paris splint.

Specimen consists of a round mass .3 cm. in diameter, and somewhat flattened. It is gray to reddish in color, and is covered with little projecting tabs of a fatty consistency.

Microscopically the cortex of growth consists of a narrow layer of small, round cells closely packed, inside which is a narrow, irregular layer of connective tissue containing numerous thick-walled vessels. The remainder of the section consists of normal adipose tissue, interspersed by bands of connective tissue of varying widths, while scattered throughout are thick-walled vessels in islands of connective tissue, some of the smaller with obliterated lumina.

CASE VI. E. M., aged twenty-four years. On Oct. 8, 1900, twisted the right knee while playing football. On account of effusion was kept in splint four weeks. Again in November a similar accident, which was slower in recovery.

April 12, 1901, slipped, twisting the same knee; effusion with slight tenderness on fibular side. No history of "catch" in joint. Splint for three weeks and then the elastic bandage. About the middle of May there was perfect motion and no effusion. On May 20, while stepping backwards, felt a sudden, sharp pain in the joint when weight was put on it. Effusion; motion free without pain. On manipulation in flexion felt something slip in the joint; then on standing erect no more pain. On crutches until four days previous to June 24, 1901. Effusion has disappeared very slowly. No "catch" at any time and no pain except on standing at the time of last injury.

Examination.—Right knee slightly swollen and about 40° of motion in flexion is allowed, the limitation being due evidently to the fixation of adhesions. From history condition probably represents bruise of semilunar cartilage without displacement of this at time of last injury. To consider conservative and operative treatment.

Because of repeated attacks of synovitis an operation was decided upon, and the joint was opened on both sides in November, 1901. Over the inner side was found a partially detached internal semilunar cartilage which was removed. Several small fringes were also removed, and through the incision on the outer side of the joint a small fibro-fatty tumor the size of an English walnut was excised. This was sessile and attached to the parietal wall of the joint. Convalescence was uneventful, and now, over one and one-half years from the operation, the function of the joint is normal and there are none of the old symptoms.

Specimen removed consisted of several large congested fringes, many of them 1 cm. in diameter, and a fatty mass 3 cm. in diameter, and the inner end of the internal semilunar cartilage.

Examination of the fringes microscopically showed a fibrous capsule irregularly infiltrated by small round cells which in limited areas are densely packed. Within is adipose tissue, into which at intervals project from the capsule irregular bands of fibrous tissue. Throughout this tissue are scattered many blood vessels, the larger ones with thickened walls, the smaller, which are much more numerous, nearly or quite obliterated.

CASE VII. L. C., female, thirty-four years old. Entered Carney Hospital June 22, 1902. Ten months previously noticed a swelling in lower anterior aspect of knee joint, which gradually increased. There was no locking but a slipping sensation in joint, and at night leg was tired and joint stiff. There was no pain. No treatment until two months before admission, when leg was held fixed in plaster.

Examination showed in the region of the semilunar cartilages of the right knee a firm, fibrous mass which rolled under the fingers. The part which fell between the bones was very gristly in character, the rest of a

softer consistency. No limitation of motion. Left knee normal.

Operation, June 23. Through an incision over inner aspect of joint an irregular sessile mass protruded, the attachment to the synovial membrane was divided; wound closed and leg fixed in plaster.

On discharge July 5, motion of knee was normal and swelling was very slight. In October, 1902, the joint was symptomless and its function normal. The specimen removed consisted of a very vascular mass of grayish-

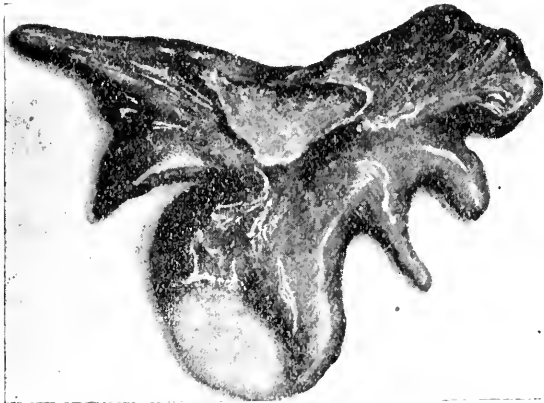


FIG. I. — Lipoma arborescens.



FIG. II (Section of Fig. I).

red to brownish tissue 5 by 8 cm., and about 2 cm. thick. It consisted of several fringelike processes, and was attached to the synovial membrane by a very short pedicle, 1.5 cm. in diameter, and its consistency varied from fatty to tough, the latter being characteristic of that part which came in contact with the bony surfaces of the joint.

SUMMARY OF SPECIMENS.

In general, the clinical picture presented by these cases is that of a more or less swollen joint, without any signs of acute inflammation and most commonly without even any excess of fluid. The patient complains of imperfect function sometimes with and sometimes without pain; more often the latter. They also sometimes complain that the joint "locks"

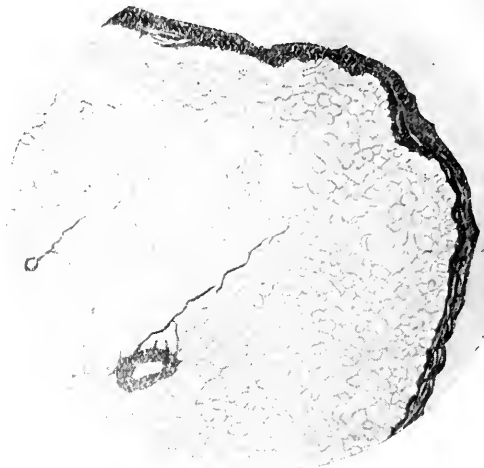


FIG. III. — A section of a lipomatous tumor occurring elsewhere than in a joint, showing the histological difference from the lipoma arborescens.

in a partially flexed position, and can be straightened only after considerable effort.

The lipomata vary greatly in size, reaching often that of a good-sized hen's egg. In shape they vary also from round, regular masses, studded with small tabs of fatlike tissue, to irregular masses, with long fingerlike processes, which are often bulbous at the distal ends. They are attached to the synovial membrane by a pedicle, usually slender, which on cross section is found to consist almost wholly of blood vessels lying in a mass of small round cells. In consistency they vary from a soft, fatty to a tough, fibrous condition, both varieties often found in the same specimen, while the color varies from a yellowish-gray to a dark purplish-red. They are very vascular, and after removal shrink to a great extent. Microscopically the cross section of any of these masses shows a cortex of varying thickness of closely packed round cells, often grouped in round clumps, separated by strands of fibrous tissue infiltrated to a less degree by similar cells. Within this outer layer is one of varying thickness of fibrous tissue, but little infiltrated with small round cells, and containing many blood vessels with thickened walls. The bulk of the mass consists, however, of normal adipose tissue, through which run bands of varying width of fibrous tissue, staining more or less feebly, and often showing signs of granular degeneration. Scattered throughout the adipose tissue are very numerous blood vessels, all with thickened walls, carried in the smaller to the extreme of obliterating their lumina, lying in small islands of fibrous tissue.

The occurrence of this condition has been recognized for some time in the pathological textbooks, but has received very little attention in the surgical textbooks. German authors have described it more often than any others, and have regarded the presence of these joint lipomata as representative of one of two conditions, as a rule, namely, synovial tuberculosis or arthritis deformans. In this way Ziegler (in his *Special Pathology*, p. 2711) refers to these lipomata arborescentia, and regards them as the result of a fatty metamorphosis of the normal synovial villi.

Coplin, in his *Manual of Pathology* (pp. 242 and 535), says that he believes lipoma arborescens to be simply a step farther than "cloudy swelling" in the process of fatty degeneration, analogous to the same process in the kidney. He believes it is caused by (1) anemia, (2) necrosis and caseation, (3) bacterial toxins, (4) embolism, (5) infections, etc. According to Coplin these degenerations develop in sub-synovial or subserous tissues, and push their way into the neighboring cavities.

Dalafield and Prudden, in their *Pathology* (pp. 317 and 779), refer to the lipoma arborescens as pushing into the joints as "tufts" of synovial membrane.

Hektoen-Riesmann in the *American Text Book of Pathology* simply advance the old theory that these growths are signs of some underlying cause, as tuberculosis or osteo-arthritis.

Haeckel reviewed the literature up to 1888, and described two new cases of lipoma arborescens in his own experience. This article was entitled "Lipoma Arborescens," and appeared in the *Centralblatt für Chirurgie*, April 28, 1888; later still, in the *Allg. Chi. für Path. und Therapie* (8 Auflage, p. 706), Billroth has another contribution to this same subject.

Stieda, in a carefully written paper on lipoma arborescens of the knee, appearing in the *Beitrag für klin. Chir.*, xvi, p. 285, 1896, gives an exhaustive review of the literature on the subject up to that date. Including his own two cases, he mentions thirteen, in ten of which the knee was involved, in two the shoulder, and in one the hip.

The first case on record is one described by Gætz in his *Dissert. inaug. Halle.*, 1798.

The name "lipoma arborescens" was first given to the condition by Joh. Müller in his "*Ueber den feineren Bau und die Formen der krankhaften Geschwülste*," while the first suggestions regarding its etiology were made by Volkmann in the *Centralblatt für Chirurgie* for 1885. He classified lipoma arborescens of the joint, with other chronic enlargements, as a condition not of necessity primarily tuberculous, but developing into it.

König, writing in 1885 and again in 1895, considered the condition as a manifestation of tuberculosis only, but finding later a similar condition in cases of arthritis deformans, he at first tried to distinguish them, and finally admitted the great difficulty in so doing.

Schmolek, in 1886, reported two cases, both of long standing, in which at the time of operation a fresh tuberculous lesion was found, from which he concluded the condition to be one of lipomacie of the joint favoring the invasion of the bacillus of tuberculosis.

Haumann in his *Dissert. inaug.*, at Bonn, in 1887, reported a case in which the condition was associated with a chronic rheumatoid affection. He too thought the structure favored the presence of tuberculosis.

Israel reported a case following trauma, in which no focus of tuberculosis was found.

Riedel in the *Archiv. für klin. Chir.*, vol. xli, 1891, mentioned a case in the knee joint following a healed periarticular tuberculosis. No focus was found at time of operation or in the specimen removed, but there was a subsequent exacerbation of the disease. The same was true in a case involving the shoulder,

which was afterwards involved by a process starting in the humeral head. He considered that the condition developed from mild inflammatory conditions, as tuberculosis and arthritis deformans.

Schüller, writing in the same publication, vol. xlv, 1893, noted the fact that small tuftlike growths from the free surface of the synovial membrane are not pathological but are found even in the newborn. The pathological cases were to be considered not as tumor formations but as simple hypertrophies, the result of chronic inflammation.

Modlinski, writing in the Russian *Medizinskoje Obosrenije*, No. 20, 1891 (as quoted by Stieda), reported a case of lipoma arborescens of both knees, in which a local and general tuberculosis was found.

Sokoloff in the *Chirurg. Itscheskij Westnick*, 1893, 2 and 3, and the same year in Volkmann's *Klinische Vorträge N. F.*, No. 81, September, 1893, reported one case in the knee in which no tuberculous focus was found, one in which such a focus was found, and one in a case of a syringo-myelic arthropathy of the shoulder, with enlarged joint cavity, atrophied humeral head, and luxated bone. From this last case he advanced the theory that a condition of negative pressure in a joint was also an etiological factor in the growth of lipoma arborescens, as favoring the hypertrophy of fatty tissue.

Of Stieda's two cases, the first affected the knee. It was of long standing, with an old history of injury. Aspiration of the fluid in the joint being unavailing, the joint was resected and a complete recovery resulted. The second case was an old museum specimen of a hip involved in a condition of arthritis deformans, showing a marked lipoma arborescens of the joint. Stieda's conclusions are as follows:

(1) Lipoma arborescens occurs in a number of chronic joint affections.

(2) It is not a lipoma in the sense of being a "new growth," but is merely a hypertrophy of normal pre-existing tissue.

(3) Its etiology is a chronic inflammatory condition of the joint, arising usually from tuberculosis or arthritis deformans and possibly a condition of negative pressure in joint.

(4) Pathologically it is an hyperplasia and fatty degeneration of pre-existing synovial tabs, to an extreme degree.

(5) Histologically the appearance is that of a typical chronic inflammatory condition, with, in addition, a specific appearance in case of tuberculosis.

(6) In an unopened joint, diagnosis is not certain, the swelling, tenderness, limitation of motion and ability to palpate not being absolutely diagnostic.

(7) Prognosis of spontaneous healing and recovery of joint function unfavorable.

(8) Treatment: arthrectomy (erosion) or when tuberculosis is present, resection of the joint.

With these conclusions our observations would, in the main, agree. Where we should differ from the author above quoted would be in giving tuberculosis relatively a less important place in the etiology, and we should urge the importance of the absence of the clinical evidence of joint disease as leading to the diagnosis of a non-tuberculous condition, and encourage exploration of the joint where any doubt exists as to the nature of the pathological process.

SUPPURATION OF THE FRONTAL, ETHMOID, AND SPHENOID SINUSES.

WITH BRIEF REPORT OF THE TREATMENT OF TWO HUNDRED AND THIRTY-SEVEN CASES.

BY EDGAR M. HOLMES, M.D., BOSTON, MASS.

OWING to the often severe and distressing symptoms, as well as to their etiological importance in the production of pathological conditions in the ear and throat, the study of the diseases of the accessory sinuses of the nose is one of the most interesting and important with which we have to deal. This subject has received much attention during the last few years, and although many points are still unsettled and under discussion, a great deal has been accomplished, and we are given much information in regard to the etiology, symptoms and treatment of this class of cases. Many cases of persistent and severe ear and throat difficulty are now known to be due to disease of these structures, and many can be greatly relieved by removing or relieving these exciting causes. It is my purpose in this paper to consider the affections of the cavities situated at the superior portion of the nose, namely, the frontal, the ethmoidal and the sphenoidal; and in a general way to report 237 of these cases treated in my office.

As the drainage plays such an important part in the etiology as well as in the treatment of all the sinuses, I deem it advisable to briefly review their anatomy. As a whole, they occupy much of the space between the nasal and naso-pharyngeal cavities below and the cranial cavities above, and although they vary considerably in extent and in the position of their natural openings into the nose, yet these variations have limitations within which we may expect to find the great majority of cases.

The frontal sinus usually develops between the tables of the frontal bone, over and between the eyes, above the root of the nose. There is almost always a thin plate of bone which separates the cavities on either side. This is not always in the median line and it is sometimes perforated. These cavities vary greatly in size, and one or both may be wanting. Although there seems to be much difference of opinion, the general belief is that they begin to develop at about the second year by the upward extension of the ethmoid cells. At about the seventh or eighth year they can be recognized as a distinct cavity above the root of the nose. They gradually increase in size, and at the age of puberty may be quite extensive. It is claimed by some anatomists that they continue to increase into old age. This is of little importance so long as we bear in mind that at all ages they are subject to great variations and may be separated from important structures by only a mere shell of bone. This is also true in dealing with all of this group of cavities. The shape or prominence of the supraciliary ridge is of little aid in determining the shape or size of the cavity behind it, which in some cases extends over the orbital roof as far as the external angular process, and occasionally nearly as far back as the optic foramen. The frontal sinus often communicates with the anterior ethmoidal duct, either directly into the middle fossa anteriorly or after having joined the infundibulum. The ethmoid sinuses are divided into various groups by different an-

atomists, but from a clinical standpoint it is sufficient to divide them into two groups, an anterior, which communicate with and drain into the middle meatus of the nose, and a posterior group, which communicate with and drain into the superior meatus above the middle turbinate. The lateral mass of the ethmoid bone forms by its outer surface the greater portion of the inner wall of the orbit and by its inner surface the upper outer wall of the nasal cavity. The body of this mass is made up of thin trabeculae of bone bounding variously shaped and sized cavities, the whole structure resembling that of a sponge. There is no regularity in the number or size of these cells, and there is no relation in the amount of space occupied by the two groups. The anterior group may have several openings into the middle meatus, and may also communicate with the posterior group. They are closely associated with the floor of the frontal sinus and the naso-frontal duct. At times one of the cells develops upwards and forwards and forms a prominence upon the floor. This has been called the *bullula frontalis*. Occasionally some cells extend into the roof of the orbit, below the frontal sinus, and may extend as far back as the optic foramen. At the anterior part of the lower border of the lateral mass of the ethmoid is a prominence containing one or more cells called the *bullula ethmoidalis*. At times there are cells in the anterior portion of the middle turbinate which may be so large as to block the whole superior portion of the nasal cavity.

The posterior group of ethmoid cells may extend below, encroaching upon the maxillary sinus, and occasionally the sphenoid body contains an ethmoid cell of considerable size. At times they occupy the greater portion of the lateral mass of the ethmoid and again only a small posterior portion. The general relation and great variation of the ethmoid cells makes it evident that any suppurative process may cause pressure and produce symptoms pointing to the frontal maxillary and sphenoidal regions.

The sphenoid sinuses, like the other sinuses, vary in quite a marked degree. They occupy simply the anterior part of the body of the sphenoid bone or they may extend even into the baso-occipital behind, into the base of the great wings laterally, and into the lesser wings superiorly. The larger the cavities, the thinner must be the bounding walls. As these walls are in contact with many important structures which without great care might become injured during operations, I will give here a few of the more important relations. Above the cavity approaches the cranial cavity, and is covered from before backward by the root of the lesser wing, the olivary process and the sella turcica. Upon these rest the olfactory peduncle, the optic commissure, the pituitary body, and when the cavity extends far back the pons varolii. The optic nerve and the ophthalmic artery are situated near where the roof joins the external lateral wall. The roof is at best very thin, and when diseased may even be perforated. The anterior wall which forms the posterior portion of the roof of the nasal chamber is nearly vertical at its upper part and inclines backwards below where it meets the floor. This wall is very thin, and through it the cavity communicates with the sphenoidal fossa of the nose.

The external lateral wall, often very thin, is de-

pressed from the cranial side for the internal carotid artery and the cavernous sinus posteriorly, anteriorly it is the inner boundary of the sphenoidal fissure through which pass the third, fourth, the ophthalmic division of the fifth, and the sixth cranial nerves and the ophthalmic vein. There is a septum of bone, usually complete, which separates the two cavities. This occasionally deviates so that at times there is marked inequality of the two cavities. It sometimes happens that one cavity is nearly behind the other, and I have seen a specimen in which one cavity was posterior to the other, and communicated with the nose only through the anterior cavity.

The lining of all the accessory sinuses is a thin mucoperiosteal membrane, with a layer of ciliated epithelium upon the surface.

The position of the outlets of the various sinuses is of great importance, in both enabling us to make a diagnosis and to treat the disease conditions found.

The infundibulum, which in about half of all cases is joined by the naso-frontal duct, opens into the anterior portion of the middle meatus between the ethmoid bulla and the uncinate process, under cover of the middle turbinate body. Where the naso-frontal duct does not join with it, it opens in front of the infundibulum directly into the middle meatus. Under these conditions it is short and straight and more nearly vertical. Neither of these openings can be seen, as they are covered by the middle turbinate. A small probe can usually be passed through these ducts, and often is an aid in diagnosis. It is not rare for one or more of the ethmoid cells to communicate directly with the middle meatus.

The posterior ethmoid cells and the sphenoid cavity open above the middle turbinate, the ethmoid into the superior meatus, and the sphenoid into the spheno-ethmoidal recess. They are much more easily explored by the probe than the anterior group. In a large number of cases there are two or even three openings from the posterior ethmoid cells, one opening is often situated in the small groove which frequently lies just above the superior meatus. The sphenoidal sinus communicates through a single small opening at the superior posterior portion of the outer wall of the nasal chamber. This opening varies considerably in size and position. In relation to the sphenoid cavity, it is nearer the roof than the floor, at times immediately below the roof. The olfactory cleft is usually so narrow that the opening cannot be seen. Even when the middle turbinate has been removed the opening may be located so far out or the superior turbinate may project so far that direct inspection is impossible. I have been able to see the opening in several cases where the middle turbinate had undergone atrophy, and in a few cases where it was near the septum, and where there was an unusually large olfactory cleft.

After this slight anatomical review, it is easy to understand how so many and often times extensive cavities may become infected by various bacteria, and when the resulting inflammations are set up how liable the inflammatory products are to infect the other cavities and to cause pressure when the openings become blocked by swelling of the mucous membrane lining them.

Anything which lowers the general vitality, as

overwork, excess in eating and drinking, lack of fresh air and exercise, exposure to cold, chronic diseases, like diabetes, nephritis, syphilis, cardiac and pulmonary disorders, and malaria, may be lowering the resistance of the nasal mucous membranes to the attack of the various bacteria which are so frequently present and act as etiological factors in the production of suppurative inflammation of the accessory sinuses. During the course of such acute diseases as scarlet fever, measles, diphtheria, typhoid fever, pneumonia, influenza, tonsillitis and rheumatism, there is often an inflammatory process set up in these cavities. Exposure to irritating dust and vapors is liable to cause local inflammations which easily become infected. Foreign bodies accidentally introduced into the nose or intentionally placed there to stop hemorrhage or give support to a fracture may, by their mechanical irritation and obstruction, cause an inflammatory process in one or more of the accessory cavities. Tumor growth, syphilitic gummata and ulcerations, and perhaps local tuberculosis, as reported by Lapalle, although Howard and Ingersoll failed to find tubercle when looking especially for it, may also act as etiological factors. Near thickly settled communities, where so many are constantly spitting collections of pus upon the street, which during dry and windy weather is soon reduced to powder, contaminating not only the air outside but filling every house, we have a very important source of infection, and almost every rhinologist has observed the frequency of acute suppurative processes following such spells of dry, windy weather. This is especially noticeable during cold winter weather, whenever the ground is free from snow.

E. Fränkel and Weichselbaum were among the first to direct our attention to the organisms associated with suppurative disease of the accessory cavities. The Klebs-Loeffler bacillus has been found by E. Fränkel, Weichselbaum, D. Mochowsky, Pearce and others. The pyogenic organisms, the various streptococci and staphylococci, have been found and reported by many observers. The bacillus of influenza has been demonstrated by Weichselbaum in 90% of autopsies on patients dead of influenza. The onset often coming, as it does during acute illness or following a rhinitis, is liable to escape the patient's attention, and as many cases are of months and perhaps years' duration when they come to the physician's care, it is not remarkable that it is impossible to find the etiological factors in so many of them. Sixty-one of my cases consulted me for deafness, some with and some without tinnitus, and gave no clue to the sinus trouble either in the past history or present symptoms except the general statement that they had catarrh. Eighty-three attributed the beginning of their trouble to an attack of influenza. Seventeen cases had had constant catarrh since attacks of diphtheria. Twelve patients claimed to have had no trouble until after a severe injury to the nose. Eleven were of the opinion that they had been free from nasal symptoms until after an attack of scarlet fever. In eight cases no symptoms were complained of, or at least remembered, until there was cough and other signs of pulmonary tuberculosis. Only seven cases were attributed to syphilis, although twenty-three had at some time been afflicted by this disease.

Five thought that a prophylactic dose of diphtheritic serum was responsible for all of their trouble, and three that vaccination was surely the cause. I saw one case where a left sphenoid and posterior ethmoid suppuration started during an attack of typhoid fever, and persisted in spite of treatment until the anterior portion of the sphenoid was removed and the cavity curetted. I cannot prove that these cavities were healthy before the fever, but there were no symptoms, and I had treated one patient for a suppuration of the right ear for two months before the onset, and had repeatedly examined the nose and naso-pharynx. Culture taken of this case showed streptococcus and typhoid bacillus. In the remainder of this series, numbering thirty, no cause was given, and when we consider the great number of cases which do not give symptoms of sufficient severity to direct attention to the nose, it is evident that many of these could have existed prior to the existence of the supposed cause. For the same reasons autopsies in certain diseases can only demonstrate the presence of sinusitis, and not prove the disease as the cause of the suppuration, which may have been present prior to its onset.

Our knowledge of the pathology of the accessory sinuses has been derived from both postmortem examinations and clinical observation, and, although there are marked differences of opinion as to the existence and frequency of the pathological conditions found and reported, the majority of pathologists as well as clinicians are agreed that the changes are those found in mucous membranes upon other parts of the body. Many and perhaps the majority of all acute inflammations tend to subside without treatment, and if the symptoms have not been very severe or alarming in character the patient has not consulted a physician. Inflammation of the frontal sinus, if not so severe as to cause ulceration, will in the great majority of cases subside. The outlet, unless blocked, is so situated as to give good drainage and probably only a very small percentage becomes chronic. The pathological conditions found vary according to the severity and duration of the disease, the ease with which the secretions are evacuated and the resistance of the membranes attacked. There may be simply congestion or inflammation with round-cell infiltration, or there may be ulceration of the mucous membrane with granulation tissue, polypoid or cystic formations, or even caries and necrosis of the underlying bone. Pressure in a retained cavity may distend its walls or cause necrosis and rupture through. In this manner the various groups of cells may become joined or fistulous openings may take place into the orbit, cranium, nose or naso-pharynx. A free opening into nose or naso-pharynx may so drain the infected cavity that the trouble subsides without any other interference. When there is a discharge of pus over the mucous membrane in the nose or throat for any length of time, it is usually found to be puffy, of a more or less deep red color, and often presenting a glassy surface. In cases of long duration there is often an atrophic condition, and there is still much discussion as to whether the atrophy or the sinusitis is the primary lesion. During the last three years there has much been added to the side of the sinusitis as the primary

affection. In 14 cases I had to deal with atrophy accompanied with the formation of foul-smelling crusts, and, although I cannot positively say whether the sinusitis or the atrophic condition was primary, I can say that in 11 of these cases after relieving the sinusitis the crust formation ceased and with it the odor. Two of these have remained apparently free for over three years and four for over two years.

The direct irritation of the pus may cause inflammation of the naso-pharynx, and by extension produce inflammation in Eustachian tube and middle ear. This may be found in various degrees of intensity. The pus when it reaches the pharynx and the larynx may produce marked inflammatory processes with the accompanying symptoms. In one of my sphenoid cases there had been necrosis through roof. There was no normal outlet to be found and after drilling through floor pus fairly poured out. I collected two fluid ounces, showing, as did some of the symptoms, that there was likely an epidural abscess.

(To be continued.)

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL.

CLINICAL meeting of the staff, held Dec. 12, 1902, in the Treadwell Library, the President, Dr. C. B. PORTER, in the chair.

DR. J. B. BAIN reported briefly a case of blank cartridge wound of the hand, from which tetanus bacilli were isolated. The wound was freely incised and all affected tissues removed. No tetanus developed.

DR. S. J. MIXTER: I remember that when our attention was so strongly called to this subject two or three years ago on account of the tetanus cases, I insisted that all cases brought to the accident room with cartridge wounds should have the most careful attention, that the injured tissue be cut out and the wound thoroughly cleansed, and if the patient refused to take ether and have the wound attended to in this thorough way he should not be treated at this hospital. I think that this is necessary. No case has been worked up so carefully as this, but the treatment outlined by Dr. Bain is the treatment used in the accident room.

DR. H. H. A. BEACH demonstrated the following cases:

CASE I. ENLARGED THIRD LOBE OF PROSTATE GLAND; CHRONIC RETENTION; SUPRA-PUBIC EXPLORATION; REMOVAL OF THIRD LOBE AND THREE CALCULI.

The patient was a man of fifty-five years, with a history of arthritis at twenty. Six years ago had frequency of micturition, gradually increasing, with pain; slight incontinence at night. Three years ago had three pints of urine drawn by catheter, and was confined to bed for five weeks. Since then has never been able to pass urine except by catheter No. 8. Four weeks ago he began to have pain in passing catheter, which lasted for some hours afterward. For two weeks pain was constant, sharp and shooting from the neck of the blad-

der to the glans penis. By the rectum the prostate was not tender, nodular, or enlarged sufficiently to account for symptom. A No. 10 catheter passes easily into the bladder, evacuating foul, cloudy urine. Under ether, a stricture found and dilated to No. 32.

Constant drainage and the bladder washed out with borate solution. The urine became clear, but the pain at the neck of the bladder returned, and the drainage was discontinued, the pain after catheterization increasing. Suprapubic cystotomy was done, and a valvelike process of the prostate found obstructing the inner opening of the urethra. It was excised, and three small calculi removed. For the free bleeding from the fresh surface left after excising the obstructing lobe, a solution of adrenalin was applied on a piece of gauze held by forceps, with the effect of immediately blanching the tissues and controlling oozing. His progress has been uneventful; the bladder wound has closed. He can retain his urine five or six hours, when he uses the catheter, without pain. He is beginning to pass urine without catheter.

CASE II. CANCER OF PYLORUS; OBSTRUCTION TO PASSAGE OF SOLID FOOD; GASTROENTEROSTOMY WITH THE MCGRAW LIGATURE.

Patient a man fifty-eight years old. First noticed a tumor in the epigastrium between eight and nine months ago. Distress after eating solid food began two months before that. Stomach contents show no hydrochloric acid. In patient's epigastrium, capacity 1,400 cc., is felt a hard, slightly irregular, movable mass 8×5 cm., the lower border at about the level of the umbilicus, left border just to the left of the median line.

Vertical incision of six inches through the right rectus muscle. Tumor about the size of an egg, surrounding the pylorus. Enlarged, hard glands in gastro-hepatic omentum, retro-peritoneal region and adjoining mesentery. A loop of jejunum brought up to greater curvature of stomach near pylorus and fastened with a row of Lembert silk sutures, two and one-half inches long. Just above this a McGraw rubber ligature inserted joining stomach and intestine, taking in the right, one and three-quarter inches of each organ, then protected by a second row of silk Lembert stitches. He had very little constitutional disturbance from the operation, the temperature rising 100.8° once only immediately after the operation. He was fed with nutrient enemata for nine days and then beginning with small quantities of milk and lime water, his diet was gradually increased. Wound solid and stitches out on the seventh day. Between the tenth and fourteenth day after operation he had some vomiting, and finally ejected the ligature. After that his gastric disturbance quieted down, and he has taken more or less solid food every day and digested it, relieving the embargo upon a general diet. The case is reported as contribution to the literature of the McGraw rubber ligature, recently brought to the attention of the profession.

CASE III. — BILIARY FISTULA FOLLOWING CHOLECYSTOTOMY; PERSISTENT SYMPTOMS OF BILIARY OBSTRUCTION; CHOLEDOCHOTOMY; COMPLETE RELIEF.

The patient, a negro woman, thirty years old, en-

tered the hospital with a fistulous opening about an inch below the right costal border. This had opened and closed irregularly during the past year and a half, following an operation, performed in Tennessee, for the removal of two gallstones. The drainage tube had remained five months.

When the fistula is closed the patient reports that she has "yellow eyes, dark movements of the bowels and urine," when it is open she has "clear eyes, light-colored movements and urine."

She has frequently abdominal colic, with pain in the right shoulder, and is disabled for work. During the past week the fistula discharged bile very freely. The scar of the operation was solid, and a firm mass, the size of a hen's egg, could be felt below it in the direction of the umbilicus.

Through an incision of four inches parallel with the costal border and below the old wound, the peritoneum was opened.

Many adhesions were found, masking the gall bladder, the inferior surface of the liver and adjoining intestines nearly to the median line. After a careful exploration of the adhesions in the direction of the common duct, a hard body could be felt by carrying the finger beneath them. The duct, however, could not be exposed from its superior surface without damage to adherent intestine, and other structures, nor could I push the stone into the intestine. Therefore, after carefully walling off the general peritoneum cavity, I opened the duodenum and felt the stone from within, then cutting into the common duct, released a stone the size of a marble, not faceted. The wound in the duodenum was then closed with silk Lembert stitches. The abdominal wound closed and drained. Nutrient enemata were used for the first few days and convalescence was uneventful. She was discharged well, with a soundly healed wound, in seven weeks.

CASE IV. CHOLELITHIASIS; CHOLEDOCHOTOMY; COMPLETE RELIEF.

The patient, a man thirty-nine years of age, two years ago had for three weeks diarrhea, nausea and vomiting, dull pain in epigastrium and jaundice. The urine dark and stools clay-colored.

Seven months later, a chill with excruciating pain in epigastrium shooting through to the back, under the shoulder-blade, vomiting and profuse perspiration. With morphia pain was relieved in about eight hours. He was jaundiced for a few days, had dark urine and clay-colored stools. In a year and a half, he had about twelve similar attacks, though not as severe. Never disabled for more than a day. Five months ago had a severe attack, the pain lasting seven or eight hours; since then, mild attacks every ten days or so. The last, one week ago, pain occurred in the afternoon. He vomited, and with the aid of morphia he was relieved in the course of four hours. He felt poorly the next day and was jaundiced. Upon entering the hospital he was feeling well. There was slight general jaundice, but no tenderness of the gall-bladder region. The upper border of liver dulness at the fifth rib. Upon full inspiration, the liver could be felt one finger's breadth below the costal border.

Incision of five inches into peritoneal cavity below the right costal border. Transverse colon, gall bladder and small intestine were adherent in

a solid mass. By cautious exploration with the finger from the under side of the mass, a stone could be felt in the upper part of the common duct. By manipulation the stone was worked back into the gall bladder, only a small area of which was visible between adherent coils of gut. The stone was worked along to that point and held firmly between the thumb and forefinger. The gall bladder was opened and a stone the size of a marble removed. Several smaller stones were fished out with a scoop. No evidence of malignant disease was detected. A glass drainage tube was tied in the gall bladder, from which flowed some ounces of bile, and the abdominal wound closed. On the first and second days after the operation he vomited bile several times. His tube was removed on the seventeenth day, convalescence was without incident, and the wound was solidly healed one month after the operation, when he was discharged well.

CASE V.—PROLAPSE OF THE RECTUM;
OPERATION; CURE.

Patient was a woman fifty-eight years old, the mother of ten children.

She had no urinary symptoms, but was usually constipated. Two years ago the rectum showed a tendency to protrude from the anus, which has become much distended, and now permits a prolapse of five inches. This is easily brought about by standing, walking, during defecation and micturition. She has always been able to reduce it by crossing her legs, or by lying down. She has a slight cystocele and the uterus is much atrophied.

An oblique incision of three and a half inches through the abdominal muscles in the left iliac region as for artificial anus, through this the sigmoid flexure was caught up and hauled tight so that there could be no protrusion at the anus. The intestine was then stitched by a double row of Lembert sutures of chromic catgut to the peritoneal borders of the wound. The muscles were then united over the intestine in layers, the skin with silkworm gut sutures, the latter were removed on the fourth day, the union perfect. The bowels were not moved as usual after a laparotomy. She had soft solids on the eighth day, and house diet on the ninth day. Bowels moved spontaneously on the eleventh day without any prolapsus.

Discharged well.

Reported at the hospital three months after in as good condition as at time of discharge.

CASE VI. HYDRONEPHROSIS; OPERATION.

Patient was a woman thirty-one years old. Her health had been good until three years ago, when she had an attack of severe pain under the right costal margin. At that time a decided lump was felt in the region of the gall bladder, which was tender on pressure. The size of the mass seemed to bear no relation to the quantity of urine passed. She had vomiting, jaundice and clay-colored stools. For six months she was ailing more or less. Eight days ago a similar pain was felt and the mass under the ribs reappeared. For two days she vomited and was jaundiced, the stools clay-colored. The jaundice has disappeared, the pain remains, but is no worse and the size of the mass has diminished.

Upon examination the abdomen was not distended. Just below the costal border is a mass of the size and shape of a pear, which is smooth and moves with respiration, being apparently connected with the liver. It is slightly tender upon bimanual pressure. No jaundice. Pelvic examination negative. On the day after entrance no pain or symptoms.

During the next four days the temperature rose at night and the mass enlarged to size of a grape fruit, fluctuating from front to back through the loin and evidently involving the kidney. The abdomen was opened by an incision of five inches through the outer border of the rectus muscle, extending downward from the free edge of the liver. The tumor was found to be retro-peritoneal. The left abdomen was explored for a kidney, and one found in normal position. The gall bladder was normal, also the appendix. The intestines were then pushed to the left side with a mass of gauze, and the peritoneum opened for about four inches outside of the ascending colon, reflecting the peritoneum, so as to expose the kidney and ureter of the right side, the pelvis of the kidney was distended to the size of an orange and the organ itself displaced downward for three inches. Following the ureter downward the upper one and one-half inch was much distended, then a sharp kink was found with an S bend, and below this point the ureter was collapsed. On pushing the kidney up into normal position, the bend disappeared, the pressure was relieved and the collapsed ureter became suddenly filled with fluid, and the tumor as rapidly diminished. With gentle pressure one half of the contents of the kidney pelvis passed downward in a few minutes. The kidney was now turned so that its convexity faced downward, toward the ureter, which provided for the most complete drainage of its interior and was then fixed in that position by some sutures to the eleventh and twelfth ribs. By including the lower part of the capsule, the kidney was suspended in a slinglike support, completely obliterating the kink. A gauze handkerchief was packed beneath it, until the adhesions should be firm and the wounds closed. In a week the gauze was removed. Temperature was normal, urine about 40 oz. daily.

In twenty-five days after operation no mass could be felt in the loin, the urine was normal and only a small granulating area in the scar.

Discharged relieved.

(To be continued.)

Medical Progress.

PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Concluded from No. 11, page 287.)

DISINFECTION.

Further experiments have been made and reported upon by Calmette and Hautefeuille¹¹ upon the efficiency of the Clayton apparatus for the evolution of sulphurous acid in the disinfection of ships. The experiments were made upon a ship of 1,200 tons at Dunkirk, France. Recent cultures of

¹¹ Rev. d'Hygiène, October, 1902, p. 865.

typhoid bacilli, cholera and plague were employed for the experiments, part of which were conducted in the hold of the ship and part in a stateroom on deck, having two berths furnished with mattresses. In all bands of flannel were used and impregnated with the disease germs, some of which were introduced dry and others moist. Control samples were kept on deck outside the influence of the gas. The machine was put in operation at 10.55, and at 1 P.M. the gas in the hold amounted to 5% of the air.

At the inlet of the gas the percentage was as high as 15%.

In the cabin or stateroom the samples were placed upon the mattresses in the berths, and some were covered with a coverlid folded double. The gas in this room at the level of the berths rose to 8%. After stopping the action of the gas, the germs were allowed to remain exposed two hours and were then removed for examination. No pains were taken to close this room hermetically, a scupper four inches wide under the lower berth remaining open throughout the experiment.

As the result of these experiments the authors conclude that gas produced under pressure by the Clayton apparatus is sufficient for the disinfection of the holds of ships when they contain objects soiled with the germs of typhoid fever, cholera and the plague.

It will also kill rats, fleas, bugs and other vermin, and will not injure delicate fabrics, grain, sugar, fruit and other objects which form the cargoes of ships.

RECENT ENGLISH EXPERIMENTS.

These experiments were conducted under the direction of the London County Council, and were reported upon by Dr. Murphy, Feb. 10, 1902,¹² the object being to determine the comparative value of different disinfectants used for household disinfection.

The disinfectants submitted to test were carbolic acid, permanganate of soda, bleaching powder, corrosive sublimate, formalin and sulphurous acid.

Seven microbes were experimented upon, including those of typhoid fever, diphtheria, cholera and tuberculosis. Four kinds of material were employed—cloth, unpainted or unvarnished wood, linen and wall paper. Microbes distributed in broth, milk or melted gelatine were liberally applied, and were exposed to the action of the disinfectants.

The typhoid bacillus was killed by all disinfectants except Condry's fluid and bleaching powder.

Condry's fluid gave generally negative results; bleaching powder also failed for the disinfection of cloth and wood infected with the typhoid bacillus after one hour's exposure, but succeeded in twenty-four hours.

The bacillus diphtheriae was killed by formalin and sulphur dioxide. The cholera vibrio was destroyed by all disinfectants except Condry's fluid and bleaching powder.

Anthrax spores were only destroyed with certainty by perchloride of mercury.

For tubercle bacilli, carbolic acid and corrosive sublimate were the only efficient disinfectants.

¹² Report of the Medical Officer of Health, London, 1902.

Neither formalin nor sulphur dioxide were efficient for the disinfection of wood and cloth infected with this bacillus.

DISINFECTION OF NEW CLOTHES.

Sir Charles Cameron¹³ relates several instances in which new clothing appeared to be the vehicle of the scarlet fever contagion. The new recruits of the Royal Irish Constabulary lodged in barracks at Phenix Park, Dublin, were often attacked with scarlet fever, and suspecting the new uniforms as sources of the disease, he ordered them to be disinfected before being used. This measure resulted in a diminution in the attacks.

DISINFECTION OF THE HANDS.

Calvello,¹⁴ after a series of experiments with the essences of essential oils, believes them to be superior to corrosive sublimate for the disinfection of the hands. In consequence of the collection of detritus around and under the finger nails, he finds that the ordinary methods of disinfection are not efficient (scrubbing and the application of soap, alcohol and corrosive sublimate). Some of the essences have decided bactericidal power, and are more penetrating. The essences chosen for experiment were canella, thyme, geranium and patchouly. He at first employed mixtures of distilled water with 6% alcoholic solutions of the fresh essences. He found it necessary to increase their strength to a 9% solution of canella, 12% of thyme and 18% of geranium. These solutions gave satisfactory results. The patchouly has too feeble antiseptic power for general use. The microbes employed for experiment were the staphylococcus pyogenes and the bacillus coli.

SCHOOL BACTERIA.

Under this title Cacace¹⁵ presents the results of some examinations of the dust of schoolrooms in Capua. He found sarcinae, b. coli, staphylococci, blastomycetes, Penicillium glaucum and Aspergillus niger. In one gram of dust collected in the principal class rooms, there were from 5 to 25 million germs; in specimens from the gymnastic hall, 17 to 40 millions, and in the infant school 70 to 193 millions. The month of June appeared to be the most favorable for their development, of the different months of school attendance. Dust collected at the close of each session contained 2 to 5 millions more than at the beginning.

Inoculations of this dust upon guinea pigs caused death by septicemia. Other pathogenic bacteria were found in the blood of the dead animals, but not those of tuberculosis.

The excess of germs in the dust of the infant school was probably due to its location, on the ground floor and near a dusty street.

THE AIR OF UNDERGROUND BAKEHOUSES.¹⁶

Dr. Newman, Medical Officer of Health of Finsbury, England, in an investigation of the bakehouses of his district, presents the following summary:

¹³ Brit. Med. Journ., Feb. 15, 1902, p. 386.

¹⁴ Lavori di Laboratorio dell'Istituto d'Igiene della R. Università di Palermo, vol. v, p. 121.

¹⁵ Centralbl. f. Bakteriologie, Parasitenkunde u. Infektionskrankheiten, vol. xvii, p. 653, 1901.

¹⁶ Public Health, London, December, 1902, p. 159.

The air of the typical underground bakehouses:

(1) Contained 14.8 volumes per 10,000 of carbonic acid (CO_2), as compared with 4.9 in above-ground bakehouses and 4.3 in the streets.

(2) It contained between 10 and 24% less moisture than outside air surrounding the bakehouses.

(3) It contained at least four times more bacteria than surrounding street air, and three times more bacteria than the air of a typical above-ground bakehouse.

BORAX OR BORIC ACID AS FOOD PRESERVATIVES.¹⁷

Vaughan and Veenboer have reviewed the recent literature of borax and boric acid as food preservatives, and present the results of experiments which they had conducted in which chopped meat, butter and cream were treated with definite quantities of borax and boric acid. They conclude that the amount of boric acid to be allowed in chopped meats should be limited to 0.5%, but that there is no objection to the use of as much as 1.5% when it is to be sprinkled on the surface of the meat, since most of this is washed off again. They also give the following conclusions; both from their experiments and from the literature already published:

(1) The use of borax or boric acid as a preservative in butter and cream in the quantities specified in the recommendations of the English commission is justified both by practical results and by scientific experimentation.

(2) The dusting of the surfaces of hams and bacon, which are to be transported long distances, with borax or boric acid, not exceeding 1.5% of the weight of the meat, is effective and not objectionable from a sanitary standpoint.

(3) Meat thus dusted with borax or boric acid does not become slimy, because the preservative thus used prevents the growth of aerobic, peptonizing micro-organisms.

PREVENTION OF FISH POISONING.¹⁸

Prizes of 5,000, 1,500 and 1,000 roubles (\$3,500, \$1,050 and \$700) are offered by the Imperial Academy of Sciences, and the Ministry of Agriculture and Crown Domains of Russia to persons who:

(1) By careful experiments define the qualities of poisons contained in fish.

(2) Investigate the action of the poison on the central nervous system, heart, circulation and digestion.

(3) Present an accurate illustration of the pathological secretions in the various parts of animal and human bodies caused by such poisoning.

(4) Present a description of the signs distinguishing fish containing poison from normal fish.

(5) Indicate methods for the prevention of development of poison in fish; and

(6) Indicate antidotes and general provisions against poisoning by fish.

Essays written in English should be submitted to the Ministry of Agriculture and Crown Domains (St. Petersburg) by Oct. 1, 1903.

MANUFACTURE AND SALE OF ICE CREAM.¹⁹

The corporation of London has published regula-

tions relative to the manufacture and sale of ice cream, the principal points urging the necessity of absolute cleanliness in the places, processes and utensils employed in manufacture. It must not be made in living or in sleeping rooms. If the materials are boiled together, freezing must take place immediately afterward. It must not be kept more than forty-eight hours. If then remaining unsold it must be destroyed.

BRITISH SANITARY LEGISLATION OF 1902.

The past year was not very fruitful in the enactment of new laws relating to the public health. The only new acts of this character were the Cremation Act (2 Edward VII, Chap. 8), the Midwives Act (2 Edward VII, Chap. 17), and the London Water Bill.

By the first of these the burial authorities are permitted to provide and maintain crematories, the plans and site being subject to the approval of the local government's board. No crematory can be established within two hundred yards of a dwelling, except by consent of the owner, nor within fifty yards of a public highway. The Secretary of State must make regulations and prescribe forms of certificates.

By the terms of the Midwives Act, midwives must be certified after April, 1905. After April 1, 1910, "No woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a qualified medical practitioner unless she be certified under this act."

Provision is made for the formation of a central midwives' board, with power to frame rules, appoint examiners, decide on plans and times for examinations, and to issue and cancel certificates of proficiency.

The Metropolitan Water Act did not become a law until Dec. 18, 1902, when it received the royal signature. A water board is thus established for the purpose of acquiring and managing the different water works belonging to the various companies which now supply London. It is estimated that from forty to forty-five million pounds sterling will be needed to carry out this great work. It remains to be seen whether the people of London will still be contented to use the filtered water of the Thames and its tributaries, or will push for more distant and purer sources.

FRENCH SANITARY LEGISLATION OF 1902.

The French government, in February, 1902, adopted a new sanitary code, which went into operation a year later (February, 1903). It consists of five titles and thirty-four articles or sections. The first title, embracing eighteen sections, treats of general sanitary measures, including the prevention of infectious diseases and the sanitation of houses and tenements. The second title treats of the powers and duties of the different sanitary authorities, general and local, including those of the Consulting Committee of Public Health of France.

Title Three treats of the expenses of sanitary work, and Title Four of the penalties for violation of the provisions of the code.

The most important change from former laws is to be found in Article Six:

¹⁷ Am. Med., March 15, 1902, p. 421.

¹⁸ Brit. Food Journ., January, 1903, p. 3.

¹⁹ Brit. Food Journ., December, 1902, p. 267.

"Vaccination is obligatory during the first year of life, and revaccination during the eleventh and twenty-first years.

"Parents or guardians are held personally responsible for the execution of this measure.

"A rule of public administration, adopted after consultation with the Academy of Medicine and the Consulting Committee of Public Health, will fix the necessary measures for carrying out this law."

FRENCH REGULATIONS RELATIVE TO EMBALMING.

Brouardel²⁰ quotes certain French regulations now in force to the effect that a vial containing a specimen of the same substances that have been used in the process of embalming shall be placed by the side of the body.

Reports of Societies.

THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

STATED meeting, Feb. 5, 1903, the President, DR. JOHN M. FISHER, in the chair.

THE ETIOLOGY OF ECLAMPSIA, BY CHARLES S. BARNES, M.D.

The causative factor or factors are not known. The clinical symptoms and pathologic findings are so varied as to lead investigators astray. Several theories of etiology were presented, as the theory of mechanical irritation by the enlarged womb; the so-called pressure theory whereby circulation of the kidneys is thought to be interfered with. Again, the malady has been considered as one of purely reflex origin, through innervation of the splanchnic nerves by pressure or by rhythmic contractions of the womb. Efforts to identify eclamptic convulsions with those of purely uremic origin have failed. The rational conclusion has been reached that the immediate cause of eclampsia is a systemic affection, an auto-intoxication; that the system of the pregnant woman is a laboratory in which are produced substances which may result in a self-destructive explosion. These toxins are probably animal alkaloids. The condition results from the gradual accumulation in the system of nitrogenous waste, due to an excess of nourishment, faulty metabolism and deficient excretory processes, one or all. Davis and Hermann have pointed out that the quantity of urea excreted is the best index of metabolism. The toxemia, however, is not ascribed to urea, but to the excess of urea-forming substances retained in the system. There is at present no good ground for belief in a bacterial source of the disease, though bacterial infection of various sorts predisposes to toxemia. The commonly accepted theory is that toxemia is the result of a vice constructive metabolism.

The question is raised as to the part of the organism responsible. The theory attributing the trouble to a diseased or dead fetus is untenable. Waste from a growing fetus may possibly determine an attack. Recent observers regard the placenta as having a remarkable glandular activity, perhaps liberating toxins into the maternal blood. The kid-

neys, while sometimes a contributing factor, often, instead, suffer the consequences of toxemia. There is strong ground for belief that the liver is the most important of the excretory organs, and that the urea index is significant of the functional activity or inactivity of the liver rather than of the kidneys. In toxemia, the skin is dry and the exhalations from the lungs are especially noxious. Thus the symptoms, though flashed outward by way of the nervous system, point directly to the derangement of the excretory organs. The conclusion has been reached by some that the function of the thyroid, normally enlarged in pregnancy, is to regulate and control metabolism. Numerous contributory or predisposing causes were enumerated, among them heredity, as to disease, temperament or habits; excess of nitrogenous food; inactivity; beverages, alcoholic, tea or coffee; bad hygiene; systemic diseases; diseases of the excretory organs; climatic influence; multiple pregnancy and primiparity; mental depression or undue strain; ptomaine poisoning; exposure; mental or physical shock; pain, especially that of labor.

The immediate cause of a convulsive seizure has been ascribed to an acute anemia of the brain or to edema of that organ. But the most plausible and rational conclusion is that, in toxemia, the poisons circulate throughout the system, including brain and cord, until, the toxins accumulating, there comes a time when the equilibrium of the nervous system can no longer be sustained, and there is an outward discharge of nervous energy in convulsive phenomena. Emphasis was laid upon the predisposing and contributing causes, such as are so imprinted upon the excretory and nervous systems of every toxemic patient that any intelligent and diligent practitioner of medicine may read them, and having read, may employ successful prophylactic treatment of eclampsia.

THE TREATMENT OF ECLAMPSIA, BY WILMER KRUSEN.

Dr. Krusen gives statistics showing the great necessity for further knowledge of this alarming complication of labor. He thinks that to insist dogmatically upon a definite and undeviating method of treatment for this or any pathologic condition is to confess ignorance of therapeutic agencies, since what is exactly adapted to one case may be futile or damaging in another. He divides the treatment of eclampsia into: (1) prophylaxis; (2) treatment of convulsions; (3) treatment during intervals; and (4), after-treatment.

Prophylaxis is directed to the prevention of convulsions and the strengthening of vital processes. The amount of urea excreted is considered the best guide, and when it falls below 1.5% there should be stimulation of all excretory processes. The liver and the intestinal tract should be stimulated by the administration of frequent and small doses of calomel, one-tenth grain three times daily for one or two weeks. Caffeine in three-grain doses, three times daily, may be given for diminution of urine. If there is high arterial tension, nitroglycerin in full doses is indicated. The writer calls attention to the connection between the inadequate action of the thyroid gland and the arrest of renal secretion, quoting Nicholson, who has given thyroid extract in eclampsia with favorable results, and advises that it be

²⁰ Brouardel: *Death and Sudden Death*, 1902, p. 101.

given in five-grain doses night and morning, and proteid foods avoided. Saline solution dilutes the poison in the blood and produces diuresis and diaphoresis. Iodid of potassium is sometimes added to the saline solution, the iodine acting as a stimulant to the thyroid gland. Dr. Krusen thinks that upon a thorough investigation of the relationship between the thyroid gland and pregnancy depends much of the future success in the prophylaxis of eclampsia.

In the treatment of the convulsions he considers chloroform as the anesthetic *par excellence* for their control, and inhalation of it should be continued until the paroxysm abates. Oxygen may be given in conjunction with it. Ice bags applied to the back of the head and neck will also aid in warding off and controlling the attacks.

In the treatment during the intervals one of the most important measures is venesection. It is indicative when the pulse shows high arterial tension, is full, rapid and bounding, and the face of the patient is suffused or almost cyanotic. In such cases it frequently rescues the patient from impending pulmonary edema and apoplexy; and it also abstracts a large amount of noxious principles from the system and will do more for the relief of the patient than any other one procedure. By using copious injections of normal salt solution the depressing effect of bleeding can be counteracted and the unknown toxins diluted. Since the salt solution stimulates the heart, promotes diuresis and diaphoresis and dilutes the toxin, it must be classed as a rational method of treatment. Bicarbonate of potassium is sometimes added to the solution. Morphia can be used hypodermatically. It is an agent of great power and rapid action, things often essential in the prevention of repeated convulsions. The writer condemns hot air and hot-water baths, and advises as purgatives croton oil, calomel or some saline; as carbon dioxide poisoning soon occurs in cases of repeated convulsions, oxygen by inhalation may be used. In regard to obstetric treatment, he believes that the teaching of Duhresen is sound, that if eclampsia comes on during the last month of pregnancy when the child is viable, its speedy extraction is desirable. But the high mortality of Cesarean section leads him to condemn that operation unless some condition, such as pelvic deformity, prevents vaginal delivery. If the patient is in the second stage of labor, all authorities agree that the uterus should be emptied as speedily as possible, but in cases in which labor has not begun, or is in the first stage, opinions differ. But as expectant or palliative treatment means certain loss of the child and the loss of 30% of the mothers, he believes that while the obstetrician should not cease to combat the convulsions, the sooner he produce or hastens labor the better for both lives concerned. Mechanical dilation of the cervix, either manually or with dilating bags, or deep cervical incisions, properly performed under rigid antisepsis, is the best method of procedure. Delivery should be accomplished as rapidly as possible, since the prompt emptying of the uterus contributes greatly to the recovery of the patient. The after-treatment should be carried out along the ordinary lines followed in the care of the puerperal patient, but with more absolute quietude, and with more vigilant attention to all the excretory organs.

DR. R. C. NORRIS. The papers that have been

presented have outlined our knowledge of the etiology, the pathology and the treatment of eclampsia about as accurately as could be done. There are a few points which I think this discussion should emphasize.

In regard to etiology, the profession, recognizing the fact that eclampsia is believed to be a toxemia, should pay attention to the functional activity of the liver of the pregnant woman quite as closely as to that of her kidneys. It is common practice to have a bottle of urine of the pregnant woman sent to the physician and to have it tested for albumin and for its specific gravity, and so long as albumin is not found and the specific gravity is near the normal, no further attention is paid to the case. I believe that such an examination of the urine is absolutely worthless, except when grave kidney lesions exist. Others will go farther and have a critical analysis of the urine made, involving a knowledge of the amount excreted in twenty-four hours and the percentage of the urea, and so long as they find these two factors approaching the normal they will give no further attention to the case. This I also believe is a false security. While we know that 2% of urea is the average amount passed, we must know that this 2% represents a proper quantity of urine passed. Moreover, it is our duty to know not only the amount of excrementitious products the patient is able to excrete, but we also must have knowledge of what may remain to create a toxemia. That is only learned by seeing the patient frequently and noting the general symptoms of toxemia, such as headache, neuralgia, coated tongue, hebetude, salivation, insomnia, nervous irritability, eye symptoms, etc. The approach of a toxemic storm usually can be seen by the alert physician. In a case under my care in which the most critical urinalyses were made with normal findings, the constitutional condition presented symptoms of toxemia requiring the most vigorous treatment. While urinalysis is most important, it should be remembered that it is only an index of kidney elimination and fails to indicate the metabolic and toxin-destroying power of the liver.

When we come to the question of treating these cases, I agree with the author that prophylactic treatment is the most important. Drugs that aim directly to promote the activity of the liver are more valuable to the pregnant woman than diuretics. Diet that lessens the tax on the liver is most important. Calomel with salines should be used frequently by a pregnant patient, apparently perfectly well, for she needs to have her liver prodded whether constitutional symptoms indicate that things are going wrong or not. A point of practical value is lavage of the intestines. While we do not know to what extent the intestines are involved in the etiology, I do know that toxemic patients in my practice receiving intestinal lavage two or three times a week show improvement.

When we come to the treatment of convulsions, there is a wide variation in the discussion of details. Dr. Krusen omitted mention of chloral and of veratrum viride, and laid special stress upon bleeding. He is, no doubt, correct that bleeding is indicated in some of the cases, but in some cases the women are anemic; there is pallor and the blood count will show diminution in the proportion of hemoglobin

and in red blood corpuscles. Depriving such patients of 20 to 30 oz. of blood does distinct harm. Such cases are better treated by the use of *veratrum viride*. The anemia of pregnancy is closely associated with toxemia, and has a practical bearing upon the use of venesection. When the pulse is 160 to 180 with but little volume, and when the patient shows profound anemia, an abstraction of 20 to 30 oz. of blood may be distinctly disadvantageous and is not going to eliminate much poison. It will lessen blood pressure, and the real value of bleeding for eclampsia is the action upon the blood pressure. The modern practice of not bleeding every case is better than bleeding every case. We must use the best of judgment when deciding in favor of venesection, bearing in mind the condition of the pulse and the blood count. There is a wide diversity of opinion as to the value of *veratrum viride*. I cannot understand why some men do not appreciate its value, unless it be that they have never employed it. I have repeatedly used it and, so far as the cessation of convulsions is concerned, have observed more benefit than from any other drug I have ever employed. It, too, must be given cautiously. The dosage differs according to whether the tincture or fluid extract is employed. I have seen a patient nearly killed by the use of twenty drops of the fluid extract administered hypodermatically. The initial dose should be five to eight drops of the fluid extract, to be repeated as soon as the effect diminishes. Sufficient should be used to keep the pulse in the neighborhood of 70 or 80. I am sorry Dr. Krusen did not discuss that in his paper. The value of full doses of chloral is well known.

I would like to give a word of warning as to the use of salt solution. I have found in some cases that an excessive amount of salt solution has aggravated the condition of the kidneys, has produced edema of the lungs, and helped to do the very thing which we aim to avoid. I should place as a limit one quart of salt solution and no more, until free diaphoresis, diuresis or catharsis has occurred. When there is edema of the lungs, it should not be employed at all. I have seen edema of the lungs aggravated and the patient's serum run out of her mouth as the result of too free use of salt solution. Large amounts of salt solution are of greatest value when *profuse* catharsis from saline purges has occurred.

I do feel that morphia is always contraindicated, but would reserve it for aggravated cases in which the convulsions recurred with great frequency and were not otherwise to be controlled. One grain to a grain and a half until the convulsions have ceased is an average amount to be employed.

Chloroform to be of any value must be administered by some one who can recognize the onset of a convulsion. There are prodromal symptoms of the eclamptic seizure, and during these is the time for the administration of the chloroform. Upon an attempt to give it during a seizure it will be found that very little enters the lungs, and for the same reason oxygen cannot be taken except between the convulsion seizures.

The necessity for delivering eclamptic patients quickly is always discussed. I have believed, on theoretical grounds, and practically my experience has borne it out, that the speediest method of de-

livery is not the safest one. If that were true, Caesarean section would be the ideal method. Next to that is rapid dilatation or incision of the cervix. I have incised the cervix and done craniotomy upon a dead baby, delivering the baby in eight minutes. This winter at Blockley I had an eclamptic patient on whom I did a Caesarean section. Both patients died in coma, despite most rapid deliveries. The method of the rubber bag to dilate the cervix in these cases of primigravidae with rapid cervixes is often too slow. The first duty is to treat the case medically, eliminate poisons, control the seizures, and then to begin by slower, less aggressive means to secure dilatation of the cervix. Here again we must consider the individual case. Some women are so weak that the shock of anesthetic and dilatation of the cervix will carry them beyond the point of recovery. Experience and good judgment are required for selecting a method of dilatation where the cervix is rigid. When the convulsions have been controlled, and when the patient has passed out of her coma, the rubber bag is sufficient. When the patient remains comatose, with repeatedly recurring convulsions, she should be kept under an anesthetic and a metal dilator used, such as Bossi's four-branched instrument, and the child extracted with forceps. That rapid method should be resorted to for desperate cases only. In other cases which improve under medical treatment, the slower plan of dilatation is safer.

To recapitulate, the practical points that I would emphasize are that while urinalysis is important, it must go hand in hand with personal interviews with the patient, to note the first signs of approaching toxemia; that the use of prophylactic measures includes, as most important of all, diet and attention to the woman's liver, and that among the means of elimination of toxins during pregnancy, the use of the intestinal canal is most valuable. For the control of convulsions, I would speak in praiseworthy terms of *veratrum viride*, and for rapid elimination of toxins, I would also speak of the value of free saline purgation. In an experience of ten years that has given me eight to ten eclamptic patients in consultation each winter and one or two additional in my own hospital, with but one exception, I have yet to see a patient die who responded to the free use of saline purges, in conjunction, of course, with other treatment. Speedy delivery is not always to be desired. Only in the gravest cases is this advisable, and then instrumental dilatation of the cervix offers the safest and best means of delivery.

DR. STRICKER COLES: I would refer especially to the early symptoms and to the prevention of eclampsia. I may have to change my ideas about this condition, but I believe from the cases I have seen that this disease is a preventable one. In other words, I believe that 90% of eclampsia can be prevented.

In my experience I have seen clinically three forms. One begins with Bright's disease. Some women may go into Bright's disease without any apparent toxemia. Of these cases I have had some eight or ten without any death at all. I look upon these as cases without danger, although some have albumin and almost solid urine. With reference to the mother there is very little danger, but this is not

the fact with reference to the child. Of these babies I have lost some before and some after birth. It is not easy to raise these children. The next form is that from toxemia. The patient has the symptoms of toxemia, headache, restlessness, malaise, indigestion and all the symptoms of toxemia, and the urine of these cases some two or three weeks before the patient will go into convulsions will show some signs. This sign will be in the amount of urea. If we find a patient eliminating 1.5% of urea with a normal amount of urine we do not find symptoms of toxemia. The danger point in my experience is when it reaches 0.5 of 1% I have never yet examined such cases in which the patient did not have headache and all the symptoms of toxemia. I have never seen a patient with a form of eclampsia that could not have been prevented.

(To be continued.)

Recent Literature.

Regional Minor Surgery. By GEORGE GRAY VAN SCHAICK, M.D., Attending Surgeon to the French Hospital, New York. Published by the International Journal of Surgery Co., New York. 1902.

The author in writing this book has striven to avoid subjects of a technical character as far as possible. He desires to describe the surgical treatment of these lesions daily encountered by the general practitioner, and the methods presented represent conclusions based on a personal experience of eighteen years of hospital, dispensary and private practice. The writer very justly claims that "minor" surgery well done often renders "major" surgery unnecessary. Hence the importance of this subject to the general practitioner.

The book is a small volume of 226 pages. It is well written; it is also confined closely to its proposed scope, an unusual feature in this type of book. The directions given are brief, definite and unobscured by theorizing. It is essentially a practical manual, and although in some instances there might arise a difference of opinion as to the method proposed being the most efficient, still it is usually a good one. Diagnosis of the commoner affections is briefly treated. After-treatment, as a rule, is omitted. The general way in which solutions and drugs are usually mentioned presupposes a considerable knowledge of surgical materia medica. With the exception that it is defective in its description of details of procedures, the book is attractive. It contains many practical suggestions, and its arrangement is good.

The Treatment of Fractures. By CHARLES LOCKE SCUDDER, M.D., Assistant in Clinical and Operative Surgery, Harvard Medical School, etc. Third edition, thoroughly revised. Philadelphia and London: W. B. Saunders & Co. 1902.

This work, the first edition of which was published in 1900, has not been allowed by its author to "gather moss." It is unusual for a book of this character to reach its third edition in so short a time.

It now appears as an octavo volume of 485 pages, increased from 457, with 645 illustrations in place of 611. Several new but not uncommon fractures are described. The chapter on gunshot fractures of the long bones is derived from a review of the observations acquired by the recent experience of military surgery with the effects of small caliber bullets.

The general text of the book has, the author states, been carefully reviewed, and an index appended. Photographs have been substituted for drawings in many instances, and the use of plaster-of-Paris more extensively illustrated. The general character of the book is preserved. It serves as a guide or manual for the treatment of fractures. The methods are, as a rule, described in detail. The author aims to not only tell *what* to do, but also *how* to do it. He tries to show by descriptive text, diagrams and illustrations of actual cases, the exact conditions which exist. The radiograph has been extensively employed for this purpose. The book is a valuable treatise on this especial branch of surgery, and represents well the present status of practice. Also the work of the publisher sustains the high standard of excellence shown in the former editions.

The Mattison Method in Morphinism. A Modern and Humane Treatment of the Morphine Disease. By J. B. MATTISON, M.D. 12mo., pp. 40. New York: E. B. Treat & Co. 1902.

This little book is a detailed description of a method of treatment of the morphine habit which the writer claims has proved successful in many cases, and is not attended with the suffering so common in many attempts to break off the habit. The essential features of this method are a moderately rapid withdrawal of the morphine, in about ten days on the average, and the production of a certain degree of nervous sedation and a consequent control of reflex irritation by bromide of sodium. Beside the details of this method of treatment, full directions are given for the treatment of such other conditions as may arise during the progress of the work.

The Proceedings of the Charaka Club. Volume I. New York: William Wood & Co. 1902.

There was organized in 1898, in New York City, a club of about ten medical gentlemen, who were interested in the history of medicine and in its artistic and literary side. The name of the club was taken from the Hindoo sage, whose work is the oldest on the subject of Hindoo medicine. Some of the communications of the members are contained in the present volume, a handsomely printed book of nearly one hundred pages, with an elaborate book-plate, and a number of half-tones and woodcuts. It has been edited for the club by Dr. Charles L. Dana, and the edition is limited to three hundred copies. The articles on "Hindoo Medicine," on the "Statues of Æsculapius," with its handsome illustrations, and on "The Evil Spoken of Physicians" deserve especial notice.

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ECLAMPSIA.

RENEWED interest in the study of eclampsia has followed the general advance in medical investigations in the last few years, and considerable attention has lately been given to the subject in recent medical literature. As long as our understanding of the etiology is at fault, so long must our treatment be empirical and consequently never uniformly successful. Good work has been done in various quarters in the endeavor to discover the correct etiology. Treatment has advanced prophylactically in that we can recognize pre-eclamptic symptoms and can often prevent convulsions by various timely measures. The problem of the true cause of the symptoms, however, still remains unsolved, but the close study which eclampsia is receiving, with the trend given to it by our advancing knowledge of physiology and pathology, will doubtless end before many years in its correct solution.

An extended discussion of the whole subject appeared in the February *Practitioner*, but a brief review of the theories of the etiology and treatment is of interest here. It is now generally conceded that eclampsia is not a disease of the kidneys, but arises from the circulation in the blood stream of one or more poisons of which the exact nature is unknown. These poisons appear to gain access to the circulation either from the alimentary canal or from the body metabolism or from both. The pregnant woman, having to deal not only with the results of her own tissue changes, but also with those which occur in the fetus, is more liable than under other circumstances to auto-intoxications. The organs of defence—the liver, kidneys, thyroid, etc.—are normally capable of dealing with these products, but when in the pregnant woman a breakdown in any one of these organs occurs, the whole mechanism is upset and a toxemic condition results. The toxic

material, passing through the kidneys, begins to irritate and injure them, the renal function fails and albuminuria appears. The failure of the kidneys to excrete the toxins leads to their accumulation in the body, and unless the normal condition is re-established serious consequences follow. In most women the defensive organs remain adequate throughout pregnancy. In many, some slight early disturbance is overcome as the organism readjusts itself to reproductive life. In others, however, the vicious circle once established continues until eclampsia or some other serious condition is the result; or the injury done the kidneys in a first pregnancy is increased in each subsequent one, until they become permanently damaged, and chronic Bright's disease is established.

Though the theory above outlined is perhaps the one most widely accepted as a working hypothesis, since it seems to fit most closely the clinical facts to be explained, there are as yet no clear proofs of its correctness.

Various investigators have attempted to prove for eclampsia a bacterial origin. The micro-organisms are supposed to exist in the uterine cavity and eclampsia to be preceded by the absorption of their toxin. Since the condition may arise after labor, the uterine wall, and not the fetus and placenta, is regarded as the site of bacterial growth. An attempt has been made to draw a parallel between septicemia and eclampsia, both being general intoxications, and the convulsions in the latter being due to the sudden absorption of large doses of poison, while the former is due to its slow continuous absorption. A recent writer also endeavors to compare these conditions to many abortions and premature labors, especially those which run a septic course, in which micro-organisms are latent in the decidua and renew their activity during pregnancy. It is noted that the uterine cavity is well drained except during the pregnant state. But so little material is available for bacterial examination in eclamptic patients that no single organism has been indicated as the causative agent, and the theory must long remain unproved.

A third and very interesting theory is that which ascribes eclampsia to thyroid inadequacy. The thyroid is enlarged during normal pregnancy, and a larger supply of iodothyrim is needed in the pregnant than in the non-pregnant state. It is supposed that a deficiency of this secretion causes the metabolism of nitrogenous substances to stop short of the formation of urea and at a point where the products are highly toxic. The clinical features of a typical eclampsia resemble those of complete athyroidia, as caused by the complete removal of the thyroid in animals. And eclampsia is thus regarded as a

temporary athyroidia. A woman in the pre-eclamptic state is put to bed and fed on milk. Her demands for thyroid secretion are lessened, and nitrogenous metabolism becomes complete again. Meat diet or, on the other hand, increased physical exertion, would again disturb the balance. Eclampsia may also follow a meal of meat or excessive muscular effort, such as labor.

The relation of the kidneys to the thyroid may be that iodothylin is a diuretic, or that urea is the real diuretic, but depends for its formation on iodothylin, or that the latter is a powerful vasodilator and maintains the renal circulation, in antagonism to the suprarenal secretion. Bearing on this theory may be mentioned the experiment with a cat, whose thyroid was removed and who became pregnant three years later. When labor set in she became comatose and had convulsions. Five days later, with the intramuscular injection of thyroid extract, the convulsions ceased, labor advanced, and the following day a dead kitten was born. The cat recovered completely.

Lastly, the mechanical theory of the causation of eclampsia has been reiterated recently by Herzfeld, who, after making a large number of autopsies on eclamptics, ascribed it to the gradual compression of the ureters by the growing uterus, and considered Cæsarean section as the indicated treatment for anuria occurring in a parturient woman with presumably dilated ureters.

Based on the toxemic theory, the treatment of pre-eclamptic symptoms, which may be easily diagnosed long before convulsions occur, is obviously of great importance. The well-known danger signals—vomiting, headache, nervous irritability and disturbances of vision, accompanied by decreased urine and urea, albuminuria and edema—are usually successfully met by rest in bed, milk diet, purgation, etc. An interesting addition to these commonly employed measures, suggested by Nicholson's thyroid theory, is the administration of thyroid extract, of which the value appears to be proved by his reported cases.

As to the advisability of obstetrical interference in the presence of convulsions opinions differ. But when dilatation of the cervix is already advanced, it seems agreed that labor should be completed artificially as quickly as may be done with gentleness. Hemorrhage is not to be checked. For the treatment of the convulsions preceding labor, the ground is more debatable. Some authorities cling to *accouchment forcé*, while others regard the shock of the operation too severe for a woman already so toxemic. They consider such treatment, if applicable to mild cases, at least improper for severe ones, since emptying the uterus cannot re-

move quickly a poison which has been accumulating for months. Cæsarean section has been recommended and used instead of *accouchment forcé*, but the question of the advisability of ending pregnancy abruptly by any procedure at all must be decided before any single method can be preferred to some other.

Bleeding and the injection of salt solution seem to have an established position in our present treatment; and again, for the convulsions, it is interesting to note the recommendation, based on theory and in certain cases borne out by its practical success, to give large doses of thyroid extract, with the view, not of affecting metabolism, but of reducing blood pressure, of relaxing the renal arteries and re-establishing diuresis. *Veratrum viride* is widely employed, especially in this country, but its use has some strong opponents.

THE EPIDEMIC AT ITHACA.

MR. JAMES C. BAYLES, the well-known sanitary engineer, who was formerly president of the New York Health Department, has been making an investigation of the typhoid epidemic at Ithaca, and writes from there under the date of March 10 that the best data obtainable in regard to it are admittedly incomplete. They show, he says, that up to the end of the week previous there had been 755 cases of the disease in Ithaca since Jan. 10 of which the clinical history is obtainable. The number of unreported cases is a matter of estimate. In view of the fact that most physicians have neglected and that some have refused to make returns, and that in death certificates some of them persistently refrained from assigning causes likely to be recognized as typhoid complications, he expresses the opinion that the number of cases, light and grave, occurring since the epidemic began would be conservatively estimated at 1,000. It is impossible to learn the number of deaths or to calculate the percentage. The returns to the board of health have not been tabulated, and he has tried in vain to get the figures. "I do not know," he goes on to say, "how many cases there are at present in Ithaca, but I am constrained to estimate that there are not less than 250 cases of which no official record has been made. If told, as I have been, on very good authority, that the number was double this estimate, I should not find myself disposed to dispute it. A great many of these cases are of a kind popularly known as walking typhoid. . . . What potentialities of mischief in disseminating the infection reside in these neglected ambulant cases may be learned from the books."

Just a year ago conditions existed in Ithaca which

should have startled the community into instant and energetic measures of self-protection. There was then a local epidemic of a disease closely resembling a mild type of typhoid. Its statistics are incomplete and unsatisfactory, but it was very prevalent, and more than one hundred cases were treated. More than this, typhoid has been more or less prevalent for many years, and at no time has the town long been free from it. For at least ten years the cautionary signals have been obvious to any one who might have chosen to look for them. After a careful investigation, Mr. Bayles has failed to find any evidence in support of the theory which obtained credence in Ithaca and was accepted by the State Board of Health, that the water of one of the creeks supplying the town became polluted from a case or cases of typhoid among a colony of foreign laborers who were constructing a dam. That there are no cases of typhoid on the watershed or along tributary streams, he is not prepared to say or to believe. That the water company was negligent in the matter of the policing of its watershed and minimizing causes of possible pollution is not open to discussion—that it was exceptionally so does not appear. If other causes of danger were corrected, there need be no reckless precipitancy in dealing with the problem of the local water supply. However bad it may be, now or normally, it is the least of the dangers to which the people of Ithaca are exposed. During the coming summer work will be done which will insure the distribution of a water supply of attested and indisputable purity and potability. "But," he remarks, "those who believe that this will solve the problem of the sanitation of Ithaca are credulous indeed."

One in a position to observe without prejudice the conditions existing in the more densely populated neighborhoods of the town has good reason to feel in the highest degree apprehensive of what may be expected when warm days are here and especially when the flies become industrious. On the basis of such a sanitary administration as Ithaca has become habituated to and has deemed sufficient, it might very well be four or five years before typhoid fever ceased to be epidemic in Ithaca. This would be practically without reference to the quality of the water supply. Fortunately the direction of affairs has been assumed by Dr. George A. Soper, a competent, experienced and energetic man, who has been selected for this service by the State Board of Health. He has planned a sanitary campaign which the common council has ratified by giving the board of health *carte blanche* and a practically unlimited credit. The test will come when it is necessary to point out to well-to-do citizens the nuisances for which they are primarily,

and it may be solely, responsible, to interfere with vested wrongs sanctioned by immemorial usage, and to apply pressure to those reluctant to do on their own premises what they recognize should be required of their neighbors. Dr. Soper can, and, if properly seconded, will, make Ithaca clean and wholesome, and do it in the least possible time. Under date of March 13, Mr. Bayles states that the wisdom of the choice of Dr. Soper is to be seen in the remarkable work which he has already accomplished, and in the basis of confidence afforded that it will be quickly and completely successful. Four more deaths from typhoid among Cornell students, who had returned to their homes, have been reported in the last week.

LEAD POISONING AND PUBLIC WATER SUPPLIES.

BEFORE the general introduction of public water supplies in cities and towns, cases of lead poisoning were occasionally reported which were undoubtedly due to the action of certain well waters upon lead, where conditions existed which were favorable to such action.

One of the earliest American reports upon this subject is a report of a special committee appointed in 1842 by the city of Lowell, in which the committee noted with special emphasis "the readiness with which the Lowell ground waters dissolve lead in dangerous quantities, and warned the inhabitants of the city against the use of lead pipes for the conveyance of drinking waters."¹

Since the introduction of public water supplies, such cases have not been of common occurrence in towns supplied with surface waters, but among the inhabitants of certain cities and towns using ground-water supplies there has been an unusual number of reported cases, where conditions in the soil existed which were favorable to the action of the water upon lead. In some instances, as at Lowell, the introducing of a new supply was followed by an outbreak of lead poisoning. Here the drinking of unfiltered water of the Merrimac River was shown to have given rise to epidemics of typhoid fever, but this water had not been known to act unfavorably upon lead. A change having been made, and the water of driven wells substituted for the river water, the ground water of some of these wells was found to dissolve lead in dangerous quantities. Fifty cases were reported to the State Board of Health by the physicians of that city.² As many more were also reported at Kingston, Milford and Hopedale, Fairhaven and Milton, all among users of ground water

¹ Report of State Board of Health for 1898, p. xxxvii.

² See Thirty-first Annual Report of State Board of Health (1899), p. xxxiv, 30.

supplies, and in many instances where comparatively new lead pipes were in use.

Studies of this important question show that the clear and practically colorless ground-water supplies, which most actively attack lead, are those containing the most carbonic acid and a small or medium amount of mineral matter.

In one or two instances a highly colored surface water was found to attack lead, if allowed to stand in the pipes for a considerable time, the lead being found both in solution and in suspension; since a coating of organic and mineral matter forms upon the pipes, carbonic acid is generated, which, together with the oxygen present, attacks the lead, and this deposit is, when the water is drawn quickly after hours of rest, apparently easily detached from the pipe and drawn out. Thus the amount of lead in water drawn after periods of rest is increased above that which is actually taken into solution by the water during this period of rest. This action of a highly colored water agrees with the recent investigations of the British government upon some of the peaty waters of England.

These facts show that the use of lead pipes for the conveyance of drinking water is attended with danger. If used at all, the standing water in the pipes should be allowed to run till all the water in the lead pipe has been drawn off, before taking water for drinking or cooking.

For several years the local government board of England has been engaged in making investigations upon the character of the moorland waters of Lancashire and Yorkshire. These waters are collected from watersheds in which there are large areas of peaty soil, and in some instances, as at Sheffield, have given rise to epidemics of lead poisoning. Twenty-three water supplies were investigated, the objects of the inquiry having been as follows: To determine, —

(a) What are the seasonal modifications of each of such contributory waters;

(b) In what way and to what degree they differ at one and another time from each other as regards their constituents;

(c) How far diversity of their ability to dissolve lead is associated with seasons of the year, and is at the same time parallel to observed differences in their chemical and bacterial characters.

A careful survey was made of all the gathering grounds of the different water works in question, in order to ascertain the physical characters of the different drainage areas and the chemical quality of the various waters as regards their action, with respect to acidity, and their action on lead.

The results of this important investigation have just been published in a report made to the Local

Government Board by Dr. Houston.¹ The following portions of a condensed summary present the several conclusions embodied in the report: —

1. The history of epidemics of lead poisoning due to water supply, at all events in the north of England, clearly shows that the towns which have suffered in the past derived their water supply from moorland sources. In some cases we know that the water was acid, and in others there was every reason to infer that the water was in a similar condition, since the physical circumstances of the gathering ground were the same.

2. Moorland gathering grounds are usually rich in peat. The amount of peat varies greatly on different gathering grounds, both superficially and in depth.

3. Moist peat has been found to be invariably acid in reaction.

4. The water draining from peat is always acid. The amount of acidity depends chiefly on the amount of peat and the length of time the water has been in contact with it.

5. Acid peaty water dissolves lead.

6. The degree of plumbo-solvency of a water is chiefly governed by the amount of its acidity.

7. Moorland spring water is neutral, and often possessed of slight acid-neutralizing ability. In virtue of this property spring water is commonly capable of neutralizing a certain proportion of acid peaty water.

22. While the cause of plumbo-solvency is to be traced to the presence of acid in water, and the source of the acid to contact with peat, the antecedent cause of the acidity of moorland waters seems to be associated, at all events in part, with the presence of acid-producing bacteria in the peat itself.

23. Certain microbes isolated from peat possess the power of rendering by their growth a sterile neutral decoction made solely from peat both acid and possessed of plumbo-solvency.

24. Acid peaty waters have the power of dissolving not only bright lead but old coated lead, and the action is a very rapid one.

25. Neutral waters do not dissolve lead to any appreciable extent, but they sometimes act on *bright* lead by eating away the surface of the metal in the presence of dissolved oxygen ("erosion").

26. The power of "eroding" lead is an inherent property of water containing oxygen. All waters do not "erode" lead, because most of them contain substances which coat the bright surface of the metal and so prevent any further action taking place.

27. Some moorland waters are not only acid and possessed of plumbo-solvent ability, but "erode" lead as well. But in the absence of associated acidity and plumbo-solvency, ability to erode lead appears to be of secondary importance. Erosive ability *per se* is not to be regarded as an intrinsically dangerous quality of a water unless under special conditions and in the presence of bright lead.

28. Risk of a water acquiring plumbo-solvent ability may be guarded against by methods designed to exclude from the supply contributory waters which experience

¹ Papers on Lead Poisoning and Water Supplies, submitted by the medical officer of the Local Government Board.

Presented to both houses of Parliament by command of his Majesty. London, 1903.

has shown to be conspicuously and uniformly acid, and also by mechanical contrivances to prevent access to the supply of the "first-washings" of peaty soil after periods of drought.

29. Plumbo-solvent ability which has been acquired by water about to be sent to consumption may be removed by suitable arrangements for neutralization. It is of advantage to combine such arrangements for neutralization with sand filtration.

30. I would urge, as a practical outcome of this inquiry, that the circumstances of every supply of moorland origin should be considered with reference to the factors of plumbo-solvency which exist upon it; and in this report I have endeavored to make clear the nature of these factors and their relative importance. It is advisable in the case of existing works to test, not only in the reservoirs and main streams, but also in the tributary streams and subsidiary "feeders" during different seasons of the year, and under ordinary and extraordinary conditions of the rainfall, in order to arrive at a satisfactory conclusion as to the liability of the supply in general, and of its constituent waters, to acquire plumbo-solvent ability. Study of this sort affords the most satisfactory means of determining how best to apply the remedy, or combination of remedies, needed in the particular instance. In the case of proposed new water works, this inquiry indicates the necessity of a careful survey of the physical characters of the gathering grounds, as well as of ascertaining the proportion of spring water to surface water at different times of the year and under different conditions of rainfall, and of testing the quality of the spring water and its power of neutralizing acid, and the quality of the surface water, especially during wet weather and sudden storms following a period of drought.

MEDICAL NOTES.

PROFESSOR KOCH A MEMBER OF THE FRENCH ACADEMY OF SCIENCES. — According to the *British Medical Journal*, Professor Koch has been elected a Foreign Associate Member of the French Academy of Sciences in place of the late Professor Virchow.

SOCIETY OF TROPICAL MEDICINE. — A society for instruction in tropical medicine has been formed in Philadelphia, the object of which is to instruct physicians in the special diseases likely to be encountered in tropical countries. Many of the leading physicians of the city are interested in the movement.

A MEDICAL JOURNAL FOR SOUTH AFRICA. — It is reported that a medical journal with the title "South African Medical Record" is to be published at Cape-town, as a monthly.

PLAGUE. — The *Lancet* is authority for the statement that during the week ending Feb. 15 neither cases of, nor deaths from, plague occurred in Egypt. The last case occurred at Tant-el-Ghezireh on Feb. 6. As regards the Cape Colony, the medical officer of health of the colony stated that for the week ending Jan. 31 two cases of plague were discovered

at Port Elizabeth; namely, a native male who was admitted to the observation ward on Jan. 27, and who died from plague on the 29th, and a colored male who was admitted to the plague hospital on Jan. 31, and who died on the same date. One case remained under treatment at the plague hospital, Port Elizabeth, at the end of the week. No case of plague has occurred at any other place in the colony.

SMALLPOX IN SCOTLAND. — During the first two weeks in February only two cases of smallpox were reported in Scotland, and one of those was a sailor arriving from another port.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 18, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 18, scarlatina 28, typhoid fever 18, measles 34, smallpox 2.

BOSTON MORTALITY STATISTICS. — The total number of deaths for the week in Boston was 257 as against 255 the corresponding week last year, showing an increase of 2 deaths, and making the death-rate for the week 22.86. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 17 cases, 6 deaths; scarlatina, 34 cases, 1 death; typhoid fever, 5 cases, 2 deaths; measles, 18 cases, no deaths; tuberculosis, 34 cases, 30 deaths; smallpox, 1 case, no death. The deaths from pneumonia were 40, whooping cough 5, heart disease 29, bronchitis 9, marasmus 3. There were 8 deaths from violent causes. The number of children who died under one year was 46, under five years 68, persons over sixty years 68, deaths in public institutions 84.

A NEW ANTIVIVISECTION BILL. — Hearings have this week been held before a legislative committee at the State House in relation to the restriction of vivisection in Massachusetts. The hearings have been much less prolonged than heretofore.

NEW YORK.

DEATH OF COL. M. C. MURPHY. — Col. M. C. Murphy, president of the New York Board of Health from 1898 to 1901, died on March 5. His case was one of great medical and surgical interest. In 1890 gastrotomy was performed on him by Dr. R. F. Weir, on account of stricture of the esophagus, and ever since then alimentation had been maintained through a tube passed into the stomach through the abdominal wall. Colonel Murphy commanded the One Hundred and Seventieth New York Volunteers in the civil war.

THE VALUE OF A SKULL. — Through his complaints to the police of the teasing of his friends, it recently became known that a South Carolina negro, James Mandy, now living in the city, had made a contract for the sale of his skull to a member of the medical profession, who is much interested in craniology. The latter learned of the extraordinary thickness and hardness of this skull through the man's giving exhibitions of its quality in a dime museum. According to the terms of the agreement the physician is to pay Mandy \$500, in monthly installments of \$5. If Mandy dies before the entire sum is paid the skull goes to the physician for the amount paid up to that time, and if the physician dies before Mandy, it is to go, at the latter's death, to the Medical Society of the County of New York.

A CURE FOR MALARIA. — According to *The Journal of Tropical Medicine*, Dr. Dempwolff, who succeeded Professor Koch as head of the German expedition for the prevention of malaria in German New Guinea, states that he has discovered an aquatic insect which destroys the *Anopheles* mosquito. He proposes to cultivate these insects artificially, and by this means to exterminate the malaria mosquito.

A CENTENARIAN. — James Colston, a centenarian, died in Brooklyn, on March 3. He was born in London, England, in March, 1803.

A SPIRITUALISTIC ARGUMENT AGAINST LIQUOR. — One of the most novel and startling arguments against the habitual indulgence in alcoholic beverages that was probably ever adduced was that set forth in a recent address in Brooklyn before the New York State Spiritualists' Association. "If the men of to-day," said the speaker, "knew how many spirits (of departed toppers) hang around the corner saloons suffering tortures because they can't get a drink, they would be more careful in fostering the dangerous drink habit." How much practical deterrent effect the promulgation of this truly harrowing thought may have remains to be seen.

TYPHOID FEVER AT WEST SENECA. — Health Commissioner Lewis announced on March 11 that Dr. W. D. Green, health commissioner of Buffalo, and Dr. Edward Clark, his deputy, had consented to serve as representatives of the State Department of Health to co-operate with the local health officer for the suppression of an outbreak of typhoid fever which has occurred at West Seneca, and to take proper precautions for the protection of the water supply of Buffalo. There were some 170 known cases, which were stated to be confined to the foreign element among the employees of the Lackawanna Steel Company.

Miscellany.

THE ILL HEALTH OF HERBERT SPENCER.

DR. GEORGE M. GOULD, in *American Medicine* for March 7, 1903, contributes an article on "The Ill Health of Herbert Spencer." As in his "Biographical Clinics," he traces for this other distinguished man of letters the relationship between his ill health and ocular defects. For the biographical basis of his paper, he quotes from the article by Iles in the *World's Work*. Spencer was less of a sufferer than Carlyle, De Quincey and the others, owing to the systematic regulation of his habits of life and methods of work. He employed an amanuensis, and very largely dictated his writings, and frequently interrupted his hours of work for rest, exercise and recreation. His nervous troubles were of a functional nature, while his complaints about "queer" sensations in his head, after near use of his eyes, are evidence that he was straining them. His good health in old age, and his belief that "nervous troubles may be assuaged with advancing years," are only, Dr. Gould remarks, the philosophy of the presbyope who has not known the relief that comes to patients with eye strain, when the effort of accommodation has become impossible. Spencer did not overwork; on the contrary, he appreciated and advocated the value of rest and relaxation, but his ability "to read without glasses at the age of eighty-one" proves him to be and to have been a sufferer from compound myopic astigmatism. Insomnia and neurasthenia are often results of eye strain. Dr. Gould believes that properly adjusted glasses would have freed him from nervous troubles, and thereby made his life fuller, more satisfactory and more profitable.

RECOVERY WITHOUT TREATMENT FROM A MINIE BALL WOUND THROUGH THE STOMACH.

A CASE of peculiar interest from a surgical standpoint has recently come to light through the death of a veteran of the civil war. The man, who was in one of the volunteer regiments on the Federal side, was shot through the abdomen by a Minie ball in the second battle of Bull Run. He claimed to have lain for nine days on the battlefield without medical assistance, and afterwards to have been taken to a hospital in Washington, where he slowly recovered. He later re-entered the service.

In trying to obtain a pension on account of this wound, which later incapacitated him for work, he met with great difficulty, because of the natural incredulity of the authorities in the accuracy of his story, which the incompleteness of the hospital records failed to substantiate. It was not believed that he could have recovered and been capable of serving again as he claimed, if his own account of his injury were correct, and it was only a short time before his death that he received what would seem to be an adequate pension for so severe a wound.

His death recently has furnished an opportunity to verify his statements by postmortem examination, with the result that his case proves to be one of the most remarkable from a surgical standpoint

that occurred in the civil war. The autopsy was performed by Dr. Arthur W. Hopkins of West Swanzey, N. H., and Dr. A. R. Gleason of Keene, N. H. It was shown that the bullet entered the epigastrium one and one-half inches to the left of the median line, at the level of the lower border of the seventh rib. It penetrated both walls of the stomach and passed above the left kidney and pancreas, apparently without injury to either. It emerged a little to the left of the spine, where it lay beneath the skin, and, as the man frequently testified, was removed at the hospital in Washington, to which he was taken from the battle field. The scars left by the bullet in its passage through the body were clearly defined at the autopsy, leaving no doubt in the minds of the physicians as to the course it had taken. The immediate cause of the man's death was pulmonary hemorrhage, and his lungs were found much diseased.

It is probable that when the bullet was removed in Washington the surgeons concluded that it had in some way passed around and not through the body, since abdominal wounds caused by Minie balls in the civil war were almost uniformly fatal. Recovery in this case is due, almost without doubt, to the fact that the patient's stomach was probably nearly empty at the time when the bullet entered the abdomen, and that for nine days, according to his story, he lay on the battlefield without food and only with water given him by the rebels, who moved him to a sheltered spot and left him, as they supposed, to die.

Correspondence.

ATTENTION, HOUSE OFFICERS! SILENCE IS GOLDEN.

PADUNK, Feb. 14, 1903.

MR. EDITOR: I am impelled to write this note to you owing to two unpleasant experiences I have had recently in sending patients to one of the large hospitals of Boston, by the thoughtlessness of the house officer of that hospital. If you think it worth while, perhaps you will speak of it in your JOURNAL, that the matter may receive the attention of those in charge.

In one instance a patient who was suffering from acute appendicitis was seen by me in consultation. I advised his immediate removal to the hospital, which was done. He was operated upon and died. The house officer criticised the attending physicians who had sent the patient in to the relatives, saying that if that case had been sent in earlier he might have been saved. The man was sick three days, and it is obvious that I could not have advised his removal to hospital before I had seen him.

CASE 2. A patient was operated upon for septic finger, by amputation of the finger. I was called the second night after the operation for a severe secondary hemorrhage of the stump. I treated him as best I could and told him to go to the hospital the next morning, gave him a note to the hospital relating my experience, and suggested that he be kept until danger of secondary hemorrhage was over. He went to the hospital, and the assistant who dressed the wound laughed at my suggestions, sent the man home, and he promptly had another hemorrhage the next day.

I do not believe these criticisms by the young house officer or assistant are malicious, but simply thoughtlessness; they certainly are unpleasant to the attending physician, who often has no chance of meeting such animadversions.

Yours respectfully,

* *

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, MARCH 7, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,479 | 416 | 19.53 | 22.51 | 2.84 | .40 | 1.21 | |
| Chicago . . . | 1,885,000 | 595 | 162 | 23.85 | 21.84 | 1.34 | 1.34 | 1.00 | |
| Philadelphia . | 1,378,527 | 614 | 172 | 24.26 | 18.88 | 2.92 | 1.14 | .98 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 202 | 50 | 20.29 | 19.30 | .99 | — | — | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 152 | 62 | 25.00 | 23.69 | 1.97 | 6.59 | — | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 101 | 28 | 25.74 | 33.67 | 1.98 | 2.97 | — | |
| Boston . . . | 603,163 | 241 | 64 | 16.18 | 25.31 | 1.66 | 2.49 | .41 | |
| Worcester . . | 132,044 | 50 | 12 | 16.00 | 16.00 | — | — | — | |
| Fall River . . | 115,549 | 50 | 27 | 6.00 | 32.00 | — | — | — | |
| Lowell . . . | 101,959 | 40 | 15 | 17.50 | 22.50 | 5.00 | — | — | |
| Cambridge . . | 98,639 | 32 | 9 | 28.12 | 18.75 | 3.12 | 9.37 | 3.12 | |
| Lynn | 72,497 | 27 | 5 | 18.51 | — | 7.40 | 7.40 | — | |
| Lawrence . . | 69,766 | 25 | 12 | 20.00 | 16.00 | — | — | — | |
| Springfield . | 69,389 | 37 | 12 | 24.31 | 18.91 | — | 10.80 | 2.70 | |
| Somerville . . | 68,110 | 23 | 9 | 13.04 | 30.43 | — | — | — | |
| New Bedford . | 67,198 | 35 | 15 | 17.14 | 28.57 | — | 2.85 | — | |
| Holyoke . . . | 49,286 | 12 | 3 | 8.33 | 25.00 | — | — | — | |
| Brockton . . | 44,873 | 10 | 3 | 30.00 | — | — | — | — | |
| Haverhill . . | 42,104 | 11 | 4 | 18.18 | 36.36 | — | 18.18 | — | |
| Newton . . . | 37,794 | 15 | 5 | — | — | — | — | — | |
| Salem | 36,876 | 9 | 3 | 11.11 | 22.22 | — | — | — | |
| Malden . . . | 36,286 | 14 | 6 | 14.28 | 14.28 | 7.14 | — | — | |
| Chelsea . . . | 35,876 | 8 | 4 | 25.00 | — | — | 25.00 | — | |
| Fitchburg . . | 35,069 | 8 | 4 | 25.00 | 37.50 | — | 12.50 | — | |
| Taunton . . . | 33,656 | 14 | — | 42.84 | 35.70 | — | — | — | |
| Everett . . . | 28,620 | 2 | 1 | — | — | — | — | — | |
| North Adams . | 27,862 | 8 | 2 | 37.50 | 37.50 | — | — | — | |
| Gloucester . . | 26,121 | 4 | 2 | 50.00 | — | 50.00 | — | — | |
| Quincy . . . | 26,042 | 3 | 1 | — | — | — | — | — | |
| Waltham . . . | 25,198 | 8 | 3 | — | 12.50 | — | — | — | |
| Brookline . . | 22,608 | 7 | 2 | 14.30 | 28.60 | — | — | 14.30 | |
| Pittsfield . . | 22,589 | 2 | — | 50.00 | 50.00 | — | — | — | |
| Chicopee . . . | 21,031 | 7 | 2 | 14.30 | 28.60 | — | — | — | |
| Medford . . . | 20,962 | 5 | — | 20.00 | 40.00 | — | — | — | |
| Northampton . | 19,883 | 6 | 1 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 8 | 1 | 25.00 | 12.50 | — | — | — | |
| Clinton . . . | 15,161 | 3 | — | — | 33.33 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | — | — | — | — | — | — | — | |
| Woburn . . . | 14,300 | 2 | — | 50.00 | — | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 11 | 0 | 27.27 | 18.18 | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 3 | 1 | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 3 | 1 | 33.33 | — | — | — | — | |
| Framingham . | 12,534 | 3 | — | 66.67 | 33.33 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 2 | 1 | — | — | — | — | — | |
| Southbridge . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 3 | 1 | 33.33 | 33.33 | — | — | — | |
| Plymouth . . | 10,739 | — | — | — | — | — | — | — | |

Deaths reported, 3,194; under five years of age, 1,121; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 823, acute lung diseases 851, consumption 423, scarlet fever 35, whooping cough 57, cerebrospinal meningitis 6, smallpox 8, erysipelas 8, measles 24, typhoid fever 47, diarrheal diseases 80, diphtheria and croup 87.


From whooping cough, New York 6, Chicago 8, Philadelphia 7, Pittsburg 10, Providence 3, Boston 6, Cambridge 3, Lynn 2, New Bedford 1, Springfield 4, Haverhill 2, Chelsea 2, and Fitchburg, Framingham and Revere 1 each. From erysipelas, Chicago 2, Philadelphia 3, Pittsburg 1, Lowell 1, Marlboro 1. From smallpox, Chicago 4, Philadelphia 4.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Feb. 21, the death-rate was 16.7. Deaths reported, 4,841; acute diseases of the respiratory organs (London) 271, whooping cough 120, diphtheria 78, measles 94, smallpox 13, scarlet fever 49.

The death-rate ranged from 4.1 in Burton-on-Trent and Kings Norton to 24.1 in Great Yarmouth; London 17.6, West Ham 15.7, Brighton 18.7, Portsmouth 13.9, Southampton 15.2, Plymouth 11.2, Bristol 17.7, Birmingham 19.8, Leicester 11.7, Nottingham 15.9, Bolton 18.0, Manchester 19.9, Salford 21.0, Bradford 19.3, Leeds 16.3, Hull 15.9, New-Castle-on-Tyne 16.9, Cardiff 14.2, Rhondda 21.4, Liverpool 21.2.

METEOROLOGICAL RECORD.

For the week ending March 7, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- om- eter. | | Ther- mometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|--|----------------------|----|-------------------|----|-----------------------|--------------|----------------|-----------------------|--------------|----------------------|--------------|--------------|--------------|------------------------|
| | Daily mean. | | Daily mean. | | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . | 1 29.96 | 36 | 48 | 25 | 78 | 56 | 67 | S W | W | 14 | 16 | F. | C. | O. |
| M. . | 2 30.42 | 32 | 41 | 23 | 82 | 60 | 71 | S W | W | 9 | 9 | F. | C. | O. |
| T. . | 3 30.67 | 32 | 34 | 29 | 84 | 75 | 80 | N E | S | 17 | 8 | O. | O. | T. |
| W. . | 4 30.42 | 42 | 53 | 32 | 86 | 54 | 70 | S | N | 9 | 3 | O. | O. | O. |
| T. . | 5 30.17 | 41 | 44 | 38 | 83 | 80 | 82 | E | S | 2 | 9 | O. | O. | .16 |
| F. . | 6 30.39 | 42 | 47 | 36 | 79 | 59 | 69 | N W | N | 14 | 9 | C. | C. | .02 |
| S. . | 7 30.58 | 40 | 49 | 31 | 81 | 83 | 82 | N W | S E | 1 | 11 | C. | O. | .0 |
|  | 30.37 | | 45 | 31 | | | 74 | | | | | | | .18 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 12, 1903.

THOMAS, A. R., passed assistant surgeon. Granted leave of absence for two months from Feb. 25. March 5, 1903.

KERR, J. W., assistant surgeon. Leave of absence granted by Department letter of Sept. 20, 1902, amended so that said leave shall be for one month and fifteen days. March 2, 1903.

FOSTER, A. D., assistant surgeon. Upon the return of medical officer in command, relieved from duty at Wilmington, N. C., and directed to proceed to Charleston, S. C., and assume command of the service, relieving Acting Assistant Surgeon F. F. Sams. March 6, 1903.

DEAN, L. C., acting assistant surgeon. Granted leave of absence for two days. March 9, 1903.

GOLDSBOROUGH, B. W., acting assistant surgeon. Granted leave of absence for one day. March 9, 1903.

PATRICE, W. E., acting assistant surgeon. Granted leave of absence for fourteen days from Feb. 27. March 10, 1903.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for three days. March 7, 1903.

ACHENBACH, J., pharmacist. Relieved from duty at Port Townsend Quarantine, Washington, and directed to proceed to Port Townsend, Washington, and report to medical officer in command for duty and assignment to quarters, relieving Pharmacist R. F. Troxler. March 6, 1903.

THURSTON, E. J., pharmacist. To proceed to Gulf Quarantine and report to medical officer in command for duty. March 6, 1903.

WOODS, C. H., pharmacist. Granted leave of absence for twenty days from March 21. March 9, 1903.

DAVIS, H. E., pharmacist. Relieved from duty at Louisville, Ky., and directed to proceed to Memphis, Tenn., and report to medical officer in command for duty and assignment to quarters, relieving Pharmacist E. M. Holt. March 6, 1903.

TROXLER, R. F., pharmacist. Upon being relieved from duty at Port Townsend, Washington, to proceed to Port Townsend Quarantine and report to medical officer in command for duty. March 6, 1903.

HOLT, E. M., pharmacist. Upon being relieved from duty at Memphis, Tenn., directed to proceed to Louisville, Ky., and report to medical officer in command for duty and assignment to quarters. March 6, 1903.

PROMOTION.

Assistant Surgeon H. B. Parker commissioned as passed assistant surgeon, to rank as such from March 3, 1903.

RESIGNATION.

Passed Assistant Surgeon A. R. Thomas resigned, to take effect April 25, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING MARCH 14, 1903.

G. P. LUMSDEN, surgeon. Detached from the "Hancock" and ordered home to wait orders. March 9.

J. R. WAGGENER, medical director. Commissioned medical director from Jan. 20, 1903. March 10.

H. H. HAAS, passed assistant surgeon, and W. H. Bucher. Commissioned passed assistant surgeons from Jan. 10, 1903.

E. O. HUNTINGTON, J. B. DENNIS and E. THOMPSON, passed assistant surgeons. Commissioned passed assistant surgeons from Feb. 10, 1903.

B. H. DORSEY, assistant surgeon. Appointed assistant surgeon March 2, 1903.

I. N. HURD, pharmacist. Detached from the Navy Yard, Portsmouth, N. H., and ordered to Washington, D. C., for examination for retirement, and thence home to wait orders. March 11.

E. S. BOGERT, JR., surgeon. Detached from the Naval Recruiting Station, Buffalo, N. Y., and ordered home to wait orders. March 12.

P. F. McMURDO, acting assistant surgeon. Ordered to the "Gloucester."

W. P. GROVE, passed assistant surgeon. Detached from duty with Marine Detachment, Culebra, P. R., and ordered to Naval Hospital, New York, for treatment.

SOCIETY NOTICES.

CAMBRIDGE MEDICAL IMPROVEMENT SOCIETY.—A meeting in memory of the late Dr. Morrill Wyman will be held at the Colonial Club, Quincy Street, Cambridge, on Monday evening, March 23, at 8 P.M. Dr. H. P. Walcott will deliver an address, after which remarks will be made by President Charles W. Eliot, Dr. David W. Cheever, Dr. J. T. G. Nichols, Dr. William T. Conneliman and Dr. R. H. Fitz. All those interested are cordially invited to be present.

FRED R. JOUETT, M.D.,
Secretary.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The society will hold a memorial meeting for the late Dr. John Homans at Sprague Hall, on Monday, March 30, at 8.15 P.M. Addresses will be made by Dr. Maurice H. Richardson, Dr. Arthur T. Cabot, Dr. George B. Shattuck, Dr. Edw. H. Bradford, Dr. Robert T. Edes, Dr. J. C. Warren, Dr. F. B. Harrington.

543 Boylston Street.

ARTHUR K. STONE,
Secretary.

RECENT DEATH.

DR. A. W. CHURCH of Waretown, N. J., died in St. Francis Hospital, Jersey City, on March 13, after an operation for appendicitis. He was thirty-three years of age and a graduate of the Edinburgh University and the Medical Department of Columbia University.

RESIGNATION.

DR. JAMES C. WHITE has resigned from the position of physician for diseases of the skin at the Massachusetts General Hospital.

APPOINTMENTS.

DR. JAMES C. WHITE, DR. WILLIAM L. RICHARDSON and DR. C. B. PORTER have been appointed on the consulting staff of the Massachusetts General Hospital.

DR. JAMES J. MINOT has been appointed visiting physician at the Massachusetts General Hospital.

BOOKS AND PAMPHLETS RECEIVED.

Proceedings of the American Medico-Psychological Association at the Fifty-eighth Annual Meeting held in Montreal, Quebec, June 17-20, 1902.

Diseases of the Stomach, a Textbook for Practitioners and Students. By Max Einhorn, M.D. Third revised edition. Illustrated. New York: William Wood & Co. 1903.

Surgical Anatomy, a Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By John B. Deaver, M.D. In three volumes. Illustrated. Vol. III. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Surgery of Penetrating Wounds of Lungs and Heart. (Experimental.) By Benj. Merrill Ricketts, Ph.B., M.D., of Cincinnati, Ohio. 1903.

Ligation of Arteries (Cocaine Anesthesia). By Benj. Merrill Ricketts, Ph.B., M.D., of Cincinnati, Ohio. Reprint. 1902.

Surgical Melange. By Benj. Merrill Ricketts, Ph.B., M.D., of Cincinnati, Ohio. Reprint. 1902.

Nasal Surgery. (Illustrated.) By Benj. Merrill Ricketts, Ph.B., M.D., of Cincinnati, Ohio. Reprint. 1902.

Lung Surgery. Historical and Experimental. By Benj. Merrill Ricketts, Ph.B., M.D., of Cincinnati, Ohio. Reprint. 1903.

Original Articles.

EXTENSIVE CAVITY FORMATION IN THE CENTRAL NERVOUS SYSTEM, PRESUMABLY DUE TO *BACILLUS AEROGENES CAPSULATUS*.

BY EMMA W. MOOERS, M.D., WAVERLEY, MASS.

From the Laboratory of the McLean Hospital.

THE so-called Gruyère cheese brain has been the subject of much speculation since 1870. There have been various theories⁹ of the nature of these cavities found in the brain.

The earliest theory was that the condition is due to dilatation of the perivascular lymph spaces; later that it is a distention of the network of the neuroglia due to lymph stasis; again to dilatation of the pericellular spaces of the neuroglia or to absorption of the nerve substance from pressure. The process has been spoken of as "cystiform degeneration," also quite widely to-day as "cyst formation."

The other pathological conditions known generally under the term *état criblé* could hardly now be mistaken for that produced by the gas bacilli. In genuine cyst formation there is a lining membrane and evidences of a chronic process. At the present time there is no reasonable doubt that the cavity formation is due to the production of gas in the brain substance by gas-forming bacteria.

Bacteria have been found in the brain substance in this condition by several observers, but in only three cases has the identity of these bacteria been clearly established. Two of these cases are reported by W. T. Howard, Jr.¹ In one of them he identified the bacteria as of the species known as the *Bacillus aerogenes capsulatus*. In a third case reported by Madison⁶ the *Bacillus aerogenes capsulatus* and other bacteria were found.

The *Bacillus aerogenes capsulatus*, as first shown by W. H. Welch,⁸ is characterized by its power of producing gas in the tissues of man and animals. It is the bacterial cause of the majority of the septic and putrefactive conditions accompanied by gas formation in the tissues. It is a common inhabitant of the intestine, and is probably widely distributed outside of the body.

The *Bacillus mucosus capsulatus* is found in certain forms of pneumonia and peritonitis and in various other inflammatory conditions. It is probably a normal inhabitant of the upper air passages. The strain of this bacillus found by Howard in one of his cases was shown by him to be an energetic gas producer, both in culture media and in the bodies of animals.

The following case, which occurred at the McLean Hospital, may here be briefly reported. For the sake of brevity we leave out all detail which has no bearing on the special features to which we wish to call attention.

The patient, a man forty-nine years of age, had advanced general paralysis, having been in the hospital for nine years. He was profoundly demented, with extensive paralytic evidences, and confined to bed. He was well nourished and weighed 168 pounds. The patient's condition continued unchanged until a few days before death, when an increased restlessness was noted. On the morning of the day he died there was discovered a marked abdominal distention, a temperature of 104° and respiration 48-58. He rapidly failed, and died in the evening.

AUTOPSY. The autopsy was made twenty hours after death; the weather was hot and the body, with ice over the abdomen, had been kept in a cool room.

Rigor mortis was present; the face and body appeared bloated, the abdomen greatly distended and the entire skin of a dark bluish hue. On section there was gaseous emphysema of the subcutaneous tissues in both thorax and abdomen, but none in the scalp, which was very dense and of unusual thickness. Gas escaped on opening the abdominal cavity. The stomach and intestines were greatly distended with gas, and showed red discoloration in places. The blood vessels were very prominent. The liver appeared spongy, pale and puffy, riddled with gas cavities; the spleen slightly so. In the kidneys and heart muscle no cavities were seen; but both showed gas cavities and bacilli on microscopical examination. The heart muscle appeared soft, and on microscopical examination the muscle fibers were much fragmented and the nuclei stained poorly. The kidneys showed in places slight increase of connective tissue. There was no pneumonia, no pleural nor peritoneal exudate. There were old adhesions at the base of the left lung. The stomach showed several small erosions.

The brain presented at the autopsy nothing but the usual condition found in advanced general paralysis; that is, marked atrophy, especially in the frontal lobes (weight of brain 1070 gm.), thickening of the pia. The vessels appeared unusually large. It was put into formalin *in toto* and found to float. The formalin was frequently changed. The cord showed unusual thickening of the pia arachnoid from the thoracic region down and a marked dark purplish-red discoloration of the membranes.

After the brain had been six days in formalin, frontal sections were made. The appearance of these sections was very striking. The whole of the cut surface showed many cavities (Figs 1 and 2); these varied in size from 3.5 cm. to the smallest visible to the naked eye; the shape varied, being usually oval but sometimes round; a few were slit-like. They were located in both white and gray matter. The portions which had maintained the greatest integrity were the gray matter of the cortex of both cerebral hemispheres and that of the cerebellum. The basal ganglia and brain stem (Fig. 2) were equally affected with the medullary portions of the brain. There was present a distinct pigmentation in certain portions of the brain; it was of a dark slate color and irregularly distributed, being seen outlining some of the convolutions (especially in the temporal lobes) just below a narrow line of unpigmented cortex. This color was also seen in the gray matter of the cerebellum and irregularly on the cut surface of the pons and medulla. The cord below the medulla did not show this pigmentation microscopically, but in the meninges was seen the same dark slate color uniformly distributed.

MICROSCOPICAL EXAMINATION OF SECTIONS. Specimens from the cortex were hardened in alcohol and stained by Nissl's method. Other pieces were hardened in formalin and stained by hematoxylin-eosin and by Gram's and various other methods. Specimens from heart and kidney were hardened in Zenker's fluid.

The cortex showed the usual changes of general paralysis, which it is not necessary to describe here.

Of some importance, however, is the fact that the nerve cells presented no postmortem alteration, but throughout, the typical changes found in fever, namely, the uniform pale staining of cell bodies without reference to the stainable or non-stainable substance; this pale staining makes the processes visible much farther than normal; the axis cylinders are frequently stained. The nucleus is large with well-marked nuclear membrane, with moderately distended nuclear network, with now and then sharply defined irregular granules in the vicinity but not connected with the nucleolus. There is no pronounced increase of satellite cells. Beside the fever alteration, many of the cells, both large and small, show a yellow pigment situated irregularly in the cell body; individual particles of the pigment are not well defined in the Nissl stain. In a hematoxylin stained preparation, however, the pigmentation is much darker, being brownish with discrete particles.

The cavities in the brain tissue were found on microscopical examination without a living membrane; the walls were frequently smooth and clean cut, but there were many which looked slightly ragged in a part or the whole of the wall. The tissue around the cavities was composed of the brain substance itself; it showed no inflammatory reaction, though it often appeared compressed and took a slightly deeper stain; the nuclei were sometimes, but by no means always, paler in these zones. The larger cavities were empty or nearly so; somewhere along the edge of the walls of these were generally seen a few bacteria or an elongated mass of them; there were also found in some very fine shreds of tissue of the neighborhood, a blood vessel whole or ruptured and the contents of the latter. The smaller cavities almost invariably contained many bacilli, and in some was seen an amorphous substance containing sharply defined particles of dark pigment (iron reaction to this pigment negative). The cavities, while often showing some relation to a blood vessel, were seen also scattered through the tissue with apparently no relation to blood vessels or lymph spaces. Bacilli were found free in the brain tissue in clumps and singly, neither associated with blood vessels nor cavities.

Only one kind of bacteria appeared to be present (Fig. 3). These were bacilli of about the size and dimensions of the anthrax bacillus. They had round or nearly square ends, some of them stained somewhat irregularly, showing faintly stained areas in the protoplasm. In others were occasionally seen darkly stained granules. A clear halo could be plainly made out by partly shutting off the light, but no distinct capsules and no spores were seen; they were found in clumps, in short chains (rarely), in pairs and singly; the bacilli stained by Gram's method and by the ordinary aniline dyes. They are morphologically and in staining reaction identical with the *Bacillus aerogenes capsulatus* of Welch.

These bacilli, besides being found in the membranes, cavities and tissues, crowded in most places the small vessels so that often the blood corpuscles could not be seen. In the larger vessels they were also seen scattered through the contents and about their walls. Many bacilli were present in the choroid plexuses.

The other histological changes, namely, the altera-

tions in the vessel walls, the increase of cells and the presence of pigment granules in perivascular lymph spaces, the degeneration of myelin fibers in cortex and cord, the increase of neuroglia and the general disturbances of the normal architecture of the cortex,—all these are the changes commonly found in such an advanced case of general paralysis.

Spinal cord.—In the pigmented portions of the meninges, especially the pia arachnoid, the small dark particles of pigment observed in the brain were very numerous and sharply defined, being present in loose masses in the stroma, in the lymph spaces and within the vessel walls. The membranes contained enormous numbers of bacilli. There were well-marked cavities in the ventral fissure so that the adjacent structures were pushed aside (Fig. 4). There were a few very small cavities lying near clumps of bacilli, especially in the lateral columns of the cord; a few larger ones were found in the ventral horns; not all the blood vessels here contained bacilli, they were much more free from invasion than those in the brain. No bacilli were found in the central canal. The cavities were much fewer than in the brain.

In view of the large number of bacilli found in the brain and spinal cord of this case, and in view of the gas-producing powers possessed by the *Bacillus aerogenes capsulatus*, which we believe to be the bacterium concerned in this case, we agree with the view of other recent observers that the cavity formation in the brain and cord is due to the development of gas therein by the bacteria.

The question which, of course, arises in all such cases is this: Is this cavity formation in the central nervous system wholly a postmortem phenomenon? The absence of any reactive changes in the tissue and the absence of symptoms which would point to a sudden damage to the nervous system speak for this. But it must be admitted that the extreme paralytic dementia would have made such symptoms difficult to observe. Yet it is now well known that the *Bacillus aerogenes capsulatus* may invade the living organism, and Howard¹ and others¹⁰ have claimed that it may even cause acute purulent meningitis. Interesting in this connection is the case of Hartmann,³ in which the anatomical findings were those of extensive cavity formation in the central nervous system without any inflammatory or reactive process anywhere. In this case the clinical picture was very interesting. Some days before death there developed a most complicated group of both sensory and motor palsies with somnolence; there was distention of the abdomen, rapid respiration and elevated temperature. Nothing was found at autopsy or by histological examination which could account for the symptoms, except the presence of the gas bacillus in large numbers. Hartmann assumes that the cavities were formed postmortem, but that the presence of the bacilli in the nervous system, partly by their mechanical, partly by their toxic actions, caused the extensive symptom-complex.

In the absence of any other demonstrated cause of death in our case, and in view of the rapid and extensive abdominal distention with great rise of temperature, it seems possible that the invasion of the circulating blood by the bacillus was the cause of death by the production of a toxemia.



FIG. 1.— Frontal section through brain (in front of the crura), showing numerous gas cavities.

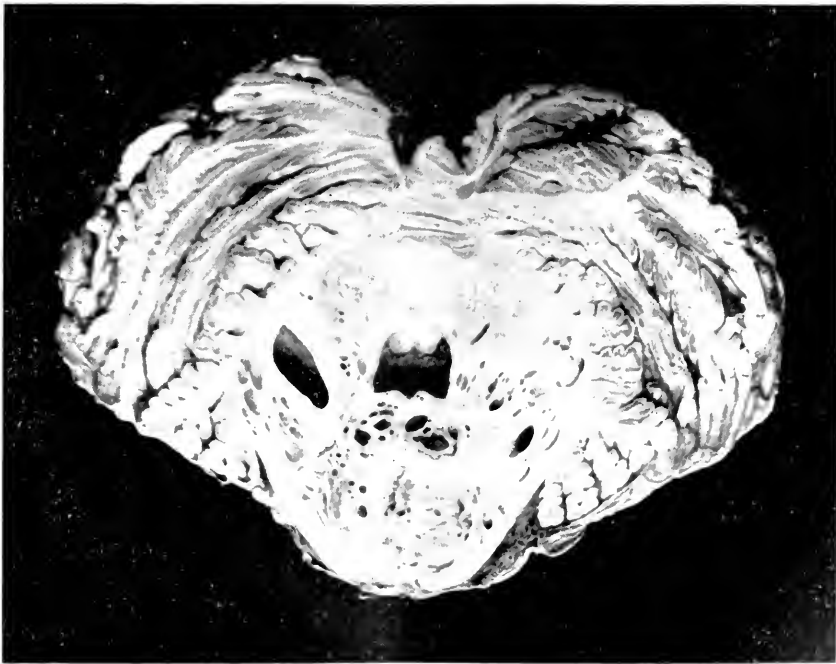


FIG. 2.— Section through pons and cerebellum, showing many cavities, especially in pons and white matter of cerebellum.

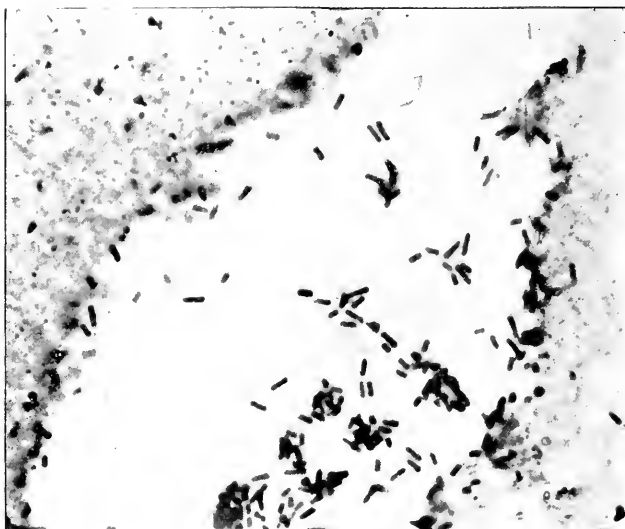


FIG. 3. — Section showing portion of one of the smaller cavities in brain. On the right, the wall; on the left, a portion of amorphous mass containing pigment granules and some bacteria; in center and wall, bacteria.

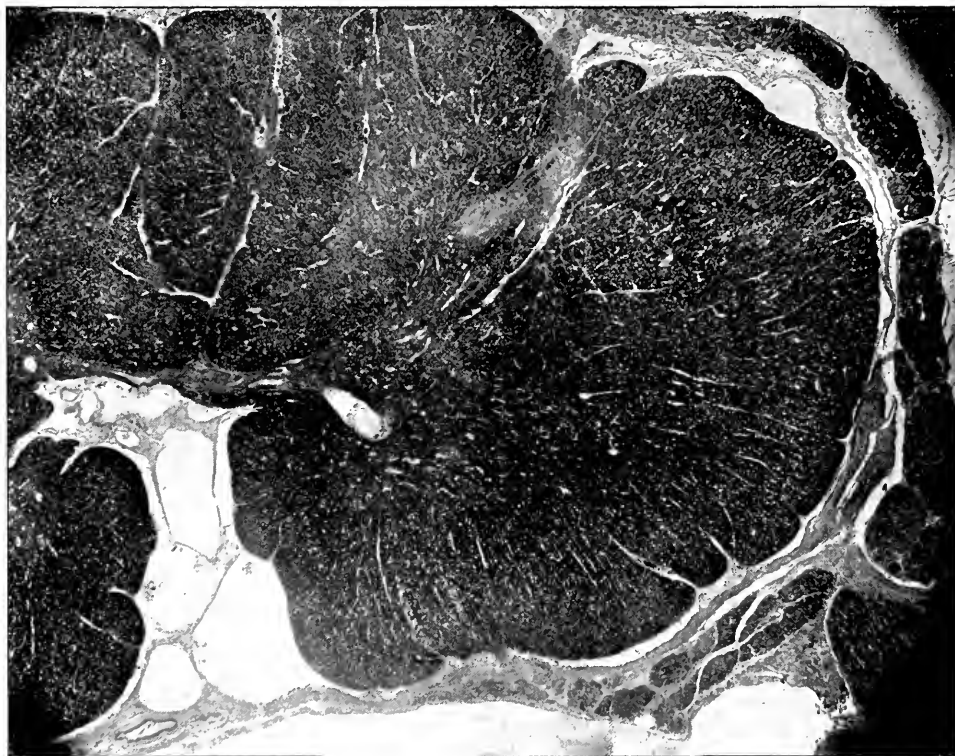


FIG. 4. — Section through cervical cord; large cavities in pia arachnoid, minute cavities in substance of cord.

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BACILLUS SHIGA IN AN EPIDEMIC OF DIARRHEA.

BY LAWRENCE W. STRONG, M.D., WABAN, MASS.

For three summers a seaside community on the Maine coast has been disturbed by what were apparently epidemics of diarrhea, affecting both infants and adults, of varying degrees of severity, and beginning about the 1st of August in each year.

Often several members of one family were affected simultaneously or in succession, and only rarely was there anything obviously suspicious in the food which had been taken which might be regarded as a possible cause of the upset. The hygienic conditions of the village seemed well-nigh perfect. The water supply was a mountain lake situated about two miles from the village, two hundred feet above the sea level and from twenty-five to one hundred feet above the habitation levels, in depth averaging about one hundred feet, surrounded by forest, with but one house in its vicinity.

The milk supply was very largely taken from a milk farm on the shore of another lake, where the mountain lake water was used for the cattle and for domestic purposes. There was good pasturage in the meadows, the milk was cooled in ice immediately after milking, the stable and premises as well as the cattle and the attendants were as cleanly as the nature of the business allows. Bacterial counts of the milk made this year and last were comparatively low.

A new system of sewerage had been installed in 1901, whereby all waste was conducted in galvanized iron pipes to a cove at a distance from the village, and there discharged below low tide level. A few residences still discharged sewage into the harbor at tide level. Bangor and Boston markets furnished meats; vegetables were largely native grown, and consequently fresh. Climatic conditions were variable, there was a good deal of fog, as is characteristic of Maine, and this summer furnished an unusual amount of cold weather.

In analyzing this apparent epidemic it is not assumed that all the cases of diarrhea were of one form, even though an epidemic with a common cause may have occurred.

The common summer diarrheas are clinically separated into first, the simple diarrhea of nervous origin, or due to alterations in temperature, change in the food or other simple cause; second, the infective diarrheas, which are subdivided into fermented

diarrhea, cholera infantum and ileocolitis. This classification, while largely on the basis of symptomatology, takes a certain account of pathology and of etiology.

The simple diarrhea, which is non-bacterial, may, by increasing the susceptibility to invasion by micro-organisms, pass over into an infective diarrhea by allowing bacteria normally or accidentally present to invade the tissues. The infective diarrhea may be of the fermental type if the irritation acts high up in the alimentary tract, or it may produce an ileocolitis if the action of the bacteria or the absorption of toxic substances is delayed until the ileum or colon is reached. Thus a case may start as a simple diarrhea and end either as a fermental diarrhea or an ileocolitis. On this theory the same micro-organism, whether a normal inhabitant of the intestine or introduced with the food, might produce either a fermental diarrhea or an ileocolitis.

It is generally recognized that streptococci in the food, especially in milk, will produce diarrheas of the above types, and saprophytes also have been regarded as causative elements, but up to the present no definite relation has been found between any special form of bacteria and variety of diarrhea. Even if such a relation exists, it will hardly explain all the cases of infective diarrhea. As to the clinical classification of the cases actually encountered last summer, the majority were simple diarrheas of the non-infectious type. Then there occurred fairly numerous fermental diarrheas, the form which usually makes up 90% more or less of summer complaints, and what was most remarkable was a preponderance of ileocolitis, usually rather a rare condition. The greater number of these were rather insidious in onset, but developed in a day or two into a very obstinate and exhausting diarrhea, with numerous mucous and watery discharges, finally producing mucous casts of the intestine and bright red blood in specks and adherent to the mucus. Occasionally was seen a grayish or pink tinged slimy mass, apparently a slough from the intestine. In this form there was from the first a moderate continuous fever, from 100° to 103°, without morning or evening variations. Vomiting was common at the onset, but rarely persisted long. Tympanites and abdominal tenderness were common. The duration of these cases was variable, but the severer ones ran a course of one to several weeks.

Such cases as these, of which I had five under my own care, are the ones which suggest an epidemic, but in addition to these the mild cases were so prevalent that the inhabitant of this resort who escaped entirely was exceptional.

While the diarrheas were most prevalent and there was considerable excitement over the situation, Dr. Flexner visited the locality. Together with Dr. C. A. Herter and Dr. E. K. Dunham of New York an investigation was undertaken.

Cultures of the bacillus of dysentery isolated by Flexner from cases in the Philippines were obtained, and serum from one of my convalescent cases of ileocolitis gave a quick and marked clumping reaction with the bacillus. From the stools of another, most severe case, the same bacillus was isolated and identified. In this case injections of antitoxic horse serum prepared by Dr. Flexner from the bacillus of dysentery were used. This serum had been used

on animals with a protective effect and had been tested for ill effects on normal individuals, but had not been used therapeutically. Without stating any conclusions as to the use of the serum, the history of the case is given here for its bearing on the source of infection. The patient was a girl aged five, rather delicate and slender. For five days previous to her illness she had drunk nothing but boiled water on account of the suspicion cast upon the public water supply by the numerous cases of diarrhea. She drank no milk, but took a small quantity of milk on cereal food twice daily. The attack began rather insidiously and at first had the characteristics of a fermental diarrhea with severe vomiting and prostration, amounting to collapse on one or two occasions. Later bloody stools with mucous casts and rectal tenesmus set in. The child ultimately recovered after a most protracted illness. Further report of the case was made by Dr. Herter at a meeting of the Medical Association of New York City, when a paper by Dr. Flexner on the rôle of the bacillus of dysentery in the summer diarrheas of children was read.¹

As to the etiology, accepting Dr. Flexner's view, the bacillus Shiga is the causative agent for the case just cited, where it was isolated from the stools; in all probability also for the case which gave the serum reaction, and by analogy for the several other cases with a similar clinical picture.

Duval and Bassett isolated the same bacillus from the stools of forty-two cases of summer diarrhea in New York. The specific bacillus was not found in twenty-five healthy children, nor in children with simple diarrhea, marasmus or malnutrition, nor did the serum from the latter conditions agglutinate with the bacillus.

Duval and Bassett² do not state what type of summer diarrheas they investigated, whether fermental or ileocolitis, further than that they were bacterial and not simple.

As was stated above, the same organism may produce either a fermental diarrhea or an ileocolitis, according to the spot where the infected material lodges, but that this is invariably Shiga's organism can scarcely be maintained on account of the known rôle of the streptococcus.

Since it seems to be proved that Shiga's bacillus causes certain cases, the main question is, can we determine clinically which these cases are?

In all probability the serum reaction will afford the solution of this question, and in the absence of this we cannot venture conclusions as to this epidemic.

From a clinical standpoint there is nothing which separates the cases under consideration into groups or distinguishes those known or inferred to be caused by Shiga's bacillus from the others.

Only the cases of ileocolitis were tested for serum reaction, but ileocolitis is not enough to warrant the assumption that the bacillus Shiga is present, as the following case shows. A bell-boy, having eaten heartily of lobster à la Newberg, had a moderate diarrhea on the next day. This he aggravated by eating three bananas and drinking excessively of ice water. When seen at night time he had extreme rectal tenesmus, considerable mucus and

bright blood in the stools and marked prostration. No vomiting. Prompt recovery on symptomatic treatment. Here was evident food poisoning acting as a irritant in the lower bowel, with immediate recovery on removal of the cause, without the prolonged course characteristic of bacterial infection. Other cases of ileocolitis had an apparently simple beginning in a simple non-infectious diarrhea from improper food.

A girl aged four was taken on a picnic drive, and ate nut-cake and bananas. During the drive she vomited both bananas and nuts. The next day she was constipated, and the third day diarrhea set in, which did not become bloody for a day or two. The attack then went on to a most severe and obstinate dysentery, with a long course and a slow convalescence.

A boy of three, having eaten roast beef and spinach at noon, began to have movements at night containing undigested spinach. The following day he had six or eight movements containing undigested food. This diarrhea went on into a characteristic ileocolitis with mucous and bloody stools.

These cases suggest the possibility of the presence of Shiga's bacillus in the normal intestine, and that through the irritative action of a simple diarrhea from any slight cause or of a fermental diarrhea from infected food it overgrows the ordinary intestinal flora and sets up the inflammatory lesions of dysentery. Almost all the children's diarrheas, both ileocolitis and fermental, as well as several cases of acute gastritis, showed upon careful questioning some slight antecedent cause in the food sufficient to give the process a start, but once started there was no obvious reason why one should end as an acute gastritis and another as an ileocolitis.

Indeed, almost all the cases of ileocolitis had an origin in a gastric upset from improper food or in a fermental diarrhea, the facts speaking against the origin of ileocolitis as a primary condition, such as the invasion of a specific organism.

Although Duval and Bassett did not find the organism in the stools of healthy children, it cannot be assumed that it is not present there, being obscured by the colon bacillus. Shiga's organism appears to be a transition form between colon and typhoid, differing from them in its action on sugars, peptone and milk.

Shiga's organism forms no gas, forms acid on milk without coagulation but with a subsequent return of alkalinity. Shiga and Flexner report motility; Kruse and Duval do not. The formation of indol also appears to be somewhat in doubt.

Recent work has shown that this organism is viable in the soil even longer than the typhoid bacillus, and this suggests the means of distribution and production of epidemics.

Although definite conclusions are not justified from the fragmentary and inexact nature of the evidence afforded by these cases, the facts at least suggest that there must have been a common cause for a certain proportion of the unusual number of diarrheas encountered. Whatever the cause, it did not produce one characteristic form of diarrhea, although ileocolitis was conspicuous. The one positive bit of evidence afforded is that the bacillus Shiga was present in four cases of ileocolitis. If our clinical inference that some simple diarrheas

¹ Boston Med. and Surg. Journ., Nov. 27, 1902.

² Amer. Med., 1902, No. xi, 417.

passed into infectious diarrhea, and that the infectious diarrheas were either fermental or ileocolitis, according to the place of lodgment of the irritating matter, is correct, then the bacillus Shiga might be the common cause sought for.

The work of Duval and Bassett supports this view. This organism may have infected the soil of this locality from diarrheas occurring during previous summers. Its further transmission may be better studied here than in localities where the conditions are less simple. The water supply is almost unimpeachable, the only possibility of infecting it being from a farmhouse on its borders which is used as an inn. No case of diarrhea was reported from this house last year. Contamination of the water supply would not explain the case of ileocolitis in the child who drank boiled water exclusively previous to her attack, nor of a second child suffering from acute gastritis who drank Poland water exclusively. It seems much more likely that infection was spread by milk, since milk is more exposed to contamination and is an ideal *habitat* for bacterial growth. As was said, almost all the milk came from a single dairy within a mile of the village. Personal inspection showed careful handling and cleanliness, and bacterial counts of the milk on two occasions were low. Two severe cases of ileocolitis occurred in families using another milk supply.

Several positive facts, however, point to upsets from milk, although there is no known relation to bacillus Shiga. Two children aged twenty months and ten years respectively, sisters of the girl treated with antitoxin, were almost simultaneously attacked with vomiting. This occurred before the appearance of the epidemic of diarrheas. The younger child had eaten nothing but bread, butter and milk, the elder had a plain supper with milk. The third child, who ate the same food but drank no milk, was unaffected. The vomiting in both cases was intense, with prostration. These cases quickly recovered, the younger having diarrhea.

A boy of two and a half, who drinks Poland water exclusively, was attacked with vomiting, and retained nothing for twenty-four hours. The milk of the previous day was curdled when received. Recovery after calomel and saline. These cases prove nothing more than that milk, the chief food of infants, is very liable to cause upsets, and that this particular milk did cause such upsets. Many cases of diarrhea occurred in adults, who even if not milk drinkers used cream on food, and cream contains 90% of the bacteria of whole milk.

The insufficient evidence does not justify any conclusion as to the channel of infection, but there is more ground for suspecting the milk than any other source.

It is not necessary even to assume that the milk contained the bacillus Shiga when drunk, it is possible that the bacillus Shiga may be a normal inhabitant of the intestinal tract and that through some chemical or other peculiarity of the food it is enabled to overgrow its near relative, the bacillus coli communis, which usually is more florid in growth.

There may even be an analogy between the action of the colon and the bacillus Shiga on sugars and casein in the test tube and in the intestine. Since they are distinguishable only by their growth and

chemical changes on sugars, litmus milk and peptone, it may be these chemical differences which make the difference between normal digestion and a diarrhea.

A systematic search for Shiga's bacillus in the milk supplies of this locality is highly desirable. The stools and presumably the urine of all cases of infective diarrhea should be disinfected.

The locality considered here differs in no way from many others affected with epidemics of diarrheas or ileocolitis in the past. Last summer several other resorts suffered equally, although there was no connection between the places. The work of Duval and Bassett goes to show that summer diarrheas, common to every place, have a relation to the bacillus Shiga. Other work has demonstrated the wide spread of this organism in nature. Shiga's organism has generally been called the bacillus of dysentery. Duval and Bassett find it, however, in "summer diarrheas" without further specification. It was looked for in this epidemic only in certain cases of ileocolitis, meaning a diarrhea with bloody stools, rectal tenesmus and mucous casts. These may be properly called dysentery, but there was nothing in cause, onset nor clinical history to separate them from other summer diarrheas. The scope of Shiga's bacillus is not determined, it seems wider than dysentery, but not so wide as to include all infective diarrheas.

It is to be hoped that this report, far from deterring people from going to a favorite summer resort, will point out that all places are equally liable to experience such epidemics, and that this place, being better investigated, is better protected.

SYSTEMIC INFECTION DUE TO NATURAL TEETH CONDITIONS.¹

BY D. D. SMITH, M.D., PHILADELPHIA, PA.

THERE are in the human mouth today, as has been the condition through all the centuries, malignant factors of general infection, and causes of disease wholly unperceived and neglected, and thus the oral cavity has ever been and still remains a prolific source of contagion.

Medical science, and its allies, ancient and modern, virtually limiting study of the mouth, as an index to general systemic conditions, to the tongue, and naturally looking for ultimate causes of disease to inimical foods and drinks, or methods of ingestion; to so-called "malaria," to mental and physical overwork; to adverse locality, microbic atmosphere, morbid conditions of stomach, kidneys and lungs, has failed to apprehend or recognize agencies of infection, obvious, prolific and virulent, in the very vestibule of human life.

Dentistry, engrossed with its mechanics and mechanism, devoting its energies largely to repair of the teeth, has discovered nothing of the serious consequences of mouth infection upon general conditions; with magnifying glass and explorer searching for cavities of decay as its ultimate end, it has failed to discover the most important connections of the teeth in their relations to the general system.

¹ Read by invitation at the meeting of the Philadelphia County Medical Society, Jan. 28, 1903.

Hypothetical as these enunciations may at first appear, they will be found in the light of full scientific investigation completely verified.

The statement that all erupted or exposed tooth-surface, in its natural state, is bacterially infected surface, is incontrovertible. And when it is considered that in the normal mouth from eight to twenty years of age and later there are twenty to thirty square inches of such surface, the momentous import of these conditions becomes at once apparent.

To conceive of the oral cavity as the "vestibule of human life" is a simile not inappropriate, for it is at this entrance that all systemic stores, commissary supplies, fuels, etc., for nutrition, are received and tested on their way to the stomach,—the chief chemical laboratory and distributing center of the general system. And not only this—it is here that the various foods, solids and liquids, incorporate with the oral secretions piped into the mouth from special glands, and the mass is subjected to a process of maceration in preparation for deglutition. Engaged with these and other indispensable offices, the oral cavity is never wholly out of service, and literally, it may be said, it is never really cleansed. It is here that solid particles from the breath, saliva, food-remains and other débris constantly deposit and accumulate; becoming cemented to the teeth chiefly through inspissation of the viscid mucus perpetually oozing from many irregular glands beneath the mucous surface. Greatly augmenting the infection from this cavity, the air commonly diverted through it, especially in mouth breathers and in sleep, becomes a purveyor of toxic emanations to the lungs, where it inevitably deposits its contagion in lung tissue or the blood. Necessarily the subject of such conditions, this vestibular cavity with its twenty to thirty square inches of dentate surface becomes quickly infested and infected with all manner of bacterial formations, decomposing food particles, stagnant, inspissated, septic matter from saliva, mucus and sputum; not infrequently with pus-exudation from irritated and inflamed gum margins; gaseous emanations from decaying teeth and putrescent pulp tissue; salivary calculus (tartar), nicotine and the chemical toxins which result from decomposition due to mingling of mouth secretions, excretions and food-remains in a temperature constantly maintained at the high normal of 98° F. In this is presented a true picture of the innumerable sources of infection inseparably connected with untreated teeth. Incredible as it may appear, these conditions obtain, not in the lower classes alone, but in general mouth conditions in high and low born, fastidious and boor, king and peasant.

Respecting the state of the breath in ordinary expiration, Hermann Köninger, in the *Journal of Hygiene and Infectious Diseases*, summarizes some original experiments as follows:

"The author has been able to assure himself that in an apartment where there is no appreciable current of air, a person coughing or sneezing could scatter germs to a distance of more than 7 meters (22 feet). Germs are scattered through the air by means of salivary droplets. These droplets are really microscopic balloons, having a bubble of air in the center, and remain in suspension but a short time. The dissemination of droplets with their germ-originating capabilities and tendencies is most

marked during coughing and sneezing. The more pathogenic microbes the mouth contains, the greater the danger of infection. Washing the mouth has the effect of decreasing the diphtheria and other bacilli susceptible of being detached. Placing the hand or a handkerchief over the mouth prevents the emission of droplets charged with bacilli. During a surgical operation no one present should speak. Measures may be multiplied indefinitely for prevention in connection with this important idea of scattering infected droplets in the breath."

Thus it is manifest that with past and present conditions of mouth and teeth, infection in the oral cavity is a common heritage, and that none under the existing régime can wholly escape its evil consequences. A gleam of recognition of this fact is found in the *Lancet* of Nov. 15, 1902. The editor says:

"The alarming increase of dental disease is beginning to attract the attention of the general public, while there are also signs that the medical profession is becoming more alive to the possibilities of dental disorders being important factors in the production of certain general diseases. Dental caries is the most prevalent disease of the human race. There is little doubt that a large number of children suffer from impoverished nutrition solely from neglected conditions of the mouth."

Experience has shown that it is not only possible but entirely practicable, through intelligent "prophylaxis treatment," to successfully combat caries in children, and at the same time to keep the mouth in a good state of aseptis. An important auxiliary benefit from this treatment is found in its educating the child to intelligent self-care of the mouth, and in the relief it affords from the terrible dread and fear of the operations of dentistry, a present serious obstacle to proper professional care in all cases.

Recognition of this by physicians, to whose care children are naturally committed, and corresponding advice from them to parents or guardians, would result in incalculable benefit to the teeth and not less to the general health of childhood. The suggestion frequently seen, that the dental profession can or should assume to control the diet of infants and children for the production of good teeth, is an absurdity. If the dental or medical pediatricist had the power he would do well to give to every mother and every child a plentiful supply of healthful foods,—cereals, vegetables, fruits, nuts and meats,—and thus, and thus only, through dietetic means lay the foundations for good teeth. No special foods or special methods of feeding will accomplish this end. Foods that make good bone, muscle, nerve and other tissue, will likewise make good teeth.

If by "dental disorders" the *Lancet* means dental caries, which it styles "the most prevalent disease of the human race," it may be confidently questioned whether dental caries alone should be regarded "an important factor in the production of certain general diseases." Pyorrhea alveolaris (formerly styled Riggs' disease), an inflammatory condition of gum margins, pericementum, cementum and alveolar process, resulting in pus formation, and wholly dependent on the presence of natural teeth in the mouth, is unquestionably productive of some general diseases.

My observations lead to the confident belief that the kidneys are the organs affected by the products

of this particular pyemic condition. An error quite generally accepted for fact, is the belief that pyorrhea alveolaris results from uremic poisoning. While uremia and pyorrhea may be and often are associated, the presence of urea in the blood is not a cause of alveolar pyorrhea; but the converse of this proposition is a true pathological condition. Uremia is a usual result of alveolar pyorrhea, due to the perpetual ingestion of mouth toxins—pus and other effete products—which are constantly and inevitably taken into the stomach from this inflammatory condition *in the mouth*. Alveolar pyorrhea is never of systemic origin: it is wholly local and caused by the stagnant septic accumulations *on the teeth*. These accumulations induce inflammation of the tissues at the gum margins about the affected teeth, and as the inflammatory products increase, the gums, pericementum and alveolar tissue become involved and withdrawn more and more from portions of the roots, forming pockets which constantly increase the infection and hasten loosening of the teeth. Pyorrhea is readily amenable to intelligent treatment, when treatment is instituted before destruction of tissues has progressed to hopeless loosening of the teeth. An edentulous (toothless) mouth is never the subject of pyorrhea; and whenever the disease has developed, extraction of such affected teeth always results in speedy and complete cure. In this is clearly manifest the verity of the local origin of this disease. "The increasing prevalence of dental caries" surely cannot justly be held alone responsible as the cause of systemic disease; it is a factor, but only in so far as it contributes to general mouth infection.

To return again to the *Lancet*, if my interpretation of the article referred to is correct it would imply that "children suffer from impoverished nutrition" because of caries and inability to masticate food; this presentation should be received with caution. The facts are that with modern culinary methods neither perfect tooth mastication nor mouth insalivation are indispensable parts of the digestive process. True it is that free and comfortable mastication contributes greatly to the pleasures of taste and ingestion, and to that extent favors stomach digestion, but it is an office which can be delegated, as is often done, not only without injury but also with decided benefit. For the maceration of foods in the mouth, water and other customary drinks may be substituted for saliva without appreciable detriment; in many mouth conditions with advantage for the stomach. That saliva in the initial stages of digestion converts starch into sugar might have been a matter of more consideration before sugar entered so largely into foods and drinks as at present. Now, with a constant over-supply of saccharines, saliva, frequently vitiated and infected as it is poured into the mouth a direct secretion by the salivary glands, might in many mouth conditions give place to water in some form with advantage. We may regard water not simply as a food adjuvant and a diluent to the circulation, but as an integral part of nutrition; as necessary to digestion as to tissue replacement and to the maintenance of life. In this connection it seems reasonable to predict that the student of dietetics must soon broaden his field from the consideration of foods in their analytical ultimates, to embrace other and per-

haps more important matters in connection with their structural compounds. The demands of tissue building are such that we seem compelled to accept the fact that the real value of typical foods is dependent not so much on their ultimate chemical elements as on the value of the substance in its entirety, before the breaking up of the aqueous, vitalized compound-cells. Whilst fully aware that this may seem in conflict with the accepted physiology of digestion, it is a theory which is found to be in accord with everyday clinical experience and with conditions yet to be considered. The indifference of the stomach to mouth mastication and insalivation is clearly expressed in numberless cases of edentulous mouths; in these the processes of digestion and assimilation go forward regardless of tooth mastication, and with no apparent obstruction or derangement; and the remaining oral tissues in all cases will be found in perfect condition of health. It will yet be demonstrated that the real cause of general disease emanating from mouth and teeth is due neither to dental caries nor disability of mastication, but to constant and perpetual infection through septic matter in foods and drinks and the inhalation of toxic emanations from the presistent and abiding infection in mouths containing natural teeth.

"When does mouth infection due to the teeth begin?" It begins with the eruption of the deciduous set and continues with increasing gravity through the period of shedding the temporary and erupting the permanent ones, and thence on so long as the natural teeth are retained in the mouth; the most critical time being that of childhood and early youth, a period in which the mouth, under the present régime, is wholly without intelligent care. Children's mouths are frequently veritable crucibles in which are generated chemical agents and compounds, highly detrimental to the teeth themselves and not less to the general health of the child. Vitiated salivary and mucous secretions, bacterial plaques upon the teeth, decay, retained food-particles and saccharines; breaths loaded with emanations from stagnant septic matter, all at a maintained temperature of 98° F, insinuate into the circulation a constantly increasing infection, to find expression later in life in diverse pathological conditions, often in chronic and fatal disorders. It may appear, as it commonly does, in stomach or kidneys; in lungs or nervous system; in heart, brain or skin; in any organ or tissue to which mouth toxins are directly or indirectly conveyed.

In an endeavor to limit contagion, medical interposition very properly condemns expectoration in public conveyances, on floors, sidewalks and in all frequented places. Beards, kissing and even the shaking of hands, are under condemnation of the scientist.

The fact is that every mouth with teeth in natural *untreated* state is inevitably breathing out dangerous, infected droplets; contention, therefore, over the surgeon's beard or any other seems puerile. (Better if increased to a perfect mouth mask.) If discussion of it shall disclose the true source of beard infection, namely, septic mouth conditions, and emphasize the special dangers attending amphitheater and all surgical operations, through droplet infection, it will accomplish great good. We are now face to face

with the query, "Are these untoward mouth conditions remediable or must they endure?" The toxins engendered amidst stagnant accumulations perpetually adherent in the mouths of consumptives as well as the sputum itself in appreciable quantity clings to the already infected tooth surfaces, increasing bacterial plaques and multiplying bacterial cultures *in the mouth*. Can it otherwise be, then, that thus an endless chain of ever-increasing contagion revolves in foods and air to blood, thence to organs and tissues; to be deposited it may be as initial infection or perhaps in augmentation of some pathological state already established; or it may return to mouth in mucus or saliva; or in some inflammatory exudation, there to begin again its round of infection.

In 1894 I began a line of experimental investigation to determine the true source of tooth decay. Results from these experiments, carried forward on patients only, were all in harmony with the theory that caries of the teeth begins at some point on the exposed enamel surface, and that it is primarily due to affinities of the ultimates of the teeth for acids of the menstruum in which the tooth is perpetually enveloped. What seems indisputable proof of this theory is the fact that if a devitalized or pulpless tooth, such a tooth as is conceded to be the subject of more rapid decay than one with a vital pulp in the same environment, be removed from a mouth in which resolution is rapidly taking place, and if it be placed in water, alcohol or glycerine, or simply exposed in the air, all caries in that tooth is at once arrested.

The inevitable deduction from such an experiment is, that caries of the teeth is a result of environmental conditions, and this is in agreement with general observation and all clinical experience. Growing out of the experiments referred to, and their results, I have developed a system of caring for the teeth diametrically the opposite of all former conceptions, theories and methods of practice; and whenever the system has found typical exemplification, whether in childhood, youth, middle life or old age, most favorable and satisfactory results have universally followed.

The treatment consists of enforced, radical and frequent change of environment for the teeth, and perfect sanitation of all mouth conditions. Experience having demonstrated that the most careful and painstaking are unable with the agents commonly employed, as the toothbrush and dentifrice, tooth-pick and dental floss, soaps, so-called germicidal-washes, or other agencies, to effect this end, the plan of forcible, frequently renewed sanitation, by an experienced operator, has been instituted with results as stated. In detail, the process consists of most careful and complete removal of all concretions, all calcic deposits, semisolids, bacterial plaques and inspissated secretions and excretions which gather on the surfaces of the teeth, between them or at the gum margins; and this to be followed by thorough polishing of all tooth surfaces *by hand methods* (power polishers should never be used); not alone the more exposed labial and buccal surfaces, but the lingual, palatal and proximal surfaces as well, using for this purpose orange wood points in suitable holders, charged with finely ground pumice-stone as a polishing material. Treated in this

manner the teeth are placed in the most favorable condition to prevent and repel septic accumulations and deposits, and not less to favor all efforts of the patient in the direction of sanitation and cleanliness.

In every instance in which this treatment has been instituted for the deciduous teeth, and in many cases of adults, there has been immunity from decay, and the teeth have shown a marked change in structural composition. Alveolar development in children also has been apparently stimulated and increased, to meet requirements of the erupting teeth. The extreme and unnatural sensitiveness of the gums, attended with purple color, congestion and tendency to bleed, has in every instance been fully overcome, and there has been quick return to the normal condition of low grade sensibility, to the natural pink tint of the gums with their typical striations and beautiful festoons. It is also apparent that the tissues of the teeth themselves — especially the dentine and enamel — probably through stimulation of the vital forces of the pulp by this treatment, begin a surprising change for the better; a change which is first and specially noted in improved color and general appearance. Dull, opaque tooth substance often loaded with an offensive "old-ivory" pigment, is transformed into clear, translucent tooth tissue; the teeth assuming the appearance of living organs with an impressive individuality.

For seven years the revelations and the benefits of this treatment, hitherto unknown, have been to me a constant source of surprise and delight, and with ever-increasing emphasis it is demonstrating the necessity for this thorough and frequent change of environment for all teeth and all oral conditions.

To arrest or to prevent inflammatory process in the mouth is to arrest and prevent resorption of pus exudations and other effete products of mouth inflammations, which of necessity are carried directly into the digestive tract. The one and only method of prevention and relief from this source of infection is, as stated, forcible, complete and frequent removal of the stagnant irritants and toxics which perpetually recur on and between the teeth and along the gum margins. Maintained at intervals of about a month, this treatment is followed by immediate lessening and ultimate arrest of all inflammations and all inflammatory exudations from the oral tissues and complete eradication of the stagnant accumulations otherwise perpetually on and about the teeth. Another important beneficial result of this treatment is seen in the unloading of the breath of its malodors and consequently of its often malignant infection. Clinical experience adds its testimony in substantiation of all this. Of the whole number of cases under this monthly "prophylaxis treatment" all have shown some phase or state of general health improvement.

The most common condition—malaise—expressed in an indifferent appetite, coated tongue and sallow skin, has in every instance, in from three to four months, given place to clearing of the tongue and skin, better assimilation of food, and apparent increase of vitality.

Next in point of numbers are cases of so-called "nervousness," in both men and women — several in a condition approaching "nervous prostration." The rapid improvement and recovery in these cases has been a matter of astonishment and gratification.

inflammatory conditions of throat, some of long standing, and attended with tonsilitis, using topical applications only in addition to the "prophylaxis treatment," have in every case shown marked improvement; some have been cured and all others are improving under treatment.

One case of chronic nervous dyspepsia, in an inveterate smoker, complicated with violent paroxysms of acute stomatitis, in which the "prophylaxis treatment" was employed, resulted, after eighteen months, in complete restoration of mouth tissues, cure of the dyspepsia and return to full general health conditions.

In two notable cases of alveolar pyorrhea in men, in one of which a diagnosis of diabetes had been made, the "prophylaxis treatment" was instituted at intervals of two and three days for about three weeks, when the time was gradually extended to one treatment a week; and from that to one in two weeks, until at the expiration of three months there was a treatment every third week; topical remedies were mainly used. Both of these cases made a complete recovery both as to pyorrhea and general mouth conditions and the restoration of the general health.

In a case of long-standing tonsilitis, complicated with chronic inflammation of the upper pharynx, the uvula and the half arches, in six months under the "prophylaxis treatment," with topical applications to the affected surfaces, the patient was benefited to such degree as to warrant a most favorable prognosis.

Other and varied interesting conditions and cases which it is deemed unnecessary to introduce here have been greatly benefited by this "prophylaxis treatment."

It is a matter to be recognized that relief from mouth infection is to be afforded through dentistry alone. Germicides will not, they cannot accomplish it. There must be positive and frequent eradication of all septic conditions of the teeth, and all environmental conditions favoring toxic stagnation and germ culture in the mouth; and the after maintenance of the most perfect state of asepsis for the entire oral cavity.

It may seem difficult to realize, but it is nevertheless true, that no greater good could come to humanity through the medical profession than the full recognition of the dangers from this insidious, prolific and virulent infection in the human mouth.

The undisputed possessions of dentistry include the very gateway to the human system, with all the important offices attaching to it; and yet the profession has so circumscribed and limited its field of operations that it has to do chiefly with the one disease, caries in the crowns of teeth; and he that can the more adroitly deal with this condition is generally the most lauded. The limitations, feeble conceptions and the errors of writers and teachers have given the general public, and the great majority of the medical profession also, the impression that dentistry is what its schools have unwittingly made it, — first and mainly, the filling of a decayed tooth. Its want of standing with the community is such that in every conflict the medical opinion supersedes the dental. There is practically no finality in a dental diagnosis or decision.

The discoveries resulting from the "oral prophylaxis treatment" present the opportunity for greatly

extending the benefits of dental science and dental service, and for making the dental profession a branch of the healing art in reality; and this, in its own legitimate field, the oral cavity.

Is it too much to hope that in the beginning of this twentieth century we shall witness, from specially instituted chairs in schools of medicine and dentistry alike, teachings which shall make plain to both professions their true relations as to kinship, homogeneity and mutual interdependence; and which shall evolve a system of medico-dentobacteriological medicine having for its one object and aim the betterment of human teeth and the dethronement of mouth infection.

SUPPURATION OF THE FRONTAL, ETHMOID AND SPHENOID SINUSES.

WITH BRIEF REPORT OF THE TREATMENT OF TWO HUNDRED AND THIRTY-SEVEN CASES.

BY EDGAR M. HOLMES, M.D., BOSTON, MASS.

(Concluded from No. 12, page 312.)

IN my series the sphenoid cavity was diseased in 182 cases or nearly 77%, and in 19 or a little more than 8% of the whole number both sides were affected. In 56 of the sphenoid cases the ethmoid cells were found to contain and discharge pus, and in 3 all of the accessory cavities were suppurative. In 39 patients I was able to demonstrate pus in the ethmoid cells, and could prove no associated disease in any of the other sinuses. In 11 there was coexisting suppurative inflammation in the frontal sinus. In 5 cases of frontal sinus suppuration I was unable to prove suppuration of the ethmoid cells. As regards the relative frequency with which the sphenoidal, the ethmoidal and the frontal sinuses are found to be suppurative, my figures are not in marked contrast to the reports of many others, but during the period of these observations I have diagnosticated antral empyema in only 42 cases. I fear that many must have escaped me, as the great majority of pathologists as well as clinicians have found this cavity to be the more frequently attacked of all the sinuses. The fact that 61 of my cases consulted me for relief from ear trouble, and that every one in this class showed suppuration of the sphenoidal, of the ethmoidal or of the two combined, would account for quite an increased percentage of this class, but after removing these I still have over twice as many sphenoid as maxillary cases. In two of the frontal sinus cases I was able to detect through the naso-frontal duct with the probe roughened areas, which I took to be exposed bone, and in three cases after removing the outer wall of the frontal sinus, denuded bone could be seen as well as felt with the probe. In 89 of the sphenoid cases the probe came in contact with roughened areas, which I took to be exposed bone. Polypi extending into the nasal cavities were found in 26, into the ethmoid cells in 3 and into the sphenoid in 2 cases. In 13 cases I opened into cysts of the middle turbinate bone, finding pus in 9. In 5 of these cysts there were areas of necrosis, one having formed a communication with the nose. In one cystic cavity there

was a polyp which filled the whole space, and in another was a growth resembling a fine-grained tapioca custard. This under the microscope was said to be of a myxomatous nature. In one case I found a shoe button in the superior meatus which had remained in the nose for over twenty years, and in another case a sarcomatous mass, which was of the spindle cell variety and had invaded the antrum, the ethmoid and the sphenoid cavities. In 4 cases there was marked destruction of the septum nasi as well as necrosis in the sinus walls. There were present also other signs of syphilis in the mouth and throat, and I considered the sinus lesion to be a syphilitic process.

The symptoms of nasal sinusitis vary greatly in character and severity. A suppurative process may be present in one or more of the sinuses without local symptoms of sufficient severity to attract the patient's attention. Excessive secretion is a quite frequent symptom. This varies greatly in quantity and character. It may be chiefly pus or it may consist of a mixture of pus and mucus, and at times there is more or less blood. It may consist of lumps of pus suspended in mucus, or it may dry and form crusts which vary in color from a yellowish white to a greenish black. The secretion may be foul or it may be almost odorless. As a rule secretion from one side of the nose suggests either foreign body, local trauma, new growth, specific disease or unilateral empyema of one or more of the accessory sinuses. The patient may have the sense of a very disagreeable odor when others can detect nothing of it from the secretion. It may discharge mostly into the naso-pharynx, causing the symptom described as "dropping into the throat," or it may be mostly discharged from the anterior nares. There may be exacerbations of excessive discharge with intermissions of comparative freedom. These patients usually complain of having frequent colds in the head.

Pain is a very irregular symptom. In some cases of severe sinus disease it is absent and again it is so severe as to make life a burden, and resists large doses of analgesics. It is located and described so differently by different patients when the diseased area is the same so far as we can ascertain that, if given too much weight, it may mislead in making a diagnosis. There are certain characteristics, however, which are found of considerable service in helping to differentiate some obscure cases. When pain is due to eye strain it is usually worse after using the eyes. It is often absent in the morning or after a period of rest. Pain due to nasal disease is frequently worse in the morning and may become less later in the day. I have seen cases, however, which were cured of their pain by relieving an ethmoiditis when the use of the eyes increased the pain and when it was usually worse at night. Deflections and spurs of the nasal septum and foreign bodies in the nose may produce similar pain to that due to sinus disease. Pain of frontal sinus origin is spoken of as pressure at the base of the nose over the eyes of all degrees of intensity. It is frequently also associated with pain in the temples. Ethmoidal diseases may be accompanied by pain and pressure in the eyes, with a pressure described often as deep in the head. Occasionally there is frontal temporal and rarely suboccipital pain. When the sphenoid cavity is diseased and obstructed the pain is complained of

as deep and boring, and there is also almost always pain in the suboccipital region. It can be easily understood that pain as well as all symptoms of sinus disease is liable to wide variations, as the various cavities are so liable to be diseased at the same time, and as each cavity has been shown to vary in such a marked degree anatomically.

Mental depression is often very marked, especially in acute cases or during acute attacks of stenosis in chronic cases. The most marked depression apparently accompanies sphenoid and ethmoid diseases, especially the latter.

The symptoms pointing to the eyes often give us material aid. Beside the pain and pressure already mentioned there are functional disorders, as blurring, marked fatigue after using eyes, inability to overcome a small amount of astigmatism, diplopia, which may be spasmodic. Strabismus and ptosis may at times be present. Ethmoidal, frontal and maxillary disease may by direct pressure cause exophthalmos. Pressure upon the optic nerve may produce inflammatory processes of all degrees of intensity, which at times may end in atrophy of the nerve.

DIAGNOSIS.

It is often much easier to suspect a suppurative disease of one or more of the sinuses than it is to locate the site of the trouble, and when we have found one sinus to be diseased it may be hard to feel sure if one or more of the others are not also affected. The general symptoms already enumerated may be of great service in directing our attention in a general way to sinus affections and sometimes to certain cavities. Transillumination may be of service in examining the frontal and maxillary sinuses. We must not forget that a diseased cavity may have free drainage and transmit light as well as a healthy one, and that occasionally a healthy cavity transmits light very poorly; also, one or both frontal sinuses may be absent. Inspection of the nasal chambers through the anterior nares should receive our closest attention. There must be some system of procedure whereby each section is taken and carefully examined until every portion which the eye can reach has been inspected. This should first be done without clearing nose and without cocaine. When this has been accomplished cocaine can be applied, and after the mucous membrane has become contracted another inspection should be given. By these methods we find the condition of the mucous membrane whether hypertrophied or atrophied, and can discover if present deformities, cystic conditions of the turbinates, polypoid and other tumor growths, foreign bodies, dried plugs of secretion and pus. If pus is found we must, if possible, find its origin. We may find this only after several examinations.

Although the only positive diagnostic value of the location of pus is when it can be seen coming from a known cavity, yet when it is found to come from certain locations it is more or less suggestive of supuration of certain cells or groups of cells. When it is found to come from the middle meatus, it suggests trouble in the frontal, maxillary and anterior ethmoid group. If after cleansing, the middle meatus remains clear for some time and then pus appears after reclining the head to the other side, the antrum of Highmore is suggested as the source. Pus coming from the superior meatus about the middle tur-

binate suggests sphenoid or posterior ethmoid cell suppuration, and if the flow is increased by holding the head far forward, the sphenoid is liable to be the one affected. Pus may be so easily carried to parts of the nose remote from its source, either by gravity or blasts of air in sniffing or blowing, that only when we can see it discharge from a certain opening can we be sure of its origin. Much can be often gained, however, by shutting off certain areas with absorbent cotton. This procedure is also of service when we have found one area diseased and wish to stop its discharge to find if there be also a flow from other localities. When there have been distressing symptoms, together with a purulent discharge which does not subside under treatment, it seems justifiable to remove a part or the whole of the middle turbinate, after which it is often possible to more thoroughly inspect the openings from the various cavities.

The probe is, I believe, one of the most useful instruments we have in aiding us to explore cavities into which it is impossible to see. With it we can often detect granulations, ulcerated and denuded areas, and caries of the bony walls. While exploring a cavity we often produce pain, which the patient locates in exactly the area in which the pain associated with the disease is located. This fact is often of considerable value. The probe can almost always be used without removing the middle turbinate. It can be passed into the frontal sinus in about half of the cases and into the sphenoid in the great majority of cases. It should be very delicate, and should be used with great care when exploring the roof of the ethmoid and sphenoid cavities, and in fact to be of service must be used very gently over the whole mucous membrane lining of any of the accessory cavities, as it is easy to produce abrasions simulating ulcerations. It may also be misleading when it is in contact with dried secretion or with very brittle bone. It can, by changing the angle of the curve, be carried over practically the whole inner surface of the cavity under inspection.

The canula is another useful instrument through which the cavities can be cleansed or inflated. When used in stenosis of the naso-frontal duct, it often gives much relief to the symptoms as well as confirms a doubtful diagnosis. Before using either the probe or canula, the nasal cavities should be thoroughly cleansed.

Where pain and depression are prominent symptoms, the application of cocaine and adrenaline about the openings from the cavities may, by contracting the vessels in the swollen mucous membrane, allow better drainage and thereby give relief to the existing symptoms. When this has taken place, pus can sometimes be seen escaping from the affected area.

I have used, with considerable success, an instrument similar in action to Seigle's otoscope. It consists of a soft speculum tip which fits the nostril, a barrel with glass through which to inspect the interior of the nose, and a politzer bag with which to rarefy the air. The patient closes mouth and swallows when the compressed bag produces suction.

TREATMENT.

Of primary importance is the establishment of free drainage and the removal of all abnormal growths

and diseased tissue which tend to keep up the suppuration. In a large number of cases it is necessary to first remove a part or the whole of the middle turbinate, as this not only obscures from view the diseased areas we wish to reach, but prevents the introduction of instruments with which to remove the trouble in the more remote regions. This can be accomplished by first removing the anterior portion with a good cutting forcep and then separating the posterior portion with a snare scissors or cutting forcep. Large polyps can be removed by snare or forceps and smaller ones by a sharp curette. Diseased cavities must be opened by forceps drill, sharp spoon or some suitable instrument. All granulation and necrotic tissue should be removed as thoroughly as its location will permit. When possible the natural openings should be enlarged by removing portions of the bone about them. As a rule this is already diseased and brittle, and can be easily separated.

In all of these operations the areas should be as thoroughly cleansed and cocaineized as possible. The operation should occupy as little time as is necessary to accomplish the desired results, but of course great care must be used when working near the cribriform plate and at the roof of the ethmoid and sphenoid cavities. In the treatment of suppurative frontal sinus, much may be often gained by removing polyps or hypertrophied tissue about the infundibulum. The passage of the probe and the use of the canula may be of service. It seems doubtful if these are sufficient in severe cases, especially where there are extensive areas of ulceration, or polypoid formation within the cavity, and, when the symptoms persist after there can be found no internal obstruction to the normal drainage, some more extensive operation must be considered. Although it is possible to drill from the nasal cavity into the frontal sinus, and many operators advocate this route, yet as the sinus is often so extensive and the diseased conditions so advanced, the external operation offers much in its favor. Through such an opening the cavity can be thoroughly inspected, diseased tissue removed, sufficient communication established with the nose, and external drainage maintained until the more severe trouble is relieved. The safety and ease of this operation are strong reasons for its acceptance. The deformity following is the only strong argument against it, but if care is taken in making incision and in sacrificing as little of the superciliary ridge as possible, the resulting deformity in most cases is not marked. In operating upon the ethmoid cells, unless marked disease is found and it seems necessary to clean out the whole area at one operation, it often seems best to open up the area which is apparently most affected. If there is diseased tissue which is not removed and the symptoms persist, other portions may be reached at subsequent operations.

There are various forceps and curettes devised for the removal of diseased ethmoid tissue, but a small cutting forcep and three sizes of ring curettes are sufficient to remove the diseased tissue in nearly every case. The sphenoid can be reached by cutting away a portion of the anterior wall below the normal opening. Shaffer advocates a hook with which to tear away portions of bone. Grünwald uses a cutting forcep, and his method is easy and

sure in results. When forceps cannot be inserted into the normal opening, a drill can be first used and then the opening thus produced can be enlarged by the forceps. A sufficient opening should be made so that all granulation and necrotic areas may be reached and curetted if in a position where such a procedure is safe. Even a large opening may fill in and become closed in a few weeks and have to be again enlarged.

In the after-treatment the general as well as the local conditions must receive our attention. I shall speak here simply of the local treatment. For the first day after operation it is sometimes necessary to plug the injured areas to prevent hemorrhage, and when the patient is liable to be exposed to dust the anterior nares may be filled with absorbent cotton for two or three days. Where the discharge is not profuse, and where only small areas have been found to be diseased, it is not usually necessary to use washes or other local medication. Some of these cases are apparently well in ten days or two weeks. Unfortunately the majority are much more severely diseased, and it takes weeks or often months before the tissues are restored to such a condition that the symptoms and signs of disease have disappeared. Under the most favorable circumstances it takes a long time for large areas of exposed bone to become covered by a permanent membrane.

Where the pus is thick and liable to form crusts, it is well to have warm alkaline solutions used two or three times a day. A good instrument for using these solutions in the nose is a plain olive-tipped glass syringe. The patient's head is held forward so that all portions of the nasal cavity are below the level of the posterior nares, and the solution slowly forced into the nose from the syringe, the tip of which is inserted into the nostril. In this manner the whole cavity can be reached and cleansed without having to apply undue force. After this, as with any cleansing solution, care must be used about blowing the nose. After the nose has been cleansed an oily spray as hydrocarbolene, camphor, menthol and albolene or the like serves to soothe the membranes and give considerable comfort. Peroxide of hydrogen is often used and is highly recommended by some. I have used it with apparently good results in a number of cases. A half-strength solution of enzymol used morning and night after having first cleansed the nose has undoubtedly been of service in some of my cases.

Grünwald has obtained very satisfactory results in treatment of the sphenoid cavity by applying pure carbolic acid followed simply by irrigation.

The prognosis is of much importance, and in its consideration we have to take into account not only the local lesions but the resulting diseased conditions produced by them, as complications in these organs at times produce the more distressing if not the only symptoms. It may be possible to remove all trouble in the nose and yet get no improvement in the existing ear complication. The throat symptoms are almost always relieved if not entirely removed. Unless there has been extensive destruction with marked atrophy of the mucous membranes, a very favorable prognosis can be given, so far as the local symptoms are concerned. Even where there is atrophy with dry decomposing crusts accompanied by disagreeable odor, the prognosis is not necessarily bad. In fact

in the majority of these cases the distressing symptoms are relieved. Where they are not, there is doubtless an affected area which has not been reached by treatment. The more easily reached and the less extensive the necrosis, the sooner we may expect to get relief. The age and general physical condition of the patient, as in all processes of repair, play an important part. The pain is almost always relieved as soon as the pressure is relieved. There may be exacerbations whenever for any reason the opening becomes stopped. Pain in and back of eyes was relieved in 38 of my cases, 9 times in frontal, 23 times in ethmoid, and 6 times in sphenoid sinus disease. Six patients reported that they were able to dispense with glasses, which they had worn for mild degrees of astigmatism. One man had been obliged to wear constantly a +75 cylinder on the right eye and +50 cylinder on the left eye for over five years. He had been unable to leave them off for any length of time without severe headaches before operation. For a while the discharge may be increased after operation and this symptom be more pronounced. This increased discharge, however, lasts as a rule but a few days. Where there are large areas of denuded bone it may take weeks before there is complete healing, also when there are diseased areas near important structures which cannot be thoroughly curetted, the process of repair is retarded; again in such a spongy labyrinth as the ethmoid, it is easy to overlook one or more diseased cavities which may be sufficiently diseased to keep up a suppurative process.

In relation to polypoid formations, now that we are able to remove the diseased areas in the ethmoid, a large number of cases can be cured, whereas the simple removal of the polyps is in the great majority of cases only palliative. In eleven cases of polyps, where I removed the middle turbinate and all of the ethmoid which seemed to be diseased, there has been no return after a year. Eight of these patients had had polyps removed before, and some several times. I have had to operate upon eight the second time. In three cases new polyps seemed to form as fast as they were removed. The others of this series I have not seen and have received no reply to my cards of inquiry.

In the 16 cases of suppurative frontal sinus, 7 were relieved by removing obstructions in the middle meatus and draining the ethmoid cells. Four of these I was able to cleanse through canula, but into the other three I could not even pass the probe and could only cleanse about the opening of the infundibulum. Eight were apparently of a more severe type, and persisted after all internal treatment had been applied. Upon six of these I performed the external operation, and obtained good results in all but one. In this case both sides were diseased and there was extensive ulceration with much granulation tissue in the right sinus. There was free drainage into the nose on both sides, but the external wound remained open and discharged for nine weeks, when I again explored the cavity and removed a large amount of broken-down material. At the end of another eight weeks the cavity became closed, but there was marked deformity. Two patients refused to have an external incision, and in one the symptoms finally ceased to be troublesome, while in the other there have been

many exacerbations of pain with occasionally a discharge of pus into the nose.

In dealing with ethmoid suppuration there is such a labyrinth of cells, any one of which may be diseased, it is impossible to estimate with any degree of certainty the length of time necessary to produce a cure. Many cases where the symptoms are very severe and of long standing are relieved in a short time and others apparently less severe may take months. Fourteen in this series I discharged well in three weeks. Of the others 23 were well within two months, and 16 others within three months; 24 were apparently well after periods varying from three to six months, and 11 others after longer periods. The remaining cases were either not free from pus after long treatment, or after treating for a while, they failed to report for further examination.

The sphenoid cavity though large can be so thoroughly exposed and drained that the great majority of cases when not complicated are cured in a comparatively short time. In the 182 cases in this series there were only five of the non-complicated which were not cured by the end of six months. Two of these are discharging pus at present, although I can find no reason for it, unless, as sometimes happens, there is some small cavity which is diseased and communicates with the sphenoid. Eighteen cases were apparently well by the end of three weeks, 15 by the end of four weeks. Fifty-one cases were free from symptoms by the end of two months. Sixty-seven cases were under treatment between two and three months. Of the 26 remaining cases, 8 were discharged during the fourth month, 11 during the fifth month, and 7 during the sixth month. In nearly every case which was not free from symptoms by the end of two months there were either large areas of denuded bone or other cells were found to be diseased and discharging with the one under treatment. Even in the protracted cases the more severe symptoms as pain, pressure, dizziness, profuse discharge, etc., in the majority of cases, are quickly relieved.

As it is impossible to report individually from such a large number of cases in this paper, I hope to present, in the near future, many of the cases characteristic of the various classes.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL.

(Continued from No. 12, page 314.)

DR. WILLIAM H. SMITH spoke on

INFLUENZA PNEUMONIA.

Dr. Cabot has asked me to say a few words in regard to influenza pneumonia as seen at this hospital. I shall limit myself to a brief discussion of the fatal cases. To Dr. Wright is due the credit of recognizing these cases, for as far back as 1896 he isolated the influenza bacillus from a case of broncho-pneumonia. The difficulty of recognizing these cases is great. First, because the bacillus is frequently found associated with the pneumococcus or streptococcus,

and in the routine cultures made at autopsies in cases of pneumonia blood serum tubes are used; the pneumococcus and streptococcus grow readily upon this media, while the influenza bacillus, although it may be present in abundance, fails to grow, as it requires a special media, one containing hemoglobin. Furthermore, some familiarity with the organism is necessary, as it is extremely small, and even in culture upon suitable media a hand lens may be needed to see the colonies. It is due, therefore, to these two facts, I believe, that more cases of influenza pneumonia have not been recognized, not because they are so uncommon. Since Dr. Wright's first case in 1896, there have been thirteen other cases of pneumonia coming to autopsy in this hospital from which the influenza bacillus has been isolated. There have been ten cases from the medical side and four from the surgical side shortly following operation. It is, of course, recognized that the number of cases is too small to permit of deductions, at the same time there are a few points of interest which may be mentioned.

The most striking thing, perhaps, noted at autopsy in these cases has been the tendency to the formation of multiple foci of consolidation, often widely separated from each other. Numerous areas of consolidation have been found throughout both lungs in several cases, or multiple foci have been present in one, two, three, four, or, as in one case, in five lobes. The size of these foci varies from pea to bean, or from the size of a chestnut to that of a pigeon's or hen's egg. The process may be a broncho-lobular, or by fusion of lobules may simulate a lobar pneumonia. A true pneumococcus lobar pneumonia may be present with an associated influenzal broncho-pneumonia. The foci may lie directly beneath the pleura, upon which is a thin protective layer of fibrinous exudate. Such foci may go on to abscess formation, and this fact has a clinical value, for it explains why a sudden pneumothorax may develop in cases of influenza; such cases have been reported by Mosler, Kundrat and Fürbinger. Furthermore, the patches of pneumonia are frequently present in the upper lobes, and given a case with the process thus situated, with slow resolution, with the accompanying temperature and purulent sputum, the diagnosis of phthisis may be made.

In all of these cases the bronchi were injected and filled with a mucoid or purulent secretion; on two occasions I cut up the entire bronchial tract, and found this purulent secretion even in the smallest bronchioles. Examination of this secretion shows it to contain chiefly pus corpuscles with desquamated bronchial epithelium, a few pneumococci or streptococci or both, but many influenza bacilli both within and outside of the leucocytes. Sections of the lung when stained and examined show the exudate in the alveoli to be made up largely of leucocytes, with varying amounts of fibrin, a few pneumococci or other organisms, but large numbers of influenza bacilli.

The age of the youngest patient in this series was two years, the oldest seventy-two. There is nothing characteristic about the pulse, respiration, or temperature, as may be seen by examining these charts (charts shown). Where the examination of the blood is recorded there was no leucocytosis, with the exception of one case, with an associated lobar pneu-

monia of pneumococcus origin; in this patient there was an increased white count.

The signs in the lungs may be those of a localized or a diffuse bronchitis, or there may be evidence of larger or smaller areas of consolidation. The rapidity with which such foci would appear at points in the lung widely separated from the original focus has been recorded. The following history illustrates this point well: A man of fifty-nine entered the hospital in January, 1899, with symptoms dating back eleven days, suggesting influenza. Upon examination at entrance no dullness or bronchial elements could be detected, many snoring râles were heard, particularly over both bases. Two days after entrance consolidation appeared at the right apex, twelve hours later there was a patch at the right back, and the expiration was harsh at both apices. Two days later consolidation was present at the left back. The sputum in this case showed both pneumococci and influenza bacilli. In other words, this patient entered with a bronchitis, after two days consolidation appeared at the right apex, twelve hours later at right back with suspicious signs at the left apex, and two days later a focus of consolidation developed at the left back. At autopsy eight days after entrance to the hospital, multiple patches of pneumonia were found at the right upper lobe, numerous foci in the right lower lobe and a focus the size of a hen's egg in the left lower lobe.

In closing it may be interesting to note that cases of influenza pneumonia have come to autopsy in the Massachusetts General Hospital in January, February, March, April, May, June, September, November and December, and at times when there was no epidemic of influenza recognized.

DR. F. E. LORD gave the results of his work on

INFLUENZA.

Through the courtesy of Dr. R. C. Cabot I was able, during the summer of 1902, to examine the sputa of many of his cases with cough and expectoration, in whom repeated examinations for tubercle bacilli had been negative. No discrimination was used in the selection of these specimens, and the series comprised acute and chronic coughs, both mild and severe.

In the first one hundred sputa, influenza bacilli were present in sixty, in large or small numbers; in twenty-nine of these sixty cases, influenza bacilli were in great numbers, and in practically pure culture in the fresh sputa. In all, the influenza bacilli were isolated from the specimens in pure culture on blood agar, proved not to grow on plain agar and to decolorize by Gram's method of staining.

Infection with influenza bacilli is therefore prevalent apart from epidemics.

Eleven of the out-patient cases were acute, eighteen were chronic.

Besides the eleven out-patient cases, eighteen acute cases have been analyzed from the house records. No house cases were included unless the diagnosis of influenza was confirmed by the presence of influenza bacilli in great numbers and in practically pure culture in the sputum.

The twenty-nine cases of acute influenza thus obtained were like epidemic influenza, except that the prostration was not so extreme. In their history and course they resembled other bacterial infections

of the respiratory tract, and the diagnosis was made with certainty only by finding influenza bacilli in great numbers in the sputum. Before the cause of their illness was thus determined, some of them were thought to have typhoid.

Twenty of these twenty-nine acute cases have been followed to determine the result of acute influenza.

Fifteen of the twenty had signs of bronchitis only. Thirteen of these fifteen recovered within six weeks. One still coughs with influenza bacilli in his sputum, three months after the onset of the disease. In a second, in whom the bronchitis was at first diffuse, there are now signs of localized bronchitis at the right base, but no influenza bacilli in his sputum, three months since onset. Five of the twenty cases had broncho-pneumonia. Two recovered after relapses and an illness of three and nine months. In a third, the solidification persisted for six to seven months, and this patient still coughs with influenza bacilli in his sputum, one year and nine months since he entered the hospital. The two remaining cases with broncho-pneumonia are dead. An autopsy was obtained on one, and sections of the lung showed influenza bacilli in large numbers.

Thus of the twenty cases, symptoms lasted for at least three months in five, and in one influenza bacilli are now present, after one year and nine months.

CHRONIC INFLUENZA.

Among the twenty-nine cases of influenza from the out-patient, eighteen have had a cough for months or years, with little variation in the amount, consistency or color of their sputum. Many of these chronic cases have been observed for months, one for a year and three months, and another for one year and nine months. Specimens of their sputa, obtained at frequent intervals, have shown influenza bacilli in practically pure culture.

These cases had been classed clinically as chronic bronchitis. It therefore seems that many of the cases formerly described as chronic bronchitis are chronic influenza.

The sputum of these cases has been purulent, usually tenacious and greenish in color.

Physical examination of these cases was negative in three. A bronchitis localized at both apices was found in one, a diffuse bronchitis in twelve, and broncho-pneumonia, as a cause of an acute exacerbation, in two.

Considerable change in the location and extent of the bronchitis was noteworthy in successive examinations.

Four of the eighteen cases with chronic influenza had attacks of paroxysmal dyspnea, for the most part nocturnal, but little influenced by climate or atmosphere. Nasal examination was negative in three. In one, Dr. Coolidge found chronic ethmoiditis, which may have had some influence on the attacks. Three cases showed no eosinophilia in a differential count of the blood. In these, the sputum has been greenish, purulent and constantly crowded with influenza bacilli, without eosinophiles, Curschmann spirals or Charcot-Leyden crystals. In the fourth case there were 5 to 10% of eosinophiles in the blood. The sputum contained greenish, purulent

masses in a colorless tenacious fluid. These masses contained influenza bacilli in great numbers. They have gradually disappeared from the sputum. In the tenacious fluid no influenza bacilli are now found, but there are great numbers of mononuclear eosinophiles and Curschmann spirals. This case must be regarded as coexisting asthma and influenza.

From the first three cases it may be that chronic influenza alone can closely resemble asthma.

The nose has been examined in nine of the chronic cases. No constant nasal disease has been established. Influenza bacilli were isolated in pure culture from the nasal secretion in two of the nine cases.

Chronic influenza is not infrequently mistaken for pulmonary tuberculosis.

Four of these cases at some time in the course of their illness had been sent to consumptives' homes. A fifth case was refused admission to a State institution for the cure of tuberculosis as too advanced.

CASES.

Ellsworth; sixty-eight. "Grippe," five years ago, and again four years ago. Yellowish green sputum since last attack. Under observation for two months.

Downing; sixty-one. Yellowish green sputum for forty-four years. Under observation for one year and three months.

Both patients have emphysema, diffuse bronchitis and probable bronchiectasis.

Their sputum, although frequently examined, has never shown tubercle bacilli. The tuberculin reaction was negative in both.

Their sputum has been constantly crowded with influenza bacilli.

Dr. Lord then showed two cases of chronic influenza.

The first patient, sixty-eight years old, had been under observation for two months. She had had "grippe" five years and again four years ago, with cough and abundant green sputum since the last attack.

The second patient, sixty-two years old, had been under observation for one year and three months. She had had cough and abundant green sputum for forty-four years.

Both cases were thought to have tuberculosis. Their sputum has been constantly crowded with influenza bacilli. No tubercle bacilli have been found in repeated examination, and they do not react to an injection of tuberculin. Both have emphysema, probable bronchiectasis and diffuse bronchitis.

Dr. R. C. CABOT: Two or three points seem worth mentioning. In the first place, this work is new, and it is very important work. The next thing that impresses me is the commonness of influenza outside of epidemics. It is very suggestive that sixty out of one hundred of these cases showed the influenza bacilla.

The third point is that these cases were considered as consumptive thirty or forty years ago. We can easily understand how simple it is to say that one has missed the tubercle bacilli, and diagnosed the case from the chronic cough and the emaciation. There was one case of this kind

refused admission at Rutland, the idea being that it was too far advanced.

Dr. F. C. SHATTUCK: Dr. Lord mentioned the fact that Curschmann's spirals were found in one case of asthma. I have a patient in my ward now who has the spirals, the first I have ever seen.

HERPETIFORM AND BULLOUS DERMATITIS.

Dr. R. H. FITZ showed the patient, a meat chopper, who, six weeks after having been vaccinated, wounded his right thumb while cutting meat.



A week later the wound became swollen and painful, and the patient had chilly sensations and was obliged to go to bed on account of weakness.

Groups of vesicles accompanied with itching then appeared on the back of the hands and wrists, and three or four days later bullae formed in large numbers upon the head, trunk and extremities. The blisters were as large as walnuts.

He entered the hospital nineteen days after the injury. There was a moderate elevation of the temperature, no leucocytosis, but 6% of eosinophiles. The bullae healed readily, and there was little or no tendency to ulceration. The epidermis separated from the feet like portions of a mould, and the new formation of epidermis on the blistered portions of the skin occasionally assumed a serpiginous character.

The case is of interest especially from its etiology. There was evidently a traumatic infection of an exceptional nature, and the appearances corresponded with those which have been observed in a limited number of patients after vaccination. Dr. J. T. Bowen has reported such cases of post-vaccinal herpetiform dermatitis, and there was one fatal case in the male ward last year.

Neusser states that a septic bullous dermatitis, usually fatal, has been seen in butchers whose fingers have been infected.

The nature of the lesions and the presence of the hoof and mouth disease in localities not far distant have suggested the possibility of the infection from this source. It is known that butchers have thus been infected when slaughtering the diseased

animals, although the hands and arms have been the seat of the eruption. There were no blisters in

A brother was humpbacked. She stated that her finger joints were noticeably enlarged a few



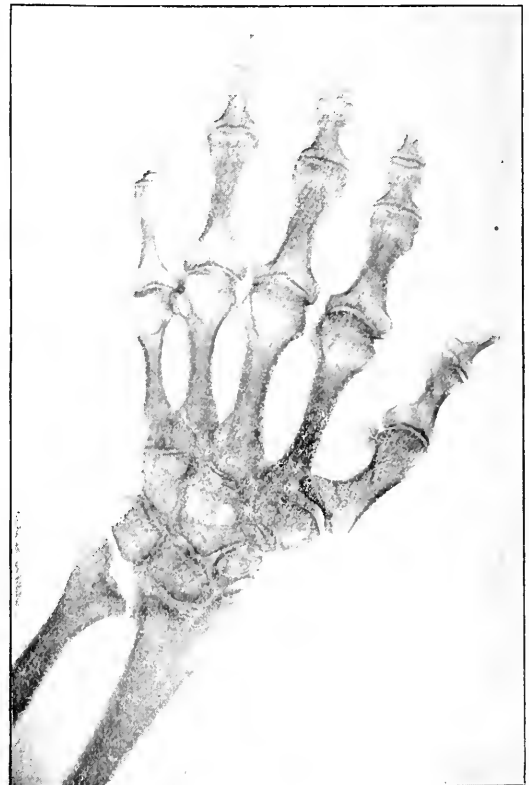
the mouth of this patient, but they have been absent in man where disease has been produced by wound infection.

The patient is convalescent and the disease has run an unusually mild course under the circumstances. Dr. J. H. Wright has made a bacteriological examination of the serum from the blisters, but has been unable to obtain any further information which might aid in throwing light upon the etiology of the patient's disease.

Dr. Fitz next showed a

CHONDRO-DYSTROPHIC DWARF.

The patient, forty-one years of age, unmarried, came under the care of Dr. E. P. Joslin at the House of the Good Samaritan with pains and stiffness in the hip and grating of the knee joints. She was referred by him to the hospital, that the nature of her deformities might be more accurately determined by means of the x-ray.



months after birth; that her deformities were apparent in childhood, when she wore apparatus to strengthen her feet and legs. She ceased to grow after the age of fifteen.

It is obvious that there is little or no deformity of the head and trunk while the arms and legs are so short that, as Dr. Goodall's measurements show, they correspond with those of a child of fourteen.

There is abundant fat tissue, especially at the knees, which are closely approximated; although the feet are widely separated there is no redundancy of skin.

The hands are stubbed, but the feet are not especially small. The former are abducted as in certain cases of arthritis deformans, and the feet show a definite talipes valgus. The motions of the hands and feet are restricted.

The skiagraphs make it clear that the shortening of the extremities is the result of disturbances in the growth of the epiphyses of the long bones, associated, also, with changes in the periosteal growth of these bones.



The head of the humerus is markedly enlarged while the shaft is short and narrow, causing a club-shaped appearance. The condyles also are enlarged. The head and tuberosity of the radius are enlarged, and from the lower edge of the former there is a sharply defined spine pointing towards the tuberosity. The styloid process of the radius is so enlarged, especially elongated, that the scaphoid lies nearly on a level with the os magnum, in consequence of which the abduction of the hand has taken place. The edge of the radial articulating surface is provided with a spinous prominence.

The top of the enlarged olecranon is represented by a sharply defined spine, and the styloid process of the ulna also appears enlarged. There is no evident alteration in the development of the carpal bones. The bones of the metacarpus and the phalanges are short; their epiphyseal ends, especially the distal, are decidedly enlarged. The proximal articulating ends are widened and thick-



ened, suggesting an increased periosteal growth of bone after the fusion of the enlarged epiphysis. The condyles of the femur and the head of the tibia and fibula are conspicuously enlarged, and a spicule of bone projects from the front of the tibia near the articulating surface. The tarsal bones are so enlarged as to simulate the appearances in acromegaly, and there are decided hypertrophy and irregularity of the epiphyseal end of the os calcis. The metatarsal and phalangeal bones of the feet show alterations similar to those observed in the analogous bones of the hand, the enlargement being most marked in the distal epiphyses.

The skiagraphs prepared by Mr. Dodd make it apparent that the shortening of the extremities is due essentially to an arrest of epiphyseal growth in length with a frequent luxuriant transverse growth in addition to an occasional protuberant growth. As a complication later in life there appears to have been the localized periosteal changes resulting from arthritis deformans.

The epiphyseal changes observed in this patient correspond to those described by Kaufmann as chondro-dystrophy. Cases of this affection often have been reported as fetal rickets, although it is now generally agreed that the process is quite independent of rickets, although its causes are wholly unknown. Sufferers from chondro-dystrophy as a rule die in early infancy and often are stillborn. This patient, therefore, is exceptional, though not unique as to age.

Although the deformities usually begin in fetal life and are apparent at birth, the evidence presented by this case indicates that the disturbed nutrition and growth of the cartilaginous ends of the

bones may first be recognized some months after birth. Another fact worthy of mention is that chondro-dystrophy has repeatedly been observed in cretinoid infants, and confusion has arisen in differentiating between infantile, sporadic cretinism (congenital myxedema) and chondro-dystrophy. This patient presents none of the deformities characteristic of myxedema or of cretinism.

(To be continued.)

Reports of Societies.

THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

THE TREATMENT OF ECLAMPSIA, BY WILMER KRUSEN, M.D.

(Concluded from No. 12, page 320.)

THERE is one other form about which I am a little doubtful in my mind. I have seen two or three cases of this form which I have called fulminating eclampsia. This has been brought on by eating a large amount of indigestible food. One patient had eaten a lot of half boiled cabbage and grapes. There were no symptoms of headache or sign of toxemia. Another woman whom I saw in consultation about a month ago had eaten a large amount of pie. She went to bed with only slight indigestion and woke up in convulsions. These cases have had no previous histories, but after having eaten some indigestible food have had more or less indigestion, and have gone into eclamptic convulsions without any apparent toxic symptoms. I believe that if we watch our patients there will be very few cases of eclampsia, and that the cases can be much better treated before the eclampsia occurs than after. I would lay special stress upon the amount of urea in the urine. My experience is that when this gets below 1% the woman is in danger, and should have small doses of calomel grain one-tenth to grain one-fourth three times a day with a milk diet.

Regarding the general treatment, I have nothing to add, except that in my experience veratrum viride has done well, especially in ten-minim doses repeated. I also believe in the use of salt solution. In the matter of delivery, my experience teaches me that the more quickly the child is delivered without undue violence, the better. Time should be taken to dilate the cervix. This can best be done with fingers in a large number of cases. I have not used Bozzi's dilator, but from examining it would think that the cervix would be torn if dilated too rapidly. I am especially fond of using the McLean bag. This can be put in the cervix, and with a good piston syringe I can dilate the cervix in an hour. If the cervix is very rigid it may require three hours for dilatation. It is not only for the sake of the mother, but for the child that delivery should be brought about; for if the child is kept in a woman having convulsions it will almost invariably be lost, and if delivered will die of toxic symptoms very much resembling those of the mother. My experience in raising children born of eclamptic mothers has not been very successful, only three or four out of a great many cases having lived.

DR. JOHN C. DAcOSTA: As Dr. Barnes said, there is such a diversity of opinion as to the etiology of eclampsia that one is at a loss to form the true idea

of the causes. There may be a variety of causes. The keynote of treatment was struck in what Dr. Krusen said about prophylaxis, and especially in what Dr. Coles said about the preventability of eclampsia. I go farther than Dr. Coles, and think the cases can be reduced more than 90% if the patient is treated in time. I believe a great deal of the mortality and many of the cases of eclampsia are due to neglect of the patient. The patient calls upon her doctor, engages him and sends for him when about to be confined. To use a homely phrase, you would not take a horse out of a stable, put him upon the race track and expect him to win. You train your horse beforehand, and then expect him to win. Train your woman for six weeks or two months before her labor, and the number of cases will be reduced more than 90%.

What Dr. Norris said I think was a very important point; that is, we should not only know the percentage of urea eliminated, but the amount in grains eliminated per diem. You may have 2% of urea and a woman passing only 8 to 12 oz. of urine a day and loading herself up with toxic products, and she may have convulsions. Train her two months beforehand, so that the excretory organs are in good working order. Restrict the diet, examine the urine weekly for albumin and urea, and the amount of urea. If a convulsion occurs, the best treatment is to empty the patient's stomach, bowels and bladder, and, as Dr. Coles has suggested, get the baby out as quickly as possible without any undue violence. After all this, if convulsions continue (although I know veratrum viride is a very useful agent, you don't have time to use it), I am a firm believer in the value of the lancet. If you have not your lance with you, you have your pocket knife. I have seen a number of cases of puerperal convulsions in consultation, but have never had such a case in my private practice, probably because I do not care to attend patients unless I have had them under my care for a couple of months. I do not regret a single case in which I have been allowed to bleed, but do regret every case in which I was not allowed to bleed. Over twenty years ago I was struck with the remark of a prominent practitioner upon the value of venesection. While a resident in Blockley he had made post-mortem examinations of twenty patients dying of puerperal convulsions, and in nineteen of these found a big clot of blood in the brain.

When you have the dry, hot skin and the quick, irritable pulse and put your lancet or knife into the arm you often do not get any blood. You have to manipulate that hand and arm, and then you get a great tarry string before you can get any blood to flow. You should bleed that woman until you get the pulse down in speed and up in power. She will probably then get well.

DR. L. J. HAMMOND: I have not for some years been much interested in obstetrics, though I have had a very large experience, much larger than I desired, in the treatment of eclampsia. Two conditions that I have especially observed are that: first, eclampsia occurs in pregnant women who have previous to the pregnancy been subjects of nephritis; second, there is a condition of eclampsia which develops in pregnant women who have not been previous to pregnancy subjects of kidney disease,

but who during the course of pregnancy, and I believe dependent upon it, develop acute nephritis. In those cases in which the pregnancy followed the kidney disease, so to speak, we invariably have the most serious form of eclampsia to deal with. Those in which we have, as several gentlemen have spoken of, a condition that seems to be an involvement of the liver, but which I always felt was in reality the result of the nephritis rather than a change of the hepatic structure; in other words, the hepatic condition was the result of and not the causative factor in the production of these various abnormal systemic conditions. In support of this I may say that no case of eclampsia has ever come under my observation where the clinical picture of nephritis did not foreshadow all other organic lesions. For this reason, and in view of the fact that the various hypotheses have no definite conclusions as to the etiology other than that it is due to nephritis, and in view of the fact that decapsulation of the kidney has been effective where prophylaxis has not been satisfactory in conditions due to parenchymatous change, in other than pregnant women, I would ask, would it not be good practice to do the operation of decapsulation as a radical prophylactic measure when the more conservative prophylaxis seemed not to lessen the dangers of eclampsia at the sixth or seventh month, or as early as could be done if one felt confident that the kidney change existed prior to the pregnancy. It seems to me that such favorable results have been reported from the operation of decapsulation that I see no reason why it should not be considered in connection with these very depressing conditions associated with pregnancy.

DR. HOPKINSON: The subject has been so thoroughly gone over that there is not much to add in reference to the etiology of the disease. We all agree with the writer that it is very obscure, and it seems more obscure to me to-night than ever before. The thyroid treatment opens up a new field, which we ought to try on account of its harmlessness. The Stroganoff treatment has been mentioned. I have employed it in five cases without mortality. I regard the use of oxygen superior to that of chloroform. Chloral, I think, is a valuable drug in this disease, and when given with morphia we can avoid the eliminating processes, sweating, purging, bleeding or the salt solutions, etc.

I look upon eclampsia as an acute infectious disease of rather short duration, rarely lasting over forty-eight hours.

In reference to emptying the uterus, I have never used that forty dollar instrument, I prefer the fingers for dilating. It takes about an hour to dilate the cervix and another hour to dilate the lower segment of the uterus. That is the time I would usually consider the safe limit in *accouchement forcé*, especially in primiparæ.

I would like to hear more about the use of chloral. This, I believe, is used largely by the French, morphia by the Germans. Stroganoff treatment combines the two.

DR. GEORGE H. BOYD: I think we owe a debt of thanks to the essayists for the interesting and exhaustive papers on eclampsia. We could probably discuss the subject until midnight and be enlightened in some respects and yet be a little farther from the solution in the end. There is no doubt

but that we can do most by prophylaxis. If we can follow our patients through pregnancy we will not have cases of eclampsia. I agree with the remarks made by Dr. Norris regarding the hygiene of pregnancy, involving the care of the bowels, diet and exercise which will avoid the result of eclampsia. We do not know what produces the toxemia, and we do not know what drugs to use in its treatment. I think it is a great mistake to lay great stress on any one drug. Dr. Norris speaks highly of *veratrum viride*. I have used it for five or six years, and find that it is more of a depressant than other drugs of its character. I feel convinced from my practical work that it is a good thing to empty the uterus, and I believe the best dilator is the fingers. The drugs which seem to me to be chiefly indicated are chloral and morphia, with chloroform for the convulsions, but am still doubtful as to the efficacy of any medication in this disease.

DR. D. E. LONGAKER: It seems fitting that the importance of the medical treatment of eclampsia should be emphasized. I am confident that it is not a mistake to treat the convulsions first, and I am sure that the best results will be obtained in this way. We know that in probably one third of all cases of eclampsia the convulsions first occur post-partum; and, where the convulsions occur before delivery, late in pregnancy, without any sign of labor, I am convinced that I have seen the most disastrous results occur by precipitate delivery, probably neglecting the medical treatment. In such cases, by all means treat the case medically. Treat the convulsions; treat the case surgically, obstetrically afterwards, but by all means arrest the convulsions. Chief and best of the medical agents in my experience has been *veratrum viride* systemically used to the amount of probably five to seven drops of the tincture or of the liquid *veratrum viride* used probably at fifteen-minute intervals until the pulse is brought below 60. I believe it is the rule that when the pulse is kept below 60 convulsions do not occur. Some years ago one of the fellows of the American Gynecological Society went into the subject of the treatment of *veratrum viride* rather exhaustively, with the result of recommending it most highly when used systematically in this way. Next to *veratrum viride* the chloral and bromide administered by the rectum I have found valuable, to the amount of dram doses of the chloral and proportionately as much of the bromide. Next to these comes the eliminative treatment and one drug which I have found of value used over a long period is elaterium. In my experience the results are better under energetic medical treatment than under the more radical surgical or obstetric.

DR. BARNES closes: I am glad for two or three reasons that the discussion turned chiefly upon treatment; first, because of its more immediate practical importance, and because we cannot settle the question of etiology in one evening; and, second, because there is not so much for me to respond to so far as etiology is concerned. One of my acquaintances has the honesty to say that he is even more confused since my paper in regard to the etiology than before. I shall not feel elated, but I have such a sense of the humorous that I am more pleased than injured. I shall take the more agreeable consideration, thinking that he means that we cannot

comprehend the question of etiology, and that when we discuss a difficult question we all do feel more perplexed than before. In regard to the inhalation of chloroform during the convulsive seizures, I have used it and seen it so used that it was valueless; that is, the administration would be begun after the spasm had assumed the onset. The convulsion must be anticipated if it is to be modified or controlled.

Dr. Norris seemed to belittle the value of examination of the urine, but later said he depended upon it to determine the amount of urea. We may have a normal amount of urea, but in following the patients possibly find toxic symptoms regardless of this. We need to watch and guard our patients. Predisposing causes must be understood, the excretory organs and the nervous system. Our patients must be constantly interrogated. Dr. Norris also said that anemia had oftentimes a close proximity to toxemia. I have a patient now who seems to illustrate that fact. The woman has given birth to children rapidly. A child was born a year ago, and on last Sunday another was born. The one born a year ago was weak and died, and the burden of caring for that while carrying the one just born was a great drain upon her strength. A few weeks ago she had an attack of the grippe, and following that she was especially toxemic, with a low percentage of urea and some hyaline casts. She tried to go into labor but was becoming irritable and worn out. Her condition emphasized the value of the rubber bag. This was introduced and remained in for several hours. She had considerable pain; the cervix was two thirds dilated. I felt that this was much better accomplished than by hand. She subsequently delivered herself promptly.

Dr. Hammond speaks of the cases which previously had nephritis as being the most serious. I think that the purely toxemic type is the more dangerous. They are more serious because the onset is insidious and they become very toxemic before the condition is recognized. In those cases in which nephritis previously existed and is recognized, the physician is on his guard.

In regard to the statement that one third of the cases of eclampsia occur post-partum, I think that statistics will show that a little more than one fourth occur before the onset of labor, about one half during labor, and less than one fourth postpartum.

Dr. KRUSEN closes: As I said in the beginning of my paper, I think it has been pretty clearly demonstrated that there are mooted points in the treatment of eclampsia. Dr. Norris has emphasized the importance of the examination of the urine in estimating the amount of urea excreted, and commended the use of drugs stimulating the action of the liver and kidneys. In regard to venesection, I am sorry I did not use it in cases in which I employed veratrum viride. It is not to be supposed for one minute that we would bleed a poor miserable anemic woman. I can hardly think either that one would give veratrum viride in such a case. There are positive indications for each remedy. Morphia I have found to be a good drug. We have to consider the practical side of these questions, employing the method practical under the circumstances in which we are working. It is not to be supposed either that I would give chloroform during a convulsion. It is to

be given when we see the little twitching signs, the rolling of the eyes, etc., and about thirty seconds or a minute before the true convulsion appears.

Dr. Coles spoke of the different forms of eclampsia. This is an interesting point. In the treatment of eclampsia I did not have time to consider the different forms in detail. In regard to the use of veratrum viride I think it makes a difference whether Norwood's tincture or the ordinary tincture is used.

Dr. DaCosta spoke of the character of the blood. That is often noticed and is one of the evidences in profound toxemia of the changes that take place in the blood.

I think Dr. Hammond's remarks form another evidence of the prevention of apoplexy. It does not matter so much as to the amount of blood that is drawn, but as to the effect upon the pulse.

In regard to Edebohls' operation, I had thought of that after reading papers on decapsulation of the kidney, but I do not know that any obstetrician has had the courage to perform it during pregnancy. If, however, it is indicated in acute Bright's disease, why should it not be indicated in the condition under discussion?

Straganoff's name seems to be closely associated with eclampsia, and I have often wondered whether his statements were absolutely accurate, because it seems to me it is wonderful to report such a very slight mortality. There is no American obstetrician who can give statistics compared to his.

Chloral I did not mention because I do not use it. Morphia I find takes its place. Why should I give chloral and sodium bromide if I can get rid of the nervous irritation as quickly by morphia? It is often impossible to give anything by the mouth, and if given per rectum is apt to be expelled by the convulsive action of the patient. It also interferes with the injection of salt solution, which I feel to be valuable in these cases. The method of dilatation I have always employed is that of manual.

Recent Literature.

A Manual of Dissection and Practical Anatomy Founded on Gray and Gerrish. By WILLIAM T. ECKLEY, M.D., Professor of Anatomy, and CORINNE B. ECKLEY, Demonstrator of Anatomy in the Medical and Dental Departments of the University of Illinois. In one octavo volume of 400 pages. Illustrated with 220 engravings, 116 of which are colored. Philadelphia and New York: Lea Brothers & Co., Publishers.

This volume is essentially a condensation and rearrangement of the works of Gray and Gerrish, planned with particular inference to the needs of dissecters. The subject is taken up from the standpoint of regions, many less important details are omitted and the student is afforded a quick, and for the most part adequate, means of reference. Such an arrangement has many advantages for the practising physician over the more systematic plan of the larger books. The illustrations are numerous and excellent, and also familiar, since they are taken in great part without alteration from other books. The size of the volume is a recommendation.

THE BOSTON

Medical and Surgical Journal

THURSDAY, MARCH 26, 1903.

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283 WASHINGTON STREET, BOSTON, MASS.**THE GRADING OF DEFECTIVE PUBLIC SCHOOL CHILDREN.**

ONE of the serious problems of our public school system is the proper classification of pupils. It is inevitable, in a large city in which pupils must be taken from varying classes in the community, with a large admixture of foreigners, that different degrees of intelligence in children of approximately the same age must be frequent. Particularly difficult is the question of the proper classification of those children who are congenitally backward in mental development, or who are actually deficient and wholly incapable of acquiring rudimentary knowledge.

These difficulties have naturally been for a long time recognized, and in some instances different measures for the improvement of the conditions have been undertaken. In Boston, for example, according to the twenty-second annual report of the superintendent of public schools, three special classes in the schools for the instruction of mentally defective children have been in existence for several years, but have attracted little public attention until very recently. Since the publication of this report, two more classes have been formed in outlying portions of the city. These classes are naturally recruited from the ordinary classes, largely through the judgment of teachers who find certain pupils incapable of keeping up with the average. As the matter has attracted more and more attention, the attempt has been made to classify these defective children under three general types: first, true imbeciles, who are wholly unfitted to be kept in public schools; secondly, somewhat feeble-minded children, who are practically unimprovable under ordinary class room instruction; and, thirdly, children who come within normal limits, but who are exceptionally dull and who require special instruction. It is evident from

the medical point of view that anything like a strict classification into these three classes is extremely difficult and often impossible. As a working basis, however, it is in general to be commended.

The so-called special classes, to which we have already alluded, are designed for children of the second type, namely, those who are feeble-minded and incapable of improvement under ordinary classroom conditions. Such children for their own good and also for the good of other pupils should be under the instruction of specially equipped teachers. It should also be recognized far more than is at present the case that the teaching of these children is an extremely difficult although by no means a thankless undertaking, and should be entrusted to teachers of very exceptional training and qualifications. Such teachers are, fortunately, under present conditions obtainable, although not always easily. For children of the first class it is clear that the public school is in no way adapted. They should be treated at special schools for imbeciles, an admirable example of which we have in this State at Waverley.

More important perhaps than the special classes are classes which should be connected with all grammar schools, which may be called ungraded classes. These are for the purpose of giving special instruction to pupils whose mental processes are slow, and who are, therefore, not able to compete with their fellow students. The importance of this type should be very clearly recognized, and should not be relegated to the position of a class to which poor scholars are sent, regardless of their future mental development. According to the superintendent's report, to which we have referred, the error has at times been made of assigning highly unskilled teachers to these somewhat, from the general point of view, uninteresting classes, rather than selecting with great care the instructor who has a particular aptitude for this most difficult and, therefore, in a sense, desirable teaching. Many of these ungraded classes are, undoubtedly, admirably managed and admirably taught, but there still seems to be a certain necessity for the recognition of the fact that everywhere and in all classes special attention should be given to these pupils who with care may undoubtedly make not only useful but entirely intelligent men and women. It is also to be borne in mind that many of these pupils, by special training, may again be restored to the regular graded classes.

The whole matter evidently has a very direct medical bearing, and one in which physicians in general should manifest a high degree of interest. Admirable as our public school system in many respects is, it undoubtedly demands an improvement in the proper grading of pupils of defective intelli-

gence. Public opinion, and especially public medical opinion, in this, as in many other matters, would do much to assist those in authority in carrying out what must be a difficult plan, even under the most favorable auspices. We beg to direct attention, therefore, to this report as a clear presentation of the difficulties which our public schools have to face and the ideals toward which they should strive.

CREMATION IN ENGLAND.

THE demand for facilities for the incineration of dead bodies has considerably increased in England in recent years. About 2,500 bodies have been incinerated at the Woking Crematory near London, and other establishments of similar character have now been erected at Manchester, Liverpool, Glasgow, Darlington, Hull and Leicester. This fact has given rise to a parliamentary inquiry upon the subject of cremation, which has now been made public.¹

The object of the investigation was to obtain the necessary information in order to prepare a draft of regulations required by the seventh section of the Cremation Act of 1902, which reads as follows:

"The Secretary of State shall make regulations as to the maintenance and inspection of crematoria, and prescribing in what cases and under what conditions the burning of any human remains may take place, and directing the disposition or the interment of the ashes, and prescribing the forms of the notices, certificates and declarations to be given or made before any such burning is permitted to take place, such declarations to be made under and by virtue of the Statutory Declarations Act, 1835, and also regulations as to the registration of such burnings as have taken place."—*Cremation Act, 1902* (2 Edward VII, Chap. 8, Sect. 7).

The principal persons who appeared before the committee were Sir Henry Thompson and the principal managers of different crematories, together with Dr. Stevenson, analyst to the Home Office. Sir Francis Seymour Haden, a prominent advocate of reform in earth burial, was the principal opponent.

One of the principal points in the inquiry was the alleged danger of employing cremation to destroy the evidence of crime. It appeared from evidence presented that cases had occurred in England in which the bodies of murdered persons had been buried without any certificate of the cause of death. It was also stated that the English law "permits burial without certification of the cause of death," and moreover that in "more numerous cases the certificate had been given without sufficient inquiry, sometimes by a medical man who had not

seen the deceased in his last illness nor the body after death. When Mary Ann Cotton, who for the sake of insurance money murdered no less than twenty persons in all, had disposed of a husband and four children in quick succession by arsenic poisoning, a medical man certified the deaths to be due to 'gastric fever,' although the symptoms were inconsistent with death from that cause."

With such facts in view the committee concludes that "the process of cremation must be carefully guarded," and that "regulations can be framed which will so far reduce the risk as to make cremation at least as safe as the existing method of burial."

With reference to such regulations, the first question considered was, "Who is to decide in each case whether a cremation is to be allowed?" It was suggested that either the medical officers of health or the coroners should perform this duty, and the chief coroner of London appeared in behalf of that body of officials. But the notoriously clumsy methods of the English Inquest Law were sufficient to defeat such reference in the opinion of the committee, and they finally decided to recommend the appointment of "medical referees specially qualified for the work." Fortunately, in Massachusetts, the introduction of improved inquest laws has furnished an intelligent body of officials to whom this duty has very properly been entrusted.

The second question to be considered was, "Whether the medical referee ought in every case personally to investigate the cause of death in such a way as to enable him to arrive at an independent conclusion on facts ascertained by himself, or ought merely to examine the medical certificates to see that they are satisfactory." To this inquiry the committee replied, "We have therefore come to the conclusion that before cremation is permitted, there must be in every case a personal inquiry by some one besides the medical attendant of the deceased."

More specifically the committee recommends that there should be required either (a) two certificates, one given by the medical attendant, the other by an independent person,—the medical referee, or a doctor nominated by the cremation authority, or a medical man holding some public responsible position—several of which are suggested in the report; or (b) a certificate given after a postmortem by a pathologist named by the cremation authority, who may or may not be the medical referee; or (c) a certificate by a coroner given after an inquest.

This investigation brought out some interesting facts in regard to the subject of exhumation for medico-legal purposes. It appears that in England, since 1893, annual returns are required from the coroners with reference to exhumations conducted

¹ Report of the Departmental Committee appointed to prepare a draft of the regulations to be made under the Cremation Act of 1902. Presented to both houses of Parliament by command of his Majesty, London, 1903.

under their orders. Hence the committee considered the question, "Whether the proposed regulations would be effective in cases where exhumation now takes place?"

During the nine years 1893-1901 the coroners had reported 95 cases of exhumation. Of these 67 had been ordered by coroners and 28 by the Secretary of State. So far, however, as the detection and punishment of serious crime is concerned, the result of all these exhumations in nine years in a population of over thirty millions is three convictions for murder, and one with a sentence of imprisonment for manslaughter. It seems clear, therefore, in the language of the committee, "that in these few cases where exhumation led to conviction and sentence for serious crime, the cremation of the body would have been impossible under the draft regulations, and that an application for cremation might possibly have resulted in the earlier detection of the crime. Further, as regards the more numerous cases mentioned, where exhumation led to no definite result, it is probable that, if in any of them application for cremation had been made under these proposed regulations, the inquiries which would have been made before the body had begun to decompose, and while the facts were still fresh in the memories of those concerned, might have resulted in the discovery of the cause of death, and, if there had been foul play, in the detection of the criminal."

The proposed regulations deal with the following subjects:

- (1) The maintenance and inspection of crematories.
- (2) The cases in which and conditions under which cremations may take place.
- (3) The disposition of the ashes after cremation.
- (4) The registration of cremations.

These proposed regulations are very fully and carefully drawn, and appear to cover every possible emergency, even to the cremation of the remains of still-born infants.

The appendices contain much interesting material, including the proposed blank forms, the regulations of existing crematories in England, and the laws of foreign countries upon this subject, including those of Massachusetts, the District of Columbia and the city of St. Louis.

THE PUBLIC HEALTH.

It would seem that information in regard to the life history of the typhoid bacillus is so complete, and so much a matter of common knowledge, as to make it doubly reprehensible that in an important educational center one of the worst of the recent

easily preventable epidemics should have taken place. It is reasonable to hope that a few additional communities, still negligent of the behest of the sanitarian, may profit to the extent of closing the door before, rather than after the loot of death. There are others, however, who will complacently say to themselves, we are secure, our water is filtered and pronounced safe by competent authority, we need fear no similar lesson of retribution. Such, indeed, may prove to be the fact, but even so they are not released from further effort. What of their ice supply? what of their milk supply? what of the care with which disinfection of excreta is practised in the sporadic cases, which competent authority says still impose a mortality tax of twenty-five deaths per 100,000 population in thickly settled communities?

Preventive medicine not only calls to her aid the pathologist, the bacteriologist, the epidemiologist, and the sanitarian, for instruction in the establishment of the rules of health and proper living, but she must rely upon the legislative body for laws embodying the principles of such of these rules as may be properly considered to affect the public health, and upon boards of health, both general and local, for supervision and enforcement of such laws, while assuming that the eventual details of personal hygiene will be scrutinized by the practitioner and attended to by the individual. Here is a chain whose weakest link may be easily parted, and it is a safe assumption that no community should flatter itself that all its links will stand the test. One spends millions for a new reservoir and protection of a water shed, and is content to let its citizens drink milk forty-eight hours from the cow, after twenty-four hours' storage in stable or shed, suiting the convenience of distributor or whim of housekeeper for early morning delivery; another insists on pure milk, and drinks water from grossly polluted wells; another coolly consumes its allotted pathogens served with salad or shellfish. A fond mother loudly protests against the neighbor's children who have whooping cough looking out of the window at her own, whom she hopes to keep germ free, while by the modish frills of her trailing skirt are entangled and diffused the mingled sweepings of a dozen streets. Vast sums are devoted to supplying "out door air" to discourage the growth of the tubercle bacilli already planted in the lungs of the indigent, while other sums collectively vast are spent to preserve in the homes of the well-to-do an atmosphere which, for temperature and humidity, is wonderfully adapted for favoring disease.

Community of interest, passing unrecognized, fails to arouse community of action. If a link fails the main chain for protection breaks; lateral chains

may or may not avail to hold the gate through which disease would enter. Where the most determined attack is made on the greatest common factor of disease, we may hope to find the least common multiple of annual deaths.

MEDICAL NOTES.

A CENTENARIAN. — It is reported that John Kehoe, who was probably the oldest person in Boston, died recently at the age of one hundred and five years.

THE FIRST BRITISH ARMY SURGEONS. — The first mention of surgeons in the British army is said to be found in 1223. There was a paid surgeon in the army of Edward I, which invaded Scotland in 1296.

A CENTENARIAN PHYSICIAN. — It is said that Dr. David of Montpelier, France, who recently celebrated his one hundred and second birthday, is the oldest living member of the medical profession. He practiced medicine till his ninety-eighth year, and is still in good health.

SANITATION OF CUBA. — According to the monthly report of Dr. Carlos J. Finlay, chief sanitary officer of the island of Cuba, it appears that Havana, as well as the rest of the island, has remained free from cases of yellow fever or smallpox originating within its territory. Precautions have been taken with regard to the introduction of bubonic plague, and for the purpose of disinfecting any suspected persons or vessels that may reach the island from infected ports. The sanitary department of Havana has continued the cleaning of houses and particularly the disinfection of tenements occupied by Chinamen. Somewhat drastic measures have at times been enforced to carry out the requirements of sanitation, but it is held that the end justifies the means taken.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, March 25, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 27, scarlatina 37, typhoid fever 7, measles 19, smallpox 1.

EXTENSION OF WORK OF TUFTS COLLEGE DENTAL SCHOOL. — It is announced that Tufts College proposes to extend the charitable work of the dental department, and for this purpose is desirous of securing a fund of \$100,000, the interest of which is thought to be sufficient to carry out the proposed plan.

THE INDEX MEDICUS. — The publication of the first number of the *Index Medicus* has been delayed by some unexpected difficulty with regard to the printing. It is to be remembered that although the Carnegie Institute has undertaken to support the *Index Medicus*, it is obviously desirable that a liberal subscription on the part of medical libraries and of physicians at large should give the managers of the Carnegie Institute a positive and practical assurance that this publication is really valued by the profession.

NEW YORK.

ORTHOPEDIC APPOINTMENT. — Dr. Frederick Mueller, recently assistant to Prof. Adolf Lorenz, and who accompanied the latter on his visit to America, arrived in New York from Europe on March 12, on his way to Chicago, where it is understood that he has been selected to fill the chair of orthopedic surgery in the medical school of the University of Chicago.

LEGAL APPLICATION OF BOARD OF HEALTH RECORDS. — By statute, where boards of health are required to register births, marriages and deaths, including causes of death, the record of these is *prima facie* evidence of the facts. But such records, the Court of Appeals holds, in the case of an administrator of an estate against the Metropolitan Life Insurance Company, are not evidence in an action upon a life policy to prove that the mother of the insured had died of pulmonary tuberculosis, and to impeach statements in that respect made in the application for insurance. In the opinion of the court the statute is a police regulation required for public purposes, and becomes *prima facie* evidence only so far as questions may arise under its provisions involving public rights. But, the court believes, it was not the intention of the Legislature to change the common-law rule of evidence in controversies of private parties growing out of contract, and the provisions of the statute should not, therefore, be construed as applicable to such cases.

TEACHING OF HYGIENE IN SCHOOLS. — In the course of a public lecture on "Tuberculosis and Children," delivered on March 16, by Dr. A. Jacobi, under the auspices of the Committee on the Prevention of Tuberculosis of the Charity Organization Society, he took occasion to criticise severely the extensive use of alcohol as a subject for hygienic teaching in the New York public schools. "What rot," he said, "the children are getting from the textbooks our taxes pay for, instead of the simple rules they ought to learn! Our schools are at the mercy of Mrs. Mary H. Hemtison of the Woman's Christian Temperance Union and of Eddyism."

HUDSON RIVER ICE POLLUTED. — On March 11 Dr. Daniel Lewis, state commissioner of health, appeared before the Senate committee on public health to urge the passage of the McCabe Bill, now pending in the Legislature, prohibiting the cutting of ice for domestic use on the Hudson River, between Waterford on the north and Coxsackie on the south, or within 3,000 feet below any town of more than 10,000 inhabitants on the river. At the same hearing Gen. Robert Avery of New York said that ice polluted by eighty sewers was sold for domestic purposes in New York City, and was frequently the cause of typhoid fever and other diseases. In the section of the Hudson excluded in the bill are the cities of Troy and Albany, and the mouth of the Mohawk River, on the banks of which many large towns are located.

A CENTENARIAN. — Mrs. Mary Johnson recently died in the almshouse on Blackwell's Island, at the reputed age of one hundred and five years. She was born in Ireland and was highly educated. Her husband was a civil engineer, and it is said that at one time she was well known in New York society.

A DEATH FROM HYDROPHOBIA. — Henry Stimson Loomis, the eight-year-old son of Dr. Henry P. Loomis, who was also a nephew of Dr. Lewis H. Stimson, died of hydrophobia on March 14. Six weeks previously his fox terrier was bitten by a large black poodle running loose on Fifth Avenue. Three weeks afterwards the terrier, without warning, bit the boy severely on the face, and slightly scratched his little sister. The animal was given into the care of the health department, and shortly afterwards died with all the symptoms of rabies, while inoculations with cultures from its spinal cord proved fatal to rabbits. Anti-rabic inoculations were immediately begun on young Loomis, but the infection which he had received seems to have been of unusual virulence, and on March 13 he was attacked with convulsions.

THE STRAINED RELATIONS AT ITHACA. — Renewed evidence of the strained relations which have existed during the typhoid epidemic at Ithaca between the faculty of the Cornell Medical School and the University Board of Trustees was furnished during the past week, when it was announced that Dr. Luzerne Colville had tendered his resignation, and that his resignation was immediately accepted. Dr. Colville, who has been lecturer on surgery in the medical staff of instruction in Ithaca, took a prominent part in the organization of the medical department of the university, and was appointed the first secretary of the medical faculty at Ithaca. His resignation is said to be on account of expressed differences between himself and the infirm-

ary committee of the trustees concerning the management of the infirmary. It is also stated that Dr. A. T. Kerr, the present secretary of the faculty and also assistant professor of anatomy, was made a member of the infirmary committee while the epidemic was at its height, but after serving forty-eight hours gave up the position; since which time no representative of the medical profession has been on the committee. As a result of his investigation of the conditions existing at the infirmary he made certain suggestions, and as the committee declined to carry them out, he felt compelled to withdraw. A death from typhoid fever in a Cornell student occurred at Utica, N. Y., on March 19.

A CASE OF GLANDERS. — Benjamin Hilson, fifty-two years of age, died recently at the Metropolitan Hospital on Blackwell's Island from glanders, and the autopsy in the case was made on March 20, by Dr. A. T. Weston of the coroner's office, in the presence of a number of interested physicians and surgeons. Hilson was an employee in a cigar factory on the East River, on the ground floor of the building next to which there is a horse market, and it is supposed that in this market he received the glanders infection in an injured finger.

A SAMUEL THOMAS MEMORIAL WARD. — At a meeting of the directors of the Manhattan Eye, Ear and Throat Hospital held March 17, it was announced that the widow and children of the late Gen. Samuel Thomas have made a gift of \$50,000 for the endowment of a ward with ten beds, to be called the Samuel Thomas Memorial Ward, in the new building which it is proposed to erect for the hospital. One hundred thousand dollars of the \$200,000 required for the building has now been subscribed.

DECISION ON THE DISTRIBUTION OF MILK. — On March 19 the Appellate Division of the New York Supreme Court rendered a decision to the effect that the section of the Sanitary Code which provides that "no milk shall be received, held, kept, offered for sale or delivery in the city of New York without a permit in writing from the Board of Health, and subject to the conditions thereof," is constitutional and valid under the police power of the State. In the case at issue, the main contention was that it was apparent on the face of the ordinance that it is unreasonable and void in that it makes it unlawful for hotels or even private consumers to have milk in their possession without a permit. Justice Laughlin, for the court, holds that the ordinance is susceptible of the construction that it is intended as a regulation of those offering milk for sale, rather than of consumers and can be held valid in that respect.

Correspondence.

LETTER FROM THE PHILIPPINES.

FROM OUR SPECIAL CORRESPONDENT.

THE CHOLERA EPIDEMIC — BUBONIC PLAGUE — SMALL-POX — A HILL SANITARIUM.

MANILA, Feb. 10, 1903.

At the present time, cholera is markedly abating in the Philippine Islands, though still very severe among the Mora natives of the Sulu group and the island of Mindanas. It has ceased as an epidemic on the island of Luzon, though cases keep cropping up throughout the provinces, showing the continued widespread existence of the infection. Should this infection survive until the beginning of the rains, as now seems highly probable will be the case, another epidemic, spread from existing foci under more favorable meteorological conditions, may be expected during the present year. No cases of cholera have occurred in Manila during the past fortnight, and but few since the beginning of the year. The quarantine of outgoing vessels sailing from Manila has been provisionally suspended for this reason, and also because most of the other islands of the archipelago are now, or have been, infected with cholera. Vessels sailing for the United States will not be subjected to quarantine unless passengers are from the badly infected parts of the southern islands, and have not completed five days since their departure from such places; but passengers will be inspected by the quarantine officers before a bill of health is granted. The cholera situation in the province of Albay, in the southern part of Luzon, looked very serious several weeks ago, but favorable meteorological conditions and energetic action by the health officials seem to have brought the epidemic under full control. Among the Moras of the southern islands, who are largely unfriendly, nothing can, of course, be done to stay the disease, but the epidemic appears to be gradually dying out from natural causes. So far, more than 80,000 deaths from cholera have been reported to the health authorities since the beginning of the epidemic, ten months ago; and these figures probably represent but little more than half the actual mortality from this cause, since in many cases the cause of death was concealed, or there was no sanitary organization through which the true state of affairs could be reported to the health authorities. A fair numerical estimate of the havoc which cholera has wrought in these islands would be placed at 160,000 deaths and 250,000 cases. How much these figures are to be increased during the present year it is, of course, impossible to say.

Looking back over the epidemic of the past ten months, one is impressed by the fact of the absolute hopelessness of maintaining an effective quarantine in these islands, either by land or sea, with the Filipino nature as it is. It has been necessary to not only fight the disease itself, but to come into constant conflict with the ignorance, superstition, fatalism and habits of life of the natives, for whose protection the sanitary work was being done. Not a regulation was made which the natives did not seem to take delight in disobeying if this could be done without punishment, and punishment for doing the unsanitary things which they and their ancestors had done all their lives merely created irritation and provoked resentment. To their way of thinking, all Americans were to be distrusted, and sanitary improvements were fraught with something harmful to the natives, even though outwardly for their benefit. Disease and pestilence were sent by a displeased heaven, and human efforts to avert them were not only futile but impious. Americans were thought guilty of spreading the cholera through the poisoning of wells — an idea favored by the free use of disinfectants where the disease was at its worst. Invocations to the saints were regarded as more efficacious than the use of boiled water, and charms and amulets as better protections against the disease than quarantine. Isolation of the sick was regarded as unnecessary, and cremation of the dead as revolting to religious ideas. With such beliefs firmly implanted in the Malay mind, the wonder is that so much good has been accomplished

and that the Filipinos have been saved from themselves, in spite of themselves, to such an extent.

A second point is that cholera is a disease readily amenable to control, if proper measures of prevention are carried out. This is particularly well illustrated in the case of troops, which in many instances have been kept free from the disease while the surrounding native population was being more than decimated. Where the cholera occurred among soldiers, its origin could almost invariably be traced to some flagrant violation of sanitary orders. In the few instances where the disease did fail to prevail to a considerable extent, the application of strict measures of quarantine, isolation, disinfection and the sterilization of food and drink, promptly brought the threatened epidemic to a close. Such well-marked examples of the protection afforded by this means were so frequent that it is scarcely too much to say that the cases which did occur among the troops were not only unnecessary but were a reflection upon the discipline of the command and the sanitary condition of the post. With boards of health clothed with ample powers, and with an intelligent civil population willing to co-operate in the execution of sanitary measures, the importation of cholera infection into a civilized community should be stripped of most of its terrors. There are always a few persons in even the best-ordered communities who, from ignorance, indifference or wilfulness, will not do as they are told. This class is invariably attacked by cholera in the presence of an epidemic, and their demise is scarcely to the material injury of the community at large. The proportion of the irresponsible, worthless and vicious element of Americans who fell victims to cholera in Manila was very noticeable.

Another feature of the recent epidemic was its self-limited character. The disease would attack a hitherto uninfected district with great violence, a large number of cases would occur, and most of the individuals attacked would promptly die. As time went on, fewer persons would develop the disease, its course would be more protracted, and a gradually increasing proportion of cases would recover. Finally, the disease would die out, or the infection become quiescent, apparently more from an attenuation of the virulence of the germ than the lack of susceptible material — and more or less irrespective of such sanitary measures as were instituted. In its course the epidemic resembled that of a prairie fire, raging along the advance line, and leaving in its wake a space on which no more damage seems to be possible.

It was also demonstrated that no small proportion of the native population presented a natural immunity to the disease. Native conditions of life are such that where one member of the household contracted the disease the others were very probably exposed to infection from the same source; and in small villages deriving a common water supply from the same well, which was early infected, it is scarcely probable that any of the villagers escaped taking infectious material into the system. In spite of this, even in the worst infected places, from 25 to 35% of the population seemed to possess a complete resistance against the disease, although this relative immunity varied with the place and season, and presumably with the virulence of the specific micro-organisms.

The disease spread along the lines of travel, and, in the country districts, at the rate of ten or twelve miles daily, or about as much as a native and his bull cart could average as a fair day's journey. After it had gained entrance to a district, it was usually transmitted by means of water, through the use of infected foods, the unsanitary habits of the natives, and the transmission of the infection by personal contact played no small part in the dissemination of the disease.

Direct infection from the sick has been relatively rare, particularly so if the simplest precautions were taken for protection. In the cholera hospitals in Manila, with the hundreds of cases treated, scarcely a case occurred among the attendants, many of whom were natives and who probably did not fully carry out all sanitary precautions. Where several cases occurred in native families, those developed later seemed to spring from the original source of infection rather than direct contact with the sick. A certain number of cases from contact undoubtedly occurred, but they were by no means as many as it had been expected would occur.

An interesting feature of the cholera outbreak in Manila was its occurrence in Bilibid Prison, where about two thousand prisoners were confined, in spite of all precautions to prevent its entrance. These precautions included the use of boiled water, the non-use of uncooked food, the prohibition of any gifts being received by prisoners or their seeing visitors from outside, and the isolation of all new prisoners for five days before they were allowed to mix with the others. The first case of cholera appeared early in the epidemic in the city in the person of a prisoner who had been confined two days previously. Two days later the disease developed in a native, who occupied a room next to the one in which the first case appeared, and five days later it attacked a Chinaman in the main prison. No new cases appeared for about a month, and then three cases occurred in the same building, at intervals of three days. The two last cases were probably contacts. There were no more cases for six weeks, when the supply of distilled and boiled water failed, and the authorities of the prison allowed the prisoners to use hydrant water. About a week later a case of cholera appeared, and nine more cases developed at short intervals during the next fortnight. There was no apparent connection between any of these cases, as they appeared in different buildings, in different parts of the prison. Careful investigation showed that apparently the water was the sole agent by which the infection was conveyed within the prison walls. There was some delay in putting in distilling apparatus, and during the month twenty-three cases occurred. The day after the distilling plant started up one case developed, but no more appeared for several months; then six cases appeared in prisoners who were found to have used the bath water for drinking purposes. This epidemic in Bilibid Prison is important in that it gives much evidence to show that the Manila water supply was infected, a thing which was not supposed by the health authorities to have occurred. Careful examination of the water supply was continually made and checked by several observers, but the presence of the cholera spirillum was never detected. It was also argued that if the general water supply was infected, the epidemic would have been much more serious and widespread in Manila than it proved to be. It was known, however, that cases of cholera occurred in the watershed from which the city supply is drawn, and it was fair to presume that cholera discharges found their way into this supply. The water supply of Manila is insufficient, however, and during the cholera was very frequently drawn from the rapidly flowing Mariquina River and pumped directly to the city, without storage, where it was at once used up. Hence infections were liable to be only temporary and not continuous, as would have been the case had the sluggish waters of a large reservoir been contaminated.

Under the former conditions it is possible to conceive that the Manila water supply might have been infected for short periods from time to time, without any resulting permanent infection, the streams being cleared of infection by frequent flushing from the torrential rains. It may be, also, that the joints of some of the branches of the pipe may have been opened by earthquakes or accident when they passed through sewage polluted ground, and that cholera discharges in this way gained access, from time to time, to certain parts of the water system. That there occurred a general and continuous infection of the water supply, such as existed in the Hamburg outbreak of 1892, there is no reason to believe; else the number of cases which should have occurred in Manila would have been ten times the 4,000 which actually appeared. The epidemic would have been fulminant in type, and a large number of cases would have developed in a short period, with a persistently infected water supply. This fact was shown in outbreaks on the island of Panay and elsewhere, where a fourth of the population of large towns contracted the disease. Had the same conditions obtained in Manila, with its large population, it is fair to presume that from seventy-five to a hundred thousand cases of cholera would have occurred.

Bubonic plague still maintains a foothold in Manila, although but few cases occur. New cases develop from time to time with considerable regularity, and the infection does not seem to be strictly limited to any particular

section of the city, though the majority of cases occur in the Chinese districts and those inhabited by the poorer class of natives. Practically all those attacked by the disease die promptly. The health officers maintain a number of gangs of rat catchers, who are constantly at work, and the number of plague rats has been growing less and less until now they have practically disappeared. The work of rat-catching is still kept up as a precaution, however, and every effort is being made to improve the sanitary condition of the poorer districts.

Owing to the outbreak of smallpox at several points in the provinces, the Board of Health has decided that every person in Manila must be vaccinated. The number of vaccinators has been added to, and it is expected that the work will be completed in the course of the next two months. Several sharp outbreaks have occurred on the islands of Samar, Luzon and Leyte, and wholesale vaccinations are in progress on those islands. In the last six weeks, 210,000 units of vaccine virus have been sent out from the government laboratories, 150,000 of which were used for vaccinations in Manila alone.

The sanitarium idea developed by the British in the establishment of their "hill stations" in India is being followed by the authorities in the Philippines in their creation of a sanitarium and resort in the mountains at Bagnio, Bengnet Province, and the practical removal of the seat of the insular government to that place, during the rainy season in Manila, which is expected to be inaugurated during the present year. A sanitarium was projected in Bengnet Province by the Spanish authorities, but the plan was never carried out. The site selected, and upon which a sanitarium, hotel, etc., is now being constructed, and near which the military authorities have reserved a tract of land for an army station, is located in the northern part of Luzon and about forty miles from San Fernando de Union, the nearest seaport. The great drawback to the site is its inaccessibility, as a large part of the trip must be made on litters carried by Igorrotes or on horseback, and the trail is so difficult from San Fernando as to make it necessary to spend three days in accomplishing the forty-mile journey from that station. The government is now spending \$200,000 on a good wagon road to run through Pozorubio to connect with the Manila and Dagapan Railway, and good access to Bagnio should be had within four or five months. It will mean much to the Philippines to bring Manila into ready communication with the new sanitarium, since the sick and those broken down by overwork or the climate are now forced to leave the islands and go to Japan or the United States to recuperate.

The mountains of Bengnet are very high and rugged, and are covered with pines above the altitude of about four thousand feet. The air is very cool and bracing, and the climate very similar to the tablelands of Arizona, except for the greater dryness of the air of the latter. There are many deep canons containing rushing mountain streams of clear water, and the pine forest is broken here and there by grassy parks. The soil consists principally of a reddish clay, black loam, conglomerates and limestone. While the climate is as cool, invigorating and favorable to the sick as that of the tablelands of Colorado, Arizona and New Mexico, it can never be regarded as favorable for lung troubles because of the humidity. Observations taken by the Spaniards place the mean maximum temperature at 73° F., while the thermometer often falls to 42° or 43° F. just before daybreak. The mean humidity reported by the Spanish commission was 62.25, the highest 72 and the lowest 52, taken during the months of November, December, January and February. During the summer months the percentage of humidity is less. A fog usually drifts in from the China Sea about evening, and fires are required for comfort. Mosquitoes are few in number, and the region appears to be free from malaria. There are a number of thermo-medical springs in the vicinity. The country in the vicinity is known to produce many of the fruits and vegetables grown in the temperate zone, and there would seem to be no reason why the others should not grow there. The new sanitarium would seem to be well adapted for the recuperation of cases of general debility, anemia, malarial cachexia, diarrheas and dysentery, and as a summer home for the Americans, especially the women and children, living in the islands.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 14, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|--------------|-----------------------------|--------------------------|--------------------------|---------------------------|----------------------|-----------------------|-----------------|----------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York | 3,785,156 | 1,416 | 401 | 21.48 | 22.34 | 2.75 | .49 | 1.20 | |
| Chicago | 1,935,270 | 631 | 167 | 25.18 | 20.06 | 2.37 | 1.58 | .63 | |
| Philadelphia | 1,378,527 | 577 | 128 | 23.05 | 17.68 | 2.08 | .52 | .35 | |
| St. Louis | 618,481 | — | — | — | — | — | — | — | |
| Baltimore | 533,712 | 231 | 60 | 28.14 | 18.61 | — | — | 4.32 | |
| Cleveland | 427,731 | — | — | — | — | — | — | — | |
| Buffalo | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg | 351,745 | 165 | 11 | 23.09 | 22.42 | 1.82 | 6.06 | — | |
| Cincinnati | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee | 315,307 | — | — | — | — | — | — | — | |
| Washington | 295,103 | — | — | — | — | — | — | — | |
| Providence | 191,230 | 82 | 31 | 25.60 | 23.16 | 3.65 | 1.22 | — | |
| Boston | 603,163 | 257 | 68 | 20.21 | 19.06 | 2.33 | 1.95 | .39 | |
| Worcester | 132,044 | 41 | 17 | 7.32 | 29.26 | — | — | 2.43 | |
| Fall River | 115,549 | 52 | 22 | 21.12 | 36.53 | 1.92 | — | 1.92 | |
| Lowell | 101,959 | 31 | 10 | 12.90 | 9.67 | — | — | — | |
| Cambridge | 98,639 | 39 | 12 | 15.38 | 17.95 | — | 2.56 | — | |
| Lynn | 72,497 | 34 | 8 | 17.65 | — | 2.94 | 8.82 | — | |
| Lawrence | 69,766 | 26 | 11 | 15.40 | 19.25 | — | — | — | |
| Springfield | 69,389 | 32 | 3 | 15.62 | 15.62 | 3.12 | — | 3.12 | |
| Somerville | 68,110 | 23 | 5 | 21.74 | 21.74 | — | 4.35 | — | |
| New Bedford | 67,198 | 39 | 16 | 15.38 | 20.51 | 2.56 | — | 10.25 | |
| Holyoke | 49,286 | — | — | — | — | — | — | 18.18 | |
| Brocton | 44,873 | 11 | 3 | 36.36 | — | — | — | — | |
| Haverhill | 42,104 | 14 | — | 14.28 | 21.42 | — | — | — | |
| Newton | 37,794 | 20 | 5 | 10.00 | 25.00 | — | — | — | |
| Salem | 36,876 | 18 | 6 | 11.11 | — | — | — | — | |
| Malden | 36,286 | 11 | 5 | — | 9.09 | — | — | — | |
| Chelsea | 35,576 | 16 | 5 | 12.50 | 25.00 | — | 6.25 | — | |
| Fitchburg | 35,069 | 8 | 2 | — | 25.00 | — | — | — | |
| Taunton | 33,656 | 9 | 6 | 11.11 | 22.22 | — | — | — | |
| Everett | 28,620 | 6 | 1 | 16.67 | — | — | — | — | |
| North Adams | 27,862 | 16 | 2 | 31.25 | 12.50 | — | — | — | |
| Gloucester | 26,121 | 12 | 5 | 25.00 | — | 16.67 | — | — | |
| Quincy | 26,042 | 4 | 1 | 25.00 | — | — | — | — | |
| Waltham | 25,198 | 8 | 1 | 25.00 | 25.00 | — | — | — | |
| Brookline | 22,608 | 4 | — | — | 25.00 | — | — | — | |
| Pittsfield | 22,589 | 9 | 0 | 33.33 | 11.11 | 11.11 | — | — | |
| Chicopee | 21,031 | 11 | 5 | 45.45 | 9.09 | — | — | 18.18 | |
| Medford | 20,962 | 9 | 3 | — | 33.33 | — | — | — | |
| Northampton | 19,883 | — | — | — | — | — | — | — | |
| Beverly | 15,302 | 3 | 1 | — | 33.33 | — | — | — | |
| Clinton | 15,161 | 3 | — | — | — | — | — | — | |
| Leominster | 14,806 | — | — | — | — | — | — | — | |
| Newburyport | 14,478 | 1 | 1 | 100.00 | — | — | — | — | |
| Woburn | 14,300 | 9 | 2 | — | 33.33 | — | — | — | |
| Hyde Park | 14,175 | 8 | 2 | 37.50 | 12.50 | — | — | 12.50 | |
| Attleboro | 13,745 | — | — | — | — | — | — | — | |
| Marlboro | 13,677 | — | — | — | — | — | — | — | |
| Melrose | 13,609 | 7 | 3 | — | 28.60 | — | — | — | |
| Westfield | 13,600 | 2 | — | — | — | — | — | — | |
| Milford | 13,418 | 7 | — | — | 14.30 | — | — | — | |
| Itevere | 13,129 | — | — | — | — | — | — | — | |
| Framingham | 12,722 | 3 | — | 66.67 | — | 33.33 | — | — | |
| Peabody | 12,534 | 6 | — | 50.00 | 16.67 | — | — | — | |
| Gardner | 12,179 | — | — | — | — | — | — | — | |
| Weymouth | 11,928 | — | — | — | — | — | — | — | |
| Southbridge | 11,344 | 5 | 0 | 40.00 | — | — | — | — | |
| Watertown | 11,268 | — | — | — | — | — | — | — | |
| Plymouth | 11,077 | 3 | — | — | — | — | — | — | |
| | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,919; under five years of age, 1,023; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 875, acute lung diseases 799, consumption 431, scarlet fever 37, whooping cough 42, cerebrospinal meningitis 13, smallpox 9, erysipelas 9, measles 39, typhoid fever 82, diarrheal diseases 72, diphtheria and croup 86.


From whooping cough, New York 7, Chicago 10, Philadelphia 3, Pittsburg 10, Providence 1, Boston 5, Lynn 3, and Cambridge, Somerville and Chelsea 1 each. From erysipelas, Chicago 2, Philadelphia 5, Baltimore 1, Springfield 1. From smallpox, Chicago 2, Philadelphia 5, Pittsburg 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Feb. 28, the death-rate was 16.6. Deaths reported, 4,789; acute diseases of the respiratory organs (London) 271, whooping cough 108, diphtheria 81, measles 104, smallpox 17, scarlet fever 52.

The death-rate ranged from 8.2 in Hantsworth to 24.3 in Wigan; London, 16.3, Westham 16.1, Brighton, 15.8, Portsmouth 13.9, Southampton 14.7, Plymouth 20.5, Bristol 15.8, Birmingham 20.1, Leicester 18.0, Nottingham 17.6, Bolton 12.6, Manchester 20.9, Salford 23.0, Bradford 13.8, Leeds 15.6, Hull 15.0, Newcastle-on-Tyne 16.9, Cardiff 16.3, Rhondda 16.1, Liverpool 20.7, Burton-on-Trent 17.2, Kings Norton 9.8, Great Yarmouth 17.1.

METEOROLOGICAL RECORD.

For the week ending March 14, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- om- eter. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | | |
|---|----------------------|-------------------|----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|--------------|-----------|---------------------|----|------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| S. . . 8 | 30.24 | 46 | 54 | 39 | 87 | 97 | 92 | S | W | 18 | 15 | R. | R. | .42 |
| M. . . 9 | 30.44 | 46 | 54 | 38 | 96 | 100 | 98 | N | E | 18 | 19 | R. | R. | 1.03 |
| T. . . 10 | 30.48 | 39 | 42 | 36 | 96 | 98 | 97 | N | E | 14 | 4 | O. | O. | .12 |
| W. . . 11 | 30.22 | 47 | 54 | 40 | 94 | 91 | 92 | SW | NW | 20 | 11 | R. | R. | .47 |
| T. . . 12 | 30.28 | 44 | 50 | 39 | 87 | 74 | 80 | N | SW | 8 | 10 | C. | C. | O. |
| F. . . 13 | 30.20 | 50 | 63 | 38 | 88 | 78 | 83 | W | E | 7 | 2 | C. | C. | O. |
| S. . . 14 | 30.18 | 50 | 61 | 40 | 81 | 72 | 76 | W | SW | 4 | 9 | C. | C. | O. |
|  | 30.29 | | 54 | 38 | | 88 | | | | | | | | 2.04 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING MARCH 21, 1903.

A. W. KAINES, acting assistant surgeon. Appointment revoked to take effect upon reporting of relief.

F. L. BENTON, passed assistant surgeon. Ordered to the Naval Station, Cavite, P. I.

G. A. LUNG, surgeon. Detached from the Bureau of Medicine and Surgery, and ordered to the Naval Hospital, Philadelphia, Pa.

J. STEPP, assistant surgeon. Detached from the Isla de Luzon and ordered home to wait orders.

P. L. COCKE, acting assistant surgeon. Ordered to the Naval Academy, Annapolis, Md.

F. A. HESLER, surgeon, died March 11 on board U. S. S. "Wilmington," en route from Cavite, P. I., to Yokohama, Japan.

SOCIETY NOTICE.

ANNUAL MEETING OF THE AMERICAN UROLOGICAL ASSOCIATION.—The annual meeting of this association will be held the last day of the American Medical Association's meeting and the day following, at New Orleans, May 8 and 9.

FERD. C. VALENTINE, M.D.
Secretary.

RECENT DEATHS.

BENJAMIN MILLER VAN SICKLE, M.D., a graduate of Rutgers College and Bellevue Hospital Medical College, and for several years a practicing physician in New York, died at his mother's residence in Newark, N. J., on March 15, at the age of forty-six.

GEORGE BEERS, M.D., of New York died from pneumonia on March 16, in the thirty-fourth year of his age. He was born in New York and was graduated from the College of Physicians and Surgeons in that city.

J. L. CILLEY, M.D., of Brooklyn, N. Y., died on March 18. He was born in Cincinnati on Jan. 25, 1838, and was a graduate of Harvard University and the Miami Medical College in Cincinnati. He was for nineteen years demonstrator of anatomy in the Ohio Medical College and also occupied for some time the position of professor of anatomy at the Cincinnati Art Academy. During the Civil War he served in both the army and the navy. He went to New York eighteen months ago, and soon became favorably known among the artists of the city through his lectures on "Anatomy for Artists."

BOOKS AND PAMPHLETS RECEIVED.

Systemic Infection due to Natural Teeth Conditions. By D. D. Smith, M.D., of Philadelphia. Reprint, 1903.

Polypoid Growths in Children vs. Prolapse. By Lewis H. Adler, Jr., M.D., of Philadelphia. Reprint, 1903.

The Excision of Cancer of the Rectum. By Lewis H. Adler, Jr., M.D., of Philadelphia. Reprint, 1902.

Du Traitement Hydro-Mineral des Maladies de L'Estomac. By M. Albert Robin. Reprint, Paris, 1902.

Address.

THE CLINICAL SIGNIFICANCE OF ARTERIOSCLEROSIS.¹

BY REGINALD H. FITZ, M.D.

For many years the anatomical changes so frequently found in the aorta of persons beyond middle life and included under the term arteriosclerosis or endaortitis deformans were considered by practitioners of medicine as of relatively little importance.

They so frequently were independent of any disturbance of function attributable to their presence that they were regarded rather as senile changes of comparatively little significance than as manifestations of disease. They could not be regarded even as evidence of senility, since not infrequently they were absent in the arteries of persons of extreme old age and occasionally were to be encountered in those of children.

It has long been recognized that the larger arteries of the brain, heart, kidneys, spleen and extremities might show alterations somewhat similar to those occurring in the aorta and its largest branches, and that pathological processes in the organs concerned might be associated.

It is only within comparatively recent years, however, that more searching attention has been directed by the pathologist to the lesions of the minuter arteries of the viscera and to their effects. As a result of these investigations the possibility of the existence of a disease, arteriosclerosis has received general recognition.

But the pathologist has found it difficult to identify the lesions of the larger arteries, notably of the aorta, with those occurring in the small arteries, especially of the viscera. The growth of tissue, the modifications of caliber, the presence of fat, the deposition of earthy salts, were readily found in arteries investigated with the scalpel and scissors; they also could be determined in arteries whose physical characteristics became apparent only with the aid of the microscope. Whether rightly or wrongly it has become the custom to identify these changes in the larger and smaller vessels under the general term arteriosclerosis, and to discriminate between the nodular arteriosclerosis of the larger vessels and the diffused arteriosclerosis of the smaller arteries. It is to be questioned, however, to what extent these affections of arteries of large and small caliber are identical.

A traumatic, syphilitic or tubercular endarteritis is manifested in minute arteries by sclerotic changes quite distinct from those of chronic endaortitis deformans; and the latter process may be present in syphilitic or tubercular patients long before either syphilis or tuberculosis has been acquired.

The difficulty experienced by the pathologist in unifying the various anatomical changes found in arteries of large and small caliber makes it necessary for the practitioner to be especially cautious in generalizing with regard to the clinical manifestations of arterial disease. It is important for him to weigh carefully the evidence in the individual

case, that he may attach the proper value to it in determining questions of diagnosis and treatment.

The disturbances produced by arteriosclerosis are dependent essentially upon the resulting modifications of caliber and the alterations of surface in the arteries of the viscera and extremities. The changes of caliber are due chiefly to failing elasticity, however induced, or to obstruction from narrowing or twisting of the canal and to irregularities of surface. The ultimate result is a loss of nutrition, either slowly produced or suddenly brought about. The consequences are various disturbances of function which concern the organs especially affected, but which may be identical with disturbances of function otherwise produced.

The patient suffers from predominant affection of the brain, heart, kidneys or extremities, and it is desirable, therefore, that the organs especially concerned should be made most conspicuous in the diagnosis. It is important to recognize that he has an arteriosclerotic encephalitis, myocarditis or nephritis, since the prognosis may depend largely upon the discovery of arteriosclerotic basis for the lesions.

The treatment also of an arteriosclerotic nephritis, or of a nephritis with arteriosclerosis elsewhere, may demand the most urgent appreciation of the existence of the arteriosclerosis.

It would seem, therefore, of clinical convenience to consider arteriosclerosis as a morbid process which may affect the central, peripheral and visceral arteries of the body. Each group alone may be concerned, or two or more groups may share simultaneously in the process. Usually the effects of arteriosclerosis are more apparent in a single group, and in visceral arteriosclerosis the results are more conspicuous in one organ than another, although combined disturbances of several organs are frequent in consequence of various degrees of arteriosclerosis in each. Hence there is no typical picture of arteriosclerosis from a clinical point of view, but there are several diseases variously designated which may be attributable to arteriosclerosis. This term, therefore, to the clinician, represents rather a species than a genus, and strictly speaking should be used as an adjective, not as a substantive.

A diagnosis of the condition arteriosclerosis usually is made by the physical examination of the accessible arteries and of the heart.

The arteries are cordlike, resistant, tortuous, with a ribbed or granular surface. The tension of the pulse is high. The heart gives evidence of hypertrophy of one or both sides by an increased area of dullness, a more powerful apex beat and an accentuation of the second aortic sound, provided the aortic valve is sufficient.

Although the presence of a cordlike resistance is most significant of arteriosclerosis, it is not always found in arteriosclerosis of the internal organs, and when appreciable does not indicate that existing visceral disease is due to arteriosclerosis. Its importance as a characteristic sign is so great, however, that it always should be sought for, and the brachials, femorals and tibials as well as the radials should be palpated, since arteriosclerosis when present is not necessarily generalized but may be

¹ Extract from an address before the Hampden Medical Society at Springfield, Oct. 21, 1902.

confined to or be more conspicuous in certain vascular territories.

The significance of tortuous arteries in the diagnosis of arteriosclerosis often is overrated.

Indeed, it is by no means certain that the process which causes serpentine arteries is that which produces thickening and rigidity of the arterial wall. Although in generalized arteriosclerosis the visible arteries often are tortuous, visceral arteriosclerosis frequently is unaccompanied by tortuous temporal or brachial arteries.

Serpentine temporal arteries repeatedly are seen in youths and young men who at the time or in after life are not to be regarded as sufferers from arteriosclerosis.

The ribbed or granular condition of the surface of an artery is due to calcification, but the question still is unsettled whether or not calcification of the peripheral arteries is necessary evidence of arteriosclerosis in them. Certainly peripheral calcification, even of tortuous arteries, may be present without thickening of the walls or evidence of visceral arteriosclerosis. Although calcified arteries are oftenest found in the aged, persons under middle life are not necessarily free from this evidence of degeneration.

The pulse of high tension usually excites the suspicion of arteriosclerosis, especially in the early stage. It is by no means pathognomonic, however, for it is not always present in arteriosclerosis; indeed, there may be lowered tension when there is even extensive arteriosclerosis, and in chronic nephritis without arteriosclerosis the tension of the pulse may be abnormally and persistently high.

In like manner hypertrophy of the heart, with or without a heaving impulse and accentuated second aortic sound, may be absent in arteriosclerosis, and when present may result from other conditions than this lesion. Such is notably the case in chronic nephritis, which may or may not be connected with arteriosclerosis.

The clinical importance of the recognition of the presence of arteriosclerosis demands not only the physical examination of accessible arteries and the heart, but also the use of such means as we may have of determining the condition of other organs whose arteries are especially liable to become sclerotic.

It is, therefore, convenient in the diagnosis of the possible arteriosclerotic nature of a given disease to bear in mind the previously mentioned topographical distribution of the arteries into central, peripheral and visceral groups.

In central arteriosclerosis, in which are affected the aorta and its larger primary branches, excepting those of the heart and kidneys, the diagnosis depends partly on an inference from age, and more particularly upon the physical examination of the branches within reach of the eye, ear and finger. Although most people over fifty years of age have more or less aortic arteriosclerosis, there are numerous exceptions, and occasionally persons of advanced years show a clean aorta, and youthful individuals may have one which is diseased.

Inspection and palpation of the innominate, subclavians, carotids, femorals, and, when possible, of the iliacs, may reveal the dilatation and rigidity which usually accompany aortic sclerosis, and a con-

current dilatation of the arch of the aorta may be determined by auscultation, percussion, and perhaps palpation of the area concerned.

When aortic arteriosclerosis involves the coronary and renal arteries the resulting disturbances of function are those of visceral arteriosclerosis, and when present in addition to the above-mentioned evidence indicate the extension of the process from the aorta to the arteries leading to the affected organs.

In peripheral arteriosclerosis the physical examination of the accessible arteries is the chief reason of diagnosis, although the evidence of an enfeebled circulation is usually furnished by the sense of discomfort,—even severe pain and numbness in the extremities, and by the rapidly induced fatigue and cramps in individual muscles or muscular groups.

The diagnosis of visceral arteriosclerosis depends first upon the recognition of the various disturbances of function and then upon the discovery of evidence of central or peripheral arteriosclerosis. Such evidence confirms the diagnosis, but does not prove its correctness, since other causes exist for the ascertained disturbance of function, and the evidence of central or peripheral arteriosclerosis does not necessarily indicate that the disturbed functions of the viscera are occasioned by sclerosis of its arteries. In visceral arteriosclerosis it is customary to recognize three principal types of disease—the cerebral, cardiac and renal. The intestinal and pancreatic types have more recently been added to the series. The three principal varieties alone are those which concern most practitioners.

The cerebral type is indicated by such disturbances of function as headache, vertigo, wakefulness, loss of memory, convulsions and focal lesions due to arterial rupture, thrombosis or embolism. In cardiac arteriosclerosis the final result is fibrous myocarditis with dilatation and insufficiency, or death may occur suddenly from rupture of the heart in consequence of coronary thrombosis or embolism. The symptoms in general are those of a weak heart; and palpitation, bradycardia or tachycardia, arrhythmia, angina, dysprosia, cardiac asthma, Cheyne-Stokes breathing, epileptiform attacks, unconsciousness, and passive congestion of the various organs, and dropsy, are to be recognized.

In renal arteriosclerosis the signs and symptoms are those of chronic fibrous nephritis. Inasmuch as a peripheral arteriosclerosis may develop in the course of a chronic nephritis, and an arteriosclerosis of the kidney produce the manifestations of a chronic nephritis, the diagnosis of an arteriosclerosis nephritis is always a problem for the practitioner, and is more easily made after than before death.

The intestinal type of arteriosclerosis has aroused attention of late years from its significance in the causation of acute intestinal symptoms, simulating obstruction and suggestive of peritonitis. Thrombosis and embolism of the sclerotic arteries result in ulceration, perforation and necrosis, which rapidly assumes a gangrenous character.

In arteriosclerosis of the pancreas, as of the kidney, the question as to the effect of arteriosclerosis upon the pancreas or of the production of arteriosclerosis by disease of the pancreas is answered with difficulty. But the increasing importance of recognizing disease of the pancreas as an organic basis

for saccharine diabetes, and the knowledge that peripheral arteriosclerosis is of occasional occurrence in diabetes, and an important element in the causation of diabetic gangrene, suggests that arteriosclerosis may play an important part in the pathology of diabetes mellitus.

It is evident that in no instance of visceral arteriosclerosis is the diagnosis to be made from the knowledge of disturbance of function alone. The functional disturbances may be due to various causes, one of which is arteriosclerosis; and it is the association of this lesion in the central and peripheral vessels with the symptoms of such disturbed function in an organ which permits the diagnosis of a visceral arteriosclerosis.

The value in therapeutics of recognizing the existence of arteriosclerosis is chiefly in the way of caution. There are no remedies which can cause arteriosclerosis to disappear, and it is doubtful to what extent, if any, its progress can be arrested. Perhaps the chief benefit of the early discovery of arteriosclerosis comes from the opportunity it gives of warning the diseased person of the necessity of a change of habits, of avoiding mental, moral and physical strain upon blood vessels which already show signs of weakness. The dilated temporal arteries of youth are no necessary evidence of advancing arteriosclerosis; they are a sign to go slowly, to avoid excesses and unnecessary exposure.

Original Articles.

CÆSARIAN SECTION FOR PLACENTA PREVIA, WITH REPORT OF A CASE.¹

BY P. E. TRUESDALE, M.D., FALL RIVER, MASS.,

Gynecologist and Obstetrician to Fall River City Hospital.

THE advent of Cæsarion section as a logical treatment for placenta previa has invited the severest criticism and the warmest approbation of different obstetricians throughout this and other countries.

Some have recommended it as the ideal treatment in all cases of placenta previa, while other authorities have tabooed it altogether.

It is much within the confines of these extreme views that we hope to gain for the Cæsarion operation a recognition which it already merits. We cannot expect to show by this treatment the low mortality attained by Reynolds, Schauta, Everke and Leopold, in their Cæsarions for contracted pelvis, because of the difference in manifestation of these two pathological conditions. A certain proportion of the patients with placenta previa will always continue to be presented for operation in emergency. When, however, every physician doing obstetrical work is made conscious of his duty to keep under closer observation his pregnant cases, the patients with critical hemorrhage, at or near full term, will be less common, and the results by the Cæsarion treatment more favorable for comparison.

During the past three years, and especially since the report of Donoghue's case¹ in 1900, treated successfully by Cæsarion section, there has been

produced a wealth of statistics from which can easily be taken statements in support of any method of treatment.

For a review of the mortality statistics, I refer you to an article by Hugo Ehrenfest² of St. Louis, published in *American Medicine*, Jan. 11, 1902. He quotes the individual results of thirty authors, and we find that there is an average maternal mortality of about 7%. The mortality of the fetus is not noted in any instance. He strongly opposes Cæsarion section for this complication of pregnancy.

To offset any prejudice that may be acquired from a study of his investigations, I refer you to another column of mortality statistics in a paper by E. Gustave Zinke,³ read before the American Association of Obstetricians and Gynecologists, Sept. 18, 1901. From thirty authors he finds an average maternal mortality of 25% and a fetal mortality of 65.21%. In his own cases there was a maternal mortality of 17.5% and fetal of 55%. He says: "I firmly believe that Cæsarion and the Porro operations are perfectly legitimate, and elective procedures in all cases of placenta previa, central and complete, and especially so when the patient is a primipara, when the os is closed and the cervix unabridged."

In justice to Ehrenfest, it should be said that the cases in his statistics were collected since 1898.

It is hoped that in the future reports of cases an analysis of the degree of previa will be given, also the mortality in each variety.

Of 234 cases of placenta previa reported by Schauta,⁴ 50 were complete. Of this number there was a maternal mortality of 18% and a fetal mortality of 70%.

Of 75 cases reported by Higgins⁵ from the records of the Boston Lying-in Hospital, 25 were of the complete variety. Of these six died, or 24%.

Jardine⁶ reports 12 complete previa, with a maternal mortality of 16 $\frac{2}{3}$ % and fetal mortality of 66 $\frac{2}{3}$ %.

Jewett's "Obstetrics," 1899, gives 739 collected cases, with 166 deaths, 109, or 14.7%, of which were complete.

Gillette,⁷ by direct correspondence with leading obstetricians at maternity institutions of this country, received reports of 216 cases of placenta previa. Of the 216, 88 were complete, and of this number 20 were lost, or 22.7%; 66 of the babies, or 70.5%.

F. A. Dorman⁸ reports 84 cases of previa treated at the Sloan Maternity Hospital; maternal mortality in all cases was 12%, fetal 45%. In a personal communication from Dr. Dorman he informs me that of the complete type there was a maternal mortality of 17.7%.

From the above statistics, we find in complete previa an average maternal mortality of 18.9% and a fetal mortality between 65 and 70%. These results were attained in maternity hospitals by expert obstetricians, and will probably never be much lowered by any vaginal method of treatment.

It is this high, though conservative estimate of the mortality in complete placenta previa that we aim to reduce by Cæsarion section.

In partial previa the maternal mortality by version probably does not exceed 5%. But in obtaining this low figure, half of the babies are sacrificed in delivery, by obstruction of the circulation through

¹ Read before the Obstetrical Society of Boston, Jan. 20, 1903.

the placenta and by slow extraction. If the life of the child is to receive a just consideration, then a method of treatment which will greatly reduce its mortality and involving little, if any more, risk to the mother should be accepted.

Hirst says: "The treatment ought to be such as will secure the least maternal and the least fetal mortality. While, of course, the life of the mother is the greater importance, yet it is a mistake to ignore all consideration of the life of the child."

Dr. Barnes has said: "It is no longer permitted to us, without ample proof of clear necessity, to sacrifice the child in order to save the mother. The cases in which the two lives are supposed to stand in antagonism are vanishing before the light of modern science and skill. And in no conjuncture is this more true than in the treatment of placenta previa."

Lateral insertion of itself does not justify a Cæsarian operation. As a rule, simply rupturing the membrane suffices to stop hemorrhage.

In the 84 cases reported by Dorman, the bleeding at the onset was moderate, and gradually increasing and independent of labor pains in 50%; in 10% it began moderately after the beginning of labor; in 40% there was a sudden profuse flooding; although in one third of these cases slight preceding attacks of bleeding had given warning signs. Then in about 27%, or that number in which there was no premonition at all, undoubtedly occurs the highest mortality. Dorman also states that over half of the women with complete previa went to full term. Of 128 deaths reported by Müller not one occurred before the seventh month, and one third reached the end of gestation. In the 34 deaths reported above by Gillette⁷ all occurred after the seventh month. Could not the diagnosis then be made by careful examination before the seventh month?

The period of greatest danger, then, is that during which the child is viable.

If as routine practice all pregnant women were examined each month after the fifth, this type appropriately called "vicious" would rarely escape recognition. Early diagnosis, removal of the patient to a well-appointed hospital and Cæsarian section performed during the last two weeks, or the last month of gestation, would, without doubt, result in an exceedingly low maternal and fetal mortality.

As gestation approaches term, the life of the child demands greater consideration.

R. P. Ranken Lyle,⁹ referring to vaginal treatment, says: "In most cases the best treatment for the mother is the worst for the child."

If the fetus is viable, should it be sacrificed by slow delivery to save the mother? On the other hand, should the mother be subjected to the dangers of a ruptured uterus and hemorrhage by a version sufficiently rapid to save the baby?

By version the circulation to the fetus is cut off about as soon as the operation is begun. On the contrary, in Cæsarian section the child is removed from the uterus before the placenta is disturbed. Is this not more consistent with a natural delivery than tearing through an ectopic placenta while the child is still in utero?

Thus far the reported cases of Cæsarian section for placenta previa are as follows:

| YEAR. | OPERATOR. | RESULT. |
|---------|---------------------------------------|--|
| ? | Hypes and Hulbert. ¹⁰ | Mother dead; child dead. |
| 1891. | J. M. Sligh. ¹¹ | Mother dead; child dead. |
| 1893. | A. C. Bernays. ¹² | Mother lived; child lived. |
| 1899. | Mattoli. ¹³ | Mother lived; child lived. |
| 1898. | Lawson Tait (Porro). ¹⁴ | Mother lived; child lived. |
| 1900-1. | Donoghue ¹⁵ (2 cases). | One mother lived; one lost. Both children lived. |
| 1901. | C. H. Hare. ¹⁶ | Mother died; child lived. |
| 1901. | W. J. Gillette (Porro). ¹⁷ | Mother lived; child lived. |
| 1901. | P. D. Covington. ¹⁸ | Mother lived; child lived. |
| 1902. | MacCalla (Porro). ¹⁹ | Mother lived; child lived. |
| 1902. | P. J. Conroy. ²⁰ | Mother lived; child dead in utero. |
| 1902. | P. E. Truesdale. | Mother lived; child died in one half hour. |

Thirteen cases are recorded. Four mothers lost, or 44.4%; four babies, or 44.4%.

These figures seem appalling unless a more critical study of each case is made.

All that can be learned of the case by Hypes and Hulbert is that it was done after everything else had been tried.

In the case reported by J. M. Sligh there was a rigid, probably malignant cervix. Tampons, forcible dilatation by steel dilators, Barnes' bags and bimanual version were attempted before Cæsarian section. Mother died twelve hours after operation. The fetus had been dead for two days.

If the result in these two cases teaches anything, it is that Cæsarian section should be done before everything else has been tried or not at all.

Nobody of fair mind would object to ruling out these cases with such histories.

In the eleven succeeding cases, then, the maternal mortality is 22.2% and the fetal 22.2%. Of these eleven, three were Porro operations. All were operated on after alarming hemorrhages had occurred, and many of them when there seemed to be little hope for mother or child by any method of treatment. Therefore these mortality figures cannot, in any way, be justly used for comparison. It would be interesting to know how many, if any, of these 22 lives could have been saved by version.

These results prove that the Cæsarian operation is not contra-indicated when the vitality of the patient is low from loss of blood.

I will report a case in harmony with this statement.

REPORT OF CASE.

Sarah K., thirty-three years of age; married ten years; born in Scotland. Seventh pregnancy. No miscarriage. Previous labors normal.

Last catamenia Jan. 1 to 5, 1902. Labor expected Oct. 10, 1902. Early symptoms were similar to those of former pregnancies. Worked in cotton mill July 1 to 4. After a long walk on July 5 had a slight hemorrhage. On the same day she consulted Dr. John B. Trainor at his office. During the rest of July and during August she was up and about the house. Had slight hemorrhages at intervals of from three days to two weeks. These usually came on after exertion.

Sept. 6 had a moderate hemorrhage accompanied by uterine contractions lasting about two hours. Did not consult her physician at this time, remained quiet for three days, and flowing stopped.

Sept. 16, on account of a profuse hemorrhage, she sent a messenger for Dr. Trainor. He responded promptly, and after a vaginal examination quickly realized the gravity of the case. An ambulance was summoned immediately, and she was

removed to the Fall River City Hospital, arriving at 3 P.M. When admitted to the ward she was bleeding freely. Pulse 128, temperature 99.2°. Absolute quiet, a pad to the vulva and a firm T bandage were sufficient to control the hemorrhage. On the following day, Sept. 17, I was requested to see the patient. At 4 P.M. I saw her for the first time. She appeared fairly well developed and nourished, noticeably anemic. Pulse 112, temperature 99.2°.

The position of the child could not be definitely made out by palpation, although it was thought to be oblique or nearly transverse. The fetal heart was heard loudest to the left, and on a level with the umbilicus. Rate 160.

The pad at the vulva and the sheet about the buttocks were saturated with blood. Vaginal examination revealed slight flow of blood, a few small clots in the vagina. Cervix broad, not taken up, resistant, but not rigid. Pulsations distinctly felt on every side. Os admitted one finger readily, two with difficulty. Placenta was attached all around the internal os, except a small detached area on the right side, which admitted the finger for some depth. Ballottement absent.

It was said that the amniotic fluid had escaped. I called Dr. J. H. Gifford to see the patient with a view to discussing the propriety of performing Cæsarian section. Soon after his arrival, we made another vaginal examination, whereupon a violent hemorrhage occurred.

A firm packing of iodoform and dry sterile gauze controlled the bleeding. The pulse then counted was 140, and feeble.

It was evident that interference of any kind at this time would result in the loss of mother and child. We concluded to temporize for a few hours at least. It was now 5 P.M. At 6 o'clock, pulse was 130, and of better character. Uterus began to contract, and continued at five-minute intervals. The pad at the vulva gave evidence of more bleeding. Morphine sulph. gr. $\frac{1}{4}$ was administered hypodermically. Uterine contractions and flowing ceased.

At 10 P.M. appearance of the patient had much improved. Pulse was 120, and of comparatively good volume. There had been a very little more bleeding, but uterus was beginning contractions again. Fetal heart now 170-180.

Should we temporize longer? If not, what method of interference would offer the best chance for mother and child? The condition of the patient was poor, but she seemed to be on the right side of the dividing line for operation.

More morphia would be required to control contractions, and, inasmuch as there was more show of blood on the pad, it was decided not to postpone interference.

Operations considered were rapid dilatation and version and Cæsarian section. The method selected must be that which would result in the loss of the least amount of blood. Surely this patient had little more in reserve than her last pint, and at this stage it is not the ounce lost or saved that gives the result?

The history of the escape of the amniotic fluid, the abnormal presentation, the central implantation of the placenta, and the undilated os, if not abso-

lutely contra-indicating version, forbode grief as the result of the attempt. As for the Cæsarian section, the risk rested almost entirely in the shock of this operation, and it was concluded that she would withstand this better than the unavoidable hemorrhage attending version.

Accordingly the patient was prepared in the usual way for emergency laparotomy. The ether was administered by Dr. E. F. Curry, and Drs. J. H. Gifford and H. G. Wilbur assisted me.

Operation.—Median abdominal incision eight inches in length. Uterus delivered through the abdominal opening, and thoroughly walled in with gauze towels. It appeared small for an eight-month uterus, but more dense. The second incision was made from the fundus uteri to the lower segment, not cutting into the placenta. The uterine wall was about half an inch in thickness. No amniotic fluid escaped from the cavity.

Baby found lying nearly in transverse position. Cord tied and cut. Child handed to Dr. R. J. Thompson. At this point m. X of ergotine were given hypodermically. The uterus closed down well. Membranes adhered firmly, so that it was necessary to scrape them off with a sponge. Patting the uterus with the hand a few times stimulated it to contract, so that when the placenta was removed, there was scarcely any loss of blood. Two thirds of the placenta lay to the left and one third covered the os. Dr. Wilbur made moderate pressure with the thumb and forefinger of each hand, encircling the cervix, and thereby controlled the very slight bleeding which occurred. The vaginal gauze was removed, and a long sponge was passed through the cervix into the vagina. The uterus was then closed with mass interrupted sutures of silk. The abdominal cavity was flushed with normal salt solution and closed with mass interrupted sutures of silkworm gut. Strychnia gr. $\frac{3}{16}$ and gr. $\frac{3}{16}$, with nitroglycerine gr. $\frac{1}{16}$, were administered during the operation. The patient was apparently in good condition at the end of the operation. Pulse 128; fairly good volume. The child was removed from the uterus within three minutes, and the operation completed in thirty minutes. The baby died in half an hour of asphyxia.

Convalescence was marked by a rise in temperature to 103° on the fourth day; dropped to 101° on the fifth, and then gradually down to normal. Pulse was 112 on the day after the operation, and at no subsequent time was it more rapid. At the time of the rise in temperature there was no abdominal distention, no tenderness, abdominal incision uniting by first intention, and the lochia remained sweet at all times. Vaginal examination revealed nothing. However, it is probable that there was some absorption at the cervix.

At the end of the fourth week the patient was discharged well. Jan. 15, or about four months after operation, I visited her at her home. She was doing her housework, and said she felt as well as ever. The abdominal cicatrix was firm.

The loss of the child was regretted very much, and it seems a question whether or not a further delay of a few hours before operating would have given it a better chance. In interest of the mother, however, this was not done.

It is unwise and unnecessary to do this operation

on a patient *in extremis*, when a firm vaginal packing of dry sterile gauze will control any degree of hemorrhage sufficiently long to allow the woman to recover a fairly good pulse. This is the only time when the vaginal tampon is of any value, for in the mild hemorrhages that occur earlier, the recumbent position with the hips well elevated suffices to stop bleeding.

The technique in the above operation was similar to that used at the Boston Lying-in Hospital.

Dr. A. Palmer Dudley²¹ recommends a more modern method. It is essentially as follows: The gas and oxygen as the anesthetic, saline irrigations instead of sponges. Abdominal incision six inches long from above the bladder to within two inches of the umbilicus. Elastic tubing passed around the cervix to control the ovarian and uterine vessels is drawn tight, half-knotted, and given to the care of an assistant. A second assistant places a hand at either side of the upper angle of the incision, and makes steady, firm pressure against the fundus uteri. The traction made upon the rubber tubing will keep the uterus firmly pressed against the abdominal wall below. The uterine incision is then made.

There are objections to this method, especially for placenta previa, which are quite obvious. In the first place, it is desirable not to cut into the placenta in making the uterine incision, but instead to begin at the fundus and cut down to the placenta. Unnecessary bleeding is thus avoided. To do this the abdominal incision must be long.

The elastic tube drawn tight around the cervix compresses the uterine nerves. Temporary paralysis may result in inability of the uterus to contract, with a resulting hemorrhage that may necessitate a Porro.

Gillette¹⁷ was obliged to do a Porro on account of hemorrhage resulting from the inability of the uterus to shut down. He used a rubber tube drawn tightly around the cervix and tied. The hemorrhage was attributed to anemia, but was it not more probably due to pressure paralysis of the uterine nerves?

In cases where placenta previa is suspected I wish to emphasize the importance of rigid cleanliness in making vaginal examinations. The hair about the vulva should be removed, the external genitals scrubbed with green soap and water, then with lysol or corrosive sublimate solution. An antiseptic douche should be given. The examination should be made with rubber gloves, for the finger goes into a perfect culture medium for bacterial growth.

The recent progress in obstetrics may be very materially attributed to the adoption of the principles of modern surgery, and in the operation of Cæsarian section is found a relief for a hitherto unsatisfactory treatment of a formidable type of placenta previa.

In conclusion, then, the Cæsarian operation would seem to be the best treatment for placenta previa, complete or partial, when the child is viable, and when the diameters of the pelvis or the conditions of the soft parts render the operation of dilatation and version, performed with sufficient rapidity to save the child, a dangerous procedure for the mother.

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FURTHER REMARKS ON THE TREATMENT OF PLACENTA PREVIA.¹

BY FRANK A. HIGGINS, M.D., BOSTON,

Instructor in Obstetrics, Harvard Medical School; Senior Physician to Out-patients, Boston Lying-in Hospital; First Assistant Visiting Physician for Diseases of Women, Boston City Hospital.

It is not my intention to weary this society indefinitely by the discussion of a subject to which it has already devoted considerable time, but so long as the proper treatment of placenta previa remains a matter of doubt to many in the profession, and so long as such widely different views as to its treatment are held by the members of this society as was evinced at a recent meeting, any further evidence which one can bring to bear on the subject can scarcely be out of place.

Since the first of January of this year I have seen and operated upon five cases of placenta previa. Two of these were of the partial or marginal variety, while three had complete placenta previa. All five of the mothers made excellent recoveries and without complications. All five of the infants were born dead or died soon after birth. One of the five possibly might have been saved under a different method of delivery, but in only one of the cases did the fetus before delivery appear to be in such a condition that any hope of its survival could be entertained. In three of the cases the patient was at full term, but in two of these the fetal heart could not be heard at any time, and whatever chance the third child might have had was deliberately sacrificed for the sake of the mother, her life being considered of much greater importance. The other two cases were hopelessly premature. Therefore in all the cases I proceeded with only one aim—that of making the operation absolutely safe for the mother, so far, of course, as it is ever possible to do so.

Of the two cases of partial placenta previa the first was seen Jan. 10, at the Lying-in Hospital, having been brought in by Dr. Denny of Brookline, who packed the vagina to control the hemorrhage. The patient had lost considerable blood, and was still bleeding slightly. No fetal heart could be heard, and there was no pulsation in the cord. The mother being in fair condition, I delivered her immediately by version, and rapid recovery followed. It was my intention to allow the body to slowly follow after extraction of the foot, but its small

¹ Read before the Obstetrical Society of Boston, Jan. 20, 1903.

size and strong uterine contractions caused rapid delivery.

The second case was seen on Feb. 22 in the outpatient clinic of the Lying-in Hospital, and was one of partial previa. There had been considerable hemorrhage for four days and a large hemorrhage of at least a quart before the patient sent for assistance, the bed being saturated and containing many clots. The hemorrhage was controlled for a number of hours by vaginal packing, and the patient's condition improved so far as possible. Later a small amount of ether was given, the hand was inserted into the vagina, the os then about the size of a quarter was dilated to admit two forefingers, enabling me to bring down a foot, assisted by the other hand through the abdominal wall. The foot was drawn outside the vagina and held firmly, exerting steady and moderate traction. The patient was allowed to come out of ether after the foot was secured, and delivery was accomplished in about an hour and a half with no further loss of blood and practically no shock to the patient. The child was, of course, stillborn. The fetal heart was heard just before the operation, but on account of the mother's poor condition everything was done with her safety in view.

Of the three cases of complete placenta previa, the first case was seen in consultation with Dr. Parks of East Boston on April 16. The patient was about six and one-half months pregnant, when without any warning symptoms she had a sudden severe hemorrhage of an alarming nature. On examination the os was found about one half dilated and completely covered by placenta. The patient was removed to the hospital. Version, the placenta being perforated, and immediate delivery were performed. The child breathed for a few minutes, but it had not arrived at the viable period.

The second case was seen Aug. 22 with Dr. Duff of Charlestown, who first saw the case after she had been bleeding for ten hours. The vagina was packed, and the patient removed to the hospital. The os was about two inches dilated and completely covered with placenta; the fetal heart could not be heard, although carefully searched for several times. The patient's pulse was 124, and she had evidently lost considerable blood, yet she was in fair condition. I felt, however, that slow delivery would be better for her than rapid version and delivery, especially as there seemed to be no question but that the fetus was already dead. The placenta was perforated, a foot brought down and steady traction made on the thigh. As the body appeared, the child was seen to make an attempt at respiration so that delivery was immediately completed. The child could not be resuscitated, it was in a state of pallid asphyxia, probably from loss of blood, and made only a few spasmodic attempts at breathing. If I could have determined before operating that the fetus was living, possibly more rapid delivery might have saved this baby, but I do not think it probable, because of the amount of placenta separation.

The third operation for complete placenta previa was done on Oct. 3, at the Deaconess Hospital, the patient having been brought in from Milton in order to be in a safe place in case of a serious hemorrhage. After several weeks of quiet and moderate hemorrhage, the patient was finally delivered, as she

was gradually losing ground. Manual dilatation sufficient to admit of bringing down a foot, perforation of the placenta and slow delivery were easily accomplished with very little loss of blood. The size of a six-months fetus, however, offered little obstruction to the delivery, which took about thirty minutes.

I am perfectly aware that the reporting of these cases can have only comparatively little effect towards the settlement ultimately of the best treatment for placenta previa, but to my mind they do help to clearly demonstrate the great safety to the mother of the slow delivery, after slight dilatation of the os, and the extraction of a foot.

I am also more than ever convinced of the comparative low maternal mortality, even in complete placenta previa, when the patient is taken in charge and receives proper treatment immediately after the first hemorrhage, and that the chief danger lies in repeated or continuous hemorrhages. The great objection to slow extraction is that it means the death of the fetus, but until we have some other expedient equally safe for the mother, and which promises better results for the infant, I shall continue to advocate and practice this method. Traction on the foot in the manner described effectually prevents hemorrhage, and at the same time slowly dilates the os, and the body of the child gradually emerges from the vagina. The time for delivery in my cases after extraction of a foot was allowed to occupy from twenty minutes to an hour and a half.

I would not advocate slow delivery in every case. If the mother is in good condition and the fetus also, as indicated by the fetal heart beat, full manual dilatation and rapid extraction should by all means be performed. But if the fetal heart cannot be heard, it is usually fair to assume that the child is not living, and the mother should be safeguarded in every possible way.

We have been inclined to believe that it is only the cases of complete placenta previa in which there is much of any danger to the mother. I desire to emphasize the fact that this is not so. Of these five cases the two with partial placenta previa were the ones in the most serious condition; not because of the situation of the placenta, but because of the neglect of the hemorrhage.

Perforating the placenta to do version I have found to be an easy matter, causes no maternal hemorrhage and very little to the fetus. The under surface of the placenta is divided into lobules with sulci running between, and the placenta is easily separated and perforated at the sulci. In my experience this is better than trying to separate the placenta, and going to one side of it.

As in my previous paper I advocated packing to control hemorrhage, I would say a word more of caution against placing too much dependence upon it. Packing is of value mainly as a temporary expedient to control hemorrhage, to promote dilatation, or to gain time while getting ready for an operation, or before moving a patient. If properly and firmly applied it will control hemorrhage for a few hours, but not longer. I would also insist that the packing be inserted with the patient in Simms' position, as it cannot be properly applied with the patient in the lithotomy position. I have seen repeated failures of the packing to control hemorrhage

when it has been put in through a bivalve speculum with the patient on her back.

With respect to the treatment of placenta previa by Cæsarean section I have yet to see a case in which I think it would be advisable or justified, and such will, in my opinion, be rarely seen.

The only occasion for Cæsarean section in placenta previa I would define as in my former paper: complete placenta previa with mother and child both in good condition before the occurrence of severe hemorrhage, and with the os uteri undilated.

This short paper, practically as it stands, was prepared for the meeting of the Obstetrical Society last October, but was deferred because of other material. Since then I have had one operation for placenta previa at the Boston Lying-in Hospital, which proved fatal to the mother, the first one in twenty cases.

The patient, a young primipara, was seen on the afternoon of Dec. 4. She had had considerable hemorrhage, and the pulse at that time was 130. She was at term. The fetus was in good condition, os dilated about two inches, completely covered by placenta. Notwithstanding the patient's rapid pulse, from her appearance I thought she would stand immediate delivery without encountering serious difficulty. Version was performed, and immediate extraction, and a living child obtained. The mother died, however, in a few hours after delivery, from shock and hemorrhage. The loss of this patient I attribute to my error in judging the patient's condition. I believe that she might have been saved had I packed and delayed delivery until she was in better condition for operation, or had I brought down a foot and allowed slow delivery at the sacrifice of the child.

NOTES ON X-LIGHT.

BY WILLIAM ROLLINS, BOSTON, MASS.

THE EFFECT OF X-LIGHT ON THE CRYSTALLINE LENS.

EXPERIMENTS have been reported in this JOURNAL which showed that animals could be made blind by x-light. Through correspondence with investigators, who at different periods have worked with x-light, I have learned of a number of cases where the eyes had grown prematurely old during the investigations. Recently I have had occasion to examine a man who has been exposed to x-light to a considerable extent since 1896. Though he is less than forty years of age he had given up trying to read even a daily paper, because he could not see the letters. To enable him to see his work comfortably at a distance of forty-three centimetres, it was necessary to provide him with double convex glasses, number 26.

With the exception of Professors Trowbridge's great condensers and Tesla's high frequency generators, the apparatus used in my experiments to help Dr. Williams in his work has been the most powerful employed in the production and study of x-light. That I have escaped injury has been due to an early recognition of the dangerous nature of x-light, and to having taken the precautions recommended in earlier papers. These uninteresting personal matters are mentioned only to give an opportunity to repeat some of these precautions which

have now become sufficiently obvious to be called x-light axioms.

First axiom: No x-light should strike a patient except the smallest beam that will cover the area to be examined, treated or photographed.

Second axiom: No x-light should strike the observer.

Directions for constructing apparatus to meet these conditions have been given. A few points will bear being repeated.

The x-light tube must be in a non-radiable box from which no x-light can escape except the smallest beam that will cover the area to be examined, treated or photographed. The box must have a nonradiable diaphragm plate, the opening in which can easily be adjusted, while looking in the fluoroscope, until the beam of light is the smallest that will cover the area under examination. The cryptoscope must have a plate of heavy lead glass to absorb the x-light which has passed unchanged through the fluorescent screen, to prevent injury to the observer's eyes. The walls of the cryptoscope must be made of nonradiable material. The patient should be covered during photographic exposures with a nonradiable sheet, exposing only the necessary area. An experimenter who works much with x-light should use a nonradiable face mask, the eyeholes of which are glazed with thick plates of heavy lead glass. In using the cryptoscope, while testing the tube during pumping and tuning, he should not use his hand for examination, but should attach to the cryptoscope a Roentgen gauge and a Williams fluorometer for determining the penetrating power of the x-light and its brightness. The hand that holds the cryptoscope should be protected with a nonradiable covering. During the pumping and tuning of x-light tubes, they should be kept in an oven with nonradiable walls. Most of these precautions are neglected even at the present time, as may be seen by the illustrations in the catalogues of the makers of apparatus and in the papers and books of those who are writing on the subject, where open tubes are almost invariably figured. If masks are used to protect patients during the therapeutic application of x-light, they are in many cases made of rubber cloth or other radiable material. If speculas are used in treating the cavities of the body, they are often made of radiable celluloid. Rubber or celluloid to make them suitable must be mixed with heavy metals or their compounds. That inefficient means are still employed to protect patients is partly due to attempts to ignore or disparage the crucial experiments that have been reported on the effects of x-light on animals. These experiments showed not only that x-light could burn, make blind and kill, when all other forms of energy that could produce the results were excluded, but they also showed that under the conditions present during the proper use of x-light in therapeutics, other kinds of energy need not be considered in the light of causes of serious injury to patients. Therefore, attempts to protect patients should consist in protecting them as far as possible from the light itself. Another matter to which attention should be directed is the importance of making all the apparatus used about patients during therapeutic applications of x-light of materials which will allow them to be sterilized. Some of the diseases for which x-light is used are known to be contagious, and while it is generally con-

sidered that cancer is not contagious, it is to me an interesting fact that several persons who have been treating this disease by x-light have themselves been attacked. I believe this would not have happened if proper precautions had been taken. It is, to say the least, unwise to be constantly treating cancer and other diseases by x-light without regularly fumigating the room and keeping the cryptoscope and other appliances sterile. Great hospitals in which the necessity for contagious wards is clearly recognized still consider one room, which is not fumigated, a proper place in which to make not only all diagnostic but all therapeutic applications of x-light, and to make them with apparatus which is not sterilized in many cases. In fact, to sterilize the present forms of much of the apparatus in use would be difficult by heat, which is the simplest method. It would appear to be at least reasonable to take advantage of such power as may reside in formalin vapor to fumigate the x-light room every night, and to make the instruments used about patients of such material as will permit heat to be used to sterilize them. I have described cryptoscopes, seehears and stethoscopes, light concentrators, light benders and specula which can be sterilized in this way.

Clinical Department.

MASSACHUSETTS GENERAL HOSPITAL.

(Concluded from No. 13, page 346.)

Dr. MIXTER reported on

A CASE OF LAMINECTOMY FOR BROKEN NECK.

The patient, a strong, healthy man, fell from a tree, some six or eight feet, to the ground, striking on his head. I saw him the next morning at the hospital, and in spite of the fact that the consulting neurologists looked upon it as an almost hopeless case, I decided to operate at once.

There was complete loss of motion and sensation, corresponding to a lesion of the cord in the injured region, and the temperature had already begun to rise.

The fracture was in the usual place, the fifth and sixth cervical vertebræ, and in addition to several fractures the laminae were dislocated.

After removing the broken fragments on thoroughly exposing the dura, the latter was opened and the cord examined. No gross sign of injury was found. The dura was not closed, and the wound was drained with a small gauze wick.

He has already good motion in one leg and in his arms, and is still improving. Dr. Walton will tell you more accurately his condition.

This case seemed as unfavorable as possible before operation. While it cannot be absolutely proved that operation is the means of cure in these cases, the fact that ones like this do get well convinces me that it is the surgeon's duty to operate on all cases if they can be seen early.

One point on which I wish to insist is the good effect of leaving the dura open and draining the cord.

DR. WALTON: The question of operation in this case presented itself shortly after I had read a paper to the Society for Psychiatry and Neurology accepting the opinion of those surgeons who advocate free operation in case of spinal fracture, without laying too much stress upon theoretical considerations, the only counter-indications to operation being great displacement, rapidly rising temperature and moribund condition. This case seemed to offer one of these exceptions on account of the high temperature and general condition. Dr. Mixter decided to operate notwithstanding these counter-indications, and the result has fully justified his position.

Many authorities have held that complete paralysis, motor and sensory, to a certain level, indicate complete and irremediable crush of the cord, and that operation in such event is unjustifiable. This position is untenable, for Dr. Mixter's case is by no means the first in which marked improvement has followed these symptoms. All authorities agree that it is sometimes justifiable to operate in case of incomplete lesion of the cord, and Kocher advises operating later in case improvement has shown incomplete lesion; but if operation is to be undertaken at all, surely the earlier the better, before adhesions are formed, and since we cannot positively establish complete crush it seems wise to give a patient in so serious a condition the benefit of every doubt.

There was paralysis of all forms of sensation to a little above the nipple line, complete loss of motion and reflexes in the lower extremities and motor and sensory paralysis in the upper, such as pointed to a lesion at the level of the fifth and sixth cervical vertebræ. Improvement was gradual after the operation, the lasting symptoms being practically of the Brown-Sequard type. There is still complete absence of motion in the left leg, but very good motion in the right leg, including the movement of the tibialis anticus, though outward movement of the foot is impossible. Tactile sense rapidly returned on both sides; pain and temperature sensation have gradually returned on the left, but are still impaired upon the right, muscle sense is absent on the left and very slightly impaired on the right. The kneejerks are exaggerated on both sides and ankle clonus is present without the Babinski sign (a very uncommon finding). The movements of the arms are very good, though still greatly impaired, and all forms of sensation are impaired on the ulnar side of each hand. This distribution of paralysis indicates lasting lesion on the left side of the cord, involving both gray and white matter, and lasting lesion in the gray matter of the right side with very slight remains of injury to the white matter on the right side. The loss of muscle sense on the left is explained by the fact that the fibers conveying these senses do not cross until they reach the medulla. Loss of pain and temperature sensation on the right and presence on the left show that the fibers conveying these sensations cross shortly after entering the cord. The speedy return of tactile sensation on both sides would tend to show that tactile fibers are of wide distribution and of partial decussation, for if they ascended in one bundle, whether crossing or not crossing, there should be loss of this variety of sensation in one side or the other.

It may be argued that inasmuch as the crush of the cord in this case was incomplete, the result would have been equally favorable without operation, and this position can never be disproved in an individual case. Statistics show, however, that there is a greater percentage of recovery among the cases operated upon than among those without operation. It is practically certain, therefore, that in some of these cases operation is beneficial, and the whole history of this case inclines us to regard it as one in which operation was of signal service.

DR. F. C. SHATTUCK showed a case of probable

ADDISON'S DISEASE.

This patient has for five months been losing strength and weight without assignable cause. During this time a discoloration of the skin has come on. He has had some digestive symptoms, but the prominent features are weakness, loss of weight and discoloration of the skin. The discoloration is perfectly uniform except that the eyelids are more deeply discolored. The discoloration is not patchy, and the mucous membranes are not involved. His occupation is barbering, and he has worked and lived in Danvers. There is no reason to think that he had anything to do with arsenic. It is not the sort of discoloration we see with lead jaundice, and he has none of the usual symptoms of lead poisoning. The question is whether he has Addison's disease or not. The genitals, axillae and linea alba are not more pigmented than any other portion of the body, as they are apt to be in Addison's disease. He has had slight fever, 100 or more. We know that Addison's disease is a destructive disease of the adrenals, and the most frequent cause is tuberculosis. In this case there are no signs of tuberculosis anywhere. I gave him an injection of tuberculin, and his temperature rose to 104 within twenty-four hours, which is pretty strong evidence that there is tuberculosis about him somewhere that we have not found. I am inclined to believe that he has Addison's disease. I have given him the iodide of potassium for a week, and am having his urine examined for arsenic and lead. He is also having suprarenal extract. I have had one case recover under the extract.

[NOTE.—Written two weeks after the malaise due to the tuberculin injection had disappeared, the patient showing marked gain. Digestive symptoms are absent; strength has increased; the discoloration is distinctly less; there has been some gain in weight. A very slight trace of lead was found in the urine. Arsenic is not yet reported on.]

DR. C. B. PORTER next demonstrated the following cases:

CASE I. CURE OF LARGE VENTRAL HERNIA IN RIGHT UPPER QUADRANT.

The first patient is a policeman. Two years ago he was operated upon for a stab wound of the liver. The abdominal muscles never regained their tone subsequent to this operation, and a general bulge in the right upper quadrant of the abdomen followed. An attempt was made four months later to cure this bulge, but without success. During the past two years the patient has been incapacitated for heavy work. Besides this he suffers from increasing constipation. During the three weeks previous to his entrance he had several severe paroxysms of pain in the region of the hernia associated with vomiting.

Cathartics were ineffective, and operation was advised to forestall the absolute shutting off of the bowels. At the operation the intestines were found inextricably tangled and adherent to the abdomen in the region of the old wound. These adhesions were dissected away with great difficulty, and the bowel injured in several places. Owing to the injury done to the small bowel, it was found necessary to resect thirteen inches and do an end-to-end suture. After this a radical cure of the hernia was done. The operation took six and one-half hours. The patient was on his feet in two weeks, the bowels working perfectly, the abdominal wound firm.

CASE II. AMPUTATION OF WHOLE UPPER EXTREMITY FOR CHONDRO-SARCOMA.

The second case is a young man twenty-five years old. Twelve years ago he first noticed a gradually increasing pain and tenderness in his left shoulder.



He was admitted to this hospital at that time, and a tumor of the shoulder found. It was finally decided that the case was inoperable, and the boy was discharged. During the succeeding years the patient enjoyed good general health and did heavy work. The shoulder grew steadily in size, until three months ago a fungating growth made its appearance in the left axilla. After the appearance of this tumor the patient became progressively weaker. He worked, however, until about two weeks ago, when he was recommended to the hospital. The left shoulder as seen by the specimen and the photograph passed around is the seat of a large stony, hard growth. This mass invests the outer two thirds of the clavicle in front, while in behind the scapula is completely buried. On the surface of the mass is a network of large superficial veins running horizontally. The posterior part of the axilla is filled with an exuberant growth the size of the fist. Scarcely any motion has been present in the shoulder joint for some years. The dangers of the operation were carefully explained to the patient. He was urged to take time to make up his mind. He elected to take his

chances as there was really no other alternative, except a lingering illness, to end finally in death.

Complete amputation of the upper extremity, including clavicle and scapula, was done. There was scarcely any bleeding during the operation, as the growth had compressed even the axillary vessels. The denuded area was covered by flaps and grafts.

The patient never rallied after the operation, and died in shock three hours later. At the autopsy



metastases were found in the lungs. Cultures from the heart showed streptococci. The invasion of bacteria evidently took place from the fungating area in the axilla.

AUTOPSY BY J. W. WRIGHT.

Anatomical diagnosis. — Amputation of left upper extremity for sarcoma in the region of left shoulder. Metastatic sarcoma of lungs. Hyperplasia of the spleen. Slight chronic interstitial nephritis. Slight defective closure of the foramen ovale. Streptococcus septicemia.

Microscopical examination. — A section of lung substance including tumor nodules shows that the tumor is composed of dense connective tissue and of cells with interlacing processes; the neoplasm is regarded as a fibro-sarcoma.

CASE III. DOUBLE DISLOCATION OF HUMERUS WITH FRACTURE OF SURGICAL NECK OF EACH.

The third case is a very fat man, who fell down stairs one month ago. Since the fall both shoulders have been useless. On examination sub-coracoid dislocations of both humeri were found. No fractures were made out. Movement of the arms were extremely limited. X-rays were taken of both shoulders, but although the dislocations were found they gave no evidence of fracture. Operation was done by me Oct. 11. An effort was made to reduce the dislocation of the right shoulder, but outside of gaining freer motion in the shoulder joint no improvement in the position was effected. An incision was made in the anterior surface of the shoulder joint, and a fracture of the surgical neck of the humerus discovered. The head of the bone was

taken out. Two weeks later reduction of the left shoulder was attempted under ether; but this was also unsuccessful. On cutting down in the same manner as in the right, a fracture of the surgical neck of the left humerus was found. The head of the bone was excised in the same manner as at the first operation. A week after the latter operation the patient was discharged against advice. Both wounds were healing by first intention. He returned in a month after his discharge with great improvement in the motion of both shoulders. I show him tonight two weeks after his last appearance. As you see, he can lift his right arm to a



horizontal position, and is gaining fast the use of his left.

CASE IV. HORSESHOE KIDNEY MISTAKEN FOR TUMOR OF STOMACH.

This woman is thirty-one years old and was recommended by Dr. H. F. Hewes for probable cancer of the pylorus. She has had a history of occasional pyrosis after eating, associated with abdominal pains. Sometimes she vomited during these attacks. Examination of stomach contents showed no free hydrochloric, lactic or butyric acids. No cachexia or loss of weight has been present. A tumor is made out in the epigastrium in the median line, not movable nor tender. The patient wished an operation in order to decide whether or not cancer was present. A laparotomy was done by Dr. C. A. Porter, when all the abdominal contents were found normal. There was, however, a connecting band about one inch in thickness, extending across the vertebral column and joining the inferior poles of both kidneys. It was this mass that had been palpated through the abdominal wall.

CASE V. MULTIPLE FRACTURES OF FOREARM.

On October 22 this man caught his right arm in a revolving belt. The x-ray plates show a transverse comminuted fracture at the middle of both the radius and the ulna with over-riding. The lower end of the radius was also transversely fractured with an anterior displacement of the lower fragment. The lower end of the ulna was dislocated outward over the radius, but not fractured. The upper fracture was compound on the inner aspect of the forearm. An opening was made over the posterior border of the ulna at the point of fracture. Both bones were wired into place and the wound closed tight. A counter opening was made on the flexor surface of the forearm to relieve the tension of the skin from swelling. Firm extension was applied, and the lower deformity molded into place without difficulty. The wounds healed by first intention, and an x-ray, taken twenty-six days later, shows the position of the fragments to be excellent. The multiple fractures and the injury to the soft parts made it seem almost hopeless to save the arm.

CASE VI. LARGE HYDATID CYST OF LIVER, COMPLICATED BY NUMEROUS ONES IN BOTH LUNGS.

The last case is an Armenian, forty years old. For ten weeks he has complained of his stomach and intestines. The bowels were irregular, but no vomiting was present. For three weeks there was loss of weight and strength, with increasing pain in the abdomen. No chills noted. On examination patient was seen to be emaciated and sweating. No glands were enlarged. Dullness was present in front from the fourth rib on the right to four fingers' breadths below the right costal border. The right hypochondrium and the epigastrium were occupied by a smooth, round bulging mass that extended nearly to the umbilicus. Fluctuation was easily made out over the most prominent part of the tumor. In this point the tenderness was pronounced. Palpation over the tumor gave a sense of crepitation beneath the fingers. Litten's phenomenon was marked on the left side, but absent on the right. In the back the dullness extended from the base to the angle of the scapula. Temperature 96.6°, white count 16,000, hemoglobin 50%. Bile present in the urine.

At the operation the tumor was seen to be a large, bile-stained liver. This was aspirated and pus found. A wide opening made along the trocar was followed by a gush of thin, brownish fluid, which contained numberless small daughter-cysts, some still unruptured. The size and color of most of these cysts resemble that of white grapes, while the sac of the main cyst was pearly white and adherent. As the condition of the patient was poor, the sac was packed full of gauze and the man put to bed. Two days after the operation symptoms suggesting pneumonia developed. Temperature 105, pulse 150, respiration 40. The area of dullness in the right base was unchanged and no other signs in the lungs were made out. For two days the man ran a high temperature with delirium, gradually becoming weaker until his death, four days after the operation.

Autopsy showed both lungs to be invaded by arger and smaller cysts filled with brownish fluid.

Dr. J. H. WRIGHT had examined a piece of the tumor excised before amputation, and found that it was essentially a spindle-cell sarcoma with a considerable development of fibrous tissue.

A later examination of the tumor, after amputation, showed that the main mass of it was bony in character.

Dr. C. L. SCUDDER: I have no cases to show, but wish to speak of two groups of cases of operation on the knee. The first group represents that class in which a movable semi-lunar cartilage caused trouble, and it seems to me very interesting that seven cases were operated on, and there were no recurrences except in one case.

The second group represents an entirely different class, that is, those cases in which movable bodies were found. They were removed, and in some instances were found to be hypertrophied fringes, which caused mechanical irritation, and in other cases, small exostoses. Periods from one to four years have elapsed since the operations were done, and in only one of these twelve cases has there followed complete relief; in other words, symptoms have recurred and persisted; such as swelling, pain and weakness in the joint, with at times, locking of the joint.

These two groups are distinctly different. The first group represents a distinct mechanical difficulty successfully treated by operation. The second group suggests a general disturbance in the joint rather than a purely mechanical difficulty, the mechanical disturbance being purely symptomatic. To the surgeon, from a clinical point of view, it indicates also the need for a thorough exploration of the joint in order to determine the pathological condition and to throw some light upon such disturbances.

I think work is being done with which Dr. Goldthwait is familiar, in regard to these joints, and I should like to ask him what the pathological findings are and why these cases do not recover after the loose body or synovial fringes have been removed. Is not the local condition suggestive of some general serious trouble progressing?

J. E. GOLDTHWAIT'S DISCUSSION OF DR. SCUDDER'S PAPER.

Dr. J. E. GOLDTHWAIT: I hope that Dr. Scudder in reporting these cases will give a careful description of each case. Without such description the cases have little value.

In the so-called "fringe" cases, or the joint cases in which there are loose bodies, it is to be borne in mind that the fringe or the loose body is usually a symptom of disease and not the disease itself. The fringe may be the result of tuberculosis, rheumatoid arthritis, simple traumatism or any other disease or irritative condition. The loose body may be and commonly is an exostosis which has been broken away from its attachment, and represents commonly a symptom of osteo-arthritis.

It is evident from this that simple removal of the fringe or the loose body should not be expected necessarily to cure these cases. The surgeon in operating should consider all the features and should expect a perfect result or a partial improvement, depending entirely upon the nature of the

condition which produces the special lesion for which the operation is performed. It is only during the past six weeks that I have operated upon a man, taking from each knee a mass of fringes large enough to fill the palm of the hand. The fringes resulted in this case from rheumatoid arthritis. The man is not, of course, cured of his rheumatoid arthritis as the result of this operation, but the amount of improvement which has resulted from the operation is a source of gratification to him.

In another case, a comparatively short time ago, a fringe was removed, which resulted from trauma, together with a large lipoma arborescens, which had formed as the result of a degeneration of some of the fringes. This condition, resulting purely from trauma, has been followed by perfect results, and the man today is an active athlete.

If such operations are discussed with this understanding, it seems to me there need be no confusion or disappointment in the ultimate results.

Reports of Societies.

NEW YORK NEUROLOGICAL SOCIETY.

STATED meeting, March 3, 1903. PEARCE BAILEY, M.D., President.

TABES ASSOCIATED WITH HEMIPLEGIA.

DR. JOSEPH COLLINS presented a man, forty-two years of age, a bartender by occupation. When twenty-four years old he had had a chancre, for which only treatment was given. A year later an iritis developed, and disappeared after two months' treatment. There was nothing further until eight years ago, when he was seized with an attack of vertigo, which was associated with an aphasia lasting several days. There was no paralysis. Four years later there was a similar attack associated with vomiting. Last August the man fell in an attack in which he was only partially unconscious. Examination showed a right-sided hemiplegia, and this had continued ever since. On coming to hospital there was found in addition a very marked atrophy of the right shoulder and an absence of both knee jerks. The pupils were small and regular, and reacted to accommodation but not to light. There were incontinence of urine and manifest ataxia. The case was presented as one of tabes, the latter probably antedating the attack of thrombosis from which the hemiplegia originated. Coincident with the attack of cerebral thrombosis there must have been an obliteration of one of the cornual branches of the anterior spinal artery. In reality, this case presented three conditions: tabes, cerebral thrombosis and a destructive poliomyelitis of very limited extent. Tabes and hemiplegia were rarely associated.

DR. J. RAMSEY HUNT said that he had examined this case in the city hospital. He had been doubtful about its being an anterior horn disease, and inclined to the opinion that there was a plexus lesion.

DR. M. G. SCHLAPP said that in some of these cases of hemiplegia certain groups of muscles were markedly atrophied. The electrical examination

should decide whether the case was of central or peripheral origin.

DR. J. FRAENKEL said that in only a few of the cases of tabes with hemiplegia had the knee jerk returned, and this had only been temporary.

DR. C. L. DANA said that he had had a short time ago under observation a man with tabes whom he had seen the very day of the occurrence of the stroke. There had not been any return of the knee jerk, and he thought this could only occur in the early stage.

DR. COLLINS said that there had been no suspicion of the existence of tabes before he had examined this man, and he had been deeply interested in the presence of the marked muscular atrophy.

A CASE OF MAJOR HYSTERIA (?).

DR. COLLINS then presented a woman, forty-four years of age, a cook by occupation. There was no history of alcoholism or of venereal disease. The present trouble began four years ago with an involuntary twitching of the hands and a loss of sensation in the hands and arms. This loss of sensation had gradually spread over the entire body. She had no pain, but felt tired and walked with difficulty. The gait was not strictly ataxic, but was rather shuffling and choreic. There was a peculiar condition of the left lower extremity, the lower third being shrunken without any hardening or thickening of the skin. Examination showed universal analgesia and more or less thermal anesthesia and analgesia. The knee jerks and ankle jerks were exaggerated. There was slight disturbance of speech but not of intellection. She presented none of the ordinary stigmata of hysteria, and the color fields were of normal size. The woman had not improved under hospital treatment. According to the history her father and sister were similarly affected, but the former lived to be over seventy years old. The case was presented without a positive diagnosis, because it did not seem to him to correspond either to hysteria, syringomyelia or Huntington's chorea.

DR. SCHLAPP was of the opinion that the case was one of hysteria, because the condition did not correspond to any known pathological lesion. The condition of the leg might have been brought about by a self-inflicted trauma. Two years ago he had presented to the society a case of supposed atypical zoster, but subsequent investigation showed that the patient had produced the condition herself by means of carbolic acid.

DR. R. H. CUNNINGHAM said he was reminded of a number of cases that he had had in a family in Richmond, Va., in 1893. Choreic symptoms developed between the ages of fifteen and thirty in the father, two sons and two daughters. One of the daughters had hemianesthesia. He would look upon the case just presented as one of adult chorea.

DR. COLLINS said that he had been inclined to look upon the case as one of hysteria, yet this diagnosis presented many difficulties. After having observed her carefully for several months he was still more inclined to the diagnosis of major hysteria.

DR. PEARCE BAILEY said that he thought the ataxic gait was due to the anesthesia, and that the case was one of major hysteria. With regard to the other case, there seemed to be no doubt that the atrophy of the shoulder was distinct from the tabes.

A fall on the point of the shoulder was quite frequently the cause of a paralysis with just such an atrophy.

A CASE OF SPINAL TUMOR.

DR. M. G. SCHLAPP presented a man, forty-four years of age, with a good previous history. About two years ago a peculiar twitching had been noticed in the muscles over the right shoulder, and about two months later he had begun to suffer pain at the root of the neck and extending into the trapezius muscle. After a time the right arm became weak, and subsequently the left side. This weakness was found to correspond to the muscles supplied by the anterior and posterior thoracic nerves on both sides. There was the Babinski symptom on both sides. There were analgesia and diminished temperature sense on the left side. The diagnosis made was an extramedullary tumor involving the fifth and sixth cervical roots of the spinal cord, pressing upon the pyramidal tracts and on Gowers' tracts, diminishing the pain sense and temperature sense. The tumor lay on the right side, and probably involved the motor roots on the other side. He thought an intramedullary tumor could be excluded. The man was to be operated on next week.

DR. PEARCE BAILEY said he had seen this man last fall, and at that time there was no sensory disturbance, and the pain dated back two years, but with intermissions. He had formed the opinion then that there was a degenerative lesion rather than a tumor.

A CASE OF CEREBELLAR TUMOR.

DR. J. RAMSEY HUNT reported a case of cerebellar tumor with degenerations of the posterior columns. The subject of this report was a man of forty-six, who had been admitted to Bellevue Hospital in July, 1902, with typical symptoms of cerebellar tumor, although the tumor could not be localized. The cerebellar symptoms had begun three months before, and he was under observation for three months. During these six months there was a progressive diminution of the knee jerks and Achilles jerks on both sides. It was thought to be due to degenerations in the posterior columns of the cord, as had been described in connection with tumors in the posterior fossa of the skull. There was very marked choked disk, and the man's mental condition became one of apathy and somnolence. At the autopsy two small tumors were found, one springing from the dura mater in the median line, and encroaching somewhat upon the right frontal lobe, and the other tumor in the left cerebellar hemisphere. Both tumors were medium-sized round-cell sarcomata. The spinal cord presented evidence of greatly increased intracranial pressure. Specimens of the spinal cord, both transverse and longitudinal, were prepared, and they apparently showed degenerations of the posterior columns, such as had been described in connection with tumor. The higher levels of the cord were most affected. Lissauer's column was spared, as was the rule. The fibers in Clark's column were also usually spared. These degenerations arose from the entrance of the posterior roots into the spinal cord. It was an anatomical fact, that where the posterior roots perforated the dura mater obliquely there was a constriction, and that here the sheath of Schwann was lost. At the same time

there was a constriction of the myelin substance, and some of the fibers were deprived entirely of this substance. The speaker then briefly discussed the mechanical and toxic theories, and said that he presented the case as one favoring the mechanical theory.

A CASE OF CEREBELLAR TUMOR.

DR. L. PIERCE CLARK reported the following case: The subject was a man of thirty, who had had both gonorrhea and syphilis, and who used alcohol and tobacco to excess. The present illness began in October, 1901, with headache in the right occipital region. After a time he began to vomit in the mornings, and the right side became weak. Iodide of mercury had been given without benefit. On examination, there was choked disk in the right eye; the sixth nerve was bilaterally weak; the muscles of the right leg were stiff and painful; the head was held stiffly and bent slightly to the right side; all the deep reflexes were exaggerated, particularly on the right side; there was double Babinski; the gait was characteristically cerebellar. A diagnosis was made of a syphilitic tumor in the middle lobe of the cerebellum involving the peduncle. On admission to the Presbyterian Hospital in January, 1903, for operation, an x-ray examination showed the tumor. The man died rather suddenly, and the autopsy disclosed a tumor of the cerebellum. Between it and the fourth ventricle was a large cyst filled with slightly turbid serum. Apparently the growth was a syphilitic gumma that had undergone syphilitic and calcareous degeneration.

A CASE OF SPINDLE CELL SARCOMA OF THE DURA CEREBELLI.

DR. B. ONUF reported this case, and presented a specimen. The subject of the report had been first seen on May 2, 1902, and at that time complained of a shooting pain in the left ear and in the teeth, and of attacks of dizziness. There was only slight perception of light; the gait was staggering; there were no marked changes in sensation or in the reflexes; there was typical choked disk. A diagnosis of cerebellar tumor was made. Subsequently the man developed slight paresis of the left facial nerve with fibrillary twitchings of the muscles in this region, and the hearing on the left side became greatly impaired. In walking, the man deviated to the right. He died in December, and at the autopsy a tumor was found at the base of the left cerebellar hemisphere. It was a spindle cell sarcoma. This could have been enucleated had it been in a more accessible situation.

DR. SCHLAPP said that about a year ago he had presented to the New York Pathological Society a case similar to the one presented this evening by Dr. Hunt, showing degeneration of the spinal cord. The specimens from his case has been counterstained with acid rubin, and the sheath of Schwann was stained. In all of the cases the degeneration extended to this sheath, especially in the cranial nerves, the trigeminus, the glossopharyngeus and the vagus nerves. He had expressed the opinion at that time that the sheath of Schwann might have some protective influence. He did not think the case tended to disprove the toxic theory. There were no sensory symptoms in the beginning, and

probably the degeneration was at first confined to the fibers passing from the posterior columns into the gray matter. The poison appeared to be selective in its action, involving only the reflex fibers. The degeneration was particularly marked in the sensory nerves.

Dr. W. M. LESZYNSKY said that he had been interested in the fact that respiratory failure had preceded cardiac failure in Dr. Clark's case. One of his own patients had died upon the operating table just as a cerebellar abscess was reached. The heart continued to beat for eight or ten minutes after the failure of respiration. If degeneration existed in the posterior columns in the upper portions it must act chiefly on the third or fourth lumbar segments in order to produce loss of knee jerks; now, then, would one explain those cases in which the knee jerk was absent for a time, then became well marked, and was alternately present and absent?

MUSCLE TONUS AND TENDON PHENOMENA; THEIR RELATIONSHIP AND INTERPRETATION.

DRS. J. FRAENKEL and JOSEPH COLLINS presented this paper, which was read by Dr. Fraenkel. It was based upon tonometric examinations of two hundred and thirty patients. The authors stated that at the present day the view most generally held was that the tendon phenomena were expressions of muscle tonus. General clinical experience showed a definite relationship between tendon phenomena and the tonicity of muscles. Hypertonia, or exaggeration of the tendon jerks, was a symptom of disease of the pyramidal tracts. The tonometer used in this investigation was the invention of the house physician of the Montefiore Hospital. A total of 554 registrations had been made. The 230 cases were distributed as follows: apparently healthy, 32; cases of tabes, 25; of organic disease of the nervous system, 33; functional disease of the nervous system, 40; pulmonary disease, 70; heart disease, 12, and various other chronic affections, 18 cases. There were 71 registrations classed as hypertonia. It was found to be frequently, although not always, associated with exaggerated Achilles reflexes. Hypotonia was found to be frequently associated with loss or diminution of the tendon phenomena. There was a comparatively small number of neurogene hypotonias in proportion to the cases of general hypotonia. Neurogene hypotonia and absence of diminution of the tendon reflex were found frequently associated. Neurogene hypotonia with exaggeration of the tendon reflexes was present in 6%. It was concluded that hypotonia produced by damage of the ascending tracts of the spinal cord was accompanied by loss or absence of the tendon phenomena in every instance. In the cases of hypertonia absent or diminished reflexes were present in 6% of the registrations. In the cerebral group there was found a larger percentage of hypotonias than of hypertonias. In the spinal group 100% gave exaggerated tendon reflex and 95% showed hypertonia. It had been learned that whenever the neurogene tone was markedly increased or decreased the tendon jerks were increased or decreased correspondingly. The authors concluded that disease of the posterior tracts caused hypotonia, and dis-

ease of the pyramidal tracts caused hypertonia. There was a large group of cases giving normal tonicity and normal tendon phenomena.

Dr. G. L. WALTON of Boston said that in the exhaustive discussion on reflexes and tonus opened by Crocq in 1901 the reader had reviewed the clinical and experimental evidence which tended to show that the reflexes generally corresponded to the tonicity. The exceptions to this rule he explained as illustrations of the fact that the centers for tonicity (at the cortex) and those for the deep reflexes (in the basilar region) were separate. This explanation was not directly discussed, though the limitation of these functions to the regions indicated was seriously questioned. The readers tonight had reinforced in a most convincing way the results of Crocq, though their explanation of the exceptional cases differed from his materially. The question was too complicated to be discussed in its entirety, especially in the absence of exact knowledge as to the seat of either the tonus or the reflexes, but such work as had been reported this evening furnished one of the definite steps by which one might gradually mount to a knowledge of this complex subject. We had been so long imbued with the notion that in man, as in the frog, the spinal cord was the center for reflexes and tonus that it was difficult to transfer our study of these functions to the brain. Even in case of disturbed reflex in cerebral disease, we were still apt to think of the function of the brain as limited to the withdrawal, or the increase of influence upon the cord, through the pyramidal tract. For a long time the hypotonicity and loss of reflex sometimes found at the onset of cerebral hemorrhage were attributed to the shock conveyed to the cord. At the discussion already alluded to the disputants, while recognizing the importance of the cerebral influence, were by no means in accord with Crocq in limiting the reflex centers and the centers of tonicity to the brain. Dr. Walton said he had several times taken occasion to suggest that, instead of speaking of lower centers controlled, or inhibited, by higher centers, inhibited perhaps in their turn by still higher centers, we should recognize the combined action of all centers, cortical, basal and spinal, allotting to certain regions a predominating reflex function, liable to transference to a lower level on gradual withdrawal of upper level influence. According to this view, each reflex movement might be regarded as a resultant of the activity of various loops of different lengths, connected with each other both laterally and vertically. The more he had observed the reflexes in cerebral disease, the more he was inclined to accord the cortex the predominant rôle in the deep, as well as the superficial reflexes, and in the tonus. It was difficult, for example, to explain on any other basis the absence of deep and superficial reflexes in the following case: The patient was unconscious and hemiplegic, with a temperature of 105° F. and all reflexes absent up to the time of his death. The Kernig symptom was present, showing, probably, comparative hypertonicity of the hamstrings, but the extremities were otherwise obviously hypotonic. Autopsy showed pneumococcus meningitis of the convexity with encephalitic invasion of the cortex. In other cases of meningitis the reflexes were frequently preserved, but in one case of meningitis coming under his observation, in which

both brain and cord were affected, during the stage of rigidity and obvious hypertonicity, the reflexes were absent, but reappeared as relaxation set in, first on the side first relaxed. One must evidently look farther than to separation of the centers to explain such conflicting phenomena; in fact, different cases might require different explanations. Possibly it was partly a question of comparative tonicity. In the last case, for example, the hamstrings might have possessed hypertonicity so far in excess of the hypertonicity of the quadriceps femoris as to "snub" the knee jerk. In long standing infantile cerebral hemiplegia with contracture the deep reflexes were often absent, though hypertonicity was apparent. Doubtless in some of these cases the contracture was in such position as to put the tendons on too great or too little stretch, thus mechanically preventing the reflex. The combination of exaggerated reflexes with hypotonicity was sometimes seen in Erb's syphilis of the cord, especially in the early stages. In a recent conversation with Dr. Courtney, he had suggested that the affection about the fibers of the pyramidal tract was sufficient to impede the transmission of voluntary impulse and of tonicity from the cortex, but the reflex stimulus passed the more rapidly, as in neurasthenia, uninhibited by the volitional mechanism. Though not sure that he had thoroughly grasped the explanation of the readers on this point, Dr. Walton felt that they had proceeded along logical lines.

DR. C. L. DANA thought the authors had established quite clearly the relations of hypertonia to the reflexes, and had given to the neurological world tangible working data. He had not fully understood the explanation of the effect of the brain on hypotonus and hypertonus. Personally, he made use of a working hypothesis which fitted in very well with the explanation given in this paper. In all the sudden insults to the brain occasioned by hemorrhages producing profound hemiplegia, there was always absence of the deep reflexes on the paralyzed side, and with it no doubt hypotonia; whereas there was not this loss of reflexes on the non-paralyzed side. After a time this absence gave place to an increase of reflex. If, however, the hemorrhages were more posterior and involved the sensory sphere, there was more definite and more prolonged absence of reflexes.

DR. B. ONUF referred to a case in which a tumor of the hip and shoulder centers was diagnosed, and the tumor removed, with the result that a very marked hypotonia developed in the paralyzed extremity after the operation, and was present even two months afterward.

DR. COLLINS said that Dr. Fraenkel was satisfied with having established the relationship between tonus and reflexes, and they were both particularly gratified with Dr. Dana's statement that in his cases of cerebral hemiplegia he had observed that the farther posteriorly the lesion extended, either into the sensory cortex or the sensory representation of the capsule, so in proportion was the existence of hypertonia or the lateness with which it appeared. This clinical experience fortified very greatly the position taken in the paper.

DR. FRAENKEL said that he too had been delighted at the confirmation of their position by the very large clinical experience of Dr. Dana. If their ob-

servations were correct they should be of value in connection with diagnosis of true lesions of the pyramidal tract associated with hypertonia and of the posterior tract with hypotonia.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of Jan. 20, 1903, the President, Dr. G. J. Engelmann, in the chair.

DR. P. E. TRUESDALE of Fall River read, by invitation, a paper entitled,

CÆSARIAN SECTION FOR PLACENTA PREVIA, WITH REPORT OF A CASE.¹

DR. J. H. GIFFORD: I trust I may be pardoned for saying something that Dr. Truesdale's modesty will prevent him from saying, and this is that the fortunate result in this case is largely to be ascribed to the neatness and dispatch with which the operation was performed. This celerity is of especial importance in operations where there has been a great loss of blood. We have listened to-night to two papers that are apparently antagonistic. But it seems to me that this is so only because they look at the question from different points of view, from opposite sides of the shield, as it were. Version followed by slow delivery seems to me to apply more to cases in the earlier months, while Cæsarian section is more adapted to the later weeks of pregnancy. A Cæsarian section would not be indicated when the child is dead. Therefore the question of operation depends on what is most conducive to the welfare of the child. Now children, even if viable, are very likely not strong enough to live until the very last weeks of pregnancy, so that we must regard the Cæsarian section as applicable only to cases where the child is not only alive, but likely to live. I think the writer is right in giving greater value to child-life. In cities like Fall River more than half the population have this feeling very strongly, and the feeling is one that has a right to be respected. Of all the series of Cæsarian sections that I have seen reported, apart from that of Dr. Reynolds, the most interesting was one of such operations done upon themselves by savage women, where naturally no question as to length of incision or method of closing it arose, but where reliance was upon nature's antiseptics, with surprisingly good results. I beg to differ with the teaching that Cæsarian section is not an operation that should be done in private houses. With the modern ease of procuring trained nurses and sterile dressings, etc., such operations can be done with safety in ordinary homes.

DR. CHARLES M. GREEN: I wish to express my admiration of the care Dr. Truesdale has shown in collating his statistics, of his highly successful maternal result, and of his convincing presentation of his case. I am not yet convinced that Cæsarian section should be the operation of election in placenta previa, in the absence of indications other than misplaced placenta. However, there is much to be said on both sides of this question, and we ought to keep our minds open on this subject for further light. Of course there can be no object in

¹ See page 359 of the JOURNAL.

performing Cæsarian section for placenta previa prior to fetal viability, unless it can be shown conclusively that the mother's chance of recovery is thereby greatly improved. I am not yet convinced that such is the case. I cannot give my own statistics off hand, but I know that my percentage of maternal loss in cases delivered by podalic version has been very low.

When pregnancy has advanced to the later weeks before symptoms appear demanding delivery, when the fetus is alive and is likely to live, when the gravida is in good condition, or by reasonable delay can be brought into good condition, when, above all, she is a primigravida with not easily dilatable vagina and perineum, I am willing to grant that abdominal section may be very properly considered in the interest of the child. I sympathize with Dr. Gifford's remark that we ought to take into consideration the religious belief of the family. Personally, I always place fetal life, with its many uncertainties, as of secondary importance to maternal life. But both in my teaching and in my practice I feel it to be my duty to give to fetal life the first consideration, if such is the intelligent parental desire.

I must enter my protest against the Porro operation, if in any case it is decided to deliver by abdominal section. Very many women recover from placenta previa, and subsequently bear living children, and we have no right to remove the uterus, unless absolutely necessary to maternal safety.

DR. EDWARD REYNOLDS: I have done so much in advocating Cæsarian section for the sake of the child that I do not hesitate to take the opposite ground on this question. The danger to the mother in placenta previa is so great that that of the child should take a second place. Delivery by version in any but the most extreme collapse, with the ordinary soft cervix, is an operation of no great mortality in the hands of thoroughly skilled obstetricians. All depends upon the operator's boldness, skill and promptness. Thus the equation of the individual operator comes in very much. In the hands of men unskilled in version, yet skilled surgeons, a Cæsarian operation is doubtless the most likely to be successful, and, furthermore, should the man in charge of a case of placenta previa seek a consultant, a skillful surgeon is generally more easily reached than a skillful obstetrician.

One vital point that I have noticed in the discussion of this question is the fact that as post-partum hemorrhage comes largely from the dilated and partially paralyzed blood vessels of the cervix, there should be less hemorrhage after the removal of the placenta without the dilatation of the cervix by the passage of the child. For this reason I have no hesitation in saying that where the cervix will contract and still has its resiliency left I should do a Cæsarian section, I would avoid doing one if the cervix were partially dilated.

DR. F. S. NEWELL: My feeling is that except in pelvic conditions where a Cæsarian section is demanded anyway, or where, as is rarely the case, dilatation of the cervix is difficult or impossible, Cæsarian section is not demanded. The child has, however, rights of its own, and immediate delivery gives it a good chance if this first indication of placenta previa is met, that is to say, if the first hemor-

rhage is recognized. That is the most important part of the whole matter.

DR. J. G. BLAKE: No hard-and-fast rule can be laid down. The individual case must be considered. In his case Dr. Truesdale unquestionably saved his patient's life. She had already lost much blood, and probably would have lost much more with any other treatment. If a case is taken in time such an operation involves no great danger, but we must operate early before too much blood has been lost.

DR. H. T. SWAIN: The question when to operate by whatever method is a very important one. If we operate when the woman is in a state of collapse the chances are bad either way. Get your patient in a suitable condition first if possible. The investigation of the question of blood pressure may be of great importance in this connection. We must have some reliable statistics as to the blood pressure in pregnant women. We sometimes cannot control hemorrhage by packing and have to operate at once, but when we can control the hemorrhage many patients are lost by inopportune operations of one kind or the other.

DR. F. B. HARRINGTON: It has been of interest to me to see how much less opposition to Cæsarian section in certain cases has been shown in the discussion tonight than was the case when we talked the matter over some months ago. May I ask Dr. Higgins to define a little more exactly the cases that he at present feels are suitable for Cæsarian section?

DR. W. E. BOARDMAN: I would like to emphasize the interest of the child. It seems to me that Cæsarian section with modern technique ought to reduce the infant mortality very materially. This, however, can be brought about only by educating the public up to coming under observation before patients are in the bad condition in which we usually find them. Many years ago, I advocated, in opposition to the recognized teaching, that we should anticipate exhausted nature and deliver women when they are still in condition to withstand the shock. The popular mind has gradually come around to understand this. I speak of this as instancing how the popular mind can be educated.

DR. G. J. ENGELMANN: Dr. Truesdale has made an admirable argument for Cæsarian section. Perhaps I did not grasp just what class of cases he regards as applicable for the cutting operation. I trust I did not understand him rightly in advocating it for all cases of placenta previa. He has given us statistics making it appear that placenta previa is a desperate condition. He might have given us other statistics. I have come across other statistics. For instance, Lohmeier had himself ninety-three cases with only one death. This might be explained by his great skill, but in his clinic, where the cases were treated by his assistants, good and poor, there were one hundred and one cases with only seven deaths. Frye and Mann have had equally good statistics. In fourteen cases of Frye's, no mothers were lost and only three children that could be regarded as affected by the method of treatment. Good obstetricians have a low mortality. I have never done a Cæsarian section for this indication, being satisfied with my results treated by version and tamponnade of the cervix by a leg. If Cæsarian section is admissible it can only be in late

cases where the child is living and liable to live. Whether the os is dilatable or not is where the individual education comes in. I regard the Porro operation for this indication as being cruel, and one to be avoided.

DR. G. H. WASHBURN: I agree as to the advisability of Cæsarian section for certain selected cases of placenta previa, especially where there is a good chance of saving the child, but I have as yet never come across a case where it seemed indicated.

DR. CHARLES M. GREEN: I wish to say one word more as to the rigid cervix. I have never yet seen a case of placenta previa in the later months where the cervix has been rigid enough to cause any great difficulty; and this is especially true when the placenta is centrally planted. I once asked Dr. W. L. Richardson about this, and I think he would not object to my quoting him to the effect that he too has never seen a case. Such cervices are generally conspicuously easy to dilate.

DR. F. S. NEWELL: I have seen one case at full term where the dilation was very difficult.

DR. G. J. ENGELMANN: I think that the advocates of Cæsarian section should define their position very closely. I was once present at a discussion of this topic where a surgeon stated his opinion that in time Cæsarian section would be the school operation of placenta previa. I strongly oppose any such teaching as that.

DR. J. B. SWIFT: I would like to ask whether the fact of a woman being a primipara and having therefore presumably a rigid vagina should not have some influence on one's choice of an operation, out of regard for the child's chances.

DR. REYNOLDS: Dr. Swift has called attention to a very important point. We know how many tears of the soft parts occur in primipara in ordinary labors, if abnormally fast.

DR. SWIFT: Suppose then we have a primipara at full term with a placenta previa and the child viable, it seems to me that Cæsarian section is clearly indicated.

DR. HIGGINS: As to the child having greater chances after a Cæsarian section than after version, it seems to me that we have often seen children who were resuscitated with only the greatest difficulty after a Cæsarian section.

DR. REYNOLDS: Yes; but they were all resuscitated in the end. The explanation is probably that it is because having had none of the usual friction in coming down through the passages they need more than ordinary children after birth.

DR. SWIFT: This discussion has been very interesting to me, as it shows that much thought has been given to this question, and that some change of opinion has taken place since we considered the subject last year. I myself feel strongly in favor of Cæsarian section in certain cases.

DR. HIGGINS: I think the choice of method is largely a personal matter with each man. For myself, I would limit the Cæsarian sections to the small class of cases I have referred to. I think the indiscriminate advocacy of Cæsarian section for placenta previa will do much harm. In the majority of cases other operations are far better. I think Dr. Truesdale's paper is a very fair one. I do not think that the religious question should be allowed to be too prominent; my experience is that

parents do not care very much for the fetal mortality where the mother's life is at stake.

DR. P. E. TRUESDALE: I do not at all want to be put into the category of men who are radical enthusiasts for Cæsarian section. On the contrary I think the cases where it is indicated are very few. The statistics I quoted are from two sources, one a man radically in favor of Cæsarian section and the other as radically opposed to it. The one gave a maternal mortality of 25% with a fetal of 60, and the other gave a maternal of 7%. Another set of statistics of complete previa gave a maternal mortality of 18% and a fetal of 60 to 70%. At the Boston Lying-in Hospital the maternal mortality in complete cases was 24%, and these cases were handled by skilled men. At the Sloane Maternity the mortality in complete cases is about 20%. Here again the cases were treated by skilled hands.

I said that Cæsarian section is indicated in complete previa and in partial previa where a version cannot be done. I should like to modify this statement. Even when the placenta is centrally implanted I think it should be done only where the child is viable. An os that is dilated one half or two thirds will offer little more by Cæsarian section than by version.

In my case, though unfortunately the child did not live, the parents and friends expressed great satisfaction that it had been born alive and been baptized.

Recent Literature.

A System of Physiologic Therapeutics. Edited by SOLOMON SOLIS COHEN, A.M., M.D., Senior Assistant Professor of Clinical Medicine in Jefferson Medical College; Physician to the Jefferson Medical College Hospital and to the Philadelphia, Jewish and Rush Hospitals; one time Professor of Medicine and Therapeutics in the Philadelphia Polyclinic, etc. Volume V. "Prophylaxis," "Personal Hygiene," "Civic Hygiene," "Care of the Sick." By JOSEPH McFARLAND, M.D., Professor of Pathology, Medico-Chirurgical College, Philadelphia; HENRY LEFFMAN, M.D., Professor of Chemistry in the Woman's Medical College, Philadelphia; ALBERT ABRAMS, A.M., M.D. (University of Heidelberg), formerly Professor of Pathology, Cooper Medical College, San Francisco; and W. WAYNE BABCOCK, M.D., Lecturer on Pathology and Bacteriology, Medico-Chirurgical College, Philadelphia. pp. 539. Philadelphia: P. Blakiston's Son & Co. 1903.

The fifth volume of this system, containing "Prophylaxis," "Personal Hygiene," "Civic Hygiene" and "Care of the Sick," is a consideration of what forms practically an introduction to the science of medicine. In a manner not usual with systems of therapeutics, it discusses the development and spread of disease, and emphasizes well the importance of combining prophylaxis and treatment in teaching and practice. The chapters are well arranged, and they cover concisely yet fully a wide field. Each chapter is in a large measure complete in itself, and the book therefore becomes useful as one of reference.

A Treatise on the Diseases of the Anus, Rectum and Pelvic Colon. By JAMES P. TUTTLE, A.M., M.D. Illustrated. New York: D. Appleton & Co. 1902.

The author states that this book is practically the outcome of twelve years' experience in one of the first and largest clinics for the special teaching and treatment of rectal diseases.

It is a volume of 961 pages, which treats most fully of rectal diseases. The opening chapters describe the embryology and anatomy of the anus, rectum and colon with their environments, also briefly the physiology of the subject. Then follows a chapter on malformations. Next the technique of the examination of patients, under which head is described the methods of the examination of feces, which latter is more fully discussed than is usual in books of this special branch of surgery. Then in succession follow the chapters describing catarrhal diseases of this region, both acute and chronic; tuberculosis; venereal diseases; ulcerations; fissure in ano; abscess; fistulae; strictures; constipation; fecal impaction; pruritus ani; hemorrhoids; prolapsus recti; neoplasms, benign and malignant; operative procedures; foreign bodies; traumatism; and neuroses. The concluding chapter is devoted to a description of recto-colonic alimentation, a very important subject, in which the physiology of this form of nutrition and the details of its technique are discussed; after which two pages of formulæ for enemata are appended.

The book is fully illustrated with 338 well-executed cuts incorporated in the text in appropriate places, and 8 full-page colored plates.

Dr. Tuttle is a clinical teacher of wide experience, and his book possesses characteristics which will appeal to the student, the general practitioner and the specialist. He has formulated his method from personal observation of a large number of actual cases. He concludes therefrom that no one method always succeeds and that one must be conversant with many to be ready to meet all cases and emergencies. Therefore, while relating his own opinions and practices, he has tried to give those of other operators in order that his readers may have as complete a knowledge of the subject as possible. This broadens the character of the book and increases its value.

The volume is a complete review of the diseases of the anus, rectum and pelvic colon. It considers etiology, pathology, symptomatology, diagnosis and treatment. Modern methods and improved instruments for diagnosis are carefully described as well as illustrated.

The anatomical section in Chapter I is full and also effectively illustrated. It is well worth a careful study. Much space has been devoted to the physical examination of patients, to diagnosis and to details of local treatment. The non-operative treatment of each disease is first described with the class of case in which it will probably prove useful. Also where such measures are likely to be inefficient the writer has not hesitated to say so.

Operative treatment receives its full share of attention. Modern procedures and technique are described in detail, especially rectal extirpation, the more recent methods for severe cases of prolapse,

the treatment for colitis and colostomy. This portion of the book adds greatly to its value.

The 300 original illustrations are taken from actual clinical cases or dissections.

Dr. Tuttle states that his book has been written during an active practice, and that almost every opinion expressed therein has been actually tested. One can hardly demand a more practical test of the value of an opinion than he has himself already applied, except that furnished by the corroborating experience of his colleagues; evidence which in many instances is already at hand.

The book will undoubtedly soon be conspicuous in the actual "working" libraries of surgeons, physicians and rectal specialists, as representing this special field of medicine for to-day.

A Text-Book of Diseases of the Ear. For students and practitioners. By DR. ADAM POLITZER, Imperial-Royal Professor of Aural Therapeutics in the University of Vienna. Translated and edited by MILTON J. BALLIN, Ph.B., M.D., and CLARENCE L. HELLER, M.D. New (4th) edition, revised and enlarged. In one octavo volume of 896 pages with 346 original illustrations. Philadelphia and New York: Lea Brothers and Co. 1902.

This is the fourth edition of what may be called the most comprehensive treatise on diseases of the ear. It has been rewritten in parts, in order to bring the subject matter to date. The portion of the work dealing with sinus-thrombosis is an example of this, and it is gratifying to note that American surgeons are taking a prominent place as authorities on this subject, several being quoted in the text.

The various intra-tympanic operations are conservatively discussed by the author, and form a valuable record of the knowledge which has been gained in this field during the past few years.

Regarding the mastoid operation (p. 507), Politzer takes a stand at variance with nearly all American operators, contending that an opening into the antrum is unnecessary, and that it is quite sufficient in the great majority of cases to simply open the mastoid cells.

Much credit is due the translators for the able manner in which they have accomplished their task.

Quiz-Compend; No. 14. A Compend of Diseases of Children. Especially adapted for the Use of Medical Students. By MARCUS P. HATFIELD, A.M., M.D., Emeritus Professor of Diseases of Children, N. W. U. Medical School; Physician to Wesley Hospital, Home for Crippled Children, Chicago Orphan Asylum, etc. Third edition, thoroughly revised. With a colored plate. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1903.

This little book is even more unsatisfactory than most of its class. The classification is obsolete and irrational, and the subject matter antiquated. It is full of inaccurate statements and contains not a few misstatements. The treatment recommended is that of a generation ago rather than that usually employed today. The student who depends on this book for his knowledge can hardly hope to pass a modern examination in pediatrics.

Therapeutics of Infancy and Childhood. By A. JACOB, M.D., LL.D. Third edition. Philadelphia and London: J. B. Lippincott Co. 1903.

In these days of therapeutic nihilism it is refreshing, even if one does not fully share his enthusiasm, to find a man who still believes in the efficacy of drugs. While he emphasizes their usefulness, Dr. Jacobi nevertheless does not underestimate the value of diet, hygiene and nursing in the diseases of infancy and childhood, but attaches even more importance to them than to drugs. His advice and suggestions, based as they are on many years of experience and careful observation, are worthy of the most careful consideration by all who have to deal with these conditions.

The book is full of aphorisms, some of which compare favorably with those of Hippocrates. Some examples are: "The choice between a badly-tasting medicine and a fine-looking funeral ought not to be difficult." "It is useless to lose the patient while his disease is being cured." "There are, fortunately, practitioners who prefer making a diagnosis of the real condition of an ailing baby, and that and its improvement or cure comprise the main treatment I recommend for 'difficult dentition.'"

While we cannot agree with all of Dr. Jacobi's conclusions regarding the feeding of sick children, we cannot fail to admire the chapter dealing with this subject as a piece of controversial writing, and appreciate the skill with which he has made use of all the arguments favorable to his point of view and omitted those unfavorable.

Taken all in all, however, the book is a most valuable one and will well repay careful perusal.

The International Medical Annual. A year book of Treatment and Practitioner's Index. Twenty-first year. New York-Chicago: E. B. Treat & Co. 1903.

The Medical Annual, now in its twenty-first year, continues on the same plan inaugurated when its publication was begun, of condensing into a single volume a reflection of the medical knowledge of the year. The volume is so well known that notice need only be taken here that the principal change in the present issue is a general summary of the year's work, from which it is hoped that the general trend of opinion may be more quickly obtained.

Nephritis. Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By PROF. DR. CARL VON NOORDEN, Physician-in-Chief to the City Hospital, Frankfurt-a.-M. Authorized American edition translated under the direction of BOARDMAN REED, M.D. New York: E. B. Treat & Company. 1903.

We are glad that Professor v. Noorden's monograph on nephritis has been translated into English. The original appealed to us so strongly that some months ago we gave our readers a summary of its contents. This is now referred to in lieu of a further review. Boston Med. and Surg. Journ., 1902, vol. cxlvii, p. 543.

E. P. J.

THE BOSTON

Medical and Surgical Journal

THURSDAY, APRIL 2, 1903.

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THE THEORY AND PRACTICE OF MEDICINE.

It is an unending source of regret that we cannot rise above the conception that modern medicine is somehow irrevocably made up of two divisions which we speak of as theoretical and practical, or scientific and clinical. There is a certain very manifest tendency to exaggerate the supposed differences between these divisions and to minimize the relationships and interdependence of the one upon the other. As a matter of fact we shall never attain a broad-minded conception of medicine and its liberal teaching until we come to recognize the essential identity of the so-called theoretical or scientific and the practical or clinical sides. The exaggeration of differences which in reality do not exist and never have existed certainly stands in the way of the symmetrical development of our medical teaching and medical knowledge. The question of determining the character of a patient's pulse by touch or instruments of precision is precisely the same problem, viewed from a different standpoint, as the postmortem study of the arterial walls and physical condition of the circulatory apparatus. Both are eminently practical and equally scientific, if approached in the proper spirit of enquiry. To make a skillful physical examination is a scientific undertaking of the most difficult sort, altogether comparable with the subsequent study of the causes of the symptomatic manifestations during life. If we could only teach students and impress upon ourselves the undeniable fact that, petty distinctions aside, the problems of medicine are afforded by the cause, course and effects of disease taken as a whole, we should hear far less of "practical" and "theoretical," or of the more objectionable distinction of "clinical" and "scientific."

Whatever the future may bring forth, present tendencies are apparently not altogether encourag-

ing. A perfect reconciliation appears distant. The reasons are not far to seek. The so-called theoretical branches of medicine are being taught more thoroughly and in a more scientific spirit than ever before. Details of knowledge are, in a measure, giving place to insistence upon proper methods of study, and the supposed immediate needs of the practitioner have been more and more forced into the background of attention. An active agency in this direction has been the gradual steady exclusion of practitioners or of men holding hospital places from positions in theoretical departments, thereby still further removing, in the student's mind, the practical significance of their laboratory work. This combination of circumstances, together with the wholly justifiable eagerness of individual departments for the prosecution of original investigation, has led to a widening of the gap between the theory and practice of medicine, which all must regret. That the spirit of research should be encouraged to the last degree is self-evident; that the vitality of a medical school depends upon study into the most abstruse and apparently unpractical fields of medicine is absolutely unquestioned. Such lines of investigation cannot be carried too far, and every means should be applied to make such work effective. We are quite unwilling to admit that such an aim is antagonistic to the best interests of the future practitioner of medicine. It should on the contrary be a positive incentive to him, and conduce to a deeper comprehension of his ultimate work.

The fact remains, however, and it is a hard one to face, that there is an increasing tendency among students to neglect or ignore the relationship between the work of their earlier and later years. Anatomical facts, physiological principles and pathological details are a memory rather than a working basis of subsequent knowledge. The student during his first years is impressed with the importance of his laboratory study, as he should be, and during his later years he is too often led to believe this same study unpractical and unessential to his future success. To the physician looking upon the matter from the perspective of experience this may seem a matter of trivial import; to the student it means a state of confusion as to the meaning of his work, which is one of the most deplorable conditions in our present methods of instruction. That this is not a mere speculation must be evident to any one who has had an opportunity to teach the same students both in the theoretical and clinical parts of their course. The sense of connection is lost; the ability to integrate the knowledge already acquired with facts as seen in the clinic is not in evidence. No bridge has been provided from the

theoretical to the clinical aspects of the subject, hence, naturally enough, the student fails to see the connections which would be of the utmost service to him in his estimate of the condition under consideration. How often does a student apply his physiological knowledge to the most palpable facts of disease, or study his microscopic slides of pathological conditions in connection with his clinical work! No systematic attempt is made, ordinarily, to impress upon the student the fact that his antecedent knowledge of anatomy, physiology or pathology is never for a moment to be left out of consideration in his study of cases. Clinical and theoretical departments cannot be further separated if we are to maintain the coherence which is altogether desirable in a system of elementary medical education. Evidently some remedy must be found.

THE ELMIRA REFORMATORY.

THE New York State Reformatory at Elmira has long been an institution to which the public has looked for progressive methods of administration in the treatment of criminal and defective classes. The recent report for 1902 contains, in addition to many matters of general interest, certain details which appeal more particularly to the physician.

The manifest difficulty of treating successfully contagious diseases, among the most important of which tuberculosis must now be included, in public institutions of this character has long been recognized. The success which has attended the efforts at this reformatory are, therefore, quite worthy of attention. In speaking of this matter, Dr. Frank L. Christian, senior physician, considers the general subject under three heads: first, the care of the tuberculous person in the institution hospital; secondly, sending home all persons suffering with tuberculosis; third, the transfer of tuberculous patients to a properly equipped special hospital under the direction of the prison department. At Elmira the first method has been particularly resorted to, and it is felt not with altogether satisfactory results. In spite of precautions, complete isolation is impossible, and persons become infected through contact apparently far more readily than under other conditions. To send criminals home because they are suffering from tuberculosis is in many cases impossible, owing to their probable reversion to former habits of crime. The third suggestion is regarded as the most rational and the most likely to produce really satisfactory results. It is suggested that a common hospital be built to which prisoners suffering from tuberculosis in various parts of the State may be sent. Such a hospital has, however, not yet been attained.

It is interesting further, in looking over this report, to see how much attention is given to the details of medical treatment and to the study of the inmates as patients and as abnormal members of society. That much may be done to elucidate some of the most difficult and important social and medical problems at such institutions is unquestioned, and every encouragement should be given to those having charge of them to prosecute in a collective manner such researches. During the year 1902 but one death occurred from typhoid fever, and two only from pulmonary tuberculosis. The report further states the somewhat remarkable fact that out of a total of 1,523 men only a little more than 1½% are removed at one time from routine prison life by illness. When we compare this record with what happened in institutions of similar character several decades ago, we are again impressed with the progress which is being made in the prophylaxis of formerly fatal diseases.

THOUGHTLESSNESS OF HOSPITAL ASSISTANTS OR HOUSE OFFICERS.

IN talking with patients and their friends the hospital assistant or house officer sometimes forgets that, besides himself, there is usually another doctor in the case, to whom a thoughtless remark on his own part may do harm. Such criticisms as gave rise to the letter in the *JOURNAL* of March 19 are due, without doubt, to thoughtlessness rather than to any malicious design. But the necessity of remembering the "other man" (for tact often means merely a discreet silence) is such that the matter should not be passed unnoticed. We believe that too much may sometimes be said by clinical teachers in calling attention to examples of bad or unsuccessful treatment in order to impress a lesson on the student. The lesson, however, acts in two ways—it not only emphasizes the proper treatment, but it may lead the student to a thoughtless lack of consideration for an ill-trained or unlucky practitioner, whose difficulties and equipment he does not appreciate. Working under the direction of the best medical men in the community, the mistakes of other doctors often seem glaring to the assistant; his own mistakes are inconspicuous, or are shielded by the protecting wing of the institution where he makes them; perhaps, also, he has not lost a youthful overconfidence which may make him too ready to criticise others, or may sometimes, as described by our correspondent, lead him into an error of judgment worse than the one he finds fault with.

Hospital patients can rarely have at home the skilled care which they receive in the hospital wards, and the house officer is frequently impressed by

the work of men less favorably situated. Such cases, however, are by no means always the fault of the outside doctor; he has usually done the best he could do under the circumstances, and the house officer, with his better facilities, is on duty not only to treat the patient, but to deal thoughtfully when the occasion arises with a perhaps less fortunate practitioner. Above all, if criticism of treatment should be called for, let him be certain that he stands on firm ground.

MEDICAL NOTES.

THE MEDICAL CONGRESS AT MADRID.—In the interest of those who are going to attend the Fourteenth International Medical Congress at Madrid, April 23 to 30, it is announced by Dr. John H. Huddleston, secretary of the American Committee, that the French railroads have made their rate reductions for the members of the Congress depend on a special certificate, and on the use of the same route for going and returning. Any member of the Congress may, therefore, write immediately to the secretary-general at Madrid, stating at what port he expects to land and what route he will take. The secretary-general will send to him at the port named, under the address *poste restante*, the necessary certificate.

A MEMORIAL TO THE LATE PROFESSOR VON PETTENKOFER.—More than three thousand pounds have already been subscribed in Germany for the erection of a memorial to the late Professor von Pettenkofer in Munich. England has also interested herself in the cause, and contributions are being sent in to the committee appointed to co-operate with the Munich committee. The proposed memorial, it is said, will take the form of a monument.

TUBERCULAR HYDROCELE.—It is reported in the *British Medical Journal* for March 21, 1903, that a French observer, Jousset, has by a special method been able to demonstrate tubercle bacilli in the pale yellow serous fluid of ordinary hydroceles, which were clinically regarded as simple. In the hands of Tuffier, careful bacteriological examinations of such cases have for years given negative results, but it is possible that a new method will demonstrate the presence of bacilli in many of these simple cases, and lead to their being grouped with the other numerous forms of tuberculosis of serous membranes.

PROF. ENRICO BOTTINI.—It is announced that the distinguished surgeon Prof. Enrico Bottini of Pavia died March 11, at the age of sixty-five.

A PROPOSED LEPER COLONY IN THE WEST INDIES.—It has been reported that the Cuban Gov-

ernment has received proposals from a German scientific association, which is anxious to acquire the Isle of Pines for use as an international leper colony. Representatives of the association who have recently visited the Isle of Pines believe that the medicinal properties of the mineral springs are what they require, in connection with a salubrious climate, for a place of retreat for lepers of the civilized nations.

CORNELL'S ACCEPTANCE OF MR. CARNEGIE'S OFFER. — Mr. Carnegie's offer to defray the expense of the new filtration plant of Cornell University, at Ithaca, has been accepted. It is estimated that the plant will cost about \$150,000.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, April 1, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 29, typhoid fever 8, measles 31, smallpox 3.

BEQUEST TO SHARON SANITARIUM. — By the will of the late Mrs. Lucy R. Read of Boston the Sharon Sanitarium has recently received a bequest of \$5,000.

BEQUEST TO BOSTON MEDICAL LIBRARY. — Under the ruling of the Supreme Court of Massachusetts that the Boston Medical Library is a charitable institution, we understand that the library will be given \$50,000 from the Billings estate.

INSTITUTIONS CONFERENCE. — At the recent meeting of the heads of Boston municipal departments certain interesting facts and statistics were presented. The number of applicants for some variety of public care was in excess by 201 over last year, with a total of 4,321 for the year. The observation hospital at Deer Island received 287 persons, an increase of 87 over the previous year. Most of these were suffering from delirium tremens. Fewer dipsomaniacs were committed than in the previous year. Attention was drawn by the chairman of the pauper institutions trustees to the need of increased hospital accommodations at Long Island. The recently opened hospital for consumptives was fully occupied within two weeks, so that patients are now of necessity being cared for in the general wards of the hospital. That this is contrary to the best modern ideas is self-evident, and if patients with tuberculosis are to be sent to Long Island, the request is just that adequate provision should be made for their proper housing in separate wards.

DR. GRENFELL'S HOSPITALS. — It will be remembered that Dr. Grenfell has established five hospitals on the coast of Labrador and Newfoundland, which are used more by the natives and fishermen from New England than by men on board vessels of the British fleet which may be in that neighborhood. For the equipment of these hospitals many surgical instruments and much laboratory apparatus are required — in fact, almost any furniture fitted for a new mission hospital, especially such as could be used in a doctor's office, the matron's office, or a general convalescent room. Hospital supplies of any sort would also be welcome. It is hoped that, inasmuch as many patients treated come from New England, physicians and others interested will feel inclined to make liberal contributions toward the support of this worthy cause. The JOURNAL would be glad to furnish a more detailed list of special articles required to those who may be interested.

MEMORIAL MEETING FOR DR. JOHN HOMANS. — A memorial meeting for Dr. John Homans, under the auspices of the Boston Society for Medical Improvement, was held March 30 at the Boston Medical Library. Remarks were made by Dr. M. H. Richardson, Dr. A. T. Cabot, Dr. Geo. B. Shattuck, Dr. E. H. Bradford, Dr. R. T. Edes and Dr. S. W. Langmaid. The following resolutions were presented by Dr. J. Collins Warren and unanimously adopted:

Resolved, That we take this opportunity to express our appreciation of the prominent part which Dr. Homans has taken in the development of abdominal surgery, in his bold pioneer work in widening the field of this important department of modern surgery, and in placing it upon a rational and enduring basis;

That we recognize in his death the loss of a personality which has shed new luster on an already honored name, and has left a deep imprint upon the traditions of New England surgery.

NEW YORK.

APPOINTMENT. — Dr. Frederick H. Dillingham, assistant sanitary superintendent in the Health Department, has resigned, and Dr. Walter Benschel, who was a medical inspector, has been appointed to the position.

MALARIA AND TYPHOID IN THE HEALTH REPORT. — The condensed quarterly report of the Health Department for the last quarter of 1902, just issued, shows that there were 677 less deaths recorded, and a lowered death-rate of 1.21 points per thousand noted, as compared with the corresponding quarter of 1901. The one feature of this decrease standing out more prominently than any other, it is stated, was the number of deaths from the communicable diseases, all of which showed a considerable decrease, with one exception, typhoid fever, to which 44 more deaths were attributed

than in the last quarter of the year 1901; and if the decrease of 40 deaths from malarial fever be placed at the side of this increase, the question naturally arises, was this decrease in malarial fevers due to more accurate diagnoses, thereby placing these deaths among those of typhoid fever, or were the official and individual efforts aimed at the extermination of the plasmodium-conveying mosquito productive of such immediately beneficial results?

NEW BUILDING FOR LONG ISLAND COLLEGE HOSPITAL.—It is announced that through the generosity of J. Rogers Maxwell, the Long Island College Hospital in Brooklyn is to have a new building, replacing the one now occupied by it. Mr. Maxwell has offered to erect at his own expense the two central sections of the proposed structure as a memorial to his brother, Henry W. Maxwell, who for many years was a member of the Board of Regents of the institution, and who at the time of his death was engaged on a plan for its reconstruction. The whole will cost about \$1,000,000, and it is stated that George Foster Peabody and his two brothers have offered to defray the expense of equipping an operating amphitheater on the top floor of the Amity Street wing to accommodate 250 students. The hospital already possesses in its immediate vicinity the Hoagland Laboratory, erected by Dr. Cornelius N. Hoagland; the Polhemus Clinic, erected by Mrs. H. D. Polhemus as a memorial to her husband; and the Dudley Memorial, a home for nurses, the gift of Henry W. Maxwell in memory of Dr. William H. Dudley, one of the organizers of the German Central Dispensary, which afterwards became the Long Island College Hospital. The latter building has just been completed and handed over to the Board of Regents by Mr. Maxwell's executors.

REPORT OF STATE DEPARTMENT OF HEALTH.—In the annual report of the State Department of Health, which has just been presented to the governor, it is shown that there were 124,160 deaths in the State during the year 1902, a decrease of about 5,000 from the previous year. The death-rate was 17, which is the average for the five preceding years. The deaths from typhoid fever numbered 1,318, which is more than 300 less than the annual average for the past five years. There were 12,582 deaths from pulmonary tuberculosis, against an average of 13,270 for the five years. As a very general pollution of the water-courses and bodies of water throughout the state was believed to exist, the department undertook an inspection of a large number at widely separated points in the state, and secured evidence of the very general neglect to protect the purity of these various supplies. Immediate and general legisla-

tion which shall at least prevent an increase of these contaminations is regarded as a public necessity. To meet this a bill limiting or absolutely preventing the discharge of untreated sewage and other refuse or waste matters into the fresh waters of the State has been prepared and introduced into the legislature. Through the liberality of citizens of Buffalo, an excellent building has been erected for the cancer laboratory, and treatment of cancerous diseases has been steadily carried forward through the year. The work of the Antitoxin Laboratory, auspiciously inaugurated last year, has developed into very gratifying usefulness. The demands made upon the laboratory for diphtheria antitoxin especially have steadily increased, and this widespread distribution insures the prompt treatment of the proper cases, even if located in the most inaccessible parts of the state.

A FAITH CURE VICTORY.—The Appellate Division of the New York Supreme Court has reversed the verdict of the jury in the lower court, and ordered a new trial in the case of a faith curist of Mount Pleasant, Westchester County, who was convicted of failure to furnish medical aid to his two-year-old child, dying of catarrhal pneumonia, and who was fined \$500. In the opinion of the Court, which was written by Justice Bartlett, two other of the justices concurring, it was stated that, while the existence of a legal obligation to provide medical attendance was granted, it did not seem that such obligation applied in every case of illness in children, and in this particular instance the prosecution had failed to show that the illness was serious enough to render the failure to summon a physician a punishable offence. This faith-cure victory, therefore, is no great cause for rejoicing for Eddyites and others of their ilk, as it simply furnishes a needed lesson in the drawing of indictments. Justice Goodrich, one of the members of the court, wrote a dissenting opinion which contains an admirable statement of a principle which applies, or ought to apply, to all problems of this sort. "The doing of an act or the omitting to do an act," he said, "which endangers the life and health of a citizen, endangers the peace and safety of the state, and cannot be justified under the plea of liberty of conscience."

--- Miscellany.

TYPHOID PLASMA OBTAINED THROUGH THE USE OF LIQUID AIR.¹

In a communication to the Royal Society in August, 1902, Dr. Allan Macfadyen, director of the Jenner Institute, showed that the typhoid bacillus,

¹ Brit. Med. Journ., March 21, 1903.

when immersed in liquid air (about -190° C.) for as long as six months, underwent no impairment of vitality. The growth and functional activity of the organisms were unaffected, although there is reason to believe that intracellular metabolism must have completely ceased while the bacilli were in this solidly frozen state. Through other experiments, made by himself and Mr. Sydney Rowland, he was next led to the conclusion that the toxin of the bacilli was not extracellular but intracellular. The search for its intracellular origin was instituted in experiments somewhat as follows: The organisms were grown on ordinary beef-broth agar, and, after careful washing with distilled water, were disintegrated in a mechanical contrivance at the temperature of liquid air. In triturations with fine silver sand, as had been previously practiced, an appreciable amount of heat is evolved, by which chemical changes in the juice were obtained. The use of liquid air, however, insured that no chemical change took place during the disintegration, as well as that the organisms were disintegrated without the addition of any triturating substance. The disintegrated mass was now freed by centrifugalization from any whole bacilli or other suspended and soluble particles, and the resulting opalescent fluid was found on inoculation into animals in small doses to be invariably toxic or fatal. The conclusion, therefore, was arrived at that the typhoid bacillus contains an intracellular toxin. The cell juice thus obtained contained no living organisms, it could be easily handled, exactly standardized and measured into accurate doses.

The object which the experimenters had in view was to obtain from the bacillus the fresh unmodified cell plasma in its highest condition of physiological activity. As has been said, the trituration was originally performed with sand, and the plasma obtained by this method when injected subcutaneously or intraperitoneally in guinea pigs was found to confer complete immunity against a lethal dose of typhoid bacilli. The protection lasted for a period of about four weeks; it was also found that another immediate effect of the injection of the cell plasma was the appearance of the agglutination reaction in inoculated animals. The blood serum of rabbits which had received one injection of the cell plasma was found at the end of four weeks to have active, specific bacteriolytic properties as regards the typhoid bacillus. The blood serum caused the complete destruction of the typhoid bacilli when tested in the peritoneal cavity of a normal guinea pig. In the same way the blood of monkeys similarly treated exhibited similar agglutinated and bacteriolytic properties.

Lately Dr. Macfadyen has carried the matter somewhat further; he finds that by repeated injections of the immunizing substance obtained by the disintegration of the organism at the temperature of liquid air, the blood serum of the animal is rendered both antitoxic and bactericidal. Further, it was found that if an animal inoculated with a lethal dose of the living bacteria were, after half the time had elapsed necessary to bring about death, injected with the protective substance, it recovered. It would thus seem that the cell plasma prepared in this way holds out hope of affording us both the means of preventing and of treating typhoid fever.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 21, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,369 | 406 | 24.52 | 20.67 | 3.07 | 1.02 | 1.24 | |
| Chicago . . . | 1,885,000 | 612 | 169 | 23.69 | 21.73 | .98 | 1.80 | 1.30 | |
| Philadelphia . | 1,378,527 | 535 | 139 | 29.18 | 15.32 | 1.30 | .75 | .75 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 184 | 52 | 27.17 | 16.30 | — | .54 | — | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 183 | 63 | 22.40 | 24.04 | 1.09 | 3.28 | — | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 70 | 23 | 29.98 | 31.41 | 1.43 | 4.28 | — | |
| Boston . . . | 693,163 | 225 | 61 | 19.55 | 23.11 | 2.22 | 2.22 | — | |
| Worcester . . | 132,044 | 35 | 10 | 8.57 | 9.43 | — | — | — | |
| Fall River . . | 115,549 | 44 | 22 | 29.53 | 25.00 | — | — | 4.54 | |
| Lowell . . . | 101,359 | 39 | 7 | 10.25 | 23.08 | — | — | — | |
| Cambridge . . | 98,639 | 41 | 12 | 12.19 | 26.83 | — | — | — | |
| Lynn | 72,497 | 21 | 4 | 4.76 | — | — | — | 4.76 | |
| Lawrence . . | 69,766 | 23 | 10 | 13.04 | 13.04 | — | — | — | |
| Springfield . | 69,389 | 33 | 6 | 12.12 | 24.24 | — | — | — | |
| Somerville . . | 68,110 | 28 | 9 | 17.85 | 25.00 | 3.57 | 3.57 | — | |
| New Bedford . | 67,138 | 36 | 13 | 25.00 | 16.67 | 2.78 | — | 11.11 | |
| Holyoke . . . | 49,286 | 12 | 4 | 25.00 | 16.67 | 8.33 | — | — | |
| Brookton . . | 44,873 | 9 | 5 | 11.11 | 11.11 | — | 11.11 | — | |
| Haverhill . . | 42,104 | 6 | 1 | 16.67 | — | — | — | — | |
| Newton . . . | 37,794 | 14 | 2 | 14.28 | 21.42 | — | — | — | |
| Salem | 36,876 | 18 | 5 | 22.22 | — | 11.11 | 5.55 | — | |
| Malden . . . | 36,286 | 14 | 1 | — | 7.14 | — | — | — | |
| Chelsea . . . | 35,876 | 9 | 3 | — | 22.22 | — | — | — | |
| Fitchburg . . | 35,069 | 8 | 3 | 12.50 | — | — | — | — | |
| Taunton . . . | 33,656 | 10 | — | 20.00 | 20.00 | — | — | — | |
| Everett . . . | 28,620 | 11 | 1 | 9.09 | — | — | — | — | |
| North Adams . | 27,862 | 5 | 2 | 20.00 | 20.00 | — | — | — | |
| Gloucester . . | 26,121 | 7 | 2 | 42.90 | — | 28.60 | — | — | |
| Quincy . . . | 26,042 | 12 | — | 8.33 | 8.33 | — | 8.33 | — | |
| Waltham . . . | 25,138 | 13 | 4 | 15.40 | — | 7.70 | — | — | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 5 | — | 20.00 | — | — | — | — | |
| Chicopee . . . | 21,031 | 8 | 3 | 12.50 | 12.50 | — | — | — | |
| Medford . . . | 20,962 | 7 | — | — | 42.90 | — | — | — | |
| Northampton . | 19,883 | 5 | 0 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 1 | 1 | 16.67 | 16.67 | — | — | — | |
| Clinton . . . | 15,161 | 5 | — | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 3 | — | — | 33.33 | — | — | — | |
| Woburn . . . | 14,300 | 8 | 1 | 12.50 | 25.00 | — | — | — | |
| Hyde Park . . | 14,175 | 5 | 1 | 20.00 | 20.00 | — | — | 20.00 | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . | 13,609 | — | — | — | — | — | — | — | |
| Melrose . . . | 13,600 | 3 | 1 | 33.33 | 33.33 | — | — | — | |
| Westfield . . | 13,418 | 3 | 1 | — | 66.67 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 5 | 3 | 40.00 | — | 20.00 | 20.00 | — | |
| Framingham . | 12,534 | 2 | — | — | 50.00 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 4 | 0 | 25.00 | 125.00 | — | — | — | |
| Southbridge . | 11,268 | 3 | 1 | — | 33.33 | — | — | — | |
| Watertown . . | 11,077 | 2 | — | — | 50.00 | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,710; under five years of age, 1,057; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 811, acute lung diseases 735, consumption 395, scarlet fever 37, whooping cough 49, cerebrospinal meningitis 14, smallpox 7, erysipelas 14, measles 50, typhoid fever 75, diarrheal diseases 82, diphtheria and croup 72.


From whooping cough, New York 14, Chicago 11, Philadelphia 4, Baltimore 1, Pittsburg 6, Providence 3, Boston 5, and Somerville, Brookton, Salem, Quincy and Revere 1 each. From erysipelas, New York 9, Chicago 2, Philadelphia 1, Baltimore 1, Boston 1. From smallpox, Chicago 2, Philadelphia 1, Pittsburg 4.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending March 7 the death-rate was 16.6. Deaths reported, 4,790; acute diseases of the respiratory organs (London) 251, whooping cough 112, diphtheria 77, measles 142, smallpox 16, scarlet fever 52.

The death-rate ranged from 6.3 in Handsworth to 26.5 in Coventry; London 16.4, West Ham 16.1, Brighton, 15.1, Portsmouth 15.5, Southampton 16.1, Plymouth 18.2, Bristol 16.9, Birmingham 17.8, Leicester 12.5, Nottingham 16.1, Bolton 19.5, Manchester 23.0, Salford 18.6, Bradford 18.2, Leeds 15.2, Hull 14.4, Newcastle-on-Tyne 22.1, Cardiff 13.9, Rhondda 16.1, Liverpool 20.1.

METEOROLOGICAL RECORD.

For the week ending March 21, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. | |
|--|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| | | | | | | | | | | | | | | |
| S. 15 | 30.40 | 44 | 52 | 35 | 70 | 81 | 76 | N E | E | 13 | 11 | O. | C. | O. |
| M. 16 | 30.51 | 37 | 39 | 35 | 90 | 91 | 96 | E S E | S E | 12 | 4 | R. | O. | T. |
| T. 17 | 30.21 | 48 | 59 | 38 | 88 | 80 | 84 | S W | N | 4 | 4 | O. | C. | O. |
| W. 18 | 30.48 | 42 | 45 | 38 | 85 | 92 | 88 | N E | S E | 9 | 8 | O. | C. | O. |
| T. 19 | 30.31 | 56 | 72 | 40 | 85 | 62 | 74 | S W | S W | 10 | 13 | C. | C. | O. |
| F. 20 | 30.13 | 60 | 76 | 43 | 82 | 82 | 82 | S W | S W | 14 | 13 | C. | C. | O. |
| S. 21 | 30.12 | 50 | 60 | 39 | 94 | 96 | 95 | N E | E | 7 | 8 | O. | R. | O. |
|  | 30.31 | | 58 | 38 | | 84 | | | | | | | | .33 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MARCH 26, 1903.

STONER, G. W., surgeon. To proceed to Washington, D. C., for special temporary duty. March 20, 1903.

GODFREY, JOHN, surgeon. Department letter of Nov. 22, 1902, granting Surgeon Godfrey extension of leave of absence for three months, amended so that said extension shall be for two months and twenty-five days from Dec. 13, 1902. March 18, 1903.

MEAD, F. W., surgeon. Granted leave of absence for five days from April 13. March 25, 1903.

SMITH, A. C., passed assistant surgeon. Granted leave of absence for fifteen days from April 3. March 25, 1903.

ROBINSON, D. E., assistant surgeon. Granted leave of absence for two months and fifteen days from April 1. March 17, 1903.

SCHERESCHESKY, J. W., assistant surgeon. Granted leave of absence for one day. March 23, 1903.

GIBSON, R. H., pharmacist. Department letter of March 18, 1903, granting leave of absence for twenty-three days to Pharmacist R. H. Gibson, amended so that said leave shall be for eight days from March 9. March 20, 1903.

STIER, CARL, pharmacist. Granted leave of absence for one day, March 24, 1903, under paragraph 210 of the regulations.

PROMOTION.

Assistant Surgeon M. H. FOSTER commissioned as passed assistant surgeon, to rank as such from March 11, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING MARCH 28, 1903.

W. B. GROVE, passed assistant surgeon. Detached from treatment at the Naval Hospital, New York, and ordered to duty at the Naval Dispensary, Washington, D. C.

R. W. PLUMMER, passed assistant surgeon. Detached from the Navy Yard, New York, and granted sick leave for three months.

J. P. MURPHY, assistant surgeon. Detached from the "Glacier," and ordered to the "Monocacy."

RECENT DEATHS.

CHARLES FREDERICK PARKER, M.D., M.M.S.S., died at his home on Chambers Street, Boston, March 24, 1903, aged forty-three years. He had practised medicine in the West End for twenty years.

ROBERT SAFFORD NEWTON, M.D., of New York, a well-known neurologist and alienist, died on March 26 of cerebrospinal meningitis. He was born in Cincinnati, Ohio, in 1858, and received the degree of M.D. from the University of the State of New York. He was attending neurologist to the Presbyterian Hospital and to St. Mary's Hospital, Brooklyn.

CHARLES DICKENS EVANS BALL, M.D., M.M.S.S., died in Boston, March 29, 1903, aged forty-four years.

SOCIETY NOTICES.

BOSTON MEDICAL LIBRARY. MEDICAL MEETING.—The regular meeting will be held in the John Ware Hall, Medical Library Building, The Fenway, on Monday, April 6, 1903, at 8.15 P.M., sharp.

Program: Dr. Allen Greenwood, "Albuminuric Retinitis"; Dr. Franz Pfaff, "Some Remarks on Pharmacology and Therapeutics"; Dr. Charles Harrington, "The Therapeutic and Nutritive Value of Foods for the Sick"; Dr. Charles H. Williams, "The Need of Supplementary Lantern Tests for the Proper Examination of Color-Perception." Demonstration of a new Lantern.

ARTHUR K. STONE, M.D.,
Secretary.

543 Boylston Street.

AMERICAN ACADEMY OF MEDICINE.—The twenty-eighth annual meeting of the American Academy of Medicine will be held in the large Banquet Hall of the "Arlington," Washington, D. C., on Monday and Tuesday, May 11 and 12, 1903.

ALEX. R. CRAIG, M.D.,
Secretary.

MEETING OF THE BOARD OF MEDICAL EXAMINERS FOR THE STATE OF TEXAS.—The above meeting will be held in Austin, Texas, on April 20, 21, 22 and 23. Those who desire to take this examination must take out application, and present themselves not later than ten o'clock on the morning of the 20th of April at the hall for said examinations on the first floor of the Driskill Hotel Building, Austin, Texas. For further information or application blanks, address Dr. M. M. Smith, Secretary, Austin, Texas.

BOOKS AND PAMPHLETS RECEIVED.

Massage in Sprains, Bruises and Dislocations. By Douglas Graham, M.D. Reprint from third edition of "A Treatise on Massage."

Congenital Dislocation of the Hip. By Dexter D. Ashley, M.D., of New York. Reprint. 1902.

Experimental Research on the Heart of a Dog, with Reference to Cardiotomy and Cardiorrhaphy. By Benjamin Merrill Ricketts, Ph.B., M.D., of Cincinnati, Ohio. Reprint. 1902.

Heart Suture. By Merrill Ricketts, M.D., of Cincinnati, Ohio.

Cutaneous Blastomycosis. By James Nevins Hyde, A.M., M.D., and Frank Hugh Montgomery, M.D., of Chicago. Illustrated. Reprint. 1902.

Is the Adenoid Operation a Justifiable Surgical Procedure? By George L. Richards, M.D., of Fall River, Mass. Reprint. 1903.

The Use of Gelato-Glycerin Bougies in the Treatment of Acute Earache in Young Children. By George L. Richards, M.D., of Fall River, Mass. Reprint. 1903.

The Involution of the Appendix—Acute Suppurative Appendicitis as a Sequel thereto. By Horace Packard, M.D., and J. Emmons Briggs, M.D., of Boston. Reprint. 1902.

The American Year-Book of Medicine and Surgery, being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery, Drawn from Journals, Monographs and Textbooks of the Leading American and Foreign Authors and Investigators. Collected and arranged with Critical Editorial Comments by various writers, under the general editorial charge of George M. Gould, M.D. Medicine. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1903.

Travaux du Laboratoire de Psychologie de la Clinique à la Salpêtrière. Profs. F. Raymond et Pierre Janet. Les Obsessions et la Psychasthénie. Paris: Félix Alcan. 1903.

The Diseases of Warm Countries: A Handbook for Medical Men. By Dr. B. Scheube. Translated from the German, by Pauline Falcke, with Addenda on Yellow Fever, by James Cantlie, M.B., F.R.C.S.; and on Malaria, by C. W. Daniels, M.B., M.R.C.S. Edited by James Cantlie, M.A., M.B., F.R.C.S., D.P.H. Second revised edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Conditions et Diagnostic du Terrain de la Tuberculose Pulmonaire. By MM. Albert Robin and Maurice Binet. Reprint. Paris. 1901.

Four Lectures on the Nature, Causes, and Treatment of Cardiac Pain. By Alexander Morrison, M.D., F.R.C.P. (Edin.) Reprint. London. 1902.

Fibroid versus Varix. By Daniel H. Craig, M.D., Boston, Mass. Reprint. 1900.

Pregnancy and Tuberculosis. Translated from the original MS. of M. Samuel Bernheim of Paris, by Daniel H. Craig, M.D., of Boston.

Character Study in the Examination of Persons for Military Service. By Franklin Bache Stephenson, A.M., M.D., A.A.S., Medical Inspector, U.S.N. Reprint. 1903.

Original Articles.

DRY HOT AIR AS A THERAPEUTIC AGENT, WITH DEMONSTRATION OF THE BODY TREATMENT.¹

BY CLARENCE EDWARD SKINNER, M.D., LL.D., NEW HAVEN, CONN.

Professor of Thermotherapy and President of the Faculty at the New York School of Physical Therapeutics; Editor of the Department of Thermotherapy in the Journal of Advanced Therapeutics; Physician in charge of the Newhope Hot-Air Sanitarium, New Haven, Conn.; Member of the American Medical Association, American Electro-Therapeutic Association, American Roentgen Ray Society, American Association for the Advancement of Science, Yale Medical Alumni Association, etc.

Mr. President and Gentlemen — Dry hot air is but little known to the profession at large, hence in addressing a gathering of general practitioners it becomes necessary to treat the subject from a general rather than a technical standpoint. Like all new therapeutical measures, it has had to pass through an experimental stage during which its employment was purely empirical, and its place in the estimation of the masses of the profession was the unenviable though inevitable one occupied by all new measures the use of which is empirical.

Those of us who were sufficiently impressed by its early promises to continue the study of its remedial influences under varying pathological conditions, however, have become convinced that in it we possess an agent capable of exerting great power for good in many directions, and the result of this continued study has been the accumulation of data sufficient to rescue the employment of the measure from the mists of empiricism, and to place it today upon a firm basis of rational indication in a large number of diseased states.

The first question which logically comes up for consideration when a new therapeutical agent appears, is "How does it influence the human organism? What is its physiological action?" The question which *naturally* assumes the most attractive aspect, however, is "What will it do in a curative way?" and as in the case of the remedy under discussion the actual course of its therapeutical evolution was according to the *natural* rather than the *logical* order, we will, if you please, follow history, and first glance briefly at some of the clinical results producible and afterward consider the manner of their production.

Rheumatism was the first disease to the management of which hot air was applied, and it is in the treatment of this disorder that it has gained some of its greenest laurels. One of the most important points to be taken into consideration in judging of the efficiency of hot air, or any other element of treatment in this disease, is the very common error of diagnosticating as rheumatism conditions of an entirely different nature. Rheumatism has been made to bear a vast deal of undeserved opprobrium. At least three fourths of the cases which have come under my observation with this diagnosis have not been rheumatism at all, and, furthermore, many of them have involved the practical point of being disease processes which do not respond to anti-rheumatic therapeutics. True rheumatism, however, has been rescued by dry hot air from the category of diseases the treatment of which has long been

regarded as a reproach to the profession, and the affection can now be as satisfactorily and positively cured as any other disease, not excepting malaria.

It is always wise, and usually necessary, to give some salicyl compound with the hot air. This agent will always relieve the pain alone, and some cases are susceptible of cure with it alone, but the salicyl compounds with hot air effect a cure in nearly all cases, and I regard their administration as imperative.

Briefly, the results of the use of hot air in rheumatism are as follow:

First, immediate relief of pain, however severe, which relief may be rendered permanent by repeating the treatments as often as the pain becomes troublesome; every four hours, if necessary.

Second, shortening of the duration of the disease, which usually lasts only from five to ten days when hot air is thoroughly administered in combination with salicylic acid.

Third, lessening of the liability of cardiac involvement because of the rapid control obtained over the pathological condition, whereby the infection is inhibited from further attacks upon other tissues.

Fourth, the lessened number and quantity of the drugs which it is necessary for the patient to ingest, because of the increase produced in the efficiency and intensity of their action at the seat of infection; hence rendering it possible to avoid drug intoxication.

Fifth, in many cases which prove intractable to other measures its employment will render possible the extinction of the trouble.

Sixth, when properly and judiciously applied, its use is never productive of any vicious after-effect; on the contrary, the patient's general condition is immediately and greatly improved.

Sprains are often extremely resistant to the usual therapeutical methods, and recovery is not infrequently a matter of from six to eight weeks. When one of these injuries is brought under the influence of hot air, within four or five hours after it has been sustained all traces of the trouble will ordinarily have disappeared in from two to four days. Instead of weeks of painful confinement we have days only, and as the pain is relieved immediately the patient does not suffer. These two results of its application entitle hot air to a place in the first rank of remedial measures appropriate to this condition, if not to the first place. The effects of hot air in this situation appear magical at first sight to those who are not clinically familiar with the agent, yet they have been obtained by the speaker and others time after time within the last four years. The treatment may be applied as often as the pain shows evidence of returning, no matter how frequently, without any bad effect upon the patient. In this way he can be kept in a condition of constant comfort.

Arthritis deformans has been hitherto, under ordinary remedial measures, the despair of the medical profession. In hot air, however, we have an agent which alone will cure many of these cases, and which, in combination with static electricity and other rational therapeutical measures, will restore the majority of the victims of this disease to useful and comfortable lives. The pain is not so susceptible of immediate relief by dry hot air treatments

¹ Read before the Medical Society of the Borough of the Bronx, New York, N. Y., March 11, 1903.

as it is in rheumatism and sprains, but electricity, in the form of the static, faradic and high-frequency currents, supplements hot air very satisfactorily in this field. To secure the best results we ought to combine the other methods of physical therapeutics with hot air, a few drugs and dietary regulation.

The progress of the disease toward recovery is very slow, but usually fairly steady when estimated in periods of weeks. From six months to a year is the time usually required to produce a cure, although I have seen cases cured in a month; I have also had them require two years. In a disease so intractable to any treatment as this, however, it is a matter upon which we may most sincerely congratulate ourselves that we are at last in a position to promise the majority of our patients relief from their troubles; and this we may now safely do.

Pneumonia is another disease in which we frequently need all the therapeutical assistance that we can secure, and hot air is one of the most potent of agents in the treatment of this disease. A local treatment applied over the affected lung will relieve the pleuritis at once and remove all signs of consolidation in from two to five days. The patient begins to improve immediately after the first treatment, and, although the course of the disease is not shortened, the severity of its symptoms is very greatly decreased. This rapid removal of the exudate does away with the danger of heart failure from overdistention, and the getting rid of the pleurisy does away with a large proportion of the respiratory oppression and cough, whereby the patient's comfort is greatly increased. The happy influence of the body treatment upon the eliminative function will do more to relieve the profound systemic toxemia sometimes encountered than any other measure now known.

Local septic infection, proceeding from ordinary traumatism or surgical operation, responds most kindly to dry hot air. In the ordinary instances where the infection begins in a hand or foot, if the case comes under treatment before the infection has involved the lymphatics of the joint which connects the limb with the trunk, the local treatment will usually be entirely effective in producing a cure, and the patient will begin to improve after the first treatment. I have seen several cases of local infection, coming under treatment early, get well in three days. If the infection has gotten into the lymphatics of the trunk, however, the influence of the body hot air treatment upon the organism at large will have to be invoked. I have up to the present time treated fifteen cases of local sepsis, of different degrees of severity, and every one of them has recovered. If any structure has become so profoundly involved in the destructive process as to render regeneration impossible, suppuration will ensue as a matter of course, and surgical interference will become a necessity. Hot air will not remove pus. It will, however, in at least a majority of cases, secure the recovery of the patient either with or without surgical interference, and in so far it is of inestimable value in this condition.

The symptoms of chronic and acute nephritis are frequently very amenable to thermotherapy. The dropsy, oppression of breathing, mental somnolence, and cardiac disturbance of the acute exacerbations of the disease will sometimes diminish

during the first treatment and before the patient has left the apparatus. I have seen cases in which all the albumin had disappeared from the urine in three weeks, and as far as examination would show the patient had been restored to perfect health. How long this happy condition will continue it is of course at present impossible to say, but if the symptomatology does return the treatment can be applied again, and any nephritic would be glad if he could be maintained in apparent health by taking a course of hot-air treatments two or three times a year if necessary. The excretion of urea and the total output of urine are usually enormously augmented by the body treatment in this disease.

Lack of time forbids my discussing the other conditions in which hot air is useful at any length, and I will merely mention those in which it has been demonstrated to be of value, as follow:

| | |
|----------------------------------|--------------------------|
| Peritonitis, | Plumbism, |
| Pleuritis, | Lithemia, |
| Synovitis, | Varicose ulcers, |
| Nervous debility and exhaustion, | Neuralgias and myalgias, |
| Neuritis, | Alcoholism, |
| Tuberculosis of joints, | Muscular adhesions, |
| Fibrous ankylosis, | Osteomyelitis, |
| La grippe, | Periosteitis, |
| Typhoid fever, | Myositis, |
| Gouty diathesis, | Dysmenorrhea, |
| Atheroma, | Gangrene, |
| Syphilis, | Angina pectoris, |
| | Cholelithiasis. |

With these clinical results before us we will now, if you please, take up the physiological action of the agent, which when considered in connection with the pathological conditions obtaining in these different diseases will elucidate the *modus operandi* by which the curative phenomena are induced, and furnish us with a key to the rational indications for its therapeutical employment.

There are two varieties of hot air applications: one where only the part affected is treated, and which is denominated the "Local treatment"; and the other where the greater portion of the body surface is subjected to influence, and which is denominated the "General" or "Body treatment." The physiological actions of these two varieties of applications differ from each other in degree and to a certain extent also in kind, and we will consider first, if you please, the physiological influence of the local treatment.

This therapeutical measure affects physiological function in two ways: First, by a direct stimulation of cell metabolism in the part treated, due to the raising of its temperature *en masse*; and, second, by a reflex acceleration of cell nutrition set up by the stimulating influence of the heat upon the numerous nerve endings in the skin.

It is, of course, not possible to raise the temperature *en masse* of one portion of the body very much higher than that of another portion, but by placing the bulb of a clinical thermometer at the bottom of a deep sinus and then applying a hot air treatment, it has been demonstrated that an increase of several degrees Fahrenheit can be induced. This is enough to accelerate oxidation processes very perceptibly.

In diseases characterized by the presence of pathogenic micro-organisms in the part treated, as local septic infection and pneumonia, the inhibitive influence of this element of the physiological action

upon the growth and activity of the germs, whereby they are rendered more susceptible of attack by stimulated leucocytosis and cell metabolism, is very evident. It has been suggested that the germs in these cases were directly destroyed by the heat. This view, however, is improbable, and there is no experimental or clinical evidence available indicating that it is possible to raise the temperature of any portion of the body sufficiently high to produce this result.

Through the reflex influence is obtained an emphatic local hyperemia, which, together with the stimulation of the trophic nerve supply of the part treated, results in greatly increased local nutrition.

Copious perspiration appears upon the region treated, and in greater or less degree upon the rest of the body. The secretion is strongly impregnated with fatty acids whatever the disease from which the patient is suffering, or even if he has no disease at all. If a toxin is circulating in the blood, a certain amount of it will be eliminated with this secretion.

To these profound influences upon the circulatory functions of the part whereby stasis is relieved, is probably due the powerful influence of dry hot air treatments in relieving pain and swelling.

The general body temperature and pulse are but rarely much affected. Patients frequently exhibit an increase of a fraction of a degree in the former and eight or ten beats per minute in the latter, but nothing to influence the general metabolic functions markedly. That local hot air applications are sometimes capable of exerting profound reflex influence upon distant parts, however, was demonstrated in a case reported by Walsh. The patient had eczema of both hands; one only was subjected to the treatment, yet both got well. Cases also have been reported where pains in a limb on one side of the body have been relieved while the corresponding limb on the opposite side was being treated.

It will be observed that all of these effects tend to greatly increase the assimilation of remedies in the tissues subjected to their action.

The physiological action of the body treatment is predominantly reflex through the spinal sympathetic, the area of skin treated being so great that the capillary circulation is able to dissipate the heat before it penetrates deeply enough to exert its action directly to any great extent, herein differing from the local application.

Microscopical and chemical examinations, made in connection with patients under treatment by the writer, have demonstrated that the following phenomena are susceptible of immediate induction by the body hot air treatment.

First, if hyperleucocytosis is not already present, the number of white blood corpuscles is increased in different cases from 15 to 50%. If it is present, the increase is usually not so great, or it may be entirely *nil*.

Second, the red blood cells are increased from 10 to 20%.

Third, the quantity of urine passed in the twenty-four hours succeeding the treatment is usually increased from 25 to 100% over that passed in the twenty-four hours preceding. In a few instances, however, a decrease in the quantity has been observed.

Fourth, the quantity of urea excreted in the

twenty-four hours succeeding the treatment is increased from 15 to 60% over that excreted in the twenty-four hours previous.

These effects persist, with decreasing intensity, for from four to forty-eight hours and sometimes longer, the time varying in different diseases and with different patients.

It will be observed from the above that the beneficial effect of body hot air is not entirely due to the induction of hyperidrosis and superficial hyperemia, as is frequently stated, but that its influence involves phenomena of much greater profundity than would be explicable upon such an hypothesis.

When we consider the large number of pathological conditions in which the reconstructive functions are deficient, the modifications in the composition of the blood noted above assume an interesting significance; and when we think of the number and variety of diseases which are dependent wholly or in part upon the retention in the system of products of sub-oxidation, the sphere of action of the body hot air treatment, as indicated by its effect upon oxidation and the excretory function, becomes extended within limits of considerable magnitude.

The general phenomena induced by the body application are as follow:

The mouth temperature rises from 1 to 5° Fahrenheit, according to the length and intensity of the application and the susceptibility to stimulation of the individual patient's deep nerve centers.

The pulse is accelerated from thirty to fifty beats per minute, and is markedly increased in volume. If it was weak before treatment it now becomes strong. If the application is continued too long it loses its volume and strength, becoming rapid, small and soft, but sometimes retains its volume, becoming very soft and slow. Under these conditions the patient becomes dizzy, faint and nauseated.

The respiration deepens and the rate increases five to ten cycles per minute, but it is not accompanied by any oppression, — rather the reverse, in fact.

The capillary areas become injected, but this phenomenon is not so marked in the regions actually in contact with the heat as with the local treatment. The fact that the capillaries of the face, which is never subjected to the heat, share this general distention, even when constantly under the influence of the breeze from an electric fan, demonstrates the profundity of the reflex obtained.

The patient reeks with perspiration, the acidity of which is markedly increased over that normally exhibited.

The sensation is not disagreeable to the patient, but quite the reverse usually. A pleasant languor ensues after about ten minutes and lasts for an hour or two, and the patient usually becomes drowsy and sleeps. If the treatment is continued too long the languor gives place to exhaustion, with cardiac palpitation and oppressed breathing, which sometimes persist for hours.

By this profound stimulation of the deep trophic centers we secure a more rapid and complete oxidation of *effete* materials which are clogging metabolic processes, figuratively speaking, into normal excretory products, — urea for the kidneys, CO² for the lungs, etc., — which are then easily disposed of by the appropriate organs, and a rapid production of

more vigorous and healthier cell elements which are much better able than their predecessors to resist toxemia and microbic invasion. We not only obtain a corrective influence in nutritional disorders whose origin is in the deep sympathetic, but if the patient is suffering from an infectious invasion we increase vastly the resisting power of his phagocytes and tissue elements. The profuse perspiration carries out with it also a certain amount of any toxine that may be present, and thus assists in relieving the depression of nerve centers due to systemic toxemia.

The functional activity of every organ and tissue in the body is immediately augmented, but this exaltation of function is not followed by a reactionary debility. Patients frequently continue to improve generally, for months after a course of body hot air treatments.

It will be seen that the physiological action of hot air is in line with that of hydrotherapy, electricity, the Turkish bath and massage, but under some conditions is much more profound than any of them.

During the demonstration of the body hot air treatment which you are about to witness, you will be enabled to observe for yourselves the acceleration of the pulse rate and the modifications of the character of the impulse which have just been described, the rise in the body temperature, the profuse perspiration and the manifestation of deep reflex influence upon the sympathetic, as evidenced by flushing of the face, which will not be exposed to the heat.

In order to save time it may be as well to start the treatment now, and if you will approach the apparatus we will prepare the patient for the *séance*. As you will observe, he is wrapped in a Turkish toweling robe, boots made of the same material are drawn over his feet, several pillows are so placed under his body as to make his position comfortable while he is under treatment. We then place another thickness of ordinary Turkish toweling over that portion of his body which is to be exposed to the heat, and the preparation is complete. His pulse, you will notice, is 64 per minute and his mouth temperature 98.6° F.

The engineer informs me, I am sorry to say, that the total gas supply for this portion of the building comes through a half-inch pipe, hence we shall not be able to secure 350° of heat for this treatment. It is necessary to have at least a five-eighths inch supply pipe to secure this degree of heat in a body apparatus. We will do the best we can with what we have, however, and if the patient responds kindly it will be possible to demonstrate the phenomena susceptible of induction by the body application, even if the treatment intensity does not reach 350° F.

I had intended to have blood counts made upon the patient before and after treatment, in order to demonstrate the modifications produced, but Dr. Jeffries, who was to have rendered us this service, is unavoidably prevented from being present. I had also intended to have quantitative determinations made of the total urea output for the twenty-four hours preceding and again for a like period succeeding the treatment, but we have been obliged to substitute another patient for the one upon whom it was originally intended to demonstrate this treatment,

and through a misunderstanding a proper collection has not been made of this secretion, hence I shall have to ask you for the present to take my word for the fact that these modifications in blood and urine take place as I have stated.

In order that the degree of variation may be observed between the temperature of the air in the top of the apparatus, where the thermometer is ordinarily suspended, and that which actually comes in contact with the patient, I will suspend this second high-temperature thermometer through this ventilation aperture by means of this cord, at the level of the patient's body. We will now turn on the heat and leave the matter in charge of the assistant, while we finish our consideration of the subject, after which we will return and observe what modifications of the patient's physiological phenomena have been induced in the meanwhile.

I find the impression very prevalent among laymen, and to a large extent among physicians also, that dry hot air is lauded by its advocates as a panacea for all ills, to the exclusion of other remedial measures which have been demonstrated to be of value in diseased conditions. This impression is entirely erroneous, and the sooner it is removed the sooner will the thermotherapist be relieved from the undeserved opprobrium attaching to the false position in which it places him.

While it is unquestionably desirable to reduce our therapeutical armamentarium to its simplest form, yet it would not be desirable, wise or humane to withhold any useful agent from a suffering patient when the influence of that agent would prove beneficial to him. Valuable and numerous as have been the additions to our list of remedial agents during the past few years, yet we still frequently encounter cases which tax our resources to the utmost, and sometimes those in which our most strenuous efforts are inadequate for the securing of the patient's recovery. While the use of dry hot air renders the use of many of the older measures unnecessary, because under its application the indications for the employment of the older measures do not arise, yet when a rational indication exists for the administration of any other remedy it should by all means be heeded, and in many pathological conditions hot air *needs* to be supported by other measures in order that a satisfactory curative result may be obtained.

I have already stated the necessity of administering salicylic acid in rheumatism; in arthritis deformans it is usually necessary and always wise to combine dietary regulation, drug tonics and other methods of physical therapeutics with hot air; in pneumonia it would certainly be most illogical to withhold strychnia, nitro-glycerine, or any other adjunct, the administration of which was indicated; in local septic infection the knife should always be used when pus has formed or tissue is sloughing; in nephritis, he who would neglect dietary regulation and the administration of drugs, however well he may administer his hot air, will find that his clinical results will very frequently give him cause to wish for additional resources.

The key to the situation consists in bearing in mind that dry hot air is simply a rational therapeutical measure, exhibiting a known and constant physiological action, which gives us a rational basis upon which to consider its application to a given

case if the case in question presents a known pathology. It will, alone and unaided, cure some disease processes; others will require that additional therapeutical agents be combined with it; and in still others all the curative resources at our command will not suffice to effect the patient's recovery. It exhibits in a marked degree the capacity to increase greatly our power to overcome pathological conditions, and because of this and the profundity of its influence in many situations it is entitled to a prominent position in our armamentarium.

I will say just a word in reference to apparatus and technique. The local apparatus, to be effective, must be capable of producing a heat of at least 400° F. in twenty minutes, and of maintaining it steadily at that point as long as desired. The body apparatus should be capable of generating a heat of at least 350° F. in half an hour, and of maintaining it at that point indefinitely. The heat should equalize itself in all situations and localities inside the apparatus, so that the thermometer reading and the temperature of the air which actually comes in contact with the patient should not differ more than 10% of the thermometer reading. The simpler the construction of the machine the easier will be the attainment of this result.

The difference between proper and thorough technique and the reverse will very frequently constitute the difference between success and failure in clinical results, and in direct proportion to the prominence with which this fact is endowed in the mind of the prescriber of hot-air therapy will the benefit accruing to his patient be pronounced. Experience in the management of hot-air apparatus and a good knowledge of the clinical phenomena producible with it are very necessary. The current idea that it is a perfectly easy matter for any physician to secure a hot-air apparatus and treat his patient, without any special knowledge of the agent or of the technique involved in the management of it, with reference to different pathological conditions, is entirely erroneous and much to be deplored. When this unfortunate impression has been eliminated, which it is to be hoped will be in the near future, better results may be looked for from the general employment of the agent, and appreciation of its beneficent powers will succeed to the lack of confidence with which it is so frequently regarded at present. The bulk of its failures to accomplish results in the past have been due to a lack of proper knowledge of its clinical possibilities and physiological action, familiarity with which would have taught that the effects demanded should never have been expected of it, and because of inefficiency of the technique followed with reference to the individual case.

I wish to refer briefly to a popular criticism upon hot air, namely, that the curative results dependent upon its use are not *permanent*. This criticism is based upon the belief that hot air is only a palliative measure, like a dose of morphine in painful conditions, for instance, and would never be entertained if the profound influences upon physiological function, which we have been discussing, were taken into consideration. This belief was probably engendered by the observation that cases of rheumatism treated with hot air *alone* very frequently do "come back," but this merely means that the dis-

ease was not *cured* because the thermal agent was not properly supported, and neither hot air nor any other remedial agent can be expected to do alone what it will when combined with proper adjuncts. The advantages exhibited by hot air consist in its power to accomplish, either alone or in combination with other agents, that which it is impossible for any other combination of agents to accomplish without the aid of hot air.

Another fact bearing upon this criticism is that when we have carried a patient through an attack of pneumonia, typhoid, rheumatism or malaria, we cannot assure him that he will never have the disease again, no matter what curative agents we have employed. We can only be certain that this one attack has been extinguished. If appropriate environmental and constitutional conditions again obtain he will surely have to sustain another attack, no matter how perfect may have been his health in the meantime. When men no longer contend with conditions which engender habits of life that are inconsistent with their perfect physical health, then, and not till then, shall we be immune from repeated attacks of disease; and when that millennium has arrived hot air and every other remedial agent will have retired to the oblivion of complete *désuétude*.

In closing, I wish to refer briefly to another criticism which I have seen, namely, that local hot-air applications to localized infections of any sort were dangerous, and very likely to transform a local into a general pathological condition. I have never heard a logical defence of this statement, and I have never heard of an authentic case where there was any satisfactory evidence that such a result was properly attributable to hot air. Further, in the many thousands of such treatments which I have administered myself, and have had administered under my supervision to such cases, I have never, in a single instance, seen the slightest reason to consider that hot air had been guilty of precipitating such a disaster, and I am free to state my entire disbelief in the existence of any cause for apprehension in this respect.

We will now, if you please, return to the patient whom we left in the body hot-air apparatus, and observe what modifications, if any, have been induced in his physiological phenomena.

He has been under treatment thirty-five minutes, and the first thing that attracts our attention is the heavy perspiration and the marked dilatation of the capillary circulation of the face. When we left him at the beginning of the treatment his skin presented the dryness normal to that of a healthy man, now it is streaming with perspiration; before treatment his face was devoid of color except the slight rosy tint incident to a good circulation, now it exhibits a blush that would do credit to the modesty of a maiden of sixteen, should she find herself exposed to the gaze of so many representatives of the opposite sex in such a *déshabille* as invests the patient at this time. His pulse is 96 per minute as contrasted with 64 when the heat was turned on, and his body temperature, as registered by this thermometer which I have just removed from his mouth, is 100.6° F. as against 98.6° F. which you will remember was the previous reading.

We will now turn off the heat and allow the patient to cool, lying in the closed apparatus for ten min-

utes; then the ear will be drawn out and the patient left to cool in the air of the room for twenty minutes more. His temperature will by this time have returned to the normal and his pulse nearly or quite so, and he will be given a sponge bath with soap and water, to be followed by an alcohol rub. After resting in the recumbent position for an hour he will be in condition to get up and go home, and if any of you meet him during the next twenty-four hours it will be instructive for you to ask him how he feels.

The thermometer which was suspended in the apparatus registers 325° F. as contrasted with 335° F., which is the registration of the thermometer which is in the normal position, — a discrepancy of 10° F., which is, of course, not large enough to make any material difference with the efficiency of the treatment, and demonstrates that the apparatus which we have been using is reliable and efficient.

If any one has any questions to ask, it will give me great pleasure to respond to his queries.

THE RÔLE OF ATMOSPHERIC PRESSURE IN THE HIP JOINT.¹

BY SEABURY W. ALLEN, M.D., BOSTON,

Assistant in Anatomy, Harvard Medical School, Boston.

IN 1836 the experiments of the Brothers Weber went to show that air pressure played an important part in the mechanism of the hip joint; that when the joint was opened, the letting in of the air made it possible for the head of the femur and the acetabulum to separate; that on replacing the femur in its former position and covering the opening into the joint with the thumb, the then air-tight condition prevented the separation of the bones. Since this time most of the textbooks of anatomy, in successive editions, have made statements implying the truth of this, for example:

Cunningham, "Practical Anatomy," 1896, p. 252: "The cotyloid ligament fits closely upon the head of the femur, and, acting like a sucker, exercises an important influence in retaining it in place."

Gerrish, 1902, p. 243: "The cotyloid ligament, . . . aided by atmospheric pressure, holds it [the head of the femur] in place when its ligaments are divided."

Gray, 1901, p. 270: "The cotyloid ligament closely surrounds the head of the femur and assists in holding it in place, acting as a sort of valve."

Holden, "Osteology," 1887, p. 233: "When crusted with cartilage, the ball [of the femur's head] fits so accurately into its socket that it is retained by atmospheric pressure alone."

McLellan, "Regional Anatomy," 1892, p. 233: "The ligaments are considerably assisted by the atmospheric pressure, which is sufficient to hold the bones together after the severance of all the ligaments and of the overlying muscles."

Merkel-Henle, "Grundriss der Anatomie des Menschen," 1901, p. 132: "Lerade hier beim Huftgelenk ist der Luftdruck für die Integrität desselben von grosser Bedeutung."

Poirier et Charpy, "Traité d'Anatomie Humaine," 1899, vol. i, p. 728: "Evidement la pression atmosphérique intervient pour le maintien du contact entre

les surfaces articulaires, mais pas plus à la hanche qu'ailleurs."

Testut, "Traité d'Anatomie Humaine," 1899, vol. i, p. 576: "Parmis les causes qui maintenant les deux surfaces articulaires solidement appliquées l'une contre l'autre, la plus puissante est la pression atmosphérique."

Woolsey, "Applied Surgical Anatomy," 1902, p. 436: "The cotyloid ligament holds the head in place by atmospheric pressure, when the capsule and surrounding muscles are divided."

As it did not seem reasonable that the above statements could be true, the following experiments were made: Among sixty-four hips in the dissecting room there were found seven in which the bones fitted accurately together, and in which the muscles and ligaments had been sufficiently undissected not to interfere with careful data. The seven cadavers were suspended in the vertical position and three pins driven in, one into the anterior superior spine of the ilium, one into the iliac crest directly above the line of the thigh, and the third into the great trochanter of the femur. (Two points were taken on the ilium from which to measure, as it was thought that when the head of the bone fell out of the acetabulum it might do so in a direction parallel to the neck of the femur, — in which case the measurement from the anterior superior spine would be the most valuable; or it might do so directly downward, — in which case the measurement from the crest would be the most valuable.)

In the results, the average of these two measurements is given. In all seven cases, even after the suspension of the cadavers, the head of the femur was snugly in the socket, there being no appreciable separation of the bones, so that the conditions corresponded as closely to those in the living as is ever likely in the cadaver. Air was then let into the joint by trephining through the innominate bone from within the pelvis, and nicking the synovial membrane with scissors. In no case did careful measuring show the least separation of the bones. Therefore, whether air was or was not let into the joint made no difference in their relative positions.

If negative air pressure does not exist in the cadaver, it seems even less likely that it would be present in life, when the tonicity of the muscles and the elasticity of the ligaments are certain factors in maintaining the integrity of the joint.

To determine, then, what did hold the bones in contact, the muscles, capsular ligament and cotyloid ligament were successively cut, with the following result:

| CADAVER. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Av. | Inc |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| Before interference | S.T. | 12.50 | 10.31 | 13.75 | 12.81 | 10.62 | 13.50 | 12.25 | | |
| | C.T. | 11.25 | 13.75 | 12.50 | 13.12 | 12.81 | 13.25 | 12.50 | 12.49 | |
| After trephining into joint from within pelvis | S.T. | 12.50 | 10.31 | 13.75 | 12.81 | 10.62 | 13.50 | 12.25 | | |
| | C.T. | 11.25 | 13.75 | 12.50 | 13.12 | 12.81 | 13.25 | 12.50 | 12.49 | 0 |
| After cutting all muscles between trunk and lower extremity | S.T. | 12.50 | 10.31 | 13.75 | 12.81 | 10.62 | 13.50 | 12.25 | | |
| | C.T. | 11.25 | 13.75 | 12.50 | 13.12 | 12.81 | 13.25 | 12.50 | 12.49 | 0 |
| After cutting posterior half of capsular ligament | S.T. | 12.81 | 11.25 | 13.75 | 12.81 | 10.62 | 14.00 | 12.25 | | |
| | C.T. | 12.65 | 13.75 | 12.50 | 13.43 | 12.81 | | 12.75 | 12.72 | .23 |

¹ Read at the Boston Society Medical Sciences, January, 1903.

| CADAVER. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Av. | Inc. |
|--|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| After cutting anterior half of capsular ligament. . . } | S.T. | 13.12 | 12.31 | 14.37 | | 11.25 | 14.25 | 13.00 | | |
| | C.T. | 13.75 | 14.68 | 12.81 | 14.37 | 13.75 | 13.50 | 13.50 | 13.43 | .94 |
| After cutting cotyloid ligament (the head of the femur then falling out of the socket, the leg being held to the trunk only by the ligamentum teres) . . } | S.T. | 15.31 | 15.93 | 17.18 | 16.25 | 14.37 | 21.50 | 14.25 | | |
| | C.T. | 15.16 | 17.35 | 15.93 | 15.00 | 16.56 | 19.25 | 17.00 | 16.50 | 1.01 |

MEASUREMENTS IN CENTIMETERS.

S.T. Distance between anterior superior spine of ilium and great trochanter.
C.T. Distance between crest of ilium and great trochanter.

It would seem, therefore, that what holds the bones together is primarily the cotyloid and secondarily the capsular ligaments (of course in life the elasticity of the surrounding structures helping them out), and that "air pressure" need not be considered.

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THE DOCTOR IN THE NAVY.

BY A. J. NUTE, B.S., M.D., WINTHROP, MASS.

ONE way of becoming a commissioned officer in the United States Navy from civil life is to be appointed a medical officer by the President.

It is interesting to know something of the history of naval surgeons. In early times he was before the mast, with small pay and the privileges of an ordinary seaman. Later he held rank similar to a warrant officer of today, and was classed as surgeon or surgeon's mate. At the present time in the navy he has no actual rank, but enters with the relative rank and pay, privileges, etc., of a lieutenant (junior grade), and through time may finally reach the relative rank of captain in the navy. One out of the entire corps may rank with a rear-admiral by being appointed surgeon-general through influence.

In order to enter, the candidate must be twenty-one years of age and a citizen; those are practically the only requirements for application. Application letters must be in candidate's handwriting addressed to the Secretary of the Navy, stating age, place of birth, residence, citizenship, a graduate or not in medicine, if so naming the school, and enclosing two certificates of character. The law does not require a candidate to be an M.D., although they usually get the preference.

Having mailed the above letter, he receives in return a letter of permission from the Secretary to appear before the examining board. This letter the candidate must mail to the chairman of the board, respectfully asking for a date on which to appear for examination. The board is in session from September 1st to July 1st at Washington, D. C. With the above letter to the board, it is advisable

for the candidate to send all the letters of reference, including both character and education, that he can get, especially from well-known people.

About a week later he will receive his letters back and an order to appear on a certain date, also naming the place and hour of examination in Washington. Examinations were formerly held at the Brooklyn Navy Yard, but last year the location was changed to a department building in Washington, in order to be a more central location.

On reporting at the time set, the candidate meets three surgeons constituting the board appointed by the surgeon-general, fully equipped to begin an examination that will last about ten days.

First comes the physical. The candidate must strip to the skin and be examined from head to foot for any signs of disease, and must also swear that as far as he knows he has no constitutional disease about him that can interfere with his duties. He is searched for any possible deformities, enlarged glands, veins, hernia of any part, condition of joints, skin, and a bad condition of any of the above mentioned is a cause for rejection. He is weighed, and his weight is required to equal two pounds to the inch in height. He is measured in height, and chest expansion, heart and lungs are thoroughly tested, also the hearing in each ear. Any peculiar marks or scars on the body are placed on record. The eyes also come in for a rigid but rather out-of-date form of examination. Each eye is tested in reading a printed card, and although the department allows glasses the vision must be perfect. The majority of college graduates of today require glasses for various defects of vision, and most of the foreign governments have not counted this against the candidate as long as it does not interfere with his work as a medical officer, especially in cases of uncomplicated near sight. There is good reason for this: the nearsighted man is never subject to eye strain, headache: as long as his work is within his visual field, he can work for many hours without any eye fatigue, and age tends to lengthen the vision. With the farsighted person that can usually pass the test, we find the whole condition reversed, and the man passed with far sight is worse off than the man rejected on account of near sight. This same condition also applies to the man suffering from certain kidney or constitutional diseases which do not show on the surface, as secretions are not usually examined, and the candidate may be in ignorance or not of the fact. Color tests are given, and then the mouth and throat are looked over.

If the physical examination has been satisfactory the candidate is then required to write a sketch of his past life in the form of a letter addressed to the board, including an outline of his school life, textbooks studied, and diplomas received. Having completed this, he is then asked to write a thesis on some subject assigned by the board, without reference to any notes or books, and must state what experience he has had in private or hospital practice. Then for ten days it is one continuous round of written and oral questions, not only in medicine but in every subject the board cares to ask about.

Usually it is carried on in the following detailed manner:

First day: Physical examination and letters of reference placed before the board.

Second day: Letter to the board describing candidate's life and education.

Tesis.

Three written questions in anatomy and physiology.

Third day: Oral examination in anatomy and physiology; number of questions not limited.

Three written questions in surgery.

Oral examination in surgery.

Fourth day: Three written questions in medicine, followed by an oral in medicine.

Fifth day: Eight surgical operations are usually done in a dissecting room, counts as practical surgery examination.

Sixth day: Pathology and microscopy; one written question in each.

Obstetrics and legal medicine; one written question in each.

Oral examination in above subjects.

Seventh day: Materia medica and action of drugs; two written questions followed by an oral quiz.

Chemistry and physics; three written questions followed by an oral.

Eighth day: Hygiene and quarantine; one written question in each followed by a series of oral questions.

Two patients are assigned to be reported on, one surgical, one medical when possible.

Recognition of instruments, cases of medical and surgical instruments are displayed, and candidate is required to name and describe the use of those asked for by the board.

Ninth day: Bandaging.

Use of microscope.

Examination in general subjects begun.

Tenth day: Examination concluded.

A general average of 75% must be obtained and in some subjects 80% and 85%, as shown in the official table below:

| | <i>Ques.</i> | <i>Required.</i> |
|----------------------------------|--------------|------------------|
| Anatomy and physiology | 2 | 80% |
| Surgery | 3 | 85% |
| Medicine | 3 | 85% |
| Pathology | 2 | 60% |
| Obstetrics | 2 | 60% |
| Materia medica | 2 | 80% |
| Chemistry and physics | 3 | 60% |
| Hygiene | 2 | 80% |
| General aptitude | | 80% |
| General education | | 80% |
| Total | | 750% |

These percentages are not absolute, and a loss in one branch may be made up in another, provided the above percentages in anatomy, physiology, medicine and surgery are obtained. General education covers grammar, arithmetic, geography, languages, history, general literature, elementary botany, geology and zoölogy. Aptitude is important, and can be enough cause for rejection. The look, bearing, ability and manner of the man as he comes in contact with the board is the basis on which the per cent is given. Oral examinations last from fifteen minutes to an hour, depending on the subject.

The board allows no part of the examination to be held elsewhere, and no allowance is made for

candidate's expense in taking the examination. A candidate may withdraw at any period of the examination with the consent of the board, and present himself at a later date. If, however, he fails to pass, he may be allowed a second trial a year later, but is not allowed a third.

Although the above is the general plan, the board have the power to conclude the examination at any time, or deviate from the above plan in any way that they think best for the service. If a man is disqualified in anything, there is such a thing known as obtaining a waiver, and he may be passed; this, however, requires influence. The board is under oath to report on the mental, physical, moral and professional qualifications of the candidate. If successful he is notified at once at the close of the examination.

Appointments are made as fast as vacancies occur, and in order of merit as reported by the board, but a qualified candidate not appointed within a year from date must take a second examination. For years back there have always been plenty of vacancies, anywhere from twenty to thirty at a time, but in the last year the vacancies have been filled and some acting appointments made as a waiting list. The question has often been asked as to what caused the lack of candidates. I think principally the examination, as it is rather peculiar, theoretical, and the system of the board makes it difficult, it tends to probe a man to see if there is something he does not know. The practical part of the examination is fair and in the reach of any good practical man, but that and the man's previous record has not counted as much as theory. Graduates of some of the smaller theoretical schools have always seemed to have the advantage in passing the test, and one advertised in a catalogue that about 20% of its graduates held commissions in the medical corps, also it has aided certain quiz schools that made a specialty in preparing young men for these examinations, and their circulars advertise success. The physical examination has also been a bar to many, especially vision, lungs and heart. There have always been plenty of men willing to try, but unless they could secure a waiver for a physical defect, it only meant rejection.

A man to be a military surgeon must be able to adapt himself to circumstances as he finds them, have the ability to make the best use of material that he has to work with if he gets caught in a tight place, and this requires practical men. The results of the navy system have not as yet been in actual test, as every shore station has direct communication with large civil hospitals for consultation, and on sea-going ships they have a picked body of men under their observation.

The war with Spain was not long enough to bring out the navy surgeon's value.

Now the young man having passed, he is ordered to procure an outfit of uniforms that cost about \$520, and report at the Navy Medical School at Washington for a six months' course of instruction in the duties of a medical officer, his place on board ship, naval etiquette, diseases peculiar to the service, and the various clerical returns and reports that he is supposed to fill out for record at the Bureau of Medicine and Surgery.

When the course is over he usually is ordered to

some ship or station. Usually orders are issued so as to give the surgeon from ten days to two weeks' time to make the necessary preparations. On arriving at the ship or station, he must dress in full-dress uniform with side arms, and report to the commandant, presenting his orders, and then he becomes an official part of the routine life. As stated above, he does not have positive rank, but is ranked as a staff officer, with rank relative to a corresponding grade in the line, so his uniform is made distinctive of his corps. The assistant surgeon wears the same general uniform as a lieutenant (junior grade), but has distinctive collar and cuff device. Where the line officer has a silver anchor embroidered on his collar the doctor has an acorn over a leaf, and the gold star on the line officer's sleeve is absent on the medical officer's, but in the latter case the gold cuff stripes are sewed on a maroon background. An assistant surgeon wears a stripe and a half on the cuff, the official stripe being one-half inch wide.

After serving three years as an assistant he is examined and if successful is made past assistant surgeon. When vacancies occur he is raised to the rank of a lieutenant, with the full two bars on his collar, two stripes on the cuff. Promotions continue in order of seniority, next being surgeon with rank of lieutenant-commander, giving him two stripes on the cuff and changing the silver bars to a gold leaf. The grade of surgeon is the last on which a regular physical and mental examination is required, promotions after that going in order of long service. The next rank is termed medical inspector, ranks with commander, three stripes on cuff, a silver leaf on collar and an embroidered visor on cap. The final rank is medical director, rank of captain, a silver spread eagle on collar, and four stripes on cuff.

The highest rank to be obtained is surgeon-general, with the pay and privileges of a rear-admiral. This appointment is made directly by the President, the term of office to last four years; therefore the position is usually given to some officer that will retire at the close of his tenure, as that retires him with the rank, etc., of rear-admiral. If a younger man was given the office, he would have to resume his original rank at the close of his term, unless the new President would re-appoint him, which would hardly be likely, as the position is much sought for. There are three important factors in making such an appointment: A man about to retire would never have to step back into a subordinate position, which might otherwise prevent him from doing his work independently; he retains the relative rank of rear-admiral for life, and the pay on the retired list is greater than he could ever get again, being some \$4,125 a year for life.

The life of a surgeon is easy, work is light, hours short and Uncle Sam is an excellent provider. Each officer is supplied with all the latest medical papers, instruments, books, chemicals and all kinds of laboratory apparatus free of cost. When traveling under orders he is allowed eight cents a mile, and many railroads make a reduced rate for officers so traveling, hence a trip from New York to San Francisco would net a tidy little sum.

The pay is first class; an officer perhaps never would get wealthy on it, but he always has a comfortable income and far more than he would obtain in civil life for the same amount of work, and at the

age of sixty-two he retires on three fourths of his highest sea pay, thus being furnished a comfortable income for the rest of his life. Sometimes complaints are heard from officers about their pay, but if the United States was to offer one half the entrance salary, they would have all the men they wanted and as competent surgeons. In Europe the young officers receive a much smaller salary, and among them Uncle Sam is noted for his liberal pay table.

An assistant surgeon at sea, on a receiving ship, or in colonies like Porto Rico, receives \$1,650 per year, with \$9 per month for ration allowance; on shore duty he receives \$1,402.50 per year and partially furnished quarters — ice, light, heat, messenger and laborer service. Junior surgeons have quarters usually in a hospital, while the senior has a fine large house to himself. Past assistants receive after five years at sea in the service \$1,800, on shore \$1,530; after five years with the rank of lieutenant, at sea \$2,160, on shore \$1,836. Surgeons receive from \$2,360 to \$2,520 at sea, and \$1,989 to \$2,142 on shore, with a time service of fifteen years. A surgeon's maximum pay is \$3,500 at sea, and \$2,975 on shore. Medical inspectors receive \$4,100 at sea, \$3,400 on shore. Surgeon-general receives \$5,500 per year afloat and ashore, but his duties are at the department unless he goes to sea on a tour of inspection. When officers are ordered to shore stations where no quarters are provided, they are allowed according to their rank from \$288 to \$720 per year added to their pay for rental of quarters.

They have on sea duty \$9 a month allowance as ration money, and for longevity pay receive an increase of 10% of their salary for each five years' service, until the total amounts to 40% increase; also they are allowed what they can make in private practice, and this often amounts to considerable in certain stations.

Social life is more or less a large factor in the life and makes quite a bill of expense, yet it is not always necessary, and if the surgeon does not care for it he can readily drop most of it and enjoy himself as he pleases. The greatest expense is food and clothing. Uniforms must be of good quality, and are expensive, but if taken care of last a long time. On board ship the food arrangement is known as the "mess," and each officer is charged an equal share in paying for it. One of the officers is elected caterer each month, and he makes out the bill of fare, collects the money and pays the bills. The cost of a mess is usually about a dollar per day to the man. Wine lists and cigars are furnished, but each individual pays for what he orders, so there is no question of any unfairness in the methods, and the man that does not care for extras does not pay for any others. On shore he must provide his own food and is supposed to pay his own servants, for at sea Uncle Sam provides cook, steward and mess-boy or waiter.

Medical officers spend three years at sea, then three on shore, and are allowed one month leave a year. This is not adhered to, as the needs of the service often demand sudden changes of station. Medical directors usually do no sea duty, but are placed on boards, or in charge of hospitals. In case of disability occurring in line of duty — and it is rare to find a record of any disability not duty, although the retired officer may be doing a busy prac-

tice outside — the surgeon retires to private life on three fourths of his present sea pay.

Duties on ship are light, as the men are all selected before being sent on board, so that all report on first-class order, and the mode of military life tends to keep them so. Sick calls in morning are practically his office hours, and he has the assistance of a well-trained apothecary with several apprentices. The apothecary does the clerical work and tends the minor cases besides the prescription work. On shore he has in addition the families of officers and enlisted men to attend. This increases his work but little, as most of the families have a civilian physician.

For illustration take a tour of duty at a New England station like the well-located and historical old Navy Yard at Kittery, Me. There the senior has a fine house, furnished, electric lights, heat and ice free, beautiful large lawns, fine vegetable and flower garden, all kept in order practically at the expense of the department; a man to do his errands and chores, a fine dispensary building within a few moments' walk of his house, fitted with as good an office and library as a doctor could wish. The dispensary is in charge of an energetic, well-educated pharmacist. The pharmacist has a well-arranged set of quarters on the second floor of the dispensary. Also under the senior is a well-furnished hospital, under direct charge of a junior surgeon assisted by one or two apothecaries and three apprentices. The naval hospital has an excellent location on the bank of the Piscataqua River, surrounded with broad lawns and plenty of fresh air and sunlight.

At that station the work is light, as it is a healthy location. Sick call sounds at 9.45 A.M., usually lasts less than an hour, then outside of a little official correspondence the senior's day's work is practically over, as the pharmacist takes care of the routine work in the way of making out requisitions, inventories and various daily and quarterly sick reports. Of course all stations are not alike, some have more work, others less, but as a rule it runs along in the manner above described.

If an officer is ambitious there are plenty of chances to keep busy. Research, sanitary and diet problems are always being brought up which the department heartily approves, furnishes everything to work with, and only asks in return that reports shall be made from time to time on the progress of investigation.

On a whole the life is such that it offers a great inducement, especially if one cares for institution life. It means a good living, good social position, comfortable income, travel, and retirement at the age of sixty-two from care and worry for the rest of one's life. The disadvantages are military system, which is necessary but never makes the officer independent, and service legislation with its political background. This latter is felt more than seen, but once in a while it crops out.

There are some disagreeable duties and stations, but they are few, and the department gives due credit for men doing such duties or serving on such stations. As far as the good and bad sides are concerned, a great deal depends on the man. He can loaf and take life easily as possible, his greatest worry being the next examination for promotion, and thus become useless as a medical man, and routine life seems to produce that effect on some. On the other hand

he can go ahead with an endless field to work in and carry on experiments that the outside physician in the ordinary walk of life could not afford the time and money to undertake.

Clothing is one of the largest bills to the young officer, as he needs an outfit of good quality, enumerated as follows: Special full dress, full dress, several working uniforms in blue, chapeau, shoulder knots, shoulder straps, at least six white uniforms, white cap frame with dozen covers, two blue fatigue caps, boat cape, overcoat, white shoes, sword and belt, rain clothes, heavy and light regulation gloves, and on going to sea must be supplied with a large amount of laundry.

The navy is like one big family, and the candidate once admitted finds a cordial reception, but as a stranger trying to enter he need not be astonished at a cold reception. There seems to be a feeling in the service that the ordinary citizen is an outsider instead of an employer, and the navy is a little social world in itself, the ticket of entrance to it being an appointment to Annapolis or a commission. In the service lines are drawn as sharply as in any European monarchy, and a high official would never think of inviting an officer of the grade of gunner, boatswain, etc., yet one is just as much of an officer as the other, and recognized by the official register as such.

The only difference seems to be the fact that the gunners, carpenters, pharmacists worked their way up and the lieutenant was appointed; but in social life that makes a great difference.

New Instruments.

A NEW MODIFICATION OF TARNIER'S AXIS TRACTION-RODS.

BY L. V. FRIEDMAN, M.D., BOSTON,

Assistant in Obstetrics, Harvard University; Third Assistant Visiting Physician for Diseases of Women, Boston City Hospital; Physician to Out-Patients, Boston Lying-in Hospital.

SOME apology seems necessary for further addition to the numerous existing traction-rods. I have had trouble with the instruments commonly used at present, and have learned that other obstetricians have had the same difficulty. The advantageous points of the rods here described have been used before, but no attempt has been made to apply them to forceps with the English lock, for which there is here so marked a preference.

The two types of traction-rods used here today are (1) Felsenreich's or Lusk's, and (2) Reynolds' or Higgins' modification of Tarnier's instrument.

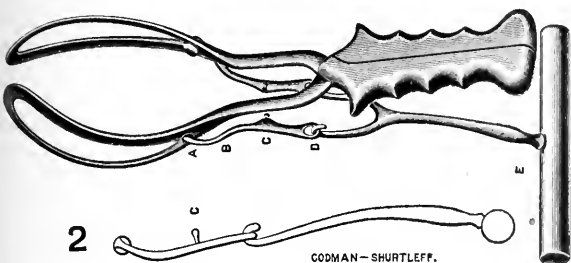
The faults of the first type are of an obvious mechanical nature. The instrument can be applied only to forceps bearing a French lock; it has a bar so complicated as to render its attachment difficult, and it is essentially not a clean surgical instrument.

The second type is simple, clean and can be applied to any forceps; but in spite of the mechanical contrivance, the rods occasionally slip out. Constant attention is necessary to keep the rods in place during the application, and in swinging the rods into apposition, the good application — frequently attained with difficulty in high operations — is usually disturbed.

I have sought to combine the best mechanical features of both types above noted, and to produce a thoroughly clean instrument which could be applied to any forceps bearing an English lock. Numerous trials on the manikin and living patient lead me to think I have succeeded. I feel certain that the most important qualification, efficient traction in the axis of the pelvis, remains unimpaired. It is obvious that this cannot be made subordinate to minor mechanical advantages.

The following advantages are claimed for these rods:

During application the rods, being fast to the blades, require no attention. The blades being in position, the lower ends of the rods are readily sprung loose from the shanks, and the traction-hooks attached without disturbing the position of the blades. The rods follow the curve of the shanks of the forceps, therefore they do not strike the perineum suddenly with their extreme width, and consequently are less apt to rupture it. The instrument has but one closed joint, and here a new, clean joint has been devised to replace the usual screw. Every part of the device is adapted for thorough surgical cleanliness.



DESCRIPTION. (See cut.)

The instrument is made of crucible steel, hand forged. The rods attached by Higgins' modification (a) are short; when in place they do not reach the lock. They follow the curve of, and lie flat on, the under surface of the shanks. It is this inward curve (b) which is mentioned above as a protection to the perineum. During application each rod is held fast to the shank by a small pin (c). At the lower end of each rod is an oval eyelet (d) to receive the hooks of the handle. The bar is similar to those now in use, but at (e) it holds by a lock joint, instead of a screw, the curved upright which bears the hooks.

Fig. 1 shows the instrument in position for traction. Fig. 2 shows the side view in better detail.

The instrument is made by Codman & Shurtleff, Boston.

Clinical Department.

DEATH FROM A SINGLE VAGINAL DOUCHE. REPORT OF TWO CASES.¹

BY G. DE N. HOUGH, NEW BEDFORD, MASS.

CASE I. Mrs. J., aged thirty-three. On Monday, March 10, this woman, who was between three and four months pregnant, miscarried. The next morn-

ing she was given a douche of 1 to 1,000 corrosive sublimate, one quart. There is some doubt as to whether she received any more douches. On Thursday, March 13, her tongue was greatly swollen, mouth extremely sore, she was salivated and had a severe diarrhea. The whole mucous lining of the mouth became gangrenous, and towards the end of her life, the sloughs having separated, quite profuse hemorrhage took place. Diarrhea continued, apparently but little influenced by medication, and she finally died of exhaustion on March 26, fifteen days after receiving the douche. The autopsy showed numerous small ulcers in the ascending and descending colon; kidneys half as large again as normal; the uterus contained a soft adherent spherical mass, as large as half a hen's egg, which appeared to be a placental fragment, and which was proved to be such by microscopical examination.

The microscopical examination confirmed the naked eye diagnosis — ulcerative stomatitis, ulcerative colitis and acute parenchymatous nephritis. The bichloride douche was given by her grandmother, an old negro nurse thoroughly accustomed to administering douches, who was, at the time that I talked with her, not absolutely certain but was strongly of the opinion that she had given the girl but the one douche.

CASE II. Mrs. S., aged thirty-five. Sarcoma of the uterus.

Vaginal hysterectomy was performed on April 3, 1902. The patient was in poor general condition before as well as after the operation. On April 6 the vaginal gauze was removed, and a douche of peroxide of hydrogen was given. The following day the packing of the vagino-peritoneal wound was removed, and a douche of a dilute formalin solution was given. It was impossible to ascertain the exact strength of this solution. It may have been as strong as 1 to 1,000, or it may have been as weak as 1 to 5,000. This douche caused the patient severe pain, and soon after it was given she passed into a condition of collapse, and in spite of vigorous stimulation died in a few hours.

A careful autopsy was performed, and absolutely nothing was found to account for the death. I believe that the irritant action of the formalin on the peritoneal surface (there can be no doubt that the formalin solution penetrated to the peritoneal cavity) caused the pain, and pain so severe that the patient, in her weak condition, was thrown into the condition of shock, from which she died.

NOTES FROM THE NEUROLOGICAL DEPARTMENT, MASSACHUSETTS GENERAL HOSPITAL.

THE RELATIVE FREQUENCY OF MULTIPLE SCLEROSIS.

BY E. W. TAYLOR, M.D., AND J. W. MYER, BOSTON.

THE relative frequency of the occurrence of disseminated sclerosis in this country and in certain portions of Europe has been the subject of recent investigation. The apparent infrequency of the disease in America has been recognized for a considerable time. In the edition of his "Text Book of Nervous Diseases," published in 1892, Dana comments on its rarity, and makes the statement that but two cases confirmed by autopsy had been

¹ Report to Massachusetts Medico-Legal Society, Feb. 4, 1903.

reported in the United States up to that time. This statement is omitted from the later editions of the book, but during the intervening ten years very few pathological studies of the condition have been published in America.

Statistical investigations of much interest have been made within a year regarding the absolute and relative frequency of the disease. The question was discussed at a meeting of the New York Neurological Society, held Feb. 4, 1902,¹ at which a number of the leading neurologists gave their experience. Dana found that among 3,000 private cases there were ten cases of multiple sclerosis, and of 600 out-patients there were but two cases, and these were doubtful. At Bellevue Hospital among 12,000 patients (not alone with diseases of the nervous system) annually received, there were only one or two cases of multiple sclerosis each year. From these figures he was led to regard the disease as rarer here than abroad. Hammond reported that of 10,000 private and dispensary cases 47 had multiple sclerosis. Of 10,056 cases in Starr's clinic, 27 were recorded as multiple sclerosis, but in six of these the diagnosis was doubtful. Sachs found thirteen undoubted cases and two doubtful ones among 2,000 private cases, and was of the opinion that we had a faulty idea of the relative frequency of the disease in Europe and America. Onuf had made a positive diagnosis of multiple sclerosis in eight cases out of 500 to 600. Fisher reported eight cases out of 2,451. In 6,000 cases of nervous disease, Collins had seen 19 cases of multiple sclerosis. He regarded the disease as very rare. Fraenkel had diagnosticated multiple sclerosis eighteen times out of 1,500 patients observed at a hospital for chronic disease.

Taking the sevarious sources together, it appears that out of a total of 35,107 cases the diagnosis of multiple sclerosis was made approximately 234 times. The relative proportion of cases of multiple sclerosis would be considerably less if the figures submitted by Onuf and Fraenkel from hospitals for chronic disease were excluded.

Dr. Byrom Bramwell of Edinburgh has very recently collected statistics² bearing on the subject from his hospital and private practice, in which a very striking discrepancy with the figures we have quoted is shown. Of 5,825 cases of organic and functional nervous disease there were 100 cases of disseminated sclerosis. In comparing hospital patients with out-patients he found a much larger proportion in the ward cases, one in nineteen, as compared with one in 168 of the out-patient cases. This would be expected, and corresponds in a measure to Onuf's and Fraenkel's statistics to which we have referred. Bramwell is of the opinion that his figures underestimate rather than overestimate the actual number of cases. Excluding certain doubtful cases, he finally concludes that the proportion of cases of multiple sclerosis to the total number of cases of nervous disease in his practice is one to 82, as contrasted with the proportion of one to 219 in America, as he interprets the figures which we have in part quoted. The discrepancy is certainly sufficiently striking, and would appear to have other basis than the inevitable fallacy of statistics.

We have looked up the cases in the Out-Patient

Neurological Department of the Massachusetts General Hospital for the seven years 1896 to 1902 inclusive. This clinic draws its patients from widely diversified classes in the community, and from a large area outside of as well as including Boston. Out of 9,783 cases of nervous disease of various sorts, functional and organic, only five undoubted cases of multiple sclerosis were diagnosticated, with four probable cases. This is a vastly smaller proportion than from any of the New York clinics quoted above. Diffuse degeneration (Putnam-Dana type of combined sclerosis) and ataxic paraplegia were diagnosticated 28 times, and spastic paraplegia without further definition seven times. That some of these latter cases, at least, were multiple sclerosis rather than an isolated degeneration of the pyramidal tracts is highly probable, but not to be proved.

It should be said that the diagnosis of multiple sclerosis has not been made in the absence of tremor of the intention type, associated with speech disturbance or nystagmus or altered deep reflexes. The diagnosis has never been made in the presence of otherwise unexplained spastic conditions, or apparent hysterical states, unless tremor of characteristic type were an accompanying sign. Many of the patients coming to the out-patient department are naturally in early stages of disease, when the diagnosis, particularly in this affection, is often very difficult, if not impossible, to make with any degree of certainty. In contrast with these figures for the Massachusetts Hospital, one to about 2,000, are those for the Long Island Hospital for chronic disease, in which there were three cases among 255 of all sorts observed in the wards. Two other cases, not diagnosticated as multiple sclerosis during life, have shown the typical lesions of that disease post-mortem. However these figures may collectively be used, it is still perfectly apparent that the diagnosis of multiple sclerosis is made with very much less frequency in the Boston clinics under consideration than in New York and Edinburgh.

These statistics, in general, appear to show that Dr. Bramwell is right in his contention that multiple sclerosis is more frequent in Edinburgh than in New York or Boston; they certainly show that the diagnosis is more often made in those cities. It would, however, hardly be asserted that the conditions in New York and Boston are sufficiently diverse to account for the wide discrepancy in the number of cases diagnosticated in the two cities. It is also evident, for obvious reasons, that the number of cases diagnosticated in hospitals for chronic disease is relatively very much greater than in out-patient departments, as shown by Bramwell's, Onuf's, Fraenkel's and our own statistics from the Long Island Hospital.

The sources of error in such estimations, on the whole, seem too great to make such statistics of value, and for the following reasons: Multiple sclerosis is a disease extremely difficult of diagnosis in its early stages, and often in its late stages; clinicians differ widely in their interpretation of obscure signs and symptoms which may occur in, but do not characterize, multiple sclerosis; examination of out-patients is often of necessity too hurried and superficial to permit of accurate diagnosis.

In a recent excellent résumé of our knowledge of

¹ Jour. Nerv. and Ment. Dis., xxix, p. 238, 1902.

² Rev. of Neurol. and Psych., 1, No. 1, p. 12, 1903.

multiple sclerosis, Hoffmann³ speaks of it as one of the commonest of organic nervous diseases, and quotes Charcot's dictum: "*C'est une affection polymorphe par excellence.*" He alludes to upwards of one hundred cases, with three autopsies, observed by him at the Heidelberg Clinic, dwells upon the difficulty of diagnosis, and mentions twenty-three conditions which must be differentiated.

The possibility of distortion of statistics under these conditions of uncertainty, and the influence of the personal equation, is too great to make results of more than superficial value.

Medical Progress.

RECENT PROGRESS IN NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON.

EQUILIBRIUM.

By volitional equilibrium Babinski¹ means that form of equilibrium whose realization necessitates an act of the will, and which can be broken by the will. We cannot stand or extend the arm without volition, or change the position without a similar volition. Other forms of equilibrium may be due to the action of certain bodily functions, such as muscular tonus, and are involuntary. Equilibrium when the body is at rest is called static; when the body is in motion, kinetic. Normally kinetic equilibrium is more easily maintained than static; it is easier to walk than to stand without swaying, or to hop than to stand on one foot. In tabes static equilibrium may be affected before kinetic. This is shown most markedly when the patient is placed upon his back, with the thighs somewhat flexed on the pelvis, the legs on the thighs and the feet apart. In this position a patient with tabes, in whom the tactile sensibility, the sense of position and the sense of movement were well preserved, could not keep his legs still, although he was conscious that they were moving. Another patient with cerebellar disease, who was so ataxic that he could not walk without support, could, after some effort, maintain himself in a standing position for some time, his static equilibrium being so much better preserved than his kinetic equilibrium. When placed in the position above described, the legs were held even stiller than in a normal subject. Babinski concludes that in tabetic ataxia both forms of equilibrium are disturbed, but static equilibrium is at first the more affected. In cerebellar asynergy static equilibrium may be preserved after kinetic equilibrium is profoundly altered, and the power to preserve static equilibrium may sometimes be increased above the normal so much as possibly to amount to catalepsy, which may be due to a disturbance of the cerebellar functions. [Although the distinction between static and kinetic equilibrium is important, the test brought forward by Babinski is not decisive. Tabetic patients who have a decidedly ataxic gait, and are unable to stand with the eyes closed, can often keep their legs perfectly quiet. — REP.]

TOPOGRAPHICAL MEMORY.

Touché² defines topographical memory as the faculty of recalling the position of objects in relation to other objects which form their environment. This special memory is probably a part of the visual memory in general, but it may be lost when the special memories for form and color are retained. From two cases with autopsies, in which the topographical memory alone was affected, Touché concludes that this memory may be destroyed by a lesion of the inferior face of the left occipito-temporal lobe, especially of the fusiform convolution, but that even if the whole left visual field (cuneus, lingual and fusiform convolutions) be destroyed the memory for form and color may persist. The topographical memory, when active, enables the individual to direct himself where he wishes to go. Marie and Ferrand have maintained that this power might be lost even when a part of the visual field was left, and that the loss was related to a lesion of the inferior face of the left occipito-temporal lobe. Touché has studied four cases in which the faculty of directing one's self was lost, and three cases of lesion of the visual zone where this faculty was retained. Where the faculty was preserved, the lesions affected the cuneus and the lingual convolution, but the fusiform convolution was only very slightly affected. In the other cases the fusiform convolution was more or less involved. He therefore thinks that the topographical memory and the faculty of directing one's self may be located in the left fusiform convolution. In this connection a case carefully studied by Colucci³ is of interest. This was the case of an introspective student who, from childhood, had always had difficulty in establishing the topographical relations of objects, which became greater with increased topographical experience. The vision was apparently normal, the young man could distinguish details clearly and the disposition of individual objects; he could judge correctly the direction of a road or a distant building, and had no trouble if the objects were in a direct line; but if it were necessary to make any turning in his route, especially at the bifurcation of two ways, the whole horizon seemed to shift its position at the moment of deviation, so that a given road would seem to be almost at right angles to its true course. This was true of familiar streets, which he had traversed many times. He could, however, conceive and indicate localities, and it seemed absurd to him that the cardinal points could be displaced, yet actual experience produced this curious confusion. This illusion was of short duration, and on ultimate analysis usually consisted in changing the horizon so that the oblique line, considered in relation to the patient's frontal plane, was changed to a direct line. The illusion seemed to be based on the difficulty of conceiving any lines in space oblique to the frontal plane. Long residence in the country, where the topographical relations were less complex than in the city of Naples, and re-education by the aid of a compass, relieved the condition a trifle.

TABES DORSALIS.

Pathogeny.—Marie and Guillain,⁴ at a meeting of

³ Deutsch. Zeitsch. f. Nervenheilk., xxi, p. 1, 1902.

¹ Revue Neurologique, 30 May, 1902.

² Presse Médicale, 30 Nov., 1901.

³ Annali di Neurologia, xx, 555, 1902.

⁴ Rev. Neurol., 31 Jan., 1903.

the Société de Neurologie of Paris, attack the hypothesis that the primary lesion of tabes is exclusively a root lesion. Without doubt there are lesions of the roots followed by true Wallerian degeneration in the posterior columns, but there are, in the posterior columns, other lesions not systematized in the course of any root fibers. In early cases, treated by the Marchi method, the changes in the posterior columns are diffuse, throughout the whole extent of the columns. In addition, the intramedullary lymph spaces are dilated, and when the central canal is permeable, blackish granules are found in the ependymal cells. When the process is very intense it may pass the limits of the posterior lymphatic system and extend into the lateral columns near the posterior horns, as in some forms of combined sclerosis, clinically closely resembling tabes. The predominant lesions of tabes are the non-systemic alteration of nerve fibers in the posterior columns, and a posterior meningitis most marked in the dorsal region. The pia mater has a lymphatic system, which in the posterior meninges has little or no communication with that of the antero-lateral meninges. The lymph spaces in the posterior meninges and posterior columns form a system particularly active and relatively independent, and Marie and Guillain believe that the tabetic process is simply a syphilitic lesion of this posterior lymphatic system of the cord. In the discussion that followed, Philippe maintained that in early cases he had found true Wallerian degeneration limited to certain root fibers. At a subsequent meeting Brissaud⁵ held that the existence of lesions elsewhere in the optic nerve, etc., indicated that tabes was a true degeneration of the centripetal protoneurones.

Juvenile tabes.—Maas⁶ reports six cases of tabes, all occurring before the age of twenty-five, and all in women. In these cases he found all the essential symptoms recognized in tabes of the adult, and is somewhat skeptical as to the existence of any peculiarities in the symptomatology of juvenile tabes. In three of his cases there were reasons for suspecting hereditary syphilis, but in the other cases no evidence of syphilis was obtained. The diagnosis of juvenile tabes has thus far rarely, if ever, been confirmed by autopsy, so that it is still doubtful how many of the cases are really tabes and not cerebrospinal syphilis. Apparently in juvenile tabes as in juvenile general paralysis, the reported cases show as many females as males, instead of the great preponderance of males observed in adults.

Senile tabes—At the congress at Toulouse, Pitres⁷ presented a study of senile tabes. Out of 350 cases observed by him 87, or 25%, were over fifty. In 55 of these cases, however, the disease began before fifty; in 32, tabes developed in persons already past fifty. These latter cases differ from those of ordinary tabes in certain particulars: they occur habitually in subjects whose arteries are markedly atheromatous, and syphilis is less frequently an antecedent. In tabes beginning after sixty-five years of age, syphilis was found in only 33%, while in tabes beginning before fifty it was found in 76%. The evolution of the disease is also more rapid in the senile cases, the motor symptoms appearing

early, and the pre-ataxic stage being correspondingly brief. Senile tabes, therefore, seems to be differentiated from ordinary tabes of middle life by its frequent occurrence in non-syphilitic atheromatous subjects and its comparatively rapid course.

Ankle reflex.—Goldflam⁸ thinks that the lancinating pains may often be the initial symptom of tabes, but there are cases in which the pains may be slight. He has personally never seen a case which had not pain or paresthesia in some form. The other symptoms of the triad—loss of knee-jerk and Argyll-Robertson pupil—are of course not detected until the pains or other symptoms demand medical aid. He reports a case in which the patient had had for ten years pains of the typical tabetic character. The most careful examination revealed no other symptom—the reflexes, the pupils, the sensibility, etc., were absolutely normal. Six years later Goldflam found unequal pupils, reacting to accommodation but not to light, and absence of the left ankle reflex. A few months later the right ankle reflex also disappeared. A year later, however, the right ankle reflex could be again elicited. The knee-jerks then were lively. Goldflam regards the ankle reflex as an extremely constant reflex, which is governed by the same laws as the knee-jerk. He holds with Babinski that it is regularly absent in tabes, often disappearing before the knee-jerk. In 116 cases of tabes he found the knee-jerk altered in 107. In 97 of these cases the ankle reflex was lost on both sides, in six it was lost on one side, in two it was unequal, and in two weak. In nine cases where the knee-jerk was normal, the ankle reflex was absent on both sides in five, on one side in three and unequal in one.

Optic atrophy.—Schupfer⁹ has studied the prognostic value of optic atrophy in 24 cases of tabes, 32% of 75 cases observed. He recalls the various opinions on the subject: that optic atrophy had a beneficial effect on the progress of the disease, especially the pains and ataxia; that it had a beneficial effect only when it appeared in the pre-ataxic stage; or that it had no effect at all. Schupfer concludes from a study of his cases, that when the disease begins with atrophy which goes on rapidly to amaurosis the pains are mitigated and ataxia is absent or slight in degree. When the atrophy appears during the course of the disease, the pains are generally mitigated, but the ataxic disturbances, if they have appeared, do not diminish. When atrophy causes speedy amaurosis the course is more chronic, and trophic disturbances are rare. The pains may disappear of themselves or be affected by treatment. Schupfer believes that the influence of blindness upon the ataxia is to be explained by the greater acuteness of other forms of sensibility in the blind, leading in the tabetic to a process of re-education of movements and an increased acuteness of the sensations governing them, such as is produced therapeutically by Frenkel's method of treatment.

MULTIPLE SCLEROSIS.

Bramwell¹⁰ calls attention to the greater frequency of multiple sclerosis in Scotland and the north of England than in the United States. In 2760 hospi-

⁵ Rev. Neurol., 28 Feb., 1903.

⁶ Monat. f. Psych. u. Neurol., September, 1902.

⁷ Rev. Neurol., 15 July, 1902.

⁸ Neurol. Centralbl., 1 Sept., 1902.

⁹ Rivista Speriment. di Freniat., xxvii, 894; xxviii, 249.

¹⁰ Rev. of Neurol. and Psych., January, 1903.

l patients he found 51 cases of multiple sclerosis, and in 3,065 private patients 49, or 1 in 58 of the total cases. This, furthermore, he thinks within the mark, as he has omitted doubtful cases which later might prove to be multiple sclerosis. He compares his figures with those published by the various New York neurologists in a discussion a year ago.¹¹ In 8,000 private patients there were 38 cases of multiple sclerosis, or 1 in 210; in 31,215 hospital cases there were 141 cases of multiple sclerosis, or 1 in 221. This gives a slightly exaggerated idea of the frequency of the disease in New York, as the same case may often have been reported by different observers; but Bramwell's statistics show that the disease is at least three and a half times more frequent in Scotland and the north of England than in New York.

Mackintosh¹² has studied the modes of onset in cases of multiple sclerosis observed in Ferrier's clinic, including only the cases exhibiting the well-known cardinal symptoms. In these 80 cases, tremor of the arms was present in 67, ataxia or slow movement of the arms in 5, nystagmus in 65, optic atrophy in 38, and scanning speech in 16. The earliest symptoms noted were motor paresis in 14 cases, sensory symptoms in 29 cases, ataxia or tremor in 20 cases, sphincter troubles in 5 cases, apoplecticiform attack in 3 cases, cerebral symptoms other than hemiparesis or apoplecticiform attack, including amblyopia, vertigo, diplopia, squint, nystagmus and headache, in 19 cases. Ten cases had acute or sudden onset. Purely unilateral symptoms were observed at the onset in 15 cases. The comparative frequency of sensory symptoms is also of importance, as contradicting the old teaching that sensory symptoms are absent, and as possibly facilitating the diagnosis of multiple sclerosis in cases which start under the guise of some other disease, such as spastic paraplegia.

Schupfer¹³ reports a case of multiple sclerosis with autopsy in a child of eleven, the symptoms beginning at the age of nine. He has also analyzed reported cases with two autopsies. The disease in childhood is often confounded with spastic cereoparalysis, Friedreich's ataxia, cerebellar ataxia, chorea, spastic paralysis, hysteria and pseudotuberculosis. The symptoms sometimes begin in childhood, but the disease may not assume a typical form until adult life. The etiology is uncertain. The symptoms may begin acutely in early childhood, and may follow some acute infection. The symptoms are very variable; motor disturbances are most pronounced in the legs, and disturbances of sensibility are very well marked; vesical disturbances are constant, and bed-sores often develop in acute cases. Oculo-motor and pupillary disturbances are quite common; but intention tremor, scanning speech and nystagmus are less common, and are apt to be transitory. Tremor of the legs is not uncommon. Mental symptoms are rare. Apoplecticiform attacks and convulsions are not often met with, but temporary disturbances of motion and sensation, of sudden onset and lasting a few days, are of importance. The course may be progressive, but the symptoms may slowly improve, and death is apt to be due to some intercurrent disease.

(To be continued.)

¹¹ Jour. of Nerv. and Ment. Dis., May, 1902.

¹² Rev. of Neurol. and Psych., February, 1903.

¹³ Monat. f. Psych. u. Neurol., July, August, 1902.

Reports of Societies.

THE NEW YORK ACADEMY OF MEDICINE.

STATED meeting, March 19, 1903, under the auspices of the Pediatric Section. The President, ANDREW H. SMITH, M.D., in the chair.

SYMPOSIUM ON TYPHOID FEVER IN INFANTS AND CHILDREN.

DR. J. LOVETT MORSE of Boston read a paper on

THE OCCURRENCE OF FETAL AND INFANTILE TYPHOID.

In consequence of the inherent difficulty in making the diagnosis, he said, little reliance was to be placed on the earlier data; but since the discovery of the typhoid bacillus and the employment of the Widal test, evidence of some real value was available. He spoke first of the abortion type, and stated that abortion in women suffering from typhoid was principally due to high temperature and the death of the fetus. The latter was generally regarded as the most common cause. In fetal and congenital typhoid the child is either born dead or dies soon after birth. It was necessary to exclude all cases reported before the time of diagnosis by the typhoid bacillus and also doubtful cases since then. There were now fifteen cases proved by bacteriological examination in autopsies and one by the serum test. In children with typhoid, who were born dead or died soon after birth, it was believed that the infection was conveyed from the mother to the fetus through the placenta. He mentioned a case in which twins were born alive at the eighth month, both of which showed the Widal reaction. On the fourth day the temperature of both was 104°, and one died on the fifth day and one on the sixth. In Bell's case the Widal reaction was seen four weeks after birth, while absent in the mother.

If these children are born alive they generally die at an early period from cachexia. From the results of autopsies it is concluded that lesions characteristic of typhoid do not occur until some time after birth. It would seem, therefore, that the infection is not perfected in fetal life, being general in character and without especial local manifestations. The typhoid bacillus is found in the spleen in most cases. The septicemic nature of the infection accounts for the extreme mortality in fetal and congenital typhoid. The infection may be conveyed from the mother through both the normal and abnormal placenta. The non-use of the intestines during fetal life, as well as the general character of the infection, would account for the absence which has been noted of any implication of the bowel; but in infants who have lived three weeks, intestinal lesions may be found. While death is the usual result, recovery may take place. It is possible that the fetus may pass through the infection and be born alive and well, but no proof of this exists.

In regard to infantile typhoid, there is much difference of opinion as to the frequency of the disease in the first two years of life. There is no very evident reason why the infant should be exempt from the infection; in fact, it would seem reasonable to suppose that this class of subjects should be more liable to contract it than older ones. In the first

year, it is true, the breast-fed child would naturally be practically exempt, and the heat employed in the preparation of the food of the artificially fed would diminish the chances of its contraction. In the second year, however, the large amount of cold milk consumed would seem to render the child particularly subject to the risk of typhoid. Nevertheless, the statistics at command are very uncertain. There is an *apparent* infrequency of the disease during the first two years of life. Whether this rarity is an actual fact or whether typhoid occurs frequently in infants without being recognized, it is as yet impossible to say. Its relative frequency can be determined only by a more general use of the Widal reaction in the illnesses of children, particularly those of a diarrheal nature, and of routine bacteriological examinations. A large series of cases is necessary.

In ten infants who recovered, the average duration of the disease was twenty-one days, and in ten who died, eighteen days. The course is shorter than in adults, and it is possible that many mild cases may escape detection. The Widal reaction and culture of the typhoid bacillus present the same results as in adults. In the light of our present knowledge it may also be said that the symptomatology is the same as in them.

DR. J. P. C. GRIFFITH of Philadelphia read a paper on

THE OCCURRENCE OF TYPHOID IN INFANTS AND CHILDREN.

He said that he had very little to add to what he had already said in previous papers, but he would endeavor to point out some of the peculiarities of the disease as it occurred in this class of subjects. As to the etiology, this was, of course, the same as in after life, and it could be shown that many children were sufferers from typhoid during the milk epidemics which occurred from time to time. He gave the statistics of typhoid in fetal life, so far as these could be considered reliable, and said that in these cases the infection was evidently conveyed through the placental circulation. It was his own belief that typhoid was far less rare in infants than was generally supposed. It was not a very rare affection, though less frequent than in adults. He would not say that it was common; *comparatively rare* was perhaps the best term to use in regard to it. Having given such statistics as seemed available, he went on to say that breast-fed infants were naturally exempt. In infants of two years and under the disease differs principally from that met with in older persons, (1) in its onset and shorter course, and (2) in that the nervous symptoms overbalance the intestinal. Walking cases are far more common than in adults. On the other hand, in exceptional instances, the onset may be remarkably sudden. The intestinal symptoms are usually very mild. Ulceration of the bowels is rare, and generally the only lesion found in them is more or less diffuse inflammation. Vomiting occurs in a considerable number of instances. Epistaxis is not so frequent as in adults. Some degree of cough, with mucous râles in the chest, is very commonly met with. Diarrhea is not infrequent in the first two and a half years of life. Out of 417 cases, it was noted in 113. Its fre-

quency in infants appears to be due to the general tendency to diseases of the intestines in them.

In early childhood diarrhea is less frequent, and does not often give trouble. During the past season there has been but little diarrhea among the cases in the Children's Hospital in Philadelphia. In the wards of this institution there is constantly more typhoid fever than any other disease, the patients ranging in age from three months to twelve years; and Dr. Griffith said that at the clinics where the students became surfeited with this subject from the many cases shown there was often a scarcity of other material to present. Abdominal pain is not infrequent, but tympanites is not a prominent feature. Rose spots probably appear in the majority of cases. Nervous symptoms unquestionably preponderate over the intestinal ones. At the same time, these may not be very marked. The low, muttering delirium, subsultus tendinum, etc., so commonly met with in adults, are very rare except in patients approaching the age of puberty. Still, there is often a slight degree of apathy and slight delirium, as well as more or less headache. In a few cases a pseudomeningitis is observed. He referred to one in which the attack was ushered in with wild delirium. All the signs pointed to meningitis, but the Widal reaction was obtained, and after a comparatively short time the excitement entirely subsided.

The average duration of the disease is from fourteen to twenty-one days. The temperature is somewhat variable. The spleen is always enlarged, and the mesenteric glands are commonly much swollen. The solitary and agminated glands are inflamed and show some tendency to ulceration, and the older the child, the more likely this is to occur. In the fetus no evidences of intestinal ulceration are found. In making a diagnosis between typhoid and diarrheal affections, such as enterocolitis, as well as meningitis, the Widal reaction must often be depended upon. Influenza offers peculiar difficulties in the way of diagnosis. Whenever there is abnormal temperature which continues for some time without apparent cause, typhoid should be suspected. It is to be noted that the Widal reaction may be very late in making its appearance. Aphasia is said to be more frequent than in adults. He had met with *nomâ* in several instances. Intestinal hemorrhage is rare. Perforation is very rare, and when it occurs it is for the most part in children approaching puberty.

The prognosis is, on the whole, good in children. This is not the case, however, in infants. Dr. Griffith's figures show a mortality of 27.07% for all cases under two and a half years. In infancy it is, therefore, a distinctly dangerous disease.

As to the treatment, it is a question to what extent hydrotherapy is of value. The typical Brand method, it may be said, is seldom applicable. Children as a rule do not tolerate it well. It is very apt to give rise to a weakness of the pulse, which continues for an hour or an hour and a half after the bath. In many cases general sponging also seems to do harm, and a brief immersion is usually preferable to this. Sponging the feet is often sufficient; if not, it may be followed by a carefully graduated bath. The abdominal ice bag generally works well. We can afford in many instances to let the temperature alone, and there is reason to believe that hydrotherapy often does more harm than good.

DR. A. D. BLACKADER of Montreal, Can., read a paper on

THE SYMPTOMS AND ETIOLOGY OF TYPHOID FEVER IN CHILDREN, MAKING SPECIAL REFERENCE TO THE WIDAL REACTION.

In speaking of the etiology, after referring to the ordinary agency of milk, water, etc., he mentioned the conveyance of infection by means of the child's fingers, by flies and by wind-driven sand. In the city of Tunis, where all the refuse is thrown in the streets, he had been informed that 75% of the cases of typhoid occurred in children. In early childhood there is less susceptibility to the disease than later. In children, as a rule, typhoid runs a milder and milder course than in adults. They appear to offer a greater resistance to the infection, and to overcome it more readily. As to differences in susceptibility, children who show a tendency to steric disturbance seem to be much less liable to have typhoid than those subject to intestinal trouble, and it may be that the acid secretions of the stomach have something to do with this comparative immunity. On the other hand, hyperemia or other abnormal conditions of the intestines would appear to constitute a predisposing factor as regards this disease. Another predisposing factor is the lowering effect of other diseases. There may, in fact, be a double infection, as the scarlatinal and typhoid; the typhoid bacillus has been found in the blood of patients suffering from scarlet fever. Intention at the same time has also been observed with meningitis.

In children with typhoid the fever shows greater instability and is of shorter duration. The onset of the attack is apt to be more sudden than in adults, and may simulate pneumonia. In a considerable number of instances it is very insidious. Not infrequently the temperature is much the same as that which characterizes the disease in adults. The pyrexia may reach a high point, and in some cases is of a remittent type. True intermittent is seldom seen in the typhoid of children. In the larger proportion of cases the fever has run its course by the end of the third week. It is found, however, that during convalescence there often occur elevations of temperature which may be due to a variety of causes. Thus, any excitement or unusual exertion may bring it on. Abortive cases are not infrequent, in which the pyrexia terminates after the eighth or ninth day. There is also the possibility of a typhoid infection running its course without any pyrexia, and he met with no cases of this kind, in 1901. The mortality of the disease is small in children. Out of 101 cases reported by him in 1900 there was but one death. When a fatal result does occur, it is usually from some intercurrent affection.

The spleen is undoubtedly always enlarged, though its increased bulk cannot always be detected. Gurgling in the ileocecal region is a sign of little value, but tenderness here is worth noting. It calls for a careful differential diagnosis from appendicitis. Rose spots occur in the great majority of cases, and exceptionally they appear as early as the fourth or fifth day. Desquamation is not generally noticed. Some amount of bronchitis is seldom wanting, though there may be only a very

moderate cough present. This is one of the ordinary expressions of typhoid in children. The circulation does not appear to suffer to the same extent as in adults, and only in very severe cases is cardiac asthenia observed. A transient intermittency of the pulse, however, is not uncommon. Diroticism is almost never met with under the age of ten years. More or less tympanites is usually present. The nervous symptoms are not marked, though there may be some headache and apathy. Pseudo-meningitis occasionally obscures the diagnosis, but the rounded abdomen, the enlarged spleen and the rose spots should enable us to decide the true nature of the case. Nephritis is an occasional complication in older children. Eberth's bacillus may develop in the urine and set up a cystitis. Recrudescence of fever may occur in consequence of complications, such as otitis, fecal impaction, etc. It must be distinguished from true relapse, which is decidedly less frequent than in adults.

In making tests for typhoid Dr. Blackader has been accustomed to use Ehrlich's, as well as Widal's, method. Widal's reaction, he thought, should be sought for every second day. In a series of fifty cases it was found by the tenth day in nineteen; between the tenth and twentieth day, in twenty-three; and between the twentieth and thirtieth day, in four; in one case the reaction was not obtained until the forty-sixth day, and three cases failed to give any reaction. No note had been made of the time of the disappearance of the reaction.

DR. L. EMMETT HOLT said that in his experience, as well as that of others, typhoid was exceedingly rare in infancy in New York. It was infrequently met with in older children also, and he had been much struck with Dr. Griffith's account of the large number of cases treated at the Children's Hospital in Philadelphia. At the Babies' Hospital in New York there had been but three cases in the last fourteen years, and they had all occurred in patients over two years old. Even if the Widal reaction were sought for in every case in which there was any possibility of the existence of typhoid, he believed that the actual number of cases of the disease would be found to be very small. It was true that cases were sometimes met with which, for want of a better name, Dr. Delafield had designated as "New York fever," for which, after excluding other diseases, and especially malaria by the use of quinine, there did not appear to be any assignable cause. Yet he did not think there was any reason whatever to consider these cases as typhoid. In this city, at least, the presumption in any doubtful case of fever in a patient under two years of age was *against* typhoid. In regard to peculiar phases in the typhoid of children, he had found it much more frequently a cerebral than an intestinal disease. As to the eruption, he had seen two or three cases in which it was so profuse that the disease was mistaken for measles. It had been his fortune to meet with quite a number of instances of this very abundant rash. He believed that attacks of acute indigestion were very apt to precipitate the development of typhoid when the bacilli of that disease were present in the intestinal canal.

DR. W. P. NORTHRUP made some remarks, which were principally devoted to a criticism of Dr. Grif-

fith's position as to the frequency of typhoid in infants. He explained that there was an "old feud" between them on this subject. He took issue with him particularly for excluding from his statistics the figures of the New York Foundling Hospital and the New York Infant Asylum, two of the largest institutions of the kind in the country, in which were given the observations of such men as the late J. Lewis Smith and James O'Dwyer, as well as of Dr. Holt and himself. He said that he had once heard of a man who had been called by the nickname "Statistics," because he was such a notorious liar. In his last published paper Dr. Griffith had given 417 cases as the total number that had been known to occur in infants under the age of two and a half years in all the earth. Of this number 91 were not altogether free from doubt; so that the actual number of undisputed cases was only 326. Dr. Northrup then gave the number of cases of typhoid fever in the United States in a single year, according to the twelfth census, and went on to say that when the 326 was compared with the untold millions of cases of typhoid which had occurred in the world, it could hardly be said that typhoid in infancy was a very frequent disease. The records of the New York Foundling Hospital showed that there had not been a single case there in twenty-five years. Further academic discussion of this matter he thought was absolutely useless. Nothing but the Widal test could determine the question.

Recent Literature.

Manual of Antenatal Pathology and Hygiene. The Fetus. By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S. (Edin.), Lecturer on Midwifery and Gynecology, Medical College for Women, Edinburgh; Lecturer on Antenatal Pathology and Teratology in the University of Edinburgh (1900); Examiner in Midwifery in the University of Edinburgh; Assistant Physician, Royal Maternity Hospital, Edinburgh; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society, and of the American Association of Obstetricians and Gynecologists. Pp. 527. New York: William Wood & Co. 1902.

The author of this book has already become widely and justly known by the large amount of original investigation performed by him, and by his numerous writings, chiefly on the subjects connected with fetal pathology. Among the more important of these is the two-volume edition on "The Diseases and Deformities of the Fetus," published in Edinburgh, while in this country his article published in Keating's *Cyclopedia of the diseases of children* on "Congenital Disorders and Diseases of the New-born" is noteworthy. He is also the originator of the idea of a prematernity hospital, which is fast coming into favor and is undoubtedly bound to have a place in connection with lying-in hospitals in the near future. Dr. Ballantyne has not been the only investigator in the field of research of fetal pathology, but he has had the unusual fortune to have had nearly three hundred specimens for examination, comprising nearly all the morbid fetal types. He is thus emi-

nently qualified to speak with authority and from a scientific standpoint.

This volume of *Antenatal Pathology and Hygiene* is to be followed by a companion volume on *Teratology and Morbid Heredity*. The book is divided into two parts, Book I, "Antenatal in Relation to Postnatal and Neonatal Pathology," and Book II, "The Pathology and Hygiene of the Fetus."

In Book I is given an interesting account of the history, literature and growth of fetal pathology, and in it the statement is made that fetal pathology is one of the last provinces of medicine to have emerged from a kind of medieval wonderland into the realm of science. Considerable evidence, however, might be brought forward to prove, as shown in some recent medical publications, that the emergence is not even now altogether complete. The author points out the relationship of surgery and gynecology to antenatal pathology, and emphasizes the fact that many of the conditions in life embraced by the former are due to intrauterine factors. He also notes that in the last decade great improvements in obstetric and operative technique have been made, but that in the pathology of pregnancy the same degree of progress has not been made as in other spheres of medicine. The last two chapters in Part I, the most valuable from a practical standpoint, are devoted to the more common pathological conditions — accidents and infections occurring in the newborn.

The major portion of the work and by far the most important is devoted to Part II, which treats of the anatomy, physiology and diseases of the mature fetus. The author's classification of fetal diseases, or fetal morbid states, is interesting in showing the elaborate manner in which this portion of his subject is treated. It comprises, I, Transmitted Diseases; II, Transmitted Toxicological States; III, Idiopathic Diseases; IV, Neoplasms; V, Traumatic Morbid States; VI, Diseases and Morbid Conditions of the Fetal Annexa; VII, Pathology of Fetal Death. A chapter is also devoted to various ill-defined morbid states of the fetus, occurring in connection with certain diseases in the mother, as eclampsia, cancer, etc. The work in no way treats of embryological conditions, and in this connection the author's definition is interesting that, "fetal pathology is characterized by disease as distinguished from embryonic pathology, which has malformations and monstrosities as its peculiar possession."

The discussion of the subject of placental transmission is excellent, and should be read by every one who is at all interested in the matter. The author does not allow that the fetus is protected by the structure of the placenta from the bacteriological diseases, or that it is necessary to admit the existence of a placental lesion to explain the passage of microorganisms. He states that fetal death is confessedly a failure and a disappointment, and treatment unsatisfactory, but he ventures the opinion that as the means for rearing premature infants are perfected, even the certain cause of fetal death, expulsion before the sixth month, may become less sure and the date of viability may thus be pushed further back. In this connection it is tersely stated that, "when the birth-rate begins to go down, the value, economic as well as sentimental of the unborn infant, begins to go up." In his conclusion the author says it is beginning to be evident that inherited diseases and

anomalies are rather signs of the breaking of heredity than instances of the persistence of it; that the tendencies of the germ plasma are towards the formation of normal structures, and that much of the harm that is done to the germ in one generation may be undone in the next, if it be permitted.

Much of value might be quoted from this most interesting and instructive book, and it has been a pleasure to read it for review. No equally satisfactory book on the subject has ever been produced, and it is a cause for congratulation that the writer is English and that the book is published in the English language. It should be widely read, and is particularly commended to those especially interested in children's diseases and in obstetrics.

The American Text-Book of Obstetrics. In two volumes. Edited by RICHARD C. NORRIS, M.D.; Art Editor, ROBERT L. DICKENSON, M.D. Second edition, thoroughly revised and enlarged. Two imperial octavo volumes of about 600 pages each, nearly 900 text illustrations, and 49 colored and half-tone plates. Philadelphia; London: W. B. Saunders & Co. 1902.

The second edition of the "American Text-Book of Obstetrics" has outgrown the single-volume size, and while there is little doubt but that in the present condition it would be rather cumbersome for one volume, it is a question if the editors would not have done better to have eliminated certain portions in order to bring this edition within the limits of a single volume. A book of one volume is easier to consult for reference, and as a textbook is unquestionably much superior for the use of the medical student.

The volumes themselves are most attractive, and are profusely and splendidly illustrated, some of the illustrations being new in this edition, while very few of them have ever appeared in other textbooks. It certainly is refreshing not to have to see again the old time-worn illustrations which have been reproduced so often, and often without reason.

The introduction of an art editor is a feature of this book, and in general the art editor has performed his work very well, and the great majority of the illustrations show as well as they may what it is intended they should. The art side might, however, be considered over-developed in certain instances, as when the nude figure of a woman, with the "pose from Spigelius," is used to indicate the location and intensity of the fetal heart sounds, the abdominal flaps being turned back and delicately held in the fingers of the woman herself; or again when a reclining figure "after the Ariadne" is taken to show the relative location of the iliac spines and the lumbar vertebrae.

The list of contributors has been changed only slightly, as necessitated by the deaths of Drs. Parvin, Etheridge and Earle, and by the addition of Dr. J. Clarence Webster. The work remains a collection of most excellent obstetrical monographs; probably a better one could not be obtained elsewhere, all things considered. There appear, however, some statements which should be eliminated from a modern book of this character at the beginning of the twentieth century. That monstrosities result from psychical influences or from maternal impressions is not supported by scientific opinion at

the present time. Moreover, one would scarcely expect to find such directions as to cover the vulva, as the head begins to emerge, with sterile lint, in order to prevent the entrance of microbes from the air in the room. Or that in many respects country practice exposes the patient even more to infection than does city life, because manure is spread over the fields and the garden close to the house in which live the farmer and his wife; and also because the butcher kills his cattle, lets the blood soak into the ground, and nails the skins to the barn-doors, whence their odor can be smelled far away. In another place the same writer says that an epidemic of puerperal fever in a new maternity hospital on Blackwell's Island was probably due to the manure with which the surrounding grounds had been covered in order to make a garden.

The work is comparatively free from contradictions, but such will creep into any book written by different men on the system plan, no matter how carefully it may be edited. As an illustration in one chapter it is stated that during the fortnight preceding parturition a genuine broadening of the cervix takes place, when the cervical canal is merged into the upper uterine cavity; while in another chapter the writer has given precedence to the views of those investigators who believe that the cervix remains unchanged until the beginning of labor. In one chapter the writer carefully describes the modern nomenclature of the abbreviations now in general use for designating the various positions, as O. L. A. and O. D. A.; while, in another chapter, presumably another writer reverts to the old method of designation by L. O. A. and R. O. A.

The details for the conduct of an aseptic labor, than which there is nothing more important in the management of normal labor, are given at considerable length with an alternative of several methods. We believe it would be better, however, to give one method, the best and the simplest, than to offer a choice of several; and to advise the use of one antiseptic only, that one which time and experience have proved to be the best and most reliable under all conditions. Advice for use of rubber gloves is given only after septic contact. The dangers of frequent internal examinations are well emphasized, while the details of the external examination for obstetric diagnosis are thoroughly described and very fully illustrated.

There is throughout the work a certain tendency towards verbosity, and consequently a considerable portion of the text might be eliminated with profit and thereby make a better textbook and less of a treatise.

Taschenbuch der Massage für Studierende und Ärzte. Von DR. ERICH EKGREN, an der III medicinischen universitäts-klinik zu Berlin. Mit einem Vorwort von Geh. Med.-Rath. Prof. Dr. H. SENATOR. Berlin: Verlag von S. Karger. 1903.

This is a small book of ninety pages, on the general subject of practical massage, written by a man of experience. The treatment of the subject is scientific. It is well condensed and sufficiently illustrated to make clear the important procedures. The book may certainly be recommended as a brief compendium on an important subject.

THE BOSTON
Medical and Surgical Journal

THURSDAY, APRIL 9, 1903.

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THE SALE OF POISONS.

A REPORT¹ has recently been made to Parliament by a committee appointed to consider the question of revising the list of poisons which in England can be sold only under definite restrictions. Under the Pharmacy Act of 1868, and its subsequent amendments, two lists of poisons were prepared. The first list consists of certain violent and dangerous poisons, which can only be sold under regulations, which require that the buyer should be known to the seller, or should be introduced by some one who knew both parties. Registry of the sale should also be made, in a book kept for the purpose, of the date of sale, name and address of the purchaser, name and quantity of the article sold, and the purpose for which it is stated to be required. The second list consists of articles to which it is only necessary to attach a label, giving the name of the article, the word "Poison," and the name and address of the seller. This requirement also applies to all articles in the first list.

The committee held several sessions and listened to much valuable testimony. Among other facts it was shown that deaths had occurred from the following patent medicines containing poisonous substances: Battle's Vermin Killer; Chlorodyne; Winslow's Soothing Syrup; a patent medicine containing antimony; Martin's Pectoral Balsam; Hooper's Whooping Cough Mixture; Holt's Whooping Cough Specific; Indian Tincture; Bentley's Weed Destroyer; Rough on Rats; and Phosphorus Paste.

The following are the amended lists recommended by the committee:

PART I.

Arsenical and its preparations.

¹ Report of Committee to Consider Schedule A of the Pharmacy Act of 1868. London, 1903.

Alkaloids. All poisonous vegetable alkaloids and their salts.
Aconite and its preparations.
Atropine and its preparations.
Cantharides.
Cocaine and its salts.
Corrosive sublimate.
Cyanide of potassium and all metallic cyanides.
Emetic tartar.
Ergot of rye and its preparations.
Morphine and its salts, and preparations containing one or more per cent of morphine.
Picrotoxin.
Prussic acid and its preparations.
Savin and its oil.
Strychnine and its preparations.
Vermin killers containing any of the foregoing poisons.

PART II.

Acetanilide and its preparations.
Almonds, essential oil unless deprived of prussic acid.
Belladonna and its preparations.
Cantharides, tincture and vesicating liquids.
Carbolic acid and liquid preparations containing more than 3% of acid.
Chloral hydrate and its preparations.
Chloroform.
Cocaine, preparations of.
Corrosive sublimate, preparations of.
Digitalis and its preparations.
Morphine, preparations containing less than 1%.
Nux vomica and its preparations.
Opium and all preparations of opium and poppies.
Oxalic acid and its soluble salts.
Precipitate red.
Precipitate white.
Mercuric iodide.
Mercuric sulpho cyanide.
Strophanthus and its preparations.
Sulphonal.

In consequence of the increased use of poisons among farmers and gardeners for use as insecticides, sheep-dips, weed-destroyers, etc., the committee thought it best to recommend a third list of poisons to include such substances.

This list consists of preparations of arsenic, tobacco or carbolic acid, to be kept in closed vessels, distinctly labelled as "Poisons," with the name and address of the seller and the purpose for which the article is made or intended.

In Massachusetts laws were enacted of a similar character in 1887 and 1888, limiting the sale of poisons, and until 1896 this law was applicable to all poisons, except those sold for agricultural purposes. But in that year the active interference of the Patent Medicine Trust was sufficient to secure the enactment of an amendment providing for the exemption of "patent and proprietary medicines" from the action of this law.

An investigation by the State Board of Health had shown that certain patent medicines, for exam-

ple, many catarrh cures, contained cocaine in such quantities as to seriously injure the health of those who used these preparations, and caused them to unwittingly become the victims of a dangerous habit. Certain cosmetics were found to contain dangerous quantities of corrosive sublimate and lead, and instances of harm were known to be due to their use. The law had no intention of preventing the sale of these articles, but only required the application of poison labels to the packages, so that the user might be cautioned as to their use.

The State Board of Health entered complaint in court against parties for the sale of such articles, among them being two so-called "Mesdames," the proprietors of face or complexion bleaches, who were accustomed to proclaim their wares in public halls, accompanied by orchestral music. This action of the board had a salutary effect, but was short-lived, since the amendment secured by the patent medicine interest prevented further action in this direction.

During the present session of the Massachusetts Legislature the subject has again come up, in the form of an order, requesting the State Board of Health to report "whether, in the opinion of the board, there is anything dangerous to public health in the sale and use of articles commonly known as face bleaches, and if so, what, in the opinion of the board, is necessary in the way of legislation to protect the public against the sale of such substances."

In reply to this order the board collected such preparations of this character as could be found in open market, and had them submitted to analysis.

Some were found to contain dangerous poisons, others were quite free, and the board suggested that the law relating to the sale of poisonous proprietary medicines which was in force prior to 1896, requiring a poison label to be affixed to such articles, would, if re-enacted, provide a greater degree of protection than is possible under existing statutes (Senate, No. 310, 1903).

EXPERIMENTAL EVIDENCE OF THE EFFICIENCY OF FORMALIN INJECTIONS IN SEPTICEMIA.

SINCE the case of streptococcus septicemia recently reported by Dr. Barrows of New York, in which recovery followed the intravenous injection of formalin solution, naturally much interest has again been directed to this possible method of treating a formidable condition. A certain amount of experimental evidence, to which we have previously alluded editorially, was already available, and we are glad to make note of a further research, conducted under the auspices of Dr. William H. Park

of New York, on the effect of such injections in septicemic conditions. The experiments, which are published in the current number of the *Medical News*, were carried out on rabbits, with the general result that streptococci were shown to increase in the blood, even after large doses of formalin, and that death might still be caused by septicemia. More than this, it was apparently shown that all the rabbits receiving formalin after the streptococcus died earlier than those receiving the streptococcus alone. Further experiments conducted with a virulent culture of pneumococcus gave similar results. The formalin failed to give the slightest protection. Tables are appended which show that injections of formalin in some cases were given far beyond the comparable dose advised by Dr. Barrows for man, but without protective effect. In spite of the relative fewness of the experiments, the results were so wholly uniform as to lead the writers of the article, Drs. Park and Payne, to the conclusion that non-lethal formalin injections are incapable of checking a septicemia once started in healthy animals.

The whole matter is naturally one of very great practical importance, and fortunately one which may be in great measure experimentally verified. The work hitherto done in testing the efficiency of formalin injections has certainly not been sufficiently encouraging to justify their routine use in man. It is always possible, and in fact probable, that the conditions in human beings are somewhat different from those in the lower animals; nevertheless, such experimental evidence as we have, must be given very great weight and lead to conservatism in this somewhat radical method of treatment.

THE BOSTON FLOATING HOSPITAL.

THE work of the Boston Floating Hospital has increased year by year until now, as we have previously had occasion to state, it has quite outgrown the facilities with which it is at present provided. Naturally, the need of a new boat, with larger opportunities, both for the care of the patients and for their adequate study, is demanded. In spite of the fact that last summer was a particularly cool one, there was a waiting list of permanent patients during the greater part of the season, so that the hospital was maintained in operation until the middle of September. It should be recognized that this summer work for children has a broad field of operation. While it is true that most of the patients come from Boston and its immediate vicinity, some are brought from cities and towns at a distance, and other hospitals are availing themselves of the peculiar opportunities which the Floating Hospital offers for the care of children during the summer.

A further element in the work is the opportunity afforded for careful and systematic investigations into the diseases common to children during the heated term. It is stated that Dr. Simon Flexner is interested in determining the value of the serum which he has been elaborating for the treatment of the summer diarrhea of children. To this end it is designed to send competent men to test the value of the serum at various children's summer hospitals. It is evident that with a larger boat, and consequently improved laboratory facilities, much could be done here toward elucidating this and other problems which are constantly being presented.

MEDICAL NOTES.

PREVENTIVE AND CURATIVE PROPERTIES OF TYPHOID PLASMA.—Dr. Macfadyen has made a further communication to the Royal Society in regard to the preventive and curative properties of typhoid plasma. From experiments made upon monkeys and control experiments upon guinea pigs, he concludes that: (1) By the injection of the intracellular juices of the typhoid organism into the monkey it is possible to obtain a serum with both antibacterial and antitoxic properties. (2) Such a serum possesses curative and preventive properties as regards the typhoid bacillus and an intracellular toxin present in the same organism.

PORTRAITS OF DOCTORS.—According to the London letter of the *Medical Record*, cartoons, published in *Vanity Fair*, have reached the number of eight hundred, among which are thirty-six doctors. These portraits of doctors are now offered by the publishers for £2 2s. Single portraits may also be purchased at varying prices; for example, Sir S. Wilks is priced at 2s. 6d., Sir F. Treves at 1s., and Sir W. Broadbent at 6d.

ONE HUNDRED AND THIRTIETH ANNIVERSARY OF THE MEDICAL SOCIETY OF LONDON.—It is stated in the same letter that the Medical Society of London celebrated its one hundred and thirtieth anniversary on Saturday by a dinner, to which nearly two hundred persons sat down. Sir William Church proposed the toast of the society, to which Mr. Gould, the president, responded. The Hon. R. P. Porter, U. S. A., responded for the guests, as also did the Lord Chancellor.

CONFEDERATION OF MEMBERS OF RECIPROCATING STATE MEDICAL EXAMINING AND LICENSING BOARDS.—A meeting of this confederation is to be held Thursday, April 23, in Chicago, the object being to take further action whereby practical and effective reciprocity may be had in the near future between the different states of the Union. It is hoped that delegates from various states will be present.

A GIFT FOR THE PASTEUR INSTITUTE.—It is stated that Dr. Emile Roux has recently been awarded the Osiris prize amounting to \$20,000, and that he intends to transfer the amount to the Pasteur Institute, of which he is sub-director.

A CENTENARIAN PHYSICIAN.—It is reported that Dr. John H. Woods of Thomas, Okla., died March 28, at the age of one hundred and one years. He had been actively engaged in practice for seventy-five years.

AN ANTISMOKE ORDINANCE.—According to *American Medicine* an antismoke ordinance has been passed by the Chicago City Council. The ordinance requires the department for the inspection of steam boilers and steam plants to pass on smoke devices and plans for constructing steam plants, and also requires the supervising engineer to give the owner of a smoke-making plant such advice and assistance as will in his judgment prevent the emission of dense smoke.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, April 8, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 35, typhoid fever 10, measles 37, smallpox 0.

AN AWARD OF FULL DAMAGES.—In a damage case recently tried in Salem, it is reported that the plaintiff received the full damages asked for, for injuries alleged to have been received while riding on one of the defendant's cars. Such an award in full is unusual.

BEQUEST FOR A HOSPITAL.—It is reported that Mrs. Elizabeth R. Stevens has given a sum of money amounting to about \$100,000 toward the erection of a new hospital in Fall River, contingent upon the further collection of \$100,000.

NOISE AS AN ELEMENT OF DAMAGE.—The Supreme Court has confirmed the ruling of the chief justice of the Superior Court that noise is an element of damage. The question arose through the operation of the Boston Elevated Railway, leading to the institution of various suits along its line for damages due to noise. The full text of the decision is of very great interest in relation to this matter, which naturally affects directly a large number of persons and indirectly the entire community.

DECISION AGAINST ANTIVACCINATIONISTS.—In a test case regarding the constitutionality of compulsory vaccination the supreme bench of the full Court of Massachusetts has rendered a decision upholding the lower court in its ruling that compulsory vaccination is constitutional. The court, in rendering

this decision, recognized the possibility of injury from vaccination in individual cases, but held that a measure of such accepted value should not, therefore, be evaded. Attention was also drawn to the fact that the authorities have not the power to vaccinate by force, and that the worst that could happen to an individual objecting to the operation was the payment of a fine of \$5.00. This ruling is quite in accord with the best public opinion on this subject.

NEW YORK.

FREE BED IN MONTEFIORE HOME.—The Montefiore Home and Hospital for Chronic Invalids has been presented with \$2,500, for the endowment of a bed, raised by a league of young people organized in the interests of the institution.

MORTGAGE ON ST. MARK'S HOSPITAL PAID.—The executive committee of the managers of St. Mark's Hospital announces that a mortgage of \$5,000 on the hospital has been paid off by a subscription raised during the past three months.

REGULATION OF BARBERS.—The State Senate at Albany has passed a bill "regulating the practice of barbering, and to establish a State Board of Barber Examiners, and provide for sanitary inspection of barbers' shops."

MORTALITY IN MARCH.—The mortality in the city during the month of March represented an annual death-rate of 19.67, against 20.81 in February and 19.76 in March, 1902. This is a very gratifying showing for what is often the worst month of the year. The most noticeable decrease is in the deaths from diseases of the respiratory system, and this is no doubt largely due to the exceptionally mild weather which prevailed. The weekly average of deaths from pneumonia declined from 196.5 in February to 178.5 in March; of deaths from bronchopneumonia, from 90.75 to 83.25; from acute bronchitis, from 49 to 37.5, and from pulmonary tuberculosis, from 182.25 to 171. The weekly average of deaths from organic heart diseases decreased from 108.25 to 100.75. There was very little change in the number of deaths from the zymotic diseases, the weekly average from diphtheria continuing about 45; from scarlet fever, about 17; from measles, about 10; from whooping cough, about 8, and from typhoid fever, about 10. There were no deaths from smallpox. Among the diseases which showed an increased mortality were cancer, the weekly average of deaths from which rose from 53.75 to 55, and Bright's disease and nephritis, in which the average rose from 125 to 130.5. The weekly average of deaths from influenza was 33.25 in March, against 34.25 in February. While this is a decrease of only one death a week, the disease really seems to be on the wane,

for while 52 deaths were reported from it during the last week in February, there were only 27 deaths ascribed to it in the last week of March.

Correspondence.

LETTER FROM THE PHILIPPINES.

SPECIAL CORRESPONDENCE.

MEDICAL MATTERS IN THE PHILIPPINES.—LACK OF HOSPITALS, DISPENSARIES AND PHYSICIANS. — 50% OF DEATHS IN MANILA WITHOUT MEDICAL ATTENDANCE. — RINGING OF CHURCH BELLS RESTRICTED. — CHOLERA DECREASING: INSTRUCTIVE OUTBREAKS. — HEALTH REPORTS.

MANILA, Feb. 22, 1903.

MR. EDITOR: The sanitary problems here are tremendous, and the work of sanitation is hampered by racial dislike, indolence, poverty and religious superstition. The health officer in the States has something to build upon—here everything must be constructed from the very foundation. From the sanitary standpoint, the Filipino is a primitive savage. Much has been done and is being done, but the best results can be hoped for only after a number of years, as a result of a vast outlay of money and such an educational campaign as will not only alter the Filipino's mode of life but his way of looking at things. The sanitary part of the "white man's burden" over here is the heaviest part.

Funds are being raised by Bishop Brent, of the Episcopal Church in the Philippines, for the erection and maintenance of a large general hospital at Manila, in which the poor, without reference to race, can receive necessary nursing and treatment without cost. A considerable sum has already been pledged for this purpose by the American, European, Filipino and Chinese residents of Manila, Commissioner Ide of the Civil Government Board heading the list with a subscription of \$10,000. A request by those in charge of the matter has been made to the government authorities for an appropriation of sufficient funds to make up any deficiencies and enable the hospital to be started at an early date; and this will undoubtedly be done. At present, hospital facilities in Manila are totally insufficient, and there is no provision for the gratuitous treatment of the indigent. The few Spanish hospitals are poorly planned and worse equipped; and of course only the military are eligible for treatment in the army hospitals in Manila, although in the provinces these are resorted to by all American officials as the only places in which proper nursing and medical treatment can be secured. More hospitals, dispensaries and physicians are urgently needed in the Philippines. Not only many large towns but entire provinces, the latter with populations of many thousands, are entirely without physicians, hospitals or drug-stores. On the island of Mindoro, the third largest in the entire archipelago, there is not a pharmacy or a physician outside the army surgeons at the few military posts on the island. The prospect of providing proper medical attendance where little or none now exists is not good, unless district physicians are appointed and paid by the general government, as the country people are too poor to pay fees which would yield even an existence to a qualified physician and the latter would have to depend for a living upon outside support. Even in the larger towns the number of physicians is very small, probably averaging about one to every ten thousand population, and such as there are are not provided with hospital facilities for their work. As a consequence, there is much counter-prescribing by pharmacists, and large quantities of patent medicines are used. American proprietors of patent medicines are now becoming aware of the latter fact and are exploiting their preparations to a large extent by advertising posters in Spanish, Tagalog and the other native languages. This lack of physicians and hospitals is responsible for much suffering and death among the natives. Many of the army surgeons have been perfectly willing to do a charity

practice among the natives, but have been much handicapped by their lack of familiarity with the native dialects; the distrust with which any white man is regarded by the Malay; the unwillingness of the latter to submit to any surgical procedure or to interest himself in preventive medicine through sanitary reform; and the fact that medicines and supplies issued for the soldiers are not to be drawn upon for the general treatment of the natives. The qualifications of the few Filipino and Spanish doctors in the islands are not of a high order, and the Philippines furnish no opportunities for the surplus medical men of the United States for the reasons above mentioned. The Federal Party (Filipinos) has just formulated a scheme for the betterment of conditions by which, together with representatives of other professions, six medical students will be sent yearly to the United States for a two years' course of study, and have their expenses paid by this political organization. The appointees are to be selected by competitive examination from among the native candidates. This is a move in the right direction, and at least indicates an awakening by the natives to a better conception of the serious conditions now existing in the islands. Under the Spanish rule, a certain number of persons possessing a slight knowledge of medicine were licensed as "practicantes" for the treatment of the sick, but the qualifications of this class are very slight, and it is a question if the exercise of their very limited knowledge does not, on the whole, do more harm than good. These men are usually entirely ignorant of anatomy, diagnosis, surgery, midwifery, physiology and pathology, and their efforts at the treatment of disease are often misdirected. While the statistics of the Custom House in Manila show that 71 physicians arrived in the islands during 1902, these were nearly all surgeons of the army, navy or marine hospital service and could contribute but little to the treatment of the sick among the Filipinos. The great need of physicians for the natives is well shown by the fact that in December, of 791 deaths occurring in Manila, 409 occurred without any medical attendance.

The Civil Service Board in Manila is now engaged in the examination of candidates for medical positions, under the government in the islands, to create a register of approved candidates from which future appointments can be made as required. The positions will pay about \$2,000 per annum. Owing to the needs of the service, the examinations will be conducted in English only; a fact which practically bars Spanish and Filipino physicians from competition. Places in the civil medical service will come under the Civil Service rules on June 30 next, and will be filled by the appointment of candidates already approved by the Civil Service Commission at Washington. These places have up to this time been filled by selection from medical men who had been in the Philippines with the army as volunteer medical officers or contract surgeons. The Civil Service Board also announces an examination for the position of veterinarian under the insular government. Owing to the needs of the service this examination will be held in the English language only. Applicants for the examination must have had sufficient experience in laboratory work to enable them to diagnose disease by the aid of the microscope and must also possess a knowledge of protective inoculation. In view of the great prevalence of surra, glanders and rinderpest in the Philippines, the veterinary work has an important bearing upon the economic and sanitary conditions of the islands.

Several companies of native troops have lately been placed under the command of the civil authorities of the Philippine Constabulary to assist in repressing the epidemic of robbery and lawlessness which has recently started up near Manila. The medical needs of these troops are at present to be attended to by army surgeons and army hospital corps men, and supplies will be furnished from the depots of the medical department of the army for the time being. A separate medical service for the Philippine Constabulary, which now numbers about 6,000 men, is now being roughly organized and equipped on army plans. Several ex-surgeons of volunteers have been appointed as medical officers and graded as inspectors of the first class, with pay of \$1,800 per annum, and a hospital corps of natives is now being

created. Hospitals are to be established, and the islands districted and a medical officer assigned to the care of the Constabulary in each district. It is very probable that the 5,000 native troops will soon be amalgamated with the Constabulary to form an insular military force of 11,000 or 12,000 men, in which case a large medical and nursing force, with various grades, must be provided for their attendance, on the lines of the British Indian Medical Service. With a strength of 12,000 men in the native forces, the conditions here will require a medical department in connection therewith of about 75 surgeons, the same number of pharmacists, and about 300 native privates to act as nurses. Should this large medical force become necessary probably a number of army surgeons would be detailed to fill the higher grades for the work of organization and equipment, as this policy has been followed in the selection of line officers of the army to direct the organization of the combatant forces.

The Manila maternity hospital, an institution which has done much good in the past but which was about to close its doors for lack of financial support, has received a new lease of life through the efforts of the wife of Governor Taft, who has organized a society of ladies for the support of this worthy charity and is raising the necessary funds for its maintenance.

Dr. J. C. Perry of the Public Health and Marine Hospital Service, who has been in charge of quarantine matters at Manila during the past three years, has been relieved from duty and will return to the United States in the near future. Dr. Perry has established the admirable quarantine station of Mariveles for the port of Manila, and has done much valuable work in connection with the recent cholera epidemic. He is a man of energy and ability, and his transfer will be much regretted in Manila.

The ringing of the church bells of Manila at unseemly hours has caused so much annoyance and loss of sleep to American residents, and particularly to invalids, that the authorities have passed a law designed to abate this nuisance. The jangling of the bells for early mass, which is held before daybreak, was especially complained of. The new law forbids the ringing of church bells prior to 6 o'clock A.M. and after 8 P.M.

The number of cases of cholera in the islands is undergoing a steady decrease, though its presence in a large number of districts over the entire archipelago denotes the continued existence of a widespread infection. The disease is still bad in the southern islands, where the rainy season is now on, but the dry season which exists in the northern islands is having a marked effect in reducing its prevalence and apparently modifying its type. A larger proportion of cases now recover without treatment than was the fact at the outbreak of the epidemic. Only two cases developed in Manila during the month prior to Feb. 15, for which reason the quarantine of out-going transports has been discontinued.

An interesting report of a violent outbreak of cholera in a company of soldiers stationed on the island of Layte has been received in Manila. In all, 12 cases occurred, of which 11 proved fatal in spite of all treatment. The strength of the company was 85 men. Of these 12 cases, 11 developed in six days and 9 in the same 48 hours. Not only was the outbreak fulminant, but the type of the disease was very malignant, and the 11 deaths occurred in a few hours, collapse rapidly supervening upon the initial vomiting and purging. Under such conditions, but little could be done medically. The one case which recovered seemed to date its improvement from copious hot intravenous injection of saline solution, but this treatment was given in the other cases with but temporary improvement, and collapse and death soon following. All cases received stimulation by strychnin and digitalis; with external heat, friction and small doses of morphin for cramps. The troops had been warned about cholera prior to the outbreak, and quarantine had been established against the neighboring town, in which a few cases had just appeared among the natives. Investigation showed, however, that several of the soldiers who contracted cholera and apparently brought the infection into the garrison had violated these orders and gone into the town under cover of darkness, where they partook of native food

and drink. It is believed that these first cases infected some article of food served in the company mess, perhaps before they themselves manifested the symptoms of the disease. The present general epidemic in the islands has shown conclusively that only a certain proportion of those exposed to cholera infection are susceptible to the disease at any one time, and probably a much larger proportion of the company was exposed to the infection than those in which the disease developed. The outbreak also furnishes an instructive example of the fact that the disease can gain a foothold among troops only through gross carelessness or flagrant disobedience of orders, for when the company was moved to a new camp site and placed under rigid quarantine the epidemic ceased abruptly. During this outbreak, isolation and disinfection were carefully carried out in respect to the sick and the articles with which they had come into contact.

An example of the difficulties encountered in sanitary work in the Philippines is reported from the island of Jolo, where a party of sailors engaged in taking observations and making surveys was attacked by a large body of Mahomedan Moros. It appears that the cholera had caused a large number of deaths in the vicinity, and that the natives were convinced that this was due to the fact that the Americans had poisoned their wells. This belief was fortified by the fact that no case of cholera occurred in the American troops in the walled city of Jolo, where every sanitary precaution was taken, although the natives were dying by hundreds within gunshot distance of the garrison.

Much difficulty is reported in securing a sufficiency of Moro laborers for the work of construction of the new military road in Mindanao now going on, because of the great amount of sickness among them. Not only is cholera present, but large numbers of the Moros are suffering from malarial fevers, this being the unhealthy season in Mindanao. The Moros are very lightly clad, many of them wearing simply a breech clout, and they seem to suffer severely from chilling when exposed to the rains. Many of them are observed to develop a malarial paroxysm during or immediately after even a slight wetting.

The health reports for the city of Manila, for the month ending Dec. 31, give the number of deaths during that period as 753, or at the rate of 29.36 per annum. The death rate for the Filipinos was 36.83, and for the nearly 10,000 American civilians was 10.91. This higher mortality among the Filipinos was due to the great death rate of native infants and young children; 389 deaths, or more than half the total, occurring among children less than one year old. As the Americans are largely adult males of sound physical condition, the low mortality among them is readily to be understood. The following deaths occurred from the most prevalent diseases: Cholera, 23; dysentery, 20; beri-beri, 33; pulmonary tuberculosis, 66; meningitis, 32; eclampsia, 76; convulsions of children, 174; bronchitis, 68; chronic diarrhea, 20; congenital debility, 15. The high infant mortality is the most noteworthy feature of the report, and gives evidence of the great amount of work to be done in instructing the natives in the care and feeding of children. The death rate for November was 41.70, the sanitary improvement shown for December being due to the decrease in cholera. The work of sanitary inspection was vigorously prosecuted during the month by the 154 sanitary inspectors, there being 206,511 inspections and re-inspections of houses, and 37,531 of these cleaned as a result of the inspections; 24,291 yards were also cleaned. The campaign against rats was continued, 58 persons being employed as rat-catchers, besides the free use of poison; at the end of the month 1,552 rat traps were set in 1,213 houses. Besides the work on shore, 5,246 inspections of ships, cascoes, barges and other water craft were made during the month. There were 8,608 vaccinations performed in Manila, and 81,680 units of vaccine virus sent out from the vaccine farm operated by the Board of Health. The leper census up to Dec. 31 showed the presence of 3,297 lepers in the islands. Work in preparation for the new leper colony on the island of Kulion is progressing rapidly.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, MARCH 28, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. |
| New York . . | 3,785,156 | 1,366 | 418 | 23.08 | 19.05 | 4.47 | .44 | .95 |
| Chicago . . . | 1,885,000 | 564 | 147 | 25.35 | 21.45 | 2.48 | 1.95 | 1.39 |
| Philadelphia . | 1,378,527 | 545 | 129 | 25.67 | 15.22 | 2.56 | .91 | .91 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . | 533,712 | 260 | 60 | 21.00 | 19.50 | 2.00 | 1.00 | 1.00 |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . | 351,745 | 134 | — | 17.16 | 6.71 | 2.24 | 4.48 | .75 |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — |
| Washington . | 295,103 | — | — | — | — | — | — | — |
| Providence . . | 191,230 | 89 | 33 | 25.83 | 21.33 | 3.37 | 5.61 | 1.12 |
| Boston . . . | 603,163 | 201 | 55 | 21.39 | 21.89 | 1.00 | 2.48 | 1.00 |
| Worcester . . | 132,044 | 22 | — | 27.27 | 27.27 | — | — | — |
| Fall River . . | 115,549 | 38 | 14 | 21.05 | 36.83 | — | — | — |
| Lowell . . . | 101,959 | 34 | 10 | 5.88 | 20.58 | — | — | — |
| Cambridge . . | 98,639 | 24 | 3 | 4.17 | 16.67 | — | — | — |
| Lynn | 72,497 | 16 | 1 | 6.25 | — | — | — | — |
| Lawrence . . | 69,766 | 26 | 11 | 50.05 | 19.25 | — | — | — |
| Springfield . | 69,389 | 15 | 3 | 13.33 | 13.33 | 6.67 | — | — |
| Somerville . . | 68,110 | 23 | 2 | 17.39 | 26.09 | 4.35 | — | — |
| New Bedford . | 67,198 | 30 | 16 | 23.33 | 16.67 | 3.33 | — | 16.67 |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — |
| Brockton . . | 44,873 | 15 | 3 | 13.33 | — | — | — | — |
| Haverhill . . | 42,704 | 11 | 3 | 9.09 | 18.18 | — | — | — |
| Newton . . . | 37,794 | 13 | 1 | — | 23.10 | — | — | — |
| Salem | 36,876 | 11 | 2 | 9.09 | 18.18 | — | — | — |
| Malden . . . | 36,286 | 5 | 4 | — | 20.00 | — | — | — |
| Chelsea . . . | 35,876 | 9 | 5 | 44.44 | 22.22 | — | 11.11 | — |
| Fitchburg . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 9 | 2 | 9.09 | 18.18 | — | — | — |
| Everett . . . | 28,620 | 9 | 2 | 18.18 | — | — | 9.09 | — |
| North Adams . | 27,862 | 8 | 4 | 12.50 | 25.00 | — | — | — |
| Gloucester . . | 26,121 | 8 | 1 | 37.50 | — | 25.00 | — | — |
| Quincy . . . | 26,042 | 7 | 1 | — | — | — | — | — |
| Waltham . . . | 25,198 | 7 | 1 | 33.33 | — | — | — | — |
| Brookline . . | 22,608 | 6 | 1 | — | — | — | — | — |
| Pittsfield . . | 22,589 | 6 | 4 | — | — | — | — | — |
| Chicopee . . . | 21,031 | 6 | 4 | — | 16.67 | — | — | — |
| Medford . . . | 20,962 | 6 | 2 | 16.67 | 16.67 | — | — | — |
| Northampton . | 19,883 | — | — | — | — | — | — | — |
| Beverly . . . | 15,302 | 2 | — | 50.00 | — | — | — | — |
| Clinton . . . | 15,161 | 3 | — | — | — | — | — | — |
| Leominster . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . | 14,478 | 8 | 0 | — | — | — | — | — |
| Woburn . . . | 14,300 | 5 | 2 | — | 20.00 | — | — | — |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — |
| Adams | 13,745 | — | — | — | — | — | — | — |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 8 | 1 | 37.50 | 37.50 | — | — | — |
| Melrose . . . | 13,600 | 5 | — | — | 20.00 | — | — | — |
| Westfield . . | 13,418 | 4 | 1 | 25.00 | — | — | 25.00 | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere | 12,722 | 3 | — | — | — | — | — | — |
| Framingham . | 12,534 | 7 | — | 14.30 | 14.30 | — | 14.30 | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 9 | — | 11.11 | 55.55 | — | — | — |
| Weymouth . . | 11,344 | 3 | 0 | — | — | — | — | — |
| Southbridge . | 11,268 | 2 | 1 | — | 50.00 | — | — | — |
| Watertown . . | 11,077 | 3 | 2 | — | — | — | — | — |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,525; under five years of age, 992; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 799, consumption 387, scarlet fever 38, whooping cough 44, cerebrospinal meningitis 6, smallpox 6, erysipelas 8, measles 26, typhoid fever 72, diarrheal diseases 69, diphtheria and croup 106.


From whooping cough, New York 6, Chicago 11, Philadelphia 5, Baltimore 2, Pittsburg 6, Providence 5, Boston 5, and Salem, Everett, Westfield and Framingham 1 each. From erysipelas, Chicago 4, Providence 1, Boston 1, Worcester 1, Lawrence 1. From smallpox, Philadelphia 2, Pittsburg 4.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending March 14 the death-rate was 17.2. Deaths reported, 4,977; acute diseases of the respiratory organs (London) 258, whooping cough 118, diphtheria 68, measles 146, smallpox 14, scarlet fever 48.

The death-rate ranged from 6.8 in Ipswich to 27.7 in Wigan; London 16.3, West Ham 16.5, Brighton 15.8, Portsmouth 13.6, Southampton 16.1, Plymouth 18.2, Bristol 16.5, Birmingham 20.6, Leicester 13.5, Nottingham 19.5, Bolton 18.9, Manchester 22.6, Salford 18.9, Bradford 20.1, Leeds 15.0, Hull 16.5, Newcastle-on-Tyne 19.2, Cardiff 12.7, Rhondda 19.6, Liverpool 22.8.

METEOROLOGICAL RECORD.

For the week ending March 28, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|--|-------------|-------------|--------------|----------|--------------------|-----------|-------------|--------------------|-----------|-------------------|-----------|--------------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| | | | | | | | | | | | | | | |
| S. 22 | 30.21 | 52 | 60 | 45 | 100 | 89 | 94 | N | E | 12 | 6 | R. | O. | .49 |
| M. 23 | 30.10 | 46 | 53 | 40 | 100 | 96 | 98 | N | E | 24 | 5 | R. | R. | 1.32 |
| T. 24 | 29.94 | 48 | 53 | 42 | 96 | 100 | 98 | N | E | 4 | 8 | O. | R. | .12 |
| W. 25 | 29.86 | 44 | 50 | 37 | 64 | 69 | 66 | N | W | 7 | 23 | C. | C. | T. |
| T. 26 | 30.04 | 44 | 54 | 34 | 57 | 41 | 49 | W | W | 15 | 9 | C. | C. | O. |
| F. 27 | 29.98 | 55 | 66 | 44 | 48 | 55 | 52 | S | W | 10 | 9 | C. | F. | O. |
| S. 28 | 30.10 | 35 | 42 | 28 | 85 | 97 | 91 | E | N | 10 | 9 | O. | N. | .02 |
|  | 30.03 | | 54 | 39 | | | 78 | | | | | | | 1.85 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING APRIL 4, 1903.

G. E. H. HARMON, medical inspector. Detached from the Naval Hospital, Port Royal, S. C., and ordered home to wait orders.

D. B. KERR, passed assistant surgeon. Detached from the "Wabash" and ordered to the "Buffalo."

J. H. PAYNE, assistant surgeon. Detached from the Naval Hospital, Newport, R. I., and ordered to the "Wabash."

B. H. DORSEY, assistant surgeon. Ordered to the Naval Hospital, Newport, R. I.

T. H. STREETS, medical director. Commissioned a medical director from Jan. 31, 1903.

C. F. ELY, doctor. Appointed assistant surgeon March 6, 1903.

M. V. STONE, assistant surgeon. Ordered to Naval Hospital, Mare Island, for treatment.

I. N. HURD, pharmacist. Retired from active service on account of disabilities incurred in the service March 28, 1903.

A. A. HOEHLING, medical director, retired. Ordered to duty as a member of the Medical Examining Board, Navy Yard, Washington, D. C.

G. P. BRADLEY, medical director. Detached from duty as a member of the Medical Examining Board, Washington, D. C., and ordered to duty at the Naval Hospital, Washington, D. C.

R. C. DEAN, medical director, retired. Detached from duty as president of the Naval Medical Examining Board, Washington, D. C., and to duty as member of the Naval Retiring Board, Navy Yard, Washington, D. C.

F. M. GUNNELL, medical director, retired. Detached from duty at the Bureau of Medicine and Surgery, and to be president of the Naval Medicine Examining Board, Washington, D. C.

C. U. GRAVATT, medical director. Detached from duty as a member of the Naval Retiring Board and ordered to report for examination for retirement, then home to wait orders.

J. C. DEVRIES, acting assistant surgeon. Ordered to recruiting duty.

D. P. MCCORD, acting assistant surgeon. Ordered home to wait orders.

R. H. MICHELS, J. L. NEILSON, M. W. BAKER, R. SHAW, B. F. JENNESS, J. H. HALLOWAY, R. A. BACHMANN, H. F. STRINE, F. M. MUNSON, E. M. BROWN, J. P. TRAYNOR, R. E. HOYT, assistant surgeons. Detached from the Naval Museum of Hygiene and Medical School, Washington, D. C., and ordered to their homes to wait orders to sea.

L. W. SPRATLING, surgeon. Detached from the Naval Hospital, Portsmouth, N. H., and ordered to the Navy Yard, New York.

H. H. HAAS, passed assistant surgeon. Ordered to the Naval Hospital, Portsmouth, N. H.

APPOINTMENTS.

DR. DANIEL FISKE JONES has been appointed surgeon to out-patients at the Massachusetts General Hospital.

DR. WILLIAM H. SMITH has been appointed physician to out-patients at the same hospital.

DR. EDWIN A. LOCKE has been appointed physician to out-patients at the Boston City Hospital.

RECENT DEATHS.

WILLIAM GEORGE ALLEN, M.D., M.M.S.S., died in Mansfield, April 5, 1903, aged sixty-nine years.

DR. JOSEPH STANFORD AMES died at Holden, Mass., Wednesday, March 25, at the age of seventy-four years. He was born in Marlboro, Mass., in 1828, and attended the Marlboro Academy. He began his medical education at the Harvard Medical School, and graduated from the Berkshire school in 1858. In the same year he began to practise medicine in the town of Holden, and continued to exercise his profession there with credit to himself and satisfaction to his fellow townsmen for forty-five years. He was a good citizen as well as a good physician.

JAMES A. STEUART, M.D., of Baltimore, Md., died there March 27 at the age of seventy-five years. He was a graduate in 1850 of the Medical School of the University of Maryland. From 1873 he was for sixteen years health commissioner and president of the Baltimore Board of Health. In 1894 he was appointed secretary of the Maryland Board of Health, and held this office for three years.

JOHN E. SANBORN, M.D., of Melrose, Mass., died April 1 at the age of seventy-nine. He was a graduate of Wesleyan University. He received the degree of M.D. from Harvard in 1850, and for a brief period entered the practice of medicine. He later held the position of professor of chemistry and materia medica in the University of Iowa. He served as surgeon in the Civil War and recommenced the practice of medicine at Rockport, later going to Salem, and finally, in 1890, settled in Melrose.

WILLIAM LEACH, M.D., died in Vineyard Haven, April 1. He received his medical degree from Harvard in 1856. For many years he was a well-known physician at Martha's Vineyard and one of the medical examiners for Dukes County.

EDGAR PERRY, M.D., M.M.S.S., died April 7 at his home 1120 Boylston Street, Boston, aged forty-seven years, as the result of a paralytic attack. Dr. Perry was born in 1855 and was graduated from Brown University in 1880, later receiving the degree of A.M. from the same institution. From 1880 until about 1894 he was actively engaged in newspaper work in various cities. He was graduated from the Harvard Medical School in 1898, and soon thereafter established a private hospital in Boston, which is in successful operation. He was twice married, and leaves a widow and three children.

SOCIETY NOTICE.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — A regular meeting of the society will be held at 3 Park Street, Boston, Mass., on Thursday, April 16, 1903, at 7.30 P.M. The meeting will be in charge of the Section on Ophthalmology; Dr. Ella L. Dexter, chairman.

Paper — with presentation of patients; "Trachoma; A Menace to the Community"; by Dr. Ella L. Dexter.

Discussion opened by Drs. Ella L. Wylie and Louise P. Tingley. Presentation of specimens, by Dr. Clara J. Alexander.

DR. AGNES C. VIETOR, Secretary,
Trinity Court, Boston.

BOOKS AND PAMPHLETS RECEIVED.

Patent and Proprietary Medicines as the Cause of the Alcoholic and Opium Habit or Other Forms of Narcomania, with Some Suggestions as to how the Evil may be Remedied. By Lewis D. Mason, M.D., of Brooklyn, N. Y. Reprint. 1903.

An Operation for the Radical Cure of Aneurism Based upon Arteriorrhaphy. By Rudolph Matas, M.D., of New Orleans, La. Reprint. 1903.

Climates and Health Resorts in the Dominion of Canada. By Guy Hinsdale, M.D. London. 1902.

The Practical Medicine Series of Year Books, comprising ten volumes on the year's Progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of Gustavus P. Head, M.D. Vol. IV. Edited by Emilius C. Dudley, A.M., M.D., and William Healy, A.B., M.D. Illustrated. March, 1903. Chicago: The Year Book Publishers.

Gastrojejunostomy with the McGraw Elastic Ligature, for the Relief of Gastroptosis. By H. O. Walker, M.D., of Detroit, Mich. Reprint, 1903.

Causes of Epilepsy in the Young. By A. Jacobi, M.D., LL.D., of New York. Reprint. 1902.

Peribronchitis and Interstitial Pneumonia. By A. Jacobi, M.D., LL.D. Reprint. 1903.

Portal Anastomosis: with Report of a Case. By Daniel H. Craig, M.D., Boston. Reprint. 1903.

Permanent Suprapubic Drainage for Advanced Tuberculosis of the Bladder. Report of a Case at End of Five Years. By Charles A. Powers, M.D., of Denver, Colo.

Original Articles.

A CASE OF INTERSCAPULO-THORACIC AMPUTATION FOR SARCOMA OF THE BRACHIAL PLEXUS.

BY F. B. LUND, M.D., BOSTON.

Summary. HISTORY OF A CASE OF SARCOMA OF THE BRACHIAL PLEXUS FOLLOWING INJURY — ATTEMPTED REMOVAL WITH RUPTURE OF AXILLARY VEIN — SUTURE OF VEIN — SUBSEQUENT INTERSCAPULO-THORACIC AMPUTATION — RECOVERY — NO RECURRENCE AFTER THREE MONTHS — PATHOLOGICAL REPORTS — REMARKS ON THE OPERATION AND POINTS IN TECHNIQUE — REVIEW OF POINTS OF INTEREST IN THE CASE.

T. D., age, forty years, a grocer's clerk, of Irish nationality, was referred to Dr. G. H. Monks' service at the City Hospital on August 19, 1902, for an exploratory operation with reference to the condition of the left median nerve. He was recommended for operation by Drs. W. N. Bullard and J. J. Thomas, who had had him under observation at the Out-Patient Department for Diseases of the Nervous System, and by whose courtesy the writer is able to append the following history kindly furnished from the Out-Patient Records by Dr. Thomas:

First seen on July 25, 1902. Eleven months ago a heavy case fell upon him, striking the left arm over the deltoid and crushing his arm against the side of a car, and also striking his knee. He was laid up, with the knee on a splint, for eleven weeks. The knee is now nearly well, though slightly stiff. It is worse in damp weather and after rest. At the time of his injury the arm was painful, but he did not pay much attention to it. The arm has been growing steadily worse, with darting pain in the radial side of the hand and in the forearm which has lately prevented sleep. The hand has grown weak and shrunken on the side where the thumb is, the patient states. The pain is better if he uses the hand. There is some numbness and pricking sensation. No tenderness has been noticed.

The physical examination showed a well-nourished, muscular man in excellent general condition. There was marked atrophy of the left forearm, excepting the upper part on the radial side. Marked atrophy of the thenar eminence and slight atrophy of the dorsal interossei. Sensation impaired over the whole of the forearm and hand. Grasp — right, 30; left, 22. Motion of the left upper extremity is possible, except that the thumb and index finger cannot be closed. Elevation of the shoulder not so good on the left as on the right. Considerable weakness in all movements of left arm. This is said to have been produced by a cut with glass, one week ago. Spine, normal. Heart, negative. Knee jerks, normal. No ankle clonus.

| | | | |
|-------|-----------------|-----------|----------|
| Circ. | Right upper arm | | 30.5 cm. |
| " | Left " " | | 29.5 " |
| " | Right forearm | | 30.0 " |
| " | Left " " | | 28.0 " |

Electrical examination. — The deltoid and triceps react normally to the Faradic current, while the triceps shows a diminished irritability. The flexor digitorum, flexor carpi radialis, the short flexor of the thumb, opponens, and abducens pollicis and the first two lumbricales show no reaction to the

Faradic current. The same muscles show a quick twitch to the galvanic current, and no reaction of degeneration.

Aug. 1, electrical examination shows quantitative change to Faradism. No reaction of degeneration. The flexor carpi ulnaris shows the same changes as the group given above. Pain was severe, and on the 18th of August he was recommended for admission to the hospital. The house record gives the following physical examination: Left arm showed atrophy and nearly complete paralysis of the muscles supplied by the median nerve, with anesthesia of palmar surfaces of index, middle and part of ring fingers and portion of thumb. Under treatment with hot air, baths, massage, etc., no improvement resulted, and an exploratory operation was advised, but refused, and on Aug. 30 he was discharged.

On Sept. 6 he returned to the hospital on the advice of Dr. Thomas, who had discovered a tumor in the left axilla. The mass in the axilla was rounded and irregular in surface, strongly suggesting a mass of hypertrophied axillary glands. It was hard, somewhat movable and very tender on palpation, which latter fact, combined with its recent appearance, suggested strongly an inflammatory origin.

Under ether the writer made an incision along the posterior border of the pectoralis major, exposing the tumor, which was found to be dark purple, very vascular, elastic, friable, and on enlarging the incision so as to expose the entire axilla, it was found to extend upward from the point where the median nerve is formed by the junction of the trunks from the outer and inner cords of the brachial plexus along the axillary artery and vein, and to be intimately adherent to these structures and to the brachial plexus. The largest mass, and apparently the primary one, arose from the origin of the median nerve from the junction of the cords as described above. An attempt was made to dissect the growth free from the axillary vessels and remove it, but after the tumor had been followed up two inches or more, in separating the axillary vein, which here described an S-shaped curve in front of the tumor, the vein was torn, and in attempting to grasp the rent with the forceps it was torn still further. By compressing the vein with the finger above and below the rent, the blood was easily excluded and the rent closed by three silk sutures passed through the outer coats of the vein with a fine, curved, round needle. On allowing the blood to re-enter the vein, the suture was found to hold. A large piece of the growth was removed for microscopic examination, the hemorrhage from the cut surface of the growth stopped by gauze packing, and the wound sutured.

The drainage was removed in forty-eight hours, and the wound healed aseptically throughout. Microscopic examination showing the growth to be sarcoma, the patient was advised to undergo an interscapulo-thoracic amputation. He was in constant pain from the involvement of the brachial plexus in the growth, and his arm was useless. He refused operation, and left the hospital on Sept. 26.

On Oct. 8 he returned for operation on advice of his physician, Dr. Devine. Since leaving the hospital he had suffered severe pain in the arm, from which he had had temporary analgesic relief. He had had x-ray treatment, one or two exposures.

Examination showed that the axillary tumor had very rapidly increased in size. A large mass, the size of a mandarin orange, bulged forward the pectoralis major and had appeared since the previous operation. The arm and hand were slightly edematous. The motions of the shoulder joint were much limited and very painful. Paralysis and atrophy were the same as previously noted. The patient was very anxious for any form of relief.

On Oct. 10 the interscapulo-thoracic amputation was performed as follows: The patient was placed on his back near the edge of the table, with a narrow pillow between the shoulder blades. An incision was made over the clavicle from a point near its articulation with the sternum to a point within two inches of the acromion. The incision was carried down through the periosteum, which was stripped off around the whole circumference of the bone. About two and a half inches of the middle of the clavicle were resected with a chain saw. The subclavius muscle and several layers of fascia were divided vertically. The upper half of the pectoralis major was divided from above downwards, opposite the center of the clavicle. By blunt dissection, partially assisted by the cephalic vein as a guide, the subclavian artery and vein were identified and isolated. After ligation of the artery with a double ligature of heavy silk, the distal portion was clamped and the vessel divided. After elevating the arm to allow as much blood as possible to drain from it, the vein was ligated and divided in a similar manner. The suprascapular artery and vein, which were exposed in the base of the neck, were ligated and divided. The arm was abducted and the incision carried downward and backward across the axilla to the anterior border of the latissimus dorsi, dividing the pectoralis major and minor muscles about their middle. Several small vessels originating below required ligature. The cords of the brachial plexus now stood out prominently under some tension. Each cord was injected with about 10 minims of a $\frac{1}{4}\%$ solution of cocaine, and divided. The pulse was unaffected by this procedure. The arm was now brought across the body and elevated, putting the scapular muscles on the stretch. The first incision over the clavicle was connected with the lower end of the second incision at the anterior border of the latissimus dorsi by an incision passing downward and backward over the middle of the spine of the scapula. The skin flap was caught with double hooks and turned back; the levator anguli scapulae, trapezius, rhomboidei and serratus magnus muscles were rapidly divided and the extremity removed. The posterior scapular artery was easily caught and ligated when divided. A number of small vessels in the muscular tissue and posterior skin flap required ligature, and also one or two small arteries accompanying the cords of the brachial plexus. The flaps were easily brought together and adjusted without tension with interrupted silkworm gut and a few coarse silk sutures. A small drain was placed in the lower angle of the wound.

The pulse, which had not quieted down from the administration of the anesthetic, remained at 130 to 136, and of good quality, and did not vary in rate or character during any of the operative procedures.

He made a good recovery from the ether. There

was little vomiting and almost no pain except during the first night, when morphia was required. On Oct. 12, when the wound was dressed, it was found to be clean, and there was no redness or tenderness. The wick was removed on that date.

On Oct. 16 the patient was very comfortable, suffering only occasional pain in the wound.

On Oct. 20 the stitches were removed. The wound healed by first intention.

On Oct. 23 the patient's general condition was excellent. The wound was healed, and caused him no pain. He was discharged on that date.

The patient was shown at the meeting of the Boston Medical Library in February, 1903. He was then in excellent physical condition, had suffered no pain, and was delighted at the result of the operation. There was no evidence of recurrence, and he had gained considerably in weight.

The appended photograph of the patient was taken ten days after the operation. The old scar

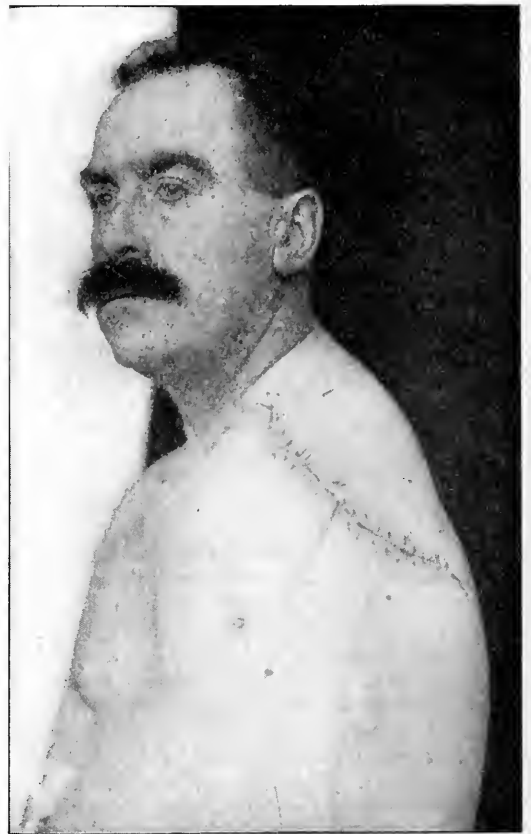


FIG. 1.

running downward at right angles to the amputation scar is a part of the axillary incision made at the first operation.

The following description of the gross specimen was furnished by Dr. Brinkerhoff:

Specimen consists of left arm, scapula and outer two thirds of clavicle. In the axilla, on the upper and inner aspect of the arm, is a partly healed wound, 5 cm. in length. In the axilla are two tumor masses. The first consists of a more or less spherical mass, 5.5 x 8 x 5 cm. This mass rises to, and invades, the coracoid process of the scapula. This mass is more or less definitely encap-

ulated. On section the cut surface yields much bloody fluid, its general color is dark red. The mass is subdivided by numerous fibrous bands, which divide it into smaller masses, 1.0 to 1.5 cm. in diameter. These smaller masses are exceedingly soft, and vary from a dark red to a mottled pink and red color. The second tumor lies immediately under the skin wound above described. It is irregularly fusiform in shape, its longest axis being parallel to the course of the median nerve. The tumor is not sharply circumscribed, and measurements of it are therefore approximate (9 x 6 x 7 cm). This mass is of firm consistence, presenting on section irregular areas from 0.5 to 2.0 cm. in diameter, which are a little softer than the firm fibrous tissue in which they lie imbedded. The fibrous stroma is grayish yellow in color. The nodules are sometimes a translucent gray, sometimes speckled over with pin-point to pin-head sized red, or red-brown, irregular areas.

The tumor mass is in relation with the nerve trunks at their exit from the brachial plexus. The internal cutaneous, the musculo-spiral, the ulnar and musculo-cutaneous nerves all lie either close to, or are partly surrounded by, the tumor mass. These nerves, however, show no macroscopic evidence that the tumor has invaded their sheaths. The median nerve enters the tumor mass and emerges from it.

Where the internal branch of the outer cord of the brachial plexus enters the tumor mass, its fibers are spread apart to include a reddish-brown nodule, 0.5 cm. in diameter. The junction of the outer and inner roots of the median nerve takes place in the upper part of the tumor mass. A series of sections through the tumor, perpendicular to the course of the median nerve, show the nerve only for a short distance after its entrance and before its exit. The brachial and axillary artery and vein pass through the tumor mass, but appear to be unaffected. Portions of the internal-cutaneous, musculo-spiral, median, ulnar and musculo-cutaneous nerves from beyond the tumor are preserved in formol. Portions of both tumors preserved in Zenker's fluid.

MICROSCOPICAL EXAMINATION BY DR. J. J. THOMAS.

Sections taken from the tumor, from the smaller, soft tumor, from the musculo-cutaneous, ulnar, internal cutaneous, musculo-spiral and median nerves, and from the axillary artery were stained with eosin and methylene blue, by Marchi's method, by Weigert's myelin sheath stain, and by Mallory's connective tissue stain.

Sections of the tumor show it to be a mass with fairly definite connective tissue capsule. At one point at the border of the tumor is seen the internal cutaneous nerve. This is not infiltrated by the tumor, nor has this penetrated between the nerve bundles into the endoneurium. The nerve bundles are shrunken, and show considerable edema, there being a space between the endoneurium and the nerve fibers. The nerve fibers are degenerated and show no evidence of myelin sheaths, though the remains of these are seen faintly stained, and rarely an axon is seen still preserved. The tumor itself shows but few blood vessels, and is composed of a mass of rather large cells, quite irregular in shape, with homogeneously staining protoplasm, occasionally showing vacuoles and large nuclei, generally oval in shape, with a coarse meshwork of chromatin. In many nuclei one or several dots of chromatin are seen. A few cells, with two or more nuclei, are occasionally seen. Cells with nuclei in mitosis are common, being seen in almost every field. The sections stained with Mallory's connective tissue stain show a considerable amount of connective tissue fibers between the tumor cells, as well as surrounding the tumor mass. Fairly numerous small hemorrhages are seen scattered throughout the tumor, and in some places about these the tumor cells appear necrotic, staining poorly, but in general the cells are extremely well preserved. In the connective tissue about the tumor are seen occasional areas containing considerable free blood pigment. Here and there in the connective tissue about the tumor, and in the epineurium between the nerve bundles, are seen areas of infiltration with round and plasma cells, and occasionally similar small areas of infiltration are found in the tumor substance.

The small, soft, red tumor mass is composed of tumor

cells similar to those of the large tumor described above, but with numerous large hemorrhages scattered throughout its substance. Sections of the inner root of the median nerve show no nerve fibers whatever, but merely connective tissue with two or three small masses of tumor cells similar to those described, and several areas of hemorrhage. Section of the outer root of the median nerve where it passes over the large tumor show the tumor as previously described, and at its border the nerve bundles, which, like those of the internal cutaneous nerve, show complete atrophy of the nerve fibers, with marked edema, and areas of infiltration with round cells in the epineurium. Here in the epineurium, between the bundles of nerve fibers, are seen two or three areas infiltrated with the tumor cells, and in two or three places the endoneurium is completely penetrated, but no cells are seen between the nerve fibers.

Sections of the artery, containing a clot, show no infiltration with tumor cells, but considerable thickening of the intima, more marked at one side of the vessel, and several small areas of infiltration with round cells about the small blood vessels of the adventitia.

The sections of the median nerve and those of the internal cutaneous nerve show almost complete atrophy of the nerve fibers; most sections showing no fibers with retained myelin sheaths, and the sections stained by Marchi's method show practically no drops staining with the osmic acid in the nerve bundles.

The sections of the musculo-cutaneous, ulnar and musculo-spiral nerves show marked degeneration of the nerve fibers; approximately one third to one half of the fibers, however, still retain the myelin sheath. Sections from all these nerves show considerable acute degeneration of the myelin sheaths still present; from one quarter to one third of them showing drops stained by the osmic acid.

ANATOMICAL DIAGNOSIS.

Large cell sarcoma.

Atrophy and infiltration by tumor growth of median and internal cutaneous nerve.

Degeneration of musculo-cutaneous, ulnar and musculo-spiral nerves.

THE OPERATION.

The interseapulo-thoracic amputation was performed first by Twitchell in Keene, N. H., in 1838, and by McClellan in the same year. Recovery resulted in both cases. In 1900 Fowler¹ collected 72 cases in which primary interseapulo-thoracic amputation was performed for malignant disease of the humerus, with eight deaths resulting from the operation, either from hemorrhage, shock or infection,—a mortality of about 11%. Ashurst in 1881 collected 51 cases in which the operation had been done for various causes, with a mortality of 25.5%, and in 1895 added 39 cases with a mortality of 24.3%. These figures have little value in reference to the advisability of operating in any given case, as they include patients in all kinds of general condition, and with more or less extensive invasion of the disease. Given a patient in good general condition, in whom the disease has not extended so as to involve the chest wall or the subclavian vessels, and the operation seems to the writer hardly more dangerous than any other major amputation.

The only part of the operation requiring special attention to technique is the ligation of the subclavian artery and vein, which should obviously be done with great care to avoid hemorrhage from wounding the veins, or air embolism. After this is accomplished the operation is simplicity itself, and is almost bloodless, the only artery of any size which

¹ Annals of Surgery, January, 1902.

must be caught in the wound being the posterior scapular.

The method followed by the writer corresponds in its main features to that advocated by Paul Berger in his monograph of 1887, and has been sufficiently described in the account of the operation.

The special points in the technique which the writer would insist upon as important are, first, the ligation of the artery before the vein, then the elevation of the extremity, so as to empty it as far as possible of blood before ligating the vein. The artery and vein in this instance were both secured by two ligatures of coarse twisted silk, tied about one fourth of an inch apart, to avoid the possible hemorrhage from the slipping of a single ligature, and the vessels were divided one fourth of an inch distally to both, a clamp being placed upon the vessels to avoid hemorrhage from their distal ends.

In this case the man's excessive muscular development made the wound required to reach the vessels very deep, and the operator was greatly aided by section of the clavicular and upper sternal portion of the pectoralis major. In the deep wound the artery was entirely covered by the distended axillary, cephalic, suprascapular, and superior intercostal veins, which had to be very carefully freed by blunt dissection. This procedure was made much simpler and safer by section of the muscle, which the writer would recommend to others in similar cases.

The disarticulation of the clavicle at the sternal end, as advocated by LeConte,² seems to the writer advisable only in case such division of the muscles fails to give enough room, as it sacrifices more of the attachments of the sterno-mastoid and involves the risk of wounding the innominate vein.

The second point in the technique which is worthy of note is the cocaineization of the trunks of the brachial plexus before division. The physiological blocking effect of cocaine when injected into the nerves of the extremities proximal to their point of section has been so conclusively shown by the admirable experimental researches of Dr. George Crile³ as to leave little doubt of its value in the prevention of shock, and to lead to its general adoption. Certainly in this case the section of the nerves was attended by no effect on the pulse perceptible to the examining finger. It is to be regretted that the effect on blood pressure was not noted by the use of the Riva-Rocci apparatus. Cocaineization of the nerve trunks is a very simple procedure, as it requires only a few seconds to inject a few drops of the solution into the loose tissue of the nerve trunks, which quickly bulges the injected portion into an edematous translucent bulb, which should entirely surround the nerve, thus showing that all the fibers have been brought in contact with the solution.

A word as to the indications for operation. The principal indications are:

(1) In the majority of cases of malignant disease of the humerus, and especially any that involve the tissues about the shoulder joint.

(2) In malignant disease in the axilla involving the axillary vein, which cannot be ligated without sacrificing the arm.

(3) In extensive injuries, usually machinery accidents to the arm, shoulder and scapula, in which the scapula has been partially or completely torn away, or the skin over the deltoid has been destroyed so that it is not available for the covering of an ordinary shoulder joint amputation.

The case presents several points of interest, not the least of which is the apparently close relation in time between the development of the tumor and an injury to the arm. The early paralysis of the median nerve, and the fact that that nerve and the cords which form it were actually involved in the growth while the other nerves of the brachial plexus were affected simply by pressure, point probably to the tumor as of primary origin in that nerve.

The attempted removal of the axillary mass was valuable as an exploratory procedure, giving an exact idea of the nature and limits of the tumor, and of the extent of the operation necessary for its removal. Notable in connection with this operation was the ease with which it was possible to close the rent in the axillary vein by suture.

The rapid growth of the tumor, and its juxtaposition to the great vessels at the base of the neck and thorax, would probably have rendered any other treatment than that by the operation adopted unsuccessful. Even should recurrence take place, the patient has been rewarded by a complete freedom from pain for a considerable interval.

THE DIAGNOSIS OF GONORRHEAL URETHRITIS.

BY ALFRED H. GOULD, M.D., BOSTON,

*From the Clinico-Pathological Laboratory,
Massachusetts General Hospital.*

THE introduction of the gonococcus into the urethra rarely causes any symptoms for the first twenty-four hours. After this period a sense of irritation and a moisture at the meatus may be observed, which increases in intensity until, at the end of two to four days, it has developed into a purulent discharge.

The length of the incubation period is usually fairly constant, but occasionally may show wide variation. It depends upon the rate of production of, and the susceptibility of the urethra to, the toxin.

The toxin is elaborated by the living, and is contained in the dead, bacterial bodies (Christmas). The production of toxin probably commences at once in the urethra, but not in sufficient quantity to irritate the urethra until a number of colonies have developed. From this assumption it follows that gonococci may be present in the urethra before there is any pus formation, and the recognition of their presence at this time allows measures to be taken to head off an acute urethritis. The presence of the gonococci may be recognized by the examination of the urine by means of coverglass preparations and by cultures. Stained preparations of the sediment will show the presence of different bacteria. The predominating organism will be a coccus that decolorizes by Gram, and which frequently is arranged in tetrads. Absolute proof that this prevailing coccus is the gonococcus can only be established by culture.

² *Annals of Surgery*, October, 1902.

³ *Problems Relating to Surgical Operations*, Philadelphia, 1901.

The writer has, however, not been able to obtain a growth of the gonococcus at this stage.

After the urethritis is thoroughly established, the identification of the gonococcus is easy on slide and by culture. It is of interest, however, to study the changes which take place in the pus cells during this period. In the earliest stages the gonococci are extracellular. The presence of pus at once gives the gonococci an unlimited medium in which to multiply.

They invade or are taken up by these cells and rapidly proliferate. The leucocytes at once begin to show degenerative changes. The nuclei increase in size and react to stains less readily. This brings out the internal structure of the nucleus so that

of suspected early urethritis. Next in importance to the early examination for diagnosis is the late examination of the sediment for prognosis. There are many cases where it is necessary to ascertain whether or not a patient is cured, or whether an intractable gleet is due to the gonococcus or to other causes.

The demonstration of gonococci in a very chronic discharge is repeatedly baffling, for two reasons: First, the organism may not be present in the discharge at the time of examination, or, finally, the gleet may be due to some other bacterium.

The gonococci can be cultivated in a fair proportion of the chronic cases, if they can be found in the sediment. A successful cultivation is assisted

GOULD-URETHRITIS.

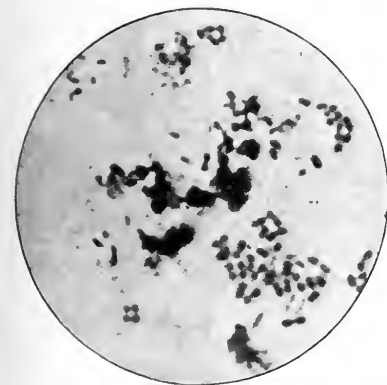


FIG. 1.—Sediment stained by Gram; early urethritis; no pus formation. Prevaling organism a coccus arranged in tetrads, decolorizing by Gram.

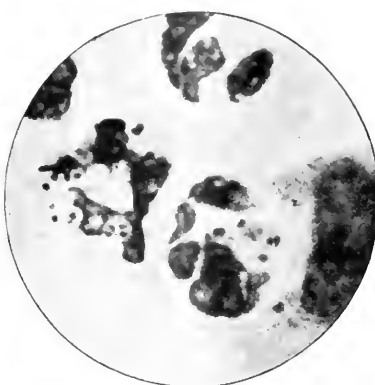


FIG. 2.—Gonococci inside nuclei of leucocytes.

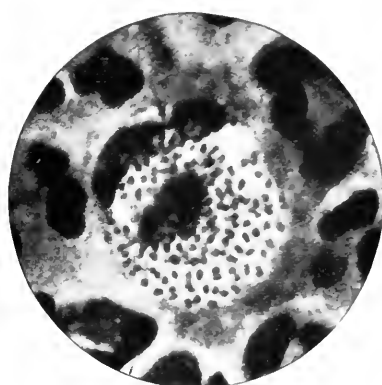


FIG. 3.—Same as Fig. 2.

into a chronic condition, when the urine is more or less clear and contains shreds. The value of shreds as a rough method of gauging the urethral condition is great, but is only half understood by most practitioners. Shreds indicate fairly exactly about how much pus is floating free in the urine. This pus may not be of sufficient quantity to cloud the urine, but it will form a definite sediment when centrifugalized. The microscopical examination of the shreds themselves is not important in the demonstration of the gonococci, for the gonococci are rarely found in the shreds but in the pus cells, which are floating free in the urine. The prevailing idea that the gonococci are to be sought for in the shreds is erroneous. It is important to notice whether or not the shreds consist of pus. The shreds, which are heavy and sink to the bottom of the urine glass, are made up of pus, and these are associated with the largest quantity of free pus in the urine. The meaning of shreds, therefore, is a secondary one in the study of urine. The general sediment contains practically all the pus and bacteria.

The writer has pointed out the assistance that may be given by an examination of the sediment in cases

of suspected early urethritis. The most practical and the most easily obtainable is hydrocele fluid. It contains no fibrin ferment and forms no clot. This fact renders it less open to contamination. It is essential to collect the fluid under rigidly aseptic precautions in test tubes. After twenty-four hours in the thermostat, the infected tubes can be thrown out and the remainder kept in the ice chest until ready for use. Gonococci grow both in liquid and in solid media easily. If liquid media is used the hydrocele fluid is mixed in equal parts with bouillon. Agar-agar is employed for solid media in strengths from 2% to 2½%. The reaction of the medium should be about + 1 (scale of the American Public Health Association). The growth upon strongly alkaline media is rich and rapid. It is short-lived, and quickly shows degenerative forms. Gonococci can be cultivated in reactions varying from + 1.5 to — 2.0.

The agar is melted, cooled to 40° C. and mixed while liquid with the hydrocele fluid in the proportion of 2 agar to 1 hydrocele. The tubes are then slanted and allowed to remain for twenty-four hours. As much hydrocele may be put in as the

agar will stand, but too great dilution will cause the slant to slump when put into the thermostat.

The writer wishes to express his obligations to the gentlemen of the Surgical Staff of the Out-Patient Department of the Massachusetts General Hospital, and to Dr. Gardner Allen of the Boston Dispensary, for their courtesy in furnishing material for this work.

The photo-micrographs were taken by Mr. Louis S. Brown of the Clinico-Pathological Laboratory of the Massachusetts General Hospital.

CREAM FOR THE HOME MODIFICATION OF MILK.¹

BY CHARLES W. TOWNSEND, M.D., BOSTON.

It is, of course, a trite observation that if we dilute cow's milk so as to obtain the proper amount of albuminoids for infant feeding we obtain too weak a fat—hence the need of starting with cream, and cream of a known percentage.

There are various ways of obtaining this cream, all of which have their advocates, and the importance of the subject has led me to try to find the most accurate, and if possible the simplest, method for obtaining this cream. In furtherance of this end the analyses of over a hundred specimens of cream with the Babcock tester have been made for me by Dr. Wilder Tileston, for whose careful and conscientious work I am greatly indebted. To ensure accuracy, two separate analyses were made of each specimen.

The methods for obtaining cream for infant feeding may be set down as follows:

- (1) Cream by the centrifugal process.
- (2) Gravity cream or top milk obtained by siphonage.
- (3) Gravity cream obtained by dipping off the top.
- (4) Gravity cream obtained by pouring off the top.

(1) CENTRIFUGAL CREAM.

The advocates of this cream for the modification of milk think that the process has no detrimental effect on the cream, and that the supposed accuracy of percentage is of great advantage in making up the modifications. The following table is of nine specimens of centrifugal creams, bought in the open market of several responsible firms. In each case the cream was stated to have the percentage given in the first column, and the results of the analyses given in the second column show, with few exceptions, considerable variation—greater in most cases than, as will be seen later, is found in gravity cream obtained at home.

Clinical experience may, of course, be misleading, but must be the final test; and there are many, myself among the number, who have failed to obtain as satisfactory results with centrifugal as with gravity cream in the feeding of infants.

TABLE OF PERCENTAGES OF CENTRIFUGAL CREAM.

| Per cent stated. | Per cent found. |
|------------------|-----------------|
| 10..... | 15.0 |
| 16..... | 14.1 |
| 18..... | 16.9 |
| 20..... | 17.0 |
| 20..... | 20.2 |
| 20..... | 16.5 |
| 40..... | 34.3 |
| 40..... | 35.3 |
| 40..... | 35.3 |

(2) GRAVITY CREAM OBTAINED BY SIPHONAGE.

A glass siphon filled with sterilized water is introduced into the bottle or can after it has stood six to eight hours and the lower milk drawn off, leaving the cream. In applying the test of simplicity to this method, it is evident to any one who has siphoned milk himself that the process is not a simple one, or one that can be easily and safely performed by an untrained and ignorant hand. To keep the long glass tube clean and sterile, to introduce the tube filled with sterile water through the cream, to draw off this water into one vessel, the milk into another, and to stop the rapid flow of the siphon at exactly the right point, and withdraw it through the cream, is not an easy process. I have known of a rubber tube being advocated as simpler for siphonage, which reminds one of the filthy condition of the interior of rubber tubes used in the old-fashioned feeding bottle, and suggests suction as a method for starting the siphonage.

As to accuracy, if the flow is stopped at exactly the right spot, the analyses obtained from different bottles of the same milk vary but little, but of course considerable variation would occur if the flow were stopped too soon or too late. Thus the analyses of the cream obtained by siphonage from two bottles of the same milk (upper 8 oz.) was 13.5% and 13.7%, and in another case 12.9% and 12.5%.

The method is, therefore, an accurate one, but one requiring considerable intelligence to perform accurately and safely.

(3) GRAVITY CREAM OBTAINED BY DIPPING OFF THE TOP.

Dr. Chapin's dipper,² made either of tin or aluminum, can be used for this purpose. This is a much simpler and easier process than siphonage; and the dipper is safer, as it is more easily kept clean. As to accuracy, it was found that a considerable variation could be obtained, depending on the care with which the dipper was lowered into the bottle. Thus the upper 8 oz. dipped off with great care in one case showed 14.2 of fat; the same milk dipped off from another bottle carelessly, although measured accurately, showed 13.6. In another case the analyses were 16.1 and 14.3%, respectively,—a variation of .6 in the first case and 1.8 in the other.

This variation is not great, and can be avoided by almost any one who is willing to take pains to lower the dipper slowly as it fills, and not to plunge it carelessly below the surface.

¹ Read at the meeting of the Boston Medical Library, Feb. 23, 1903.

² "Home Modification of Cow's Milk for Infant Feeding." H. D. Chapin, New York Med. Journ., Nov. 4, 1889.

(4) GRAVITY CREAM OBTAINED BY POURING OFF THE TOP.

This is a method I have used for a number of years, and with excellent results. Its very simplicity, requiring no instruments, either of glass, tin or aluminum, to keep clean, fails to appeal to some minds. If it is accurate, that is, if with two or more specimens of the same milk set under the same conditions, we can obtain the same percentage of fat, if we can obtain a sufficiently high percentage of fat, and also varying percentages of fat depending on the amount poured off, it seems to me this simple method should take precedence of all others. There are no instruments to be bought, none to endanger the cream from improper care, no process more or less elaborate to be taught, and no variations in the methods of carrying out the process. Any one can pour off milk up to a given measured mark in a graduate or glass, and do it accurately. I have poured slowly and carefully, and again hurriedly and carelessly, but in each case pouring off the amount accurately, and have found hardly any variation in the percentages. Thus pouring off the upper 8 oz. with care, I have obtained 10.8% of fat, and carelessly pouring off the same amount from another bottle of the same milk, the analysis was 10.6; at another time the percentages were respectively 10.1 and 10.2, a variation of only .2 and .1%. This method is, therefore, accurate as well as simple.

In all these cases of gravity cream the milk has stood eight hours.

The fact that in pouring off, some of the thin, lower milk is seen to flow off at the same time need not disturb us, provided we get a sufficiently high percentage of fat. As will be seen by the following table, almost any percentage can be obtained by varying the amount poured off. Although milk from different sources varies considerably, and will also vary with the time of year, it is possible to obtain surprisingly little variation from day to day, if the dairy is well and honestly managed. By this is meant not only that the internal arrangements of the dairy are good, but also that the milk comes only from the dairy, and its volume is not made up irregularly by milk from inferior farms or from railroad milk.

It will be seen that in twenty-eight examinations made of the upper 8 oz. poured from the quart in July, August, September and October, months when considerable variations take place in the food of the cows, the average analysis was 10.8%, with an extreme variation of 9.8 on one side and 11.9 on the other. This was milk from a herd of eighty or ninety cows kept under model conditions. The milk was delivered to me as one of the regular customers without any knowledge on the part of the dairyman that examinations were being made. Doubtless the milk varies more than this at other times of year, and from different milk supplies, indeed, I have found the percentage of the top quarter poured off as high as 12.6 and as low as 8.1; but these examinations show that we can feel sure of considerable uniformity from day to day, from the same dairy.

I have found the average percentage of the upper 8 oz. obtained by the Chapin dipper or the siphon

to be 2 to 3% higher than that obtained by pouring off the upper 8 oz. The following table shows the percentage of fat as obtained by pouring off varying amounts of top milk:

| Number of examinations. | Amount poured off from a quart after standing 8 hours. | Extremes per cent. | Average per cent. |
|-------------------------|--|--------------------|-------------------|
| 5 | 3 oz. | 19.9 — 23.3 | 21.7 |
| 9 | 6 oz. | 13.2 — 15.2 | 14.0 |
| 28 | 8 oz. | 9.8 — 11.9 | 10.8 |
| 9 | 12 oz. | 7.6 — 8.8 | 8.1 |
| 6 | 16 oz. | 5.4 — 6.9 | 6.5 |

For practical purposes, then, we can assume that in pouring off from the quart, after standing eight hours, the upper 3 oz., we obtain a 22% cream, the upper 6 oz. a 14% cream, the upper 8 oz. a 10% cream, the upper 12 oz. an 8% cream, and the upper 16 oz. a 6% cream.

Let us see how much difference in the analysis of the modification it would make if we assumed that the cream was 10%, and it should really be 12% or 8%. Following the rule which I have formulated,³ each ounce of 10% cream, in a 20-oz. mixture, represents .50% of fat, .20% of albuminoids and .20% of sugar; and each even tablespoonful of sugar of milk added to this mixture raises the percentage of sugar 2%, and taking 4 oz. of top milk, 15 of water, 1 of lime water and 2 measures of sugar of milk, we would have, if it were 10% fat, fat 2, sugar 4.80, albuminoids .80; if it were 8% fat, the final modification would be 1.6% fat; if it were 12% fat, it would be 2.4% fat.

Infants are not cast in the same mold — they are very unlike; and a certain amount of clinical experimentation is needed in every case, and with that an approximately accurate knowledge of the percentage is all that is necessary. Analyses of mothers' milk show much greater variations from day to day, and from hour to hour, and even during the course of one nursing, than is shown in the mixed milk obtained daily from the same herd of cows. The more cows, the greater the uniformity, as individual peculiarities are lost. The albuminoids and sugar of cows' milk I have not considered here, as these constituents vary so little we can, for practical purposes, regard them as constant.

If with a supposed 10% top milk we obtain symptoms of too much fat, it is an easy matter to pour off more of the top milk. Occasional examinations of the milk with the Babcock machine are of great advantage, but not an absolute necessity. In feeding delicate babies, or those whose digestion has been entirely upset, one should begin with a very weak modification of all the constituents, and then gradually advance by very small steps. In this way the dangers from variations in the richness of the cream can to a large extent be avoided. The more the cream is diluted, as in the case of delicate babies, the more the error is diluted also.

³ Home Modification of Milk. C. W. Townsend, Boston Med. and Surg. Journ., March 23, 1899; and *ibid.*, Oct. 11, 1900.

CONCLUSIONS.

(1) Centrifugal cream is probably less desirable for infant feeding than gravity cream. As obtained from dealers it is often far from accurate in percentage.

(2) Siphonage for obtaining gravity cream is an accurate method, but one requiring considerable skill to perform accurately and safely.

(3) Dipping off the top milk is an accurate and safe method if reasonable care is used.

(4) The method for obtaining gravity cream by pouring off the top is very accurate and extremely simple. There is no instrument to be bought and kept clean. By this method it is possible to obtain cream of any desired percentage up to 26%.

(5) To ensure perfect accuracy, frequent examinations with the Babcock machine are required; but for practical purposes this is not necessary, provided the mixed milk from a well-regulated dairy is obtained.

VARIATION IN THE COMPOSITION OF HUMAN MILK.¹

BY PHILIP P. SHARPLES AND EUGENE A. DARLING, M.D., CAMBRIDGE, MASS.

ANALYSES of human milk have been numerous, but few attempts have been made to carry out a series of analyses in a systematic manner. The purpose of the present investigation was to provide data from samples numerous enough to sink the effect of any individual sample in the average of all the samples.

Collection of samples.—The samples were collected under as uniform conditions as possible. After the child had suckled in the morning nursing for a few minutes, a sample of about 1 oz. was drawn by the breast pump. The sample was forwarded to the laboratory in a mailing case. The analytical work for all except a few of the samples was begun within a few hours of the collection of the samples. Some, however, were preserved until the succeeding day with a drop of formalin.

The methods of analysis used were as follows:

Total solids.—The total solids were obtained by evaporation to constant weight on a water bath. Usually 2 grams were taken.

Fat.—The fat was determined by the Babcock method. In case the full 17.6 cc. were not available 10 cc. were taken, and the results calculated, to the normal.

Solids not fat.—The solids not fat were obtained by taking the difference between the total solids and the fat.

Proteids.—A slight modification of Ritthausen's method was used in the determination of the proteids. Five cubic centimeters of milk were diluted to 100 cc. and 2 cc. of copper solution (3 gm. copper sulphate to 1 liter) were added. A 6% caustic soda solution was run in until the solution was barely acid to phenol-phthalein. After the precipitate had subsided the solution was filtered through balanced filters, and the precipitate collected and washed on the filter. After drying at 150° C. the filter was extracted with 76° naphtha, and then the naphtha

displaced with ether. The precipitate was dried again at 100° C. and weighed. This last weight minus the weight of the ash of the precipitate gives the proteids.

Ash.—The ash was determined by igniting the total solids until white over a Bunsen burner.

Sugar.—The sugar was determined by difference. In a few samples as a check it was determined directly from the filtrate of the proteids with Fehling's solution.

Errors of analysis.—The different methods of analysis were chosen not so much to get absolute accuracy as to get strictly comparable results. The solids are capable of duplication within .02 %, the fat within .10 %, the proteids .05 %, the ash .01 %, while the sugar when determined by difference would be subject to an error which is the algebraic sum of all the other errors. It is not likely to exceed .10 %. Beside these general errors, individual samples were subject to the doubling of the stated error by the employment of half the usual quantity for analysis, and to accidental errors such as the souring of the sample.

Results of analysis.—A scanning of the indi-

TABLE I.

| CASE. | Age. | No. of Lactation. | No. of Samples. | Total Solids. | Fat. | Solids not Fat. | Sugar. | Proteids. | Ash. |
|-------------------|------|-------------------|-----------------|---------------|------|-----------------|--------|-----------|------|
| A | 42 | 13th | 19 | 12.94 | 4.27 | 8.66 | 7.08 | 1.45 | 0.13 |
| B | 26 | 1st | 16 | 10.73 | 2.12 | 8.61 | 7.15 | 1.32 | 0.14 |
| C | 38 | 7th | 16 | 12.62 | 3.94 | 8.68 | 6.82 | 1.71 | 0.15 |
| D | 26 | 1st | 9 | 10.26 | 1.88 | 8.39 | 7.02 | 1.22 | 0.15 |
| E | 37 | 2d | 11 | 11.55 | 3.41 | 8.14 | 6.78 | 1.24 | 0.12 |
| F | 29 | 1st | 20 | 9.74 | 1.31 | 8.43 | 7.13 | 1.18 | 0.12 |
| G | 29 | 1st | 8 | 10.28 | 2.01 | 8.27 | 6.92 | 1.21 | 0.13 |
| H | 23 | 2d | 18 | 12.03 | 3.64 | 8.39 | 7.00 | 1.27 | 0.12 |
| Average | | | 117 | 11.39 | 2.91 | 8.48 | 7.01 | 1.34 | 0.13 |

vidual analyses shows a wide variation in each and every constituent, but especially in the fat. The fat varies from .70 % to 7.04 %, and even the samples from the same subject show almost as much variation. Cases A and F, showing a very irregular and a very even milk, illustrate this point. In A the total solids vary much from week to week, but the graphic representation shows at a glance that the variation is due to the fat and not to the other constituents. Such a variation can hardly hold for the average of all the milk supplied at a nursing, and must to a considerable extent be due to differences in the conditions of taking the sample. It is well known in the case of milch cows that the fat increases throughout the milking, and that the strippings are the richest. It is equally true of human milk. The average of Cases A and F further show how little can be deduced from even a series of analyses from one subject. In Case A the fat is almost four times as much, the proteids .3% more, while the sugar is .05% less. These individual differences are only to be eliminated by averaging a large number of samples from many individuals.

Tables showing the averages for each week from the beginning of lactation still show the effect of the individual sample to a marked degree. Here again the variations are mainly in the fat. The solids not fat show a fairly even line. A table

¹ Read at the Boston Medical Library Meeting, Feb. 23, 1903.

TABLE II.

Case A. Age 43.

13th Lactation.

Week of Lactation.

I. Total Solids

II. Solids not Fat.

III. Fat

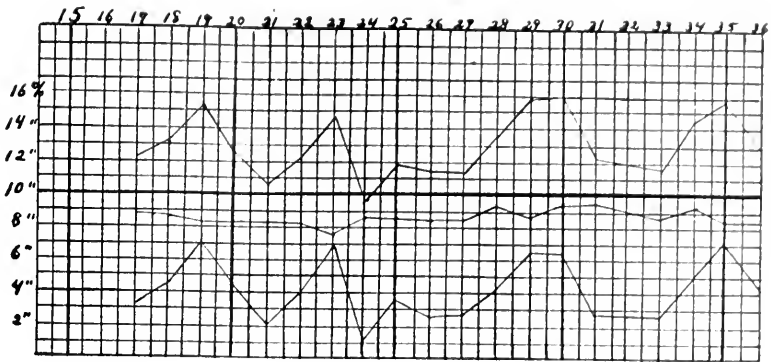


TABLE III.

Case F. Age 28. 1st Lactation.

Week of Lactation

I. Total Solids

II. Solids not Fat

III. Fat.

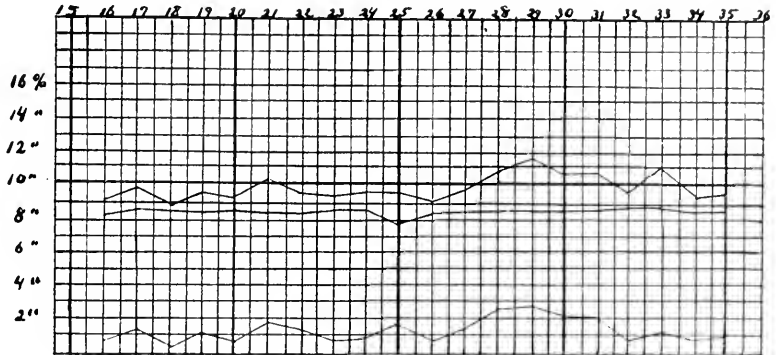
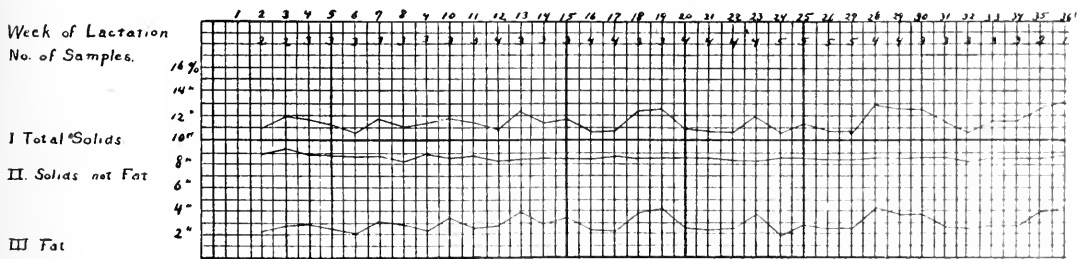


TABLE IV.



Variation in Composition in Weekly Periods

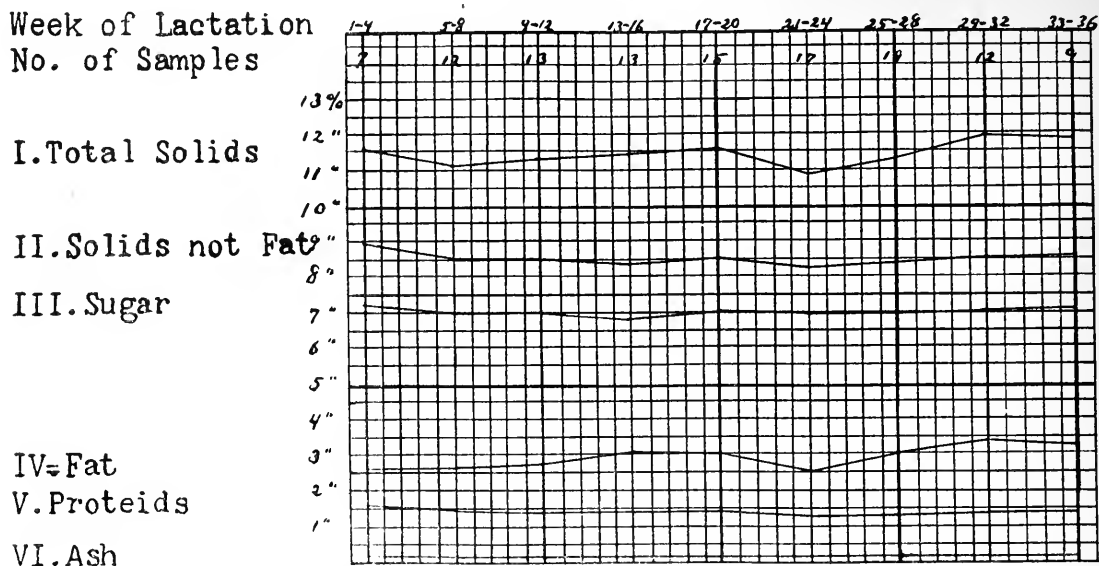
calculated for periods of four weeks is, however, much more satisfactory. No period is represented by fewer than seven samples, and the number may run as high as nineteen. The straightening of the curve in the graphic table is very marked, and it is hard to escape the conclusion that if the number of samples were large enough the line would still further approach the general average of all the samples. The first two periods must, however, be excepted. In these the proteids are seen to decrease from 1.58 to 1.42 and 1.35.

TABLE V.

VARIATION IN AVERAGE COMPOSITION AT FOUR WEEKLY PERIODS.

| Weeks of Lactation . | 1-4 | 5-8 | 9-12 | 13-16 | 17-20 | 21-24 | 25-28 | 29-32 | 33-36 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Number of Samples . | 7 | 12 | 13 | 13 | 15 | 17 | 19 | 12 | 9 |
| Total Solids | 11.59 | 11.14 | 11.27 | 11.42 | 11.51 | 10.86 | 11.36 | 11.91 | 11.84 |
| Solids not Fat | 8.95 | 8.52 | 8.53 | 8.35 | 8.51 | 8.29 | 8.39 | 8.54 | 8.60 |
| Sugar | 7.22 | 6.98 | 7.05 | 6.83 | 7.06 | 6.97 | 6.96 | 7.00 | 7.13 |
| Fat | 2.63 | 2.62 | 2.73 | 3.07 | 3.01 | 2.56 | 2.97 | 3.37 | 3.24 |
| Proteids | 1.58 | 1.42 | 1.35 | 1.38 | 1.36 | 1.21 | 1.29 | 1.31 | 1.34 |
| Ash | .16 | .14 | .14 | .14 | .14 | .12 | .12 | .14 | .12 |

TABLE VI.



Variation in average composition at four-weekly periods.

A comparison of the results tabulated by the number of the lactations shows some marked differences. All the samples from cases of the first

TABLE VII.

VARIATION IN COMPOSITION BY NUMBER OF LACTATION.
First Lactation.

| CASE. | Age. | No. of Lactation. | No. of Samples. | Total Solids. | Fat. | Solids not Fat. | Sugar. | Proteids. | Ash. |
|-------------------|------|-------------------|-----------------|---------------|------|-----------------|--------|-----------|------|
| B | 26 | 1st | 16 | 10.73 | 2.12 | 8.61 | 7.15 | 1.32 | 0.14 |
| D | 26 | 1st | 9 | 10.26 | 1.88 | 8.39 | 7.02 | 1.22 | 0.15 |
| C | 29 | 1st | 20 | 9.74 | 1.31 | 8.43 | 7.13 | 1.18 | 0.12 |
| G | 29 | 1st | 8 | 10.28 | 2.01 | 8.28 | 6.92 | 1.21 | 0.13 |
| Average | . | . | 53 | 10.21 | 1.76 | 8.45 | 7.09 | 1.23 | 0.13 |

TABLE VIII.

More than One Lactation.

| CASE. | Age. | No. of Lactation. | No. of Samples. | Total Solids. | Fat. | Solids not Fat. | Sugar. | Proteids. | Ash. |
|-------------------|------|-------------------|-----------------|---------------|------|-----------------|--------|-----------|------|
| E | 37 | 2d | 11 | 11.55 | 3.41 | 8.14 | 6.78 | 1.24 | 0.12 |
| H | 23 | 2d | 18 | 12.03 | 3.64 | 8.39 | 7.00 | 1.27 | 0.12 |
| C | 38 | 7th | 16 | 12.62 | 3.94 | 8.68 | 6.82 | 1.71 | 0.15 |
| A | 42 | 13th | 19 | 12.94 | 4.27 | 8.66 | 7.08 | 1.45 | 0.13 |
| Average | . | . | 64 | 12.37 | 3.87 | 8.50 | 6.94 | 1.43 | 0.13 |

actation are grouped in Table VII, while the cases of two or more lactations are grouped in Table VIII. The fat in the first lactation averages 1.76%, while it is 3.87%, or more than double, in the other group. From the individual averages it is seen that the highest fat occurs in Case A, the fifteenth lactation; the next highest in Case C, the seventh lactation; while the other two members of this group, E and H, are both higher than the highest of the first group. The proteids do not fall in line so

well, but the highest averages again are in the seventh and fifteenth lactations. The general average of the proteids is .20% more, and of the sugar is .15% less in the second group. These variations are in accord with the variations which occur in the milk of a single individual, that is, a higher fat percentage is usually with a high proteid and a low sugar.

Conclusions.—(1) The average composition of human milk, as shown by 117 analyses, is:

| | | | |
|-----------|------|-----------------|-------|
| Fat, | 2.91 | Ash, | 0.13 |
| Sugar, | 7.01 | Total Solids, | 11.39 |
| Proteids, | 1.34 | Solids not Fat, | 8.48 |

(2) There are wide variations from the average in milk from the same individual at different times.

(3) There are marked variations in the average composition of milk from different individuals.

(4) The average composition of human milk does not vary to any marked extent at different periods of lactation.

(5) During the first lactation the milk, on the average, is weaker in fat and proteids, but stronger in sugar than in subsequent lactations. These differences may or may not be due to age.

Clinical Department.

TRIKRESOL IN PARA-URETHRAL ABSCESS.*

BY M. L. HEIDINGSFELD, P.H.B., M.D., CINCINNATI.

Professor of Dermatology, Laura Memorial College; Clinical Lecturer on Dermatology and Venereal Diseases, Miami Medical College; Dermatologist to Presbyterian Hospital.

ONE of the most troublesome of the long list of vexatious and perplexing diseases which at times impose themselves on the practitioner of medicine is that occasioned from chronic gonorrhea or gleet, which, in spite of the most careful, well-regulated and painstaking treatment, pursues an exceedingly

* Read before the North Kentucky Medical Society, Nov. 13, 1902.

obstinate and refractory course. This unpleasant experience is often shared by genito-urinary specialist and general practitioner alike, and its occurrence is not so uncommon but that any measures which will insure some relief in this direction will be heralded with pleasurable interest.

Many of these cases owe their obstinate character and protracted form to the presence of a complicating prostatitis, vesiculitis or cowperitis, which by reason of their inaccessible character resist successful treatment, and continue to pour their infectious contents into the urethra, and indefinitely prolong the urethritis.

A much larger class, I believe, owe their unduly protracted course to a different and frequently overlooked condition, an extension of the gonorrheal infection into the numerous small glands which extensively line the anterior urethra and glans penis and the external and internal surfaces of the prepuce. Their inflammatory and infectious contents are exuded in the form of a molded filament or shred, and often persists long after an active urethritis has subsided, the urine has become cleared, producing urine loaded with infectious shreds, or dispelling their overburdened contents in the form of a "good morning drop."

Careful palpation will generally reveal their presence in the form of minute indurations, varying from a pinhead to a small shot in size, and the successful management of the case entails their cure, which is often spontaneous, but which can be more promptly insured by careful, systematic dilatation, or passage of sounds.

These so-called para-urethral abscesses often become greatly inflamed and considerably enlarged, varying from a pea to a pigeon's egg in size, rupturing and expelling their highly infectious and purulent contents externally or internally, as the case may be. It is the intention of this paper to deal practically with the management of these forms. Diday,¹ in 1860, first called attention to these forms of peri-urethral abscess, and ascribed to them their gonorrheal origin, and maintained, even at that time, that a gonorrheal urethritis could be indefinitely prolonged by the presence of such an infectious abscess, and that the patient would be subjected to the grave danger of auto-reinfection in case the urethritis at any time yielded to treatment. The microscopic examination of the contents of these abscesses almost invariably reveals the presence of characteristic intra- and extra-cellular gonococci, and Diday's observation has since been amply confirmed by Otis,² Oedmansson,³ Touton,⁴ Pick,⁵ Jaddasohn,⁶ Lang,⁷ Felleki,⁸ Aldor,⁹ Rona¹⁰ and a host of others. Most of the cases post-date the urethral infection, and are the result of the extension of the gonorrheal infection into the ducts of the affected glands. Some not only antedate and secondarily induce a gonorrheal urethritis, but also occur unassociated with an urethritis (Reichmann,¹¹ two cases, Pick,¹² one). It is somewhat difficult to understand how the minute openings of these small glands can become infected and the relatively large patulous urethra escape, unless we accept Finger's¹³ explanation, that the act of micturition carries away the infectious gonococci, or their prolonged undisturbed repose in the recess of some follicle is essential for their full active development.

It is somewhat difficult to estimate the frequency of this form of complication, inasmuch as it is seldom mentioned in genito-urinary statistics, and, when given, mild forms are prone to be overlooked, and very mild ones do not merit special significance. Winternitz,¹⁴ reports three cases out of 359 venereal cases in the University of Prag, for 1892. In my private practice, for 1901, I saw three characteristic and well-defined cases (in two of whom the abscesses were as large or larger than a small marble, while the third was an infection along a duct on the glans penis) out of a total of 102 cases of gonorrheal urethritis. In 1902 I have thus far seen four cases, to about the same proportion of cases. Personal experience therefore leads me to believe that the condition complicates gonorrheal urethritis once in thirty to forty times; but, however infrequent, its presence is always of great significance, and its successful management is of much import to the course of the complicating urethritis. This has been so well impressed upon those who interest themselves in genito-urinary work that every means — free incision and drainage (Aldor¹⁵), extirpation (Pezzoli¹⁶), destruction with electrolysis (Ehrmann¹⁷), or the actual cautery (Touton¹⁸) — has been promptly employed to successfully combat the condition, whenever and wherever it manifests itself. Heretofore, probably the most popular and successful method of treatment, at least of the superficial and favorably situated abscesses, has been destruction with the Paquelin, though incision and drainage has been freely practiced with less reliable results. Extirpation when radically performed promises much to the patient, but because of the more extensive character of the operation and confinement to bed can seldom be readily performed. In my own hands the Paquelin has proven to be the most reliable agent, but its preclusion in the larger and more deeply seated abscesses, together with the unduly prolonged course and thoroughly unreliable results when the other measures were employed, induced me to try, to my knowledge, an entirely new procedure for their successful treatment.

The promptness with which these abscesses refilled when freely incised and drained, and the obstinacy with which they baffled treatment, reminded me of the large indurated obstinate abscesses which often complicated severe cases of postular acne, and induced me to employ a method of treatment which I was successfully using in the treatment of the latter affection: hypodermic injections into the heart of the abscess of minute quantities of trikresol. The marked success which attended the use of this preparation in acne induced me to employ it with equal success in all forms of furuncles and localized abscesses, a single injection often completely aborting them in twenty-four to forty-eight hours. Its use was then extended to large abscesses and carbuncles, with equally gratifying results, and in one instance I believe I aborted an incipient facial erysipelas, by injecting this preparation into its emanating point, a small abscess at the outer angle of the right eye (C. B., Sept. 6th, 1902).

The method of its application is exceedingly simple: An ordinary 15-minim glass syringe, which is provided with a retaining screw, is employed, and, after it is filled with trikresol, is armed with a 26-gauge needle; the air is expressed, and the retaining

screw (Fig. 1, "A") run down, until the fraction of a minim can be carefully measured by proper adjustment of the retaining screw. The proper dose



is then estimated, a drop the size of a bead sufficing for the smallest abscess and a minim or more for the larger ones, and is then injected into the center of the abscess.

Its use, thus far, has been limited to four cases, in all of which it has not only brought to an abrupt close this obstinate form of urethral complication, but has materially shortened the otherwise unduly protracted course of gonorrheal urethritis.

CASE I. H. S., aged twenty-seven years, with a history of several previous gonorrheal infections, covering a period of almost five years, was infected the last time in December, 1900. In June, 1901, several abscesses formed along the anterior border of the urethra, immediately behind the sulcus coronarius. Patient then placed himself under the care of a New York specialist, and a complete extirpation was performed. Patient materially improved, but a mild urethritis persisted, which became quite active after an interval of several months, and was again complicated with abscess formation. On the date of the patient's first visit, Oct. 28, 1901, patient in addition to a very active gonorrheal urethritis, showed two circumscribed abscesses, each about the size of a marble, directly under the line of operative incision. The abscesses were incised and freely drained, patient refusing to again submit himself to a radical extirpation. The gonorrheal urethritis subsided under proper measures, but failed to entirely disappear. In the course of a few weeks the abscesses again reformed, and were excised and drained a second time, on Dec. 22. The improvement was again of only temporary nature, and when the abscesses formed the third time, they were injected with trikresol on Feb. 17, 1902, with the result that by March 31, the date of the patient's last visit, abscesses and urethritis permanently subsided and showed no further active manifestations.

CASE II. J. M., aged nineteen years, was infected with a gonorrheal urethritis for the first time in September, 1901. For an interval of several months patient attempted to cure his own case, by means of patent medicines and borrowed prescriptions, but was eventually obliged to place himself under the care of a physician. Although some improvement resulted from this change, with slight exacerbations and remissions, urination continued painful, and the discharge was abundant and purulent. The patient presented himself for the first time Feb. 25, 1902; there was, in addition to an active purulent, gonococci-bearing urethral discharge, a reddened, inflamed, tender peri-urethral abscess, the size of a large hazel nut, on the under surface of the penis near the scrotum, in the median line. The abscess was incised, drained, and the cavity injected with trikresol, and the urethritis treated with irrigations and injections. Although a fistula formed at the site of the abscess, and persisted for about ten

days, the case improved rapidly, and on date of his last visit, March 26, 1902, patient deemed further attention unnecessary and withdrew from observation and treatment. The patient presented himself several months after the date of his last visit, stating that he had been permanently cured and was free of all manifestations.

CASE III. C. T., aged twenty-seven years, has passed through several gonorrheal infections, and had been entirely free from any active manifestations of the disease for almost two years, prior to the date of his last infection, April 21, 1902. Patient placed himself under my personal care on May 1, and case progressed fairly well, with the exception that a peri-urethral abscess, size of a small hazel nut, formed along the right border of the frenulum, immediate posteriorly to the sulcus coronarius. The abscess was freely incised and drained with iodoform gauze on May 20, and the pus, which was rather abundant, contained characteristic intra- and extracellular gonococci. During the next few weeks the case improved somewhat under persistent treatment, but the abscess soon reformed, and on July 28 its destruction with the Paquelin cautery was attempted. The improvement following this step was likewise only temporary, and when the urinary fistula formed by the radical cauterization closed, the abscess formed for the third time. On Sept. 2 this abscess was injected with trikresol, with the result that by Sept. 23 the abscess had practically disappeared, and the gonorrheal urethritis, which had completely baffled persistent and painstaking treatment from March 1, gradually subsided, so that by Oct. 20, the date of the patient's last visit, all active manifestations disappeared and patient was discharged as well.

CASE IV. D. W. S., aged twenty-one, was infected with gonorrhea for the first time Oct. 2, 1902, and was treated with anterior urethral injections of albargin, 1-1,000, until Oct. 8, when an induration, the size of a large pea, manifested itself on the dorsal surface of the penis, in the sulcus coronarius, and for the time being was diagnosed an initial syphilitic chancre (?), with the question mark affixed. Patient was subjected to permanganate irrigations, every second and third day, but failed to show any material improvement. On Oct. 13, the induration was diagnosed a peri-urethral abscess, and was incised and injected with trikresol. A considerable quantity of gonococci-bearing pus escaped. Irrigations with permanganate were continued Oct. 16, 18, 21, with rapid improvement on the part of the patient, and on Oct. 25, date of patient's last visit, the urine was practically clear and the discharge had ceased.

To recapitulate briefly, the injection of trikresol in all four of these well-defined cases not only effected a complete cure of the abscess, in from seven to fourteen days, but materially cut short what was hitherto, with the exception of Case IV, an exceedingly obstinate, refractory and unduly protracted gonorrheal urethritis. In Cases I and III it effected a prompt and complete cure of the abscess, when radical extirpation, free incision and drainage, and the free use of the actual cautery, measures which find a very esteemed and valuable place in the therapy of some of the most successful and celebrated genito-urinary surgeons, utterly

failed. Although four cases scarcely afford sufficient experience to determine the full efficiency of this preparation in all cases and under all conditions, yet in connection with the marked success which attends its use in analogous conditions, pustular acne and furunculosis, its ease of administration, absence of any marked distress or serious complication, thoroughly suffices, I believe, to warrant its use in every accessible case, until its efficacy, unailing or otherwise, is fully established.

Since the foregoing has been written and presented, I have had the opportunity to try the injections of trikresol in the treatment of an anomalous and I think equally obstinate and distressing form of affection, namely, vulvo-vaginal abscess, and with equally gratifying results. On Nov. 8, 1902, Miss I. S. presented herself with a vulvo-vaginal abscess of the left labium, of the size of a pigeon's egg, tender and sensitive to pressure, and accompanied with considerable redness and swelling of the adjacent area. The abscess was incised, a considerable quantity of pus escaped, whose microscopic examination revealed ill-defined, poorly staining, degenerated pus cells, with an abundance of deeply stained characteristic looking, intra- and extra-cellular gonococci. A few drops of trikresol was then injected into the central portion of the abscess by means of a hypodermic syringe, and an ice bag applied for twenty-four hours. Patient presented herself again on Nov. 11, stating that she had experienced scarcely any pain or discomfort from the operation, and that the swelling and distress she had previously experienced had entirely disappeared. Patient was menstruating at the time, so that a local examination was unfeasible. When patient presented herself on Nov. 15, the labium had assumed a perfectly normal appearance, swelling and inflammation had entirely disappeared, and patient was discharged well.

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Medical Progress.

RECENT PROGRESS IN NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON

(Concluded from No. 15, page 397.)

* SENSORY DISTURBANCES IN HEMIPLEGIA.

Brécy¹⁴ has found disturbances of sensation in 41 out of 65 cases of hemiplegia, and in 10 out of 12 cases observed from the onset. Disturbances of

localization are the most common. Permanent hemianesthesia is very rare, but defective faculty of localizing sensations of touch or pain is almost constant, and he very often found hypesthesia of the hand and forearm with more or less complete abolition of the sense of position and the stereognostic sense. Analgesia is rare. The disturbances of sensation usually have the same distribution as the disturbances of motion, and are most marked in the extremities. Homonymous lateral hemianopsia is the chief disturbance of special sensibility. The lesion giving rise to disturbances of sensation is either in the posterior portion of the optico-striate region, the Rolandic cortex or the parts between. Lesions in the optico-striate region are more frequent, and of course may involve more of the sensory fibers than a lesion of the cortex. The most intense and persistent sensory disturbances are due to lesions of the thalamus, in front of the pulvinar, in the posterior and inferior part of the external nucleus. Sensory disturbances may also arise from lesions of the posterior segment of the internal capsule.

Gordon,¹⁵ in a study of 35 cases, has also found that ordinary hemiplegia is very often accompanied by disturbances of sensibility. In the upper limb, tactile sensibility was affected in 24 cases, pain in 30, heat in 33, and cold in 28. Sensation is more affected in the upper limb than elsewhere, and usually more affected in the distal portion of the limb. Touch and pain are affected in a slightly smaller number of cases in the leg than in the trunk, but the temperature sense suffers more in the leg than in the trunk. The face is the least affected. The stereognostic sense was affected in 29 cases, but the sense of position was affected in only 17. The faculty of localization of sensation was apparently not examined. The sensory disturbances on the whole ran parallel with the motor disturbances in regard to distribution. From his observations Gordon is inclined to believe that sensory disturbances always accompany motor disturbances of cerebral origin, but that they are often overlooked from lack of sufficient care in the examination.

REMOTE EFFECTS OF INJURIES OF THE CRANIUM.

Viedenz¹⁶ carefully reviews the literature in regard to the influence of injuries of the cranium in producing mental disturbances. In 1,542 insane men observed at Eberswold in fifteen years, he found only sixteen cases in which an injury could probably be regarded as the cause of the mental disease. In a far larger number of cases, however, the injury was the exciting or predisposing cause of the trouble. The injury led to a diminished capacity for resistance in the brain, especially to intolerance of alcohol, and thus to an alcoholic psychosis. The alcoholism may be the result of a moral deterioration, or there may be no actual abuse of alcohol in the ordinary sense, yet the brain is more readily affected by a normal moderate indulgence. From his study of the literature and his own experience he comes to the following conclusions: Injuries of the skull in childhood quite frequently cause imbecility or dementia, which may be complicated with convulsions. In some cases moral degeneracy may develop with good intelligence. An injury of the skull is also capable

¹⁴ Les troubles de la sensibilité dans l'hémiplégie d'origine cérébrale.

¹⁵ *Journ. of Nerv. and Ment. Dis.*, March, 1903.

¹⁶ *Arch. f. Psych. u. Nervenkrankh.*, xxxvi, 363.

of causing mental disturbance in a mentally intact adult, but far more frequently it acts as an exciting cause on an invalid brain or as a predisposing cause on an intact brain for the development of a psychosis. The mental disturbance may come on immediately after an injury, or after a longer or shorter interval. In the interval there are usually some prodromal symptoms. There is no typical traumatic insanity, but all psychoses caused by a cranial injury have certain common features, such as a marked change in character, irritability, failure of memory and intolerance of alcohol. After an injury to the skull we most frequently observe primary dementia, hallucinatory confusion and stuporous states, sometimes with katatonic symptoms, and rarely paranoia. It is doubtful whether genuine epilepsy or genuine general paralysis can develop after an injury, but similar morbid types are often observed. The mental disturbances following an injury to the skull closely resemble those arising on an alcoholic basis. The outbreak of mental disturbances after injury is due less to coarse anatomical changes in the brain than to finer microscopical injuries, which seem chiefly to affect the capillaries. No definite, constant change has yet been found in the ganglion cells. The prognosis in the individual case is to be made in the same way as in similar mental disturbances from other causes.

PARALYSIS AGITANS.

Compin¹⁷ discusses their regular forms of paralysis agitans in which some of the cardinal symptoms may be absent or modified. The tremor may be absent or be hardly perceptible; it may for a long time be limited to one or two limbs, and often be unilateral; it may extend to the tongue, lips, eyelids, eyeballs, vocal chords or the head; and it may be exaggerated by voluntary movements or even be an intention tremor. The muscular rigidity may also be absent or very slight. In other cases it may be so marked as to cause contracture or permanent deformity. There may also be a contracture in extension instead of in flexion. The rigidity may for a long time remain localized in one half of the body, as in hemiplegia. The clinical picture may also be atypical by the exaggeration of certain symptoms, such as retropulsion, pain, etc., or by the addition of unusual symptoms, such as trophic or sensory disturbances, paralysis, cerebral and mental symptoms, or disturbances of secretion. Although the course is usually slow, it may sometimes be very rapid; on the other hand, the disease may remain limited to one limb or one side for many years. Sometimes the symptoms may subside, or, after having been general, may become unilateral again. From this variability in the symptoms, the multiplicity of clinical forms, and the addition of unusual symptoms, Compin is disposed to regard paralysis agitans not as a well-defined morbid entity, but as a symptom complex, produced by a great variety of lesions.

EPILEPSY.

An interesting discussion on the treatment of epilepsy was held¹⁸ at the meeting of the Medical

Society of London, two months ago. Risien Russell, who opened the discussion, stated that the theory of auto-intoxication as the cause of epilepsy had the most supporters, but the question had not been answered in such a way as to put the treatment on a sound etiological or pathological basis. The results of serum therapy and the inoculation of filtered cultures of certain micro-organisms have thus far been unsatisfactory. The bromides are still the most potent agents we have to combat epilepsy, and their supposed ill effects are usually the result of the disease and not of the remedy. He thought the ammonium and sodium bromides had no special advantages over the bromide of potassium, but bromide of camphor deserved further trial. Borax, arsenic, digitalis, belladonna, etc., were sometimes useful adjuvants, but by themselves they had little value. Bromopin was the best of the recent compounds. The exclusion of salt from the diet was of decided importance. Beevor argued against the toxic origin of epilepsy and in favor of the bromides. Ormerod believed borax was sometimes of value, and that belladonna was helpful in *petit mal*. Langdon Down had observed a temporary cessation of the trouble after influenza or pneumonia, but the attacks returned in an aggravated form. Sir Victor Horsley, speaking of the surgical treatment, stated that when general convulsions followed a blow on the head, without obvious evidence of injury, surgical measures were generally of no avail. In the case of definite trauma of the skull, followed by localized convulsions, the question of successful surgical intervention depended largely on the situation of the injury; trephining in the frontal region was unfavorable, and in the occipito-temporal and occipito-parietal regions generally, but not always, without benefit. When the injury was over the motor cortex the skull should be trephined and the cicatricial tissue removed. In cysts and porencephaly in children trephining was often beneficial. In one case, when fits had followed an injury to the spine, the fits ceased after laminectomy; in a similar case laminectomy had no effect. Hystero-epilepsy offered no field for surgical interference.

ISOLATION IN THE TREATMENT OF PSYCHO-NEUROSES.

Dejerine¹⁹ affirms that isolation, as a method of facilitating the employment of psychotherapy, is the sole method which gives favorable results and permanent cures in the treatment of various forms of psycho-neuroses. The ordinary sojourn in a hospital is usually attended with no benefit to a neurasthenic or hysterical patient, and it sometimes is actually harmful. In view of this fact Dejerine has instituted a method of treatment for patients of the hospital class, unable to bear the expense of a private sanitarium, in his wards at the Salpêtrière. The patient, if an adult, is received only on consenting to be isolated. She is put in a bed with the curtains constantly drawn. She sees the physician and his pupils at the morning visit for a few minutes, the interne at the evening visit, and the nurse who brings her meals. No one else can come near her. If badly nourished, as many are, she is given milk hourly, until she takes five or six quarts a day. The psychotherapy begins at the start. She is carefully examined, but never told

¹⁷ Etude clinique des formes anormales de la maladie de Parkinson.

¹⁸ Rev. of Neurol. and Psych., March, 1903.

¹⁹ Rev. Neurol., 15 Dec., 1902.

her symptoms or the diagnosis. Dejerine tells his assistants in her presence that she has no lesion of the nervous system, that the trouble is not serious, and that in time she will be well. Lectures upon a neuropath in the patient's presence have deplorable results. The psychotherapeutic method is simple and is based on reasoning, persuasion and discipline. The patient is informed that the symptoms of which she complains have not the serious significance she fears, and she is not left until conviction begins to dawn upon her. It is necessary to listen to all her ills, but when once her confidence is gained, improvement is rapid. The interne repeats the process in the evening. Isolation is continued until improvement sets in, which generally takes place in ten days or a fortnight. Then isolation is made less stringent; the curtains are opened for an hour or two, permission to receive a letter or a visit is promised if improvement continues and this leads to still greater improvement. Dejerine thinks the results are better among hospital patients than in private practice, because such patients are more docile and submissive to authority, and because the cure is promised publicly, before the corps of assistants. The results obtained by Dejerine in this way are remarkable. Out of 200 cases of psycho-neuroses — hysteria, neurasthenia, mental anorexia, uncontrollable vomiting, etc. — treated by him since 1895, he has met with only two failures.

Reports of Societies.

PHILADELPHIA OBSTETRICAL SOCIETY.

STATED Meeting, March 5, 1903, at 8.15 P.M., the President, DR. J. M. FISHER, in the chair.

DR. L. J. HAMMOND reported

A CASE OF POST-OPERATIVE TETANUS, WITH ESPECIAL REFERENCE TO THE FOCUS OF INFECTION.

The case was that of a female, twenty-two years of age, the daughter of a farmer, whose duties, in addition to household work, included milking cows, feeding pigs and attending to chickens. Previous to her arrival in Philadelphia she had suffered from an attack of (gonorrheal?) peritonitis. Three days after her arrival in the city the patient complained of toothache and swelling in the left cheek, due to eleven carious teeth. This attack terminated in an alveolar abscess, which was incised and cleansed of a considerable quantity of pus. Two days after this had healed, an abdominal section was done for a bilateral pyosalpinx, ovarian abscess on one side and a multiple cystic ovary upon the other. The abscess sacs were removed without rupture. The patient progressed very well until the sixth day, when she complained of strange feelings about the eyes. Four hours subsequently she complained of an intensity of this ocular condition with stiffness of the jaws. Dr. Hammond saw her within an hour after the latter was noted, and found the patient presenting a risus sardonicus. The abdominal incision was examined, and found united without any irritation. Trismus grew rapidly worse, and in five hours after

he saw her, it was impossible to separate the jaws, and at the end of two more hours the muscles of the neck were all completely spastic. No other muscles were spastic until about four hours previous to death (which occurred twenty-seven hours after the first symptoms were noted), when there was noticeable contraction of the muscles of the back and abdomen during the paroxysms only. Morphia, eserine, bromides, chloral and the tetanus antitoxin were all employed. Owing to the tightly closed mouth a culture could not be obtained from the teeth cavities, hence a positive bacteriological proof of tetanus could not be obtained, but the knowledge of the habitat of the tetanus bacillus, and the mode of life of this farmer girl, would tend to convince one that she had become infected with tetanus germ at her home, and that the extensive caries of the teeth should furnish a most vulnerable storehouse for its concealment. As the period of incubation of tetanus is nine to twenty-one days, the germ could not have been introduced at the time of operation.

DR. JOSEPH SAILER: Some years ago during a course in bacteriology at the Pasteur Institute, I was much impressed by a remark made by Roux upon the treatment of tetanus by an antitoxic serum, that there were two classes of cases: the chronic, all of which recovered, and the acute, none of which recovered.

When Dr. Hammond asked me to see this case he had given a million units of the antitoxic serum, and I felt that there was really very little more to be done. My experience is that Roux's remark regarding recovery is pretty nearly true; that is to say, chronic cases recover rapidly under any treatment, and other cases, no matter how early the treatment is instituted or how vigorously carried out, die inevitably. Of course, the most important thing one can do under these circumstances is to arrive at some conclusion in the early stages as to whether there is any likelihood that a case will get well. There is an old rule regarding tetanus: that if the symptoms commence in the upper part of the body, particularly in the head, the prognosis is grave; if they commence in the lower part of the body, the prognosis is very much more favorable. It is easy to theorize why this should be so. If the lesion is in the lower part of the body the toxin reaches the less vital centers of the spinal cord and there is a progressive although very slow immunization of the nervous system so that by the time it reaches the upper portion the nerve cells are able to resist injurious influences. So far as I know there is no evidence that such a theory has any actual basis of truth.

Of course the question of the treatment of tetanus is a most alluring one. The antitoxin is such a trustworthy antidote to the tetanus toxin that Ehrlich and Morgenroth could work out their theories of immunity with mathematical values, which is difficult with antitoxins of many other organisms. It would seem, therefore, that if there is any disease in which antitoxin ought to be efficient it is this one of tetanus. Yet, excepting in the case of some of the smaller animals, whose bodies can be thoroughly saturated with antitoxin, even experimentally it has no curative power, for the reason that the toxins are united with the cells by intermediary bodies and form combinations that cannot be neutralized by the antitoxin, as the toxins in the blood are neutralized by the antitoxin of diphtheria.

In regard to Dr. Hammond's case, when I saw it, the symptoms were most pronounced in the face, and the entire appearance of the patient formed a most typical clinical picture. Even at that time I was compelled much against my will to look upon the prognosis as hopeless, because the patient was beginning to have cramp of the respiratory muscles. The sensation of a binding around the chest is a characteristic symptom, and almost the gravest met with in traumatic tetanus, and indicates that the fatal outcome cannot be long delayed. The tetanus bacillus stays in the original wound without multiplying, and liberates a toxin that travels along the nerve sheaths to the parts of the central nervous system from which the influences which move special muscles arise. As the peripheral neurons are the parts first affected, they appear to be also the parts in which the symptoms are first manifested. The fact that this patient's symptoms began in the eye and extended to the face led me to suspect some other focus of infection than the abdominal wound, and it seems probable that there was infection in the jaw. Cultures would not have been of much value. A few investigators have been able to obtain the tetanus bacillus from the original wound. In one case the bacillus was said to have been obtained from the neighboring lymph glands. But the majority of observers, no matter how carefully investigations were undertaken, have been unable to find it, and for pretty obvious reasons. It does not multiply. It appears in small numbers, and usually is a rather difficult germ to grow.

It is hardly worth while to mention that there is probably no germ more difficult to destroy than the tetanus bacillus. It is more difficult than the anthrax, because it is anaërobic, and it fails to grow in the intervals of fractional sterilization, unless put under anaërobic conditions. The spores can be boiled for twenty-four hours without being destroyed. A few instances of aerobic tetanus bacilli have been described. I think if methods could be adopted by which the tetanus bacilli could be killed all further measures would be unnecessary, because no other organism can resist the condition required to destroy it. I have been interested in the gelatine treatment of hemorrhage. In going over the literature it is surprising to find how frequently patients injected with gelatine for checking hemorrhages have died of tetanus. Some five or six cases are now on record. The reason is that the tetanus bacillus in gelatine media cannot always be got rid of by boiling at intervals. I can only agree with Dr. Hammond in his idea of the case, that it was an infection probably carried with the patient from her home and lodged in the tooth. I should be rather inclined to differ with him in his view that the depressed state of the patient had promoted the infection. I should rather think that perhaps the latent focus had been aroused by the suppuration in the jaw, or even by the operation upon it.

DR. F. C. HAMMOND: Coe of New York in 1901 reported two cases of tetanus following aseptic celiotomy. One case was similar to the case reported by Dr. Hammond as regards the pelvic condition, bilateral pyosalpinx (gonorrheal). In this case tetanus developed during the latter part of the third week. The patient had progressed so well from the opera-

tion that she was permitted to lie upon a couch on the sixteenth day. On the twenty-fourth day, while around the ward, her legs "gave way," precipitating her to the floor. For a few days previous there had been some difficulty in swallowing, and stiffness of the muscles of the neck. Owing to her known hysterical nature, these were considered of an hysterical character. Subsequently sufficient symptoms developed to warrant a diagnosis of tetanus. The patient died on the thirty-sixth day after the operation and the twentieth after the appearance of the initial symptoms. In the second case stiffness of the muscles appeared on the ninth day, and the patient felt inclined to be hysterical. A diagnosis of hysteria was made. On the next day marked tetanic symptoms appeared, and the patient succumbed on the eleventh day after the operation. In both cases an early diagnosis of hysteria was made, which was verified by a consultant. The diagnosis of tetanus was not made in either case until trismus had developed. It hardly seems possible in the modern day of aseptic and antiseptic surgery that we should look for tetanus as a complication of abdominal section.

DR. H. D. BEYEA: I would like to ask Dr. Hammond to what extent and how the water used in this operation was sterilized. In a plastic operation, cervix and perineum, performed by Dr. Penrose in a private house a few years ago, tetanus developed and resulted in death. The nurse in attendance, not accustomed to prepare for such an operation, it was found had not properly prepared the water. It had been taken from a well after a storm, and was muddy. This was observed when it was too late to resterilize the water, and therefore mercuric chloride was added. There seemed to be no question of doubt but that the water was the source of the infection in this case. Shortly afterward there occurred at the University Maternity two or three cases of tetanus with the same result. It was discovered that the water used for douching was taken from the tap and prepared by adding mercuric chloride. The infection here was positively traced to the water. It would seem to me, since the tetanus bacillus is so frequently found in water, that unless the water is sterilized by fractional sterilization, boiled for at least two hours on two consecutive days, or sterilized in the Sprague-Schuyler sterilizer under fifteen pounds pressure, we should look to the water as the probable source of infection. Aside from catgut, it is practically the only source of infection in abdominal technique.

DR. B. C. HIRST: The cases that occurred in the University Maternity were three in number, and all due to the water of intrauterine douches, I am sure. We had at that time a resident physician who conceived the idea that every woman's womb must be washed out after labor. Every unfortunate woman had an intrauterine douche, whether there were any complications or not, and three died of tetanus. We had the water examined after the first case, and in the sediment collected from the tap water there were demonstrated the bacilli of malignant edema and of tetanus. Animals injected with the bacilli died, some of malignant edema and some of tetanus. We had boiled the water, but we immediately installed a Sprague-Schuyler sterilizer, the first, I believe, in the University Hospital.

It is a curious fact that the mistake should be made so often of mistaking tetanus for hysteria. I have seen three cases in which this mistake was made at different times, in different localities, and each by a different consultant.

DR. HAMMOND, in closing, said: I thank the gentlemen very much for the discussion, which has amounted to so much more than the paper that I have learned a great deal from what I felt to be a very uninteresting subject.

I took advantage of the suggestion made by Dr. Sailer as to the prevention of any subsequent cases of tetanus by first cleansing the entire institution with 1-500 bichloride solution, and liberated two tanks of oxygen in each room with the hope that pure air might contribute something toward preventing such condition. I never before had a case of tetanus, and have not since. In the same week there were four major operations in the same institution, and the water that was used was first filtered and then boiled eighteen minutes. So it seems to me improbable that the infection was in the water. If so, we would have heard something more of it in the other cases, all of which were prepared in precisely the same way both as regards the water and instruments. The case directed itself so clearly toward the teeth as the focus that I have learned the lesson that whenever I have a patient from the country districts the first thing I expect to do, and for which I shall accuse myself of negligence if I do not do, is to inspect the teeth, having any carious teeth looked after before operation. In answer to Dr. Beyea's question, I can but repeat that it seems highly improbable that the germ was in the water. I do not think in this case there was any possibility of mistaking the diagnosis for that of hysteria. Hysteria never entered my mind. The lectures I heard when a student so impressed me, especially in regard to the peculiar expression [risus sardonius], that from the appearance of this in my patient, I felt no doubt as to diagnosis.

DR. M. H. BOCHROCH read a paper on

BIRTH PALSIES.

The obstetrician, he said, does not always take into consideration the accidents to the child which so frequently eventuate in serious and permanent palsies. These injuries are not always evident at birth; very frequently they do not receive attention until years after, and then at the hands of a neurologist, whose function is usually limited to making the diagnosis of a permanent and hopeless lesion. Birth palsies occur more frequently in the practice of the general practitioner than in the hospitals and wards attended by professional obstetricians. In brain lesions, such as hemiplegias, microcephaly, porencephaly and hydrocephalus, forceps are as a rule used too late rather than too soon; that prolonged pressure, such as occurs in primiparae, is more often the cause of this deplorable state than the improper use of the forceps. In cases of cerebral hemiplegia or cerebral diplegia, the most that can be accomplished is a tedious and only partially successful attempt at education, and some training of the paralyzed limbs. It would seem that in every child in whom at birth there are present symptoms of asphyxiation following dystochia, and in whom there has been prolonged pressure and constriction

of the head, it would be a justifiable procedure to rapidly make an opening of moderate size upon either side of the parietal region; by such a procedure the effused blood escapes, or could be washed out with a normal salt solution. Erb's palsy is detailed, stress being laid upon the avoidance of the various procedures which predispose to this condition. The treatment of brachial palsy resolves itself into the employment of massage and electricity. The paralyzed arm should not be allowed to hang helplessly by the side, but should be supported in a sling or in a Velpeau bandage. In some of these cases nerve suturing may be indicated.

DR. GEORGE M. BOYD: I have been fortunate enough not to meet with any of the palsies seen as the result of difficult forceps operation. I have never met with a case of brachial palsy. The doctor speaks of prolonged labor superinducing the palsies rather than the labor assisted by forceps interference. It seems to me that very many of the injuries that we meet with, and possibly the great number of asphyxias and fetal deaths, are due to too early interference, injudicious or faulty use of the forceps.

DR. STRICKER COLES: I have been so unfortunate as to have one case of palsy of the arm in difficult labor. The shoulders were very difficult to deliver, and twenty minutes were used in making traction. I thought at one time I would not be able to deliver them at all. It was a typical case of palsy as described by Dr. Bochroch. I heard occasionally from the child, and at one time that she was at the Polyclinic Hospital, where it was thought to make an x-ray picture, thinking the palsy was due to displacement. This was refused, and the last I heard of the patient was that she had diphtheria and died.

The only other form I have known of is facial paralysis, occipito-posterior delivery with forceps. The paralysis disappeared in five or six days, and I have seen no bad results following the paralysis.

DR. L. J. HAMMOND: I have been very much interested in the surgical treatment of peripheral nerve injuries, and my feeling is that in this unfortunate condition we have a lesion justifying surgical treatment. As Dr. Bochroch has said, we have the condition due either to extravasation of blood from rupture of the venous plexus, which surrounds the cord (extra-durally), or we have inflammatory lymph deposited within the sheath itself. If this be correct it seems to me that we have in operation a relief that should be undertaken in cases that do not respond to the routine medical treatment within a reasonable period. If operation is delayed until nutritive changes take place, it is probable that nothing can be done. I should like to hear from Dr. Bochroch regarding results of treatment.

DR. W. S. STEWART: I should like to call the attention of the society to another form of palsy which we might find on investigation. I presume that most of the members of this society do not believe in maternal impressions. I have had in my experience a case resembling that described by the reader of the paper, but which I could trace back to maternal impressions. The child's left arm was paralyzed and hung at its side. The mother was disposed to accuse me of injuring it in her delivery. Prof. D. Hayes Agnew was consulted, and said

that there was nothing to indicate that the child had been injured in delivery. I inquired of the mother whether she had been disturbed in any manner by seeing a person with a similar condition. She at first said, No. Then she replied, except that a man had sat opposite her at her table who had no use of one arm. I told her I believed that to be the cause of the child's condition, and that it would be well to try electricity. I did not believe the condition would ever improve. That child, unfortunately, did not die as in the case mentioned, and is living today with the same condition, unhelped by various treatments and numerous doctors. I had another case which occurred with a woman sitting opposite a man at her meals, with a glass eye. When her child was born it had a corresponding sightless eye. In another case a pregnant mother gave birth to a child that had constant movement similar to chorea, and I learned that the mother while carrying the child was riding in a street car with a woman whose child was choreic. I could give you many other cases without doubt results of maternal impressions. While this society may not feel much interest in this subject, I think it is often well to trace such occurrences to the true source.

DR. E. P. BERNARDY: There is no doubt that a prolonged labor can cause serious brain lesion to the newborn child, the excessive overlapping of the parietal bones causing rupture of the blood vessels and injuring the delicate coverings of the brain, but the true cause of many brain lesions, especially those of late appearance, are caused mostly by the injuries occasioned by misapplied forceps. While the forceps are valuable both to mother and child, it is a well-known fact that they may become the reverse.

In an experience of nearly five thousand confinements, I can hardly recall a case injured by a prolonged labor, where forceps were not applied. In my earlier obstetrical practice the application of forceps was one in about five cases, while at the present it is one in about fifty or a hundred confinements.

In an article which I published upon the "Use and Abuse of the Obstetrical Forceps," the statistics showed that in America the forceps was applied in every fifteen confinements. Therefore, I cannot believe that these injuries are produced from lack of the use of the forceps.

DR. F. C. HAMMOND: Regarding Duchenne's paralysis, the experiments of Stolper conclusively prove that the plexus cannot be compressed by the tips of the forceps so long as the child presents by the vertex, although it may occur in face and brow presentations. Dr. F. X. Dercum states that he has never seen a case of palsy, cerebral in origin, occur in a multipara. From the standpoint of prophylaxis it would be well to apply forceps just as soon as the fetal head fails to recede between the pains.

DR. BOCHROCH: Regarding Dr. F. C. Hammond's remarks I cannot go into details concerning in what particular presentation the forceps do the most damage. It is well to remember Erb's point high up on the neck the site of the origin of brachial palsy, and that if the forceps lie over too far palsies may be made in that way. In some articles it is shown that the sole cause of palsies is that the forceps are put on in a bungling fashion, pressing on Erb's point. It is a very curious fact that facial palsies usually disappear in two or three days. I

mentioned in my paper that nerve suturing might be resorted to. I am not, however, familiar with a case in which it has been done. Nerve suturing is receiving considerable attention from the surgeons, and they will have to decide that question.

I think Dr. Bernardy did not understand me; I tried to make clear that it was the want of proper use of the forceps, rather than the early use, which caused injuries. The fact that the forceps are not used early enough, and prolonged pressure permitted, especially in primiparæ, is, I think, the frequent cause of the palsies encountered.

Recent Literature.

Medical Microscopy. Designed for Students in Laboratory Work and for Practitioners. By T. E. OERTEL, M.D., Professor of Histology, Pathology, Bacteriology, University of Georgia. With 131 illustrations, some of which are colored. Philadelphia: P. Blakiston's Son and Co. 1902.

The author has attempted to present in a small volume of 350 pages the essentials of clinical microscopy, and has succeeded admirably. The book is suited especially for practitioners, who, unable to take a post-graduate course, wish to acquire sufficient knowledge and skill to avail themselves of the aid the microscope offers for diagnosis. The writer has wisely restricted himself to those methods which have proved the best for routine work. Dr. Oertel evidently possesses a thorough first-hand knowledge of the subject and a familiarity with the recent literature.

We think it would have been better to have omitted the chapter on tumors. The diagnosis of tumors is too difficult and involves too great a responsibility to be undertaken by any one who has not had prolonged and thorough instruction under some competent teacher.

The book is printed on heavy opaque paper, from large clear type.

Lessons and Laboratory Exercises in Bacteriology.

An Outline of Technical Methods Introductory to the Systematic Study and Identification of Bacteria. By ALLEN J. SMITH, M.D., Professor of Pathology in the University of Texas. Philadelphia: P. Blakiston's Son & Co. 1902.

This work consists of eighty-three exercises in general bacteriological technique and explanatory notes. A description of the characteristics of the important pathogenic bacteria is not included. The author has employed a new terminology. The old familiar names of nearly all the pathogenic bacteria have been discarded, and are not mentioned even as synonyms; for example, there is no reference to *Staphylococcus pyogenes aureus* in the index; *Bacillus pyocyaneus* is designated *Pseudomonas pyocyanea*, a term which has been abandoned by Migula, who introduced it.

Antiquated methods and complicated procedures unsuited for elementary students are given, while some of the simple and valuable recent methods are not mentioned. There are not a few errors in the text. The book is printed on poor paper and the illustrations are crude.

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THE RELATIVE MEDICAL AND SURGICAL FERTILITY OF THE DIFFERENT NATIONS DURING THE PAST YEAR.

THE following statistics are by no means a guide to all the articles published during the past year, but are made up from the articles considered worth epitomizing by the editors of Gould's Year Book of Medicine and Surgery for 1903. As these abstracts are as nearly as possible a report of all that is new in medicine and surgery for this period, they are perhaps as good a guide as may be found in regard to what country is at present the most active in furthering medical advance. It is not supposed that the statistics are accurate; in the first place they are from the American point of view; secondly, occasional individuals of one country publish their work in periodicals of another country; thirdly, much of the best work that is being done is not reported within the year, and, fourthly, the importance of certain pieces of work cannot be inferred from these figures (for instance, Ehrlich's immunity counts the same as some minor report of a new operation or a new instrument); but admitting the evident errors, the statistics may not be without interest as showing the tendency of the times.

NUMBER OF ARTICLES EPITOMIZED IN GOULD'S YEAR BOOK FOR 1903.

| From. | Medical. | Surgical. | Total. |
|-------------------------------|----------|-----------|--------|
| United States | 704 | 629 | 1,333 |
| German Empire and Austria . . | 873 | 217 | 1,090 |
| Great Britain and Ireland . . | 313 | 246 | 559 |
| France | 312 | 131 | 443 |
| Italy | 102 | 11 | 116 |
| Russia | 22 | 2 | 24 |
| Canada | 13 | 12 | 25 |
| Australia | 4 | 10 | 14 |
| Hungary | 4 | 2 | 6 |
| Norway and Sweden | 5 | 0 | 5 |
| Holland | 8 | 6 | 11 |
| Switzerland | 2 | 0 | 2 |

| | | | |
|-----------------------|-------|-------|-------|
| India | 2 | 1 | 3 |
| Finland | 1 | 0 | 1 |
| New Zealand | 1 | 0 | 1 |
| Mexico | 1 | 0 | 1 |
| Uruguay | 1 | 1 | 2 |
| | 2,368 | 1,271 | 3,639 |

From this it may be seen that last year the United States published the largest number of articles containing something new; that in surgery the United States has published almost as many articles as all the other countries together (629 to 642); that in medicine Germany and Austria have produced the greatest number of medical articles; yet America's lead in surgery is greater than Germany's lead in medicine. Also, that while most countries tend to an excess of medical reports over surgical (namely, Germany, France, Italy, Russia, Norway and Sweden), the English-speaking countries tend to produce a more equal proportion of the two subjects (namely, United States, Great Britain, Canada and Australia).

NUMBER OF ARTICLES PRODUCED IN SPECIAL SUBJECTS.

General Medicine.

| | United States. | Great Britain and Ireland. | German Empire and Austria. | France. | Italy. |
|--|----------------|----------------------------|----------------------------|---------|--------|
| Infectious diseases | 42 | 24 | 40 | 18 | 6 |
| Tuberculosis | 13 | 6 | 36 | 14 | 12 |
| Pentosuria, glycosuria and diabetes | 6 | 0 | 16 | 2 | 2 |
| Gout and rheumatoid arthritis, . . | 2 | 2 | 10 | 2 | 0 |
| Supra-renal glands | 0 | 0 | 7 | 1 | 1 |
| Akromegaly and osteo-arthritis | 2 | 0 | 3 | 0 | 0 |
| Blood | 4 | 4 | 49 | 2 | 4 |
| Spleen | 3 | 1 | 1 | 1 | 2 |
| Hemorrhagic diseases | 0 | 1 | 4 | 1 | 1 |
| Hodgkin's disease | 1 | 2 | 2 | 0 | 0 |
| Circulatory organs | 12 | 12 | 15 | 7 | 2 |
| Respiratory tract | 12 | 3 | 11 | 6 | 2 |
| Digestive system | 17 | 14 | 62 | 7 | 7 |
| Urine and kidneys | 6 | 8 | 29 | 0 | 8 |
| Parasites | 6 | 3 | 3 | 0 | 1 |
| Pediatrics | 121 | 59 | 139 | 78 | 13 |
| Pathology and bacteriology . . | 92 | 11 | 19 | 11 | 6 |
| Nervous and mental diseases . . | 79 | 22 | 25 | 33 | 6 |
| Cutaneous diseases | 56 | 39 | 10 | 15 | 1 |
| Syphilis | 0 | 0 | 6 | 7 | 0 |
| Materia medica and therapeutics | 96 | 39 | 91 | 50 | 13 |
| Physiology | 45 | 21 | 91 | 29 | 5 |
| Legal medicine | 48 | 8 | 1 | 5 | 0 |
| Public hygiene and preventive medicine | 11 | 18 | 23 | 16 | 7 |
| Physiologic chemistry | 21 | 9 | 50 | 6 | 0 |

General Surgery.

| | | | | | |
|-----------------------|---|---|---|---|---|
| Technique | 9 | 1 | 3 | 0 | 0 |
| Amputations | 2 | 2 | 1 | 1 | 0 |

| | | | | | |
|---|-----|----|----|----|---|
| Anthrax, actinomycosis, tetanus, etc. | 7 | 5 | 2 | 2 | 0 |
| Cysts and tumors | 16 | 17 | 2 | 2 | 0 |
| Anesthetics | 19 | 9 | 4 | 4 | 0 |
| Esophagus and stomach . . . | 13 | 12 | 1 | 4 | 0 |
| Peritoneum and intestines . . | 13 | 21 | 9 | 5 | 0 |
| Rectum and anus | 12 | 3 | 0 | 0 | 0 |
| Appendix | 26 | 3 | 3 | 0 | 0 |
| Hernia | 10 | 5 | 3 | 2 | 0 |
| Liver, gall bladder and spleen. | 28 | 6 | 3 | 4 | 0 |
| Respiratory organs | 9 | 1 | 3 | 1 | 0 |
| Vascular system | 11 | 6 | 1 | 4 | 0 |
| Diseases and fractures of | | | | | |
| bones | 6 | 8 | 1 | 1 | 0 |
| Joints and dislocations . . . | 1 | 7 | 1 | 0 | 0 |
| Venereal diseases | 15 | 2 | 4 | 2 | 0 |
| Brain and nervous system . . | 21 | 7 | 1 | 4 | 0 |
| Muscles and fascia | 1 | 3 | 0 | 0 | 0 |
| Spine | 9 | 3 | 1 | 0 | 0 |
| Kidneys and ureters | 27 | 10 | 1 | 2 | 0 |
| Genitals (male) | 34 | 13 | 5 | 5 | 0 |
| Plastic surgery | 13 | 14 | 1 | 0 | 0 |
| X-rays | 14 | 2 | 0 | 0 | 0 |
| Obstetrics | 42 | 27 | 36 | 15 | 4 |
| Gynecology | 17 | 17 | 69 | 21 | 2 |
| Orthopedics | 10 | 3 | 3 | 0 | 0 |
| Ophthalmology | 102 | 10 | 28 | 26 | 5 |
| Nose and throat | 53 | 9 | 10 | 15 | 2 |
| Otology | 21 | 6 | 8 | 9 | 0 |
| Anatomy | 6 | 15 | 52 | 3 | 1 |

From the first list (medicine) it may be seen that Germany's forte lies especially in tuberculosis, diabetes, gout, rheumatoid arthritis, blood, digestive, urinary and renal diseases, physiology and physiological chemistry; that America's forte lies in pathology and bacteriology, nervous and mental diseases, cutaneous diseases and legal medicine; that France's forte lies in nervous and mental diseases and syphilis. It is interesting to note that the two nations best known to be of a nervous temperament should excel in articles concerning nervous and mental diseases. From the second list (surgery) the United States seems to be strongest in technique, anesthetics, surgery of the peritoneum and intestines, appendicitis, surgery of the liver, spleen, genito-urinary tract and spine, x-rays, orthopedics, ophthalmology, nose and throat, and otology. The British Isles are strongest in cysts, tumors, diseases of the joints, dislocations and plastic surgery; while Germany is strongest in gynecology and anatomy.

For a true criterion of the fertility of the different races of physicians, however, percentage ratios must be considered:

| | France. | German Empire and Austria. | Great Britain and Ireland. | United States America. | Italy. |
|--|---------|----------------------------|----------------------------|------------------------|--------|
| Ratio of physicians to 10,000 inhabitants. | 3.9 | 4.6 | 6.1 | 16.1 | 6.3 |
| Actual number of physicians | 14,445 | 40,552 | 26,831 | 123,251 | 20,437 |

| | | | | | |
|--|-------|-------|-------|-------|-------|
| Per cent of all medical articles pub'd. | 13.17 | 36.86 | 13.21 | 29.72 | 4.30 |
| Per cent of all surgical articles pub'd. | 10.31 | 17.07 | 19.36 | 49.40 | 1.10 |
| Per cent of total articles published. | 12.17 | 29.97 | 15.37 | 36.66 | 3.19 |
| One article to how many physicians? | 32.63 | 37.0 | 47.6 | 92.4 | 176.0 |

In other words, the French produced during the past year one article to every 32.6 physicians; the Germans, one to 37; the English, one to 47.6; the Americans, one to 92.4, and the Italians, one to 176.

Apparently, then, the French are the most productive, whereas the position of the Americans is well toward the bottom of the list.

THE SPRING MEDICINE IDEA.

Our correspondent, in another column, suggests a query which has no doubt occurred to many others, as to the significance, if there be any, of the deeply rooted idea that spring brings with it certain peculiar physical dangers and medical responsibilities. Whatever its source may be, the supposed necessity of a "spring medicine" has invaded the minds of regular practitioners of medicine to an extent which at least excites our curiosity, and stimulates enquiry.

The successful quack is, after all, usually a person of keen perceptions, who finds it useful to study human peculiarities and prey upon human weaknesses in a way which appears illegitimate to the more reputable practitioner. Man hibernates less conspicuously, no doubt, than some of his lower congeners, but, nevertheless, his attitude toward life varies more than he suspects during the winter as contrasted with the summer months. If he is unwise, as most men are, he wears thick underclothing in winter, he refrains from physical exercise, certainly in the open air, his uric acid tendencies assert themselves, he labors with his mind, regardless of his body, and spring finds him ready for the rejuvenating medicine, which he finds advertised in every newspaper and in every street car. Proverbially of weak reasoning capacity in matters medical, he attributes his steady improvement in physical condition to sarsaparilla or hypophosphites, or other more mysterious draughts, instead of to the natural accompaniments of the salubrious weather of spring, golf, the trout brook, uncontaminated air and the completer excretion of waste products.

In the meantime, with this somewhat insecure basis of physiological fact, the quack, whether without or within the fold, finds his opportunity, and spring is turned into a veritable plague spot in the calendar. Our sins of the winter are visited upon

us many fold magnified, and we enter upon the summer journey with trembling steps, leaning upon the staff of the saving "spring medicine." With this aid we revive, and the "spring medicine" has vindicated itself beyond the power of argument to refute.

Such is, undoubtedly, the popular attitude toward this season of the year, brought about by a small amount of fact, unscrupulous quackery, skilful advertising and a willingness to be duped, which is apparently instinctive in the human animal. This is, in fact, but one of many curious superstitions regarding health which are transmitted from generation to generation, and unquestioningly accepted by the world at large. A good share of the enlightened physicians' work should be to combat these tendencies of which medicine, even today, is full; but the slightest experience shows how difficult a matter this is, and what is more regrettable, how often the doctors themselves condone and encourage them. We are inclined to think that the spring medicine idea simply represents a flagrant example of an exceedingly common tendency. We are still far too inclined to allow our patients to think that they are "nervously exhausted," instead of being simply undisciplined, or that they have been "threatened" with pneumonia, or "caught" a cold, or narrowly escaped some other physical calamity. This attitude is certainly akin to the spring medicine idea, which we openly deplore. The moral is sufficiently plain.

THE REVIVED INDEX MEDICUS.

WE are in receipt of the somewhat delayed first instalment of the *Index Medicus*, bearing the date January, 1903. The general appearance of the publication is very similar to that with which we are familiar in the numbers previously published. A somewhat larger type has, however, been used, which is certainly to be regarded as an improvement. This new series of the *Index Medicus* begins, as already announced, with the year 1903, but a certain number of foreign journals for December, 1902, have been included in the titles given. It is announced that numbers two and three, for February and March, will be issued as a double number, since the material has sufficiently accumulated owing to the enforced delay in the publication of the first number. In a notice printed at the head of the current number it is stated that the classification adopted is based as far as possible upon the latest accepted views in medicine, but it is to be remembered that the bibliographer has to deal with a large amount of material which cannot be systematically classified.

This work, which has been again undertaken under the auspices of the Carnegie Institution at Washington, must appeal to every physician and scientific man who looks into the literature beyond his weekly journal. Its discontinuance several years ago was universally deplored, but at that time resources were not available for its continuance. There can be small doubt that, under the present auspices, such a lapse can hardly occur again, certainly not in the immediate future; nevertheless the profession at large should feel a sense of responsibility in liberally supporting the publication through subscription. It is evident that the work of the editors must enlarge year by year with expanding knowledge, and that, therefore, the expense of continuing the *Index* will constantly increase, an added reason for the generous support of the medical profession at large.

MEDICAL NOTES.

NEW JERSEY STATE BOARD OF MEDICAL EXAMINERS.—The State Board of Medical Examiners of New Jersey has secured amendments to the Medical Practice Act of that State, by which the academic standards for admission to the State examinations have been raised from a competent common school education to a diploma issued after four years of study in a normal, manual training or high school of the first grade in that State, or its equivalent. The medical requirements have been increased from three to four courses of medical lectures of at least seven months each, in different calendar years, prior to receiving the degree of Doctor of Medicine. The amendments go into effect July 4 next. After that date, candidates for examination or for the endorsement of a license issued by a recognized examining board of another State will be obliged to comply with the new standard of requirements for a New Jersey license.

INCREASE IN THE MEDICAL CORPS OF THE NAVY.—The Fifty-seventh Congress in its last session provided for an increase of one hundred and fifty members in the Medical Corps of the Navy, twenty-five of which are to be appointed each calendar year for six years. By the enactment of this law there is afforded to the young physicians of the country an opportunity to take service in the Navy of the United States and an assurance of the continuance of this opportunity for the next six years. The number of vacancies in this Corps occurring from retirements, resignations and casualties average about ten a year, which, added to the twenty-five created by new legislation, makes thirty-five appointments open to ambitious young medical men yearly.

These appointments are to be made in the grade of assistant surgeon, and are within the reach of any well-qualified physician between the ages of twenty-one and thirty who is a citizen of the United States. Examinations to determine the fitness of candidates for appointment are held in Washington, D. C., and at Mare Island, Cal., and the boards of examiners are in continuous session throughout the year. It is only necessary for any physician of the required age and citizenship desiring to enter the Medical Corps of the Navy to apply to the Secretary of the Navy for permission to be examined to insure being given an opportunity. No political or other influence is required, and the only testimonials needed are those bearing on moral standing and citizenship. The examinations to determine the fitness of candidates for these appointments are conducted in the following order: (1) physical; (2) professional; (3) collateral. Further particulars can be had by addressing Bureau of Medicine and Surgery, Navy Department, Washington, and referring to No. 78,399.

THE WIDAL REACTION IN MALIGNANT ENDOCARDITIS. — W. Hale White, M.D., and W. C. C. Pakes report the case of a young woman dying of typical malignant endocarditis, upon whom during life a characteristic Widal reaction was obtained. Examination showed that the patient had not contracted typhoid fever after the onset of the endocarditis, and the case is, therefore, of interest that in endocarditis of streptococcus origin there was developed in the blood serum substances capable of agglutinating in the strength of 1 to 20 *B. typhi abdominalis*. In the experience of these writers the Widal reaction has not hitherto been obtained in endocarditis.

TRANSMISSION OF MOSQUITOES BY VESSELS. — According to the bulletin of the Yellow Fever Institute, from investigations which have been made regarding the transmission of mosquitoes by vessels, the general conclusions are drawn: first, that mosquitoes may come aboard vessels under favorable conditions when the vessel is not over fifteen miles from shore; second, that *Stegomyia* may be carried from Mexican or West Indian ports to those of our Gulf States; third, that they may board a vessel lying at anchor a half mile or less from shore, being conveyed by the open lighters used or flying aboard, and, finally, that a vessel moored a short distance from land may become infected with yellow fever.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, April 15, 1903, there were reported to the Board of Health of Boston

the following cases of acute infectious diseases: Diphtheria 31, scarlatina 25, typhoid fever 11, measles 30, smallpox 0.

A MEMORIAL TO DR. HORACE WELLS AS DISCOVERER OF ETHER. — A memorial service to Dr. Horace Wells as the discoverer of ether was held at the Center Church at Hartford, Conn., last Sunday. A memorial window to him and to his wife was placed, and the medical and dental societies of Hartford attended the ceremony. There is a statue to Dr. Wells in Bushnell Park, Hartford.

NEW YORK.

HOSPITAL SATURDAY AND SUNDAY ASSOCIATION. — The Distributing Committee of the Hospital Saturday and Sunday Association met in the Mayor's office on April 7, to give out the money contributed at the annual collection to the institutions represented in the association. There are thirty-seven of these, and the amount apportioned to each is on the basis of the amount of free work done during the previous year. The general agent of the association reported that the total collection was a little over \$82,000, of which \$9,902.75 was designated for particular hospitals. Deducting from the balance \$4,638 for expenses, there remained for distribution on the basis named the sum of \$68,000. The five hospitals receiving the largest amounts were the following: The Montefiore Home and Hospital for Chronic Invalids, \$6,800; Mount Sinai Hospital, \$5,245; St. Luke's Hospital, \$4,323; Roosevelt Hospital, \$4,233; and the German Hospital and Dispensary, \$4,009.

COLUMBIA UNIVERSITY, MEDICAL DEPARTMENT. — At the monthly meeting of the trustees of Columbia University, held April 6, the following changes were announced in the College of Physicians and Surgeons: Dr. George M. Tuttle has resigned from the professorship of gynecology; Dr. Arnold H. Knapp has been appointed lecturer in ophthalmology; Dr. John S. Thatcher, clinical lecturer in medicine, and Dr. E. L. Dow, demonstrator of pathology. The gift was received from the daughters of the late Dr. Minturn Post, who was graduated from Columbia in 1827, of the valuable collection of minerals made by Dr. Post.

DISEASED CATTLE FOR SLAUGHTER. — A deliberate attempt to send a carload of diseased cattle for slaughter in New York was recently foiled by the State Agricultural Department. Word was received of the shipping of the stock from Newport, Herkimer County, and the car was intercepted in the railroad yards in New York by the department's agents. Of twenty cows found in the car, three were in a dying condition, and soon expired. Eight

others were suffering from advanced tuberculosis, and at least three from pneumonia. It was also learned that several others of the herd had died at Utica, before they could be transferred to the car on the New York train. It is intended to prosecute the shipper of the cattle.

A CENTENARIAN.—Daniel Butler, the oldest resident of Tompkin's County, died at Enfield Falls, near Ithaca, on April 7, at the age of 104 years.

THE TYPHOID EPIDEMIC AT ITHACA.—An official statement in regard to the typhoid epidemic at Ithaca, dated March 29, has been given out by Dr. Soper, the representative there of the State Board of Health, in reply to a letter from the New York State Teachers' Association, inquiring whether it would be safe to hold a meeting of that society scheduled to take place at Ithaca the first week in July. In it Dr. Soper states that a careful consideration of the matter leads him to express the opinion that the meeting could be safely held there. In the last four weeks, he says, marked improvements are observed in the typhoid situation, and the course of the epidemic seems to have been run. Beginning early in January, the epidemic increased rapidly, until on Feb. 2 there were thirty-eight cases in a single day. From that date it diminished slowly until the 22d, when its decline became more rapid. He gives the total number of cases as 681, and the deaths at 51, but states that these figures are probably not accurate, the statistics of the epidemic being not yet compiled. There have been 54 new cases in March, of which 36 were reported in the first two weeks and 18 in the last fortnight. In his view, the security of health in the near future depends partly on a sanitary organization formed within the last month and partly on the probability that the original source of infection no longer exists. If the measures which the authorities are capable of carrying out are executed, there should be but little more danger of typhoid fever in Ithaca during the coming spring and summer than in any other city of similar size and location. Indeed, he thinks, there is probably no other city in the country in which the health of the people could be so vigilantly guarded. After describing the sanitary measures which are being carried out, he says: "The health of the community, as indicated by the prompt and accurate returns now being made by physicians, is such as to warrant the confidence that typhoid fever in the epidemic form is passed. It is to be expected that a few more cases will occur, as it would be unreasonable to suppose that the last spark of the conflagration has been extinguished. If the food, milk and water supply are kept free from infection from the surrounding

country, and infectious matter in the town is destroyed, there will be no opportunity for another outbreak." As a matter of fact, a few cases have occurred during the last week.

Miscellany.

A SERIES OF FACSIMILE REPRINTS OF MEDICAL AMERICANA.

Few copies of the early contributions to medical literature written by Americans and published in this country are in existence. From an historical standpoint these early American contributions to medical science are worthy of better fate than that which has attended them until finally and safely lodged in a corporate library. For the better and more permanent preservation of these valuable monographs, the *Medical Library and Historical Journal* has undertaken the reproduction of a series of these in facsimile.

The first to be published will be "The Abuses and Scandals of Some Late Pamphlets in Favour of Inoculation of the Small Pox, Modestly obviated, and Inoculation further consider'd in a Letter to A—— S——, M.D. & F.R.S., In London," a monograph by William Douglass printed by Franklin at Boston in 1722. Photographic plates of the book will be made in exact facsimile, and an illustrated prefatory sketch (historical, biographical and bibliographical) will be written by Lewis Stephen Pilcher, A.M., M.D., LL.D., the widely known medical *bibliophile* and editor of the *Annals of Surgery*. The issue will be strictly an edition de luxe, limited to 150 signed and numbered copies, printed in the best style of the typographical art, on large paper and bound in gray boards.

Numbers will be assigned in the order in which subscriptions are received. The price of each book will be \$1.00 net, payable on delivery. After the limited edition has been printed, the plates will be destroyed and the book will not be re-issued.—*Medical Library and Historical Journal*.

Correspondence.

THE PREPARATION AND DISTRIBUTION OF ANTITOXIN BY THE MASSACHUSETTS BOARD OF HEALTH.

Boston, April 13, 1903.

MR. EDITOR :—So long as the statements of Mr. W. W. Bartlett before the Committee on Public Health of the Massachusetts Legislature concerning the antitoxin work of the State Board of Health were directed only to the committee, it did not seem worth while for me to take any notice of them, for the members of the committee are as well fitted as Mr. Bartlett to collect information on this matter. When, however, the legal representative of the Massachusetts Pharmaceutical Association puts his observations into a circular which is to give information to the medical profession, I feel called upon to straighten out his report a little in the interest of those physicians who are unable to inform themselves, as well as in the interest of the tax-paying public.

The preparation and distribution of antitoxin by the State Board of Health has been carried on very quietly and unostentatiously. Only last fall I met a physician practising in a prominent town of this State who had just learned of the free distribution of antitoxin by the State. When the work was begun over eight years ago there were but three plants in operation, all of them municipal. Two of these still survive. The work of the Board was considered more or less experimental in character, and everything was done in the simplest manner compatible with the safety and efficiency of the product. The rapidly increasing demand for antitoxin culminated in the epidemic of 1900, during which year over eighty thousand 1000-unit doses were distributed, equaling that many dollars in commercial value. The plant in the meantime remained experimental, but the product was no longer so.

It became evident, however, that if the work was to continue, provision must be made for adequate facilities, and the work must be recognized by the State. The present unsatisfactory arrangements made it necessary for me to give a great deal of personal attention to the work which would not be required with better equipment. Moreover, no work requiring the use of living bacteria could be carried on, and the manufacture of tetanus antitoxin carried on for three or four years was finally discontinued because I hesitated to bear the heavy responsibility. Yet with the present limited equipment a relatively enormous amount of antitoxin has been prepared—1,300 liters from Jan. 1, 1897, when a new method of recording amounts went into effect. This represents a market value of over \$250,000. So far as I know, this huge amount of fluid has been absorbed without any untoward effect. As stated above, for several years tetanus antitoxin was prepared side by side with it, and yet there is no record of any injurious effect. This shows that the safeguards were adequate, and in these safeguards the personal factor plays a prominent part. No matter how elegant and automatically perfect the equipment, things may go wrong, for the more we depend upon either living or automatic machinery, the greater the watchfulness demanded.

This much it seemed necessary to state concerning the operations of the Board in the preparation and distribution of antitoxin up to the present.

The circular sent out by W. W. Bartlett, representing commercial interest, was thus without a historical basis, even if its details had been on a level with the facts. That the equipment is unsatisfactory we all know, otherwise there would be no reason for legislation. That it was unsafe, not a shadow of evidence could be adduced to show, and the author had to fall back upon some Latin phrases and some ridicule of the city of Boston and of the State. It seems to me that if the State is to retain in its service men of self-respect, such extemporized inspection of public institutions must be forbidden. It is wrong on at least three separate counts. It was reported to the public at large, who are unable to judge in matters requiring professional and expert training; it was made by a man who possessed neither of these qualifications, as his remarks about antitoxin standards and filters reveal only too clearly, and it was full of misleading statements and misstatements of fact, the most serious being that he obviously tried to convey the impression that antitoxin was prepared in a stable. The fact is that the antitoxin is prepared inside of the horse, but next to the horse, the most important steps are those carried on in the laboratory. The stable and bleeding room play a quite secondary part in the whole matter. In spite of his assertion to the contrary, in the *Boston Evening Transcript* he opens his circular with the following sentence: "This biologic laboratory consisted of two very old and very dirty stables." He states elsewhere: "... and yet this very important serum that should only be prepared under the most careful aseptic conditions was made in this filthy stable." "When I contemplated that this great museum of comparative biology and bacteriology... really consisted of two unsanitary and filthy stables." He recognizes the existence of a laboratory later on, but through a peculiar psychological squint or after image effect the "two filthy stables" rise up to obscure the laboratory.

He recognizes the laboratory, in that he enters it with-

out being able to wipe his feet on a door mat. The laboratory is several hundred feet from the stable, and is guarded by four successive door mats. Why he did not see or use them I do not know, yet it would not have been the part of the laboratory assistants to invite a quasi-member of the Revision Committee of the United States Pharmacopeia to wipe his feet before entering.

I refer to these matters to show the pettiness of the criticism and its essential untruthfulness. I might analyze the circular line by line and show similar oddities in each sentence.

As the matter actually stands, no one officially connected with the work has claimed that the Board had a model plant or a plant at all. Of the many scientists who have visited me, there have been some who have been interested in the antitoxin work because of the success attending its use in the Boston City Hospital and in the State. There are always some who are interested to know what "Massachusetts is doing." To these I have always stated that the antitoxin plant was still in the experimental stage, and that there was nothing to be imitated, at present. It should also be remembered that legislation upon this subject has been pending for more than a year, and that under the circumstances I could not consistently recommend the outlay of money not absolutely necessary until such legislation had been completed. No one would welcome more than I a model plant which represented the simplicity as well as the high standards of our State, and to which all interested strangers would be welcomed. At the same time, we welcome whatever private manufacturers are doing to improve appearances and make their plants inviting to strangers. This, however, as the scientist well knows, is no guaranty whatever that the product is equally honest. That could only be ascertained by prolonged inspection and special tests.

The "inspection" made by the legal representative of the Massachusetts Pharmaceutical Association was unsatisfactory for other weightier reasons. No one can spend fifteen to thirty minutes in a laboratory, witness none of the processes, and yet claim to criticize them. In fact, a full week's attendance would have barely acquainted him (even if he were trained) with those processes which form the true safeguards of a biological product. This leads me to say something of methods. There are half-a-dozen successive safeguards in the preparation of serum upon which different men, with sufficient training and experience, would lay different emphasis, according to the conditions under which the serum is prepared. I should not be willing, for example, to follow the methods of one manufacturing firm, although I am prepared to admit that their final product may be as safe as any. The fact is that we must trust individuals, especially where the preparation of such things as "biological products" is concerned, and if these individuals are amenable to public authority and their methods open to investigation by properly constituted official bodies and no commercial or financial interests are involved, we are perhaps as safe as we can be among the uncertainties of life. Above all, any injurious results caused by such products would become known at once, which may or may not be the case with private products. I was told some time ago that a certain animal vaccine prepared by some firm killed all or nearly all the animals inoculated with it. The firm paid the damages, and nothing more was said about it. Think of the uproar which would follow the killing of a single cow with State vaccine! That accidents may now and then follow the use of antitoxin serum injected in such large amounts may be looked for with the other unexpected casualties of this world. Yet even here we must carefully weigh facts. It might be possible, to use an extreme illustration, to carry safeguards so far as to make the cost of serum prohibitory.

The public is always liable to be affected by externals and appearances, and private manufacturers are fully aware of this human quality. Even physicians fall under the influence of appearances, yet any one knows that they are only indices in the practice of medicine and surgery, and often very unreliable ones. I think it is important to emphasize this aspect of the subject brought out by Mr. Bartlett's letter. If the State Board of Health should be authorized to prepare certain biological products, to whose judgment of the necessary elegance of a

should they submit? This is a very essential question, for if such men as Mr. Bartlett shall be allowed to lay havoc in the public press with carefully planned arguments looking towards economy, efficiency and utility, rather than appearances, the plan of a public health might as well be given up, for I doubt that any well-meaning man would be found willing to direct the work under such conditions.

Arguments are sometimes presented in favor of large plants as compared with small plants. Here, again, the care of the manufactured product must be considered. The process of preparing antitoxin and vaccine were that required to make a pin or a nail it might be left to private competition or combination. There human element is eliminated by an unvarying machine. In the preparation of biological products there many variable factors requiring exercise of judgment constantly. The larger the establishment, the opportunity for any responsible director to control judgment on the part of a large staff of routine workers. In fact, biological products are of such a character that they cannot be introduced into the pharmacopeia, because no adequate tests can be provided for. The druggist, in the case of antitoxin, must appeal to the State Board of Health to make the test for length or sterility, and this body must, therefore, be prepared to maintain standards for such a purpose. The personal element is thus a very important factor, will remain so as long as these biological products are not be made artificially and by well-defined processes. The Vaccination Number of the *British Medical Journal* (July 5, 1902, p. 60) occurs the following passage which seems to fit present circumstances very well:

regards the private English firms which prepare animal vaccines, there appears to be a general anxiety to conform to most of the principles already laid down as necessary for obtaining a vaccine which, when taken from the calf, shall be as free as possible from extraneous organisms. There is only one comment which can be made upon their methods. As has already been pointed out, the essential condition upon which success depends is, at every stage of the process, the personal factor. If a bacteriologist with established reputation for accurate work is directly responsible for the entire conduct of the work, his name alone is sufficient to guarantee that every precaution is being taken against contamination. But the mere assurance that the work is being conducted under strict supervision or by trained experts does not give one the degree of confidence in it because the terms "supervision" and "expert" are somewhat vague and elastic. . . .

In conclusion I wish to point out the difference between a public and a private plant in their position as scientific institutions. The public plant finds in the advancement of science its chief incentive, the private plant finds the same necessarily in making money. Science is natural enough, and we would not quarrel with them if they did not wish to assume the rôle of scientific institutions and endeavor to suppress the public institutions. They have thus far not contributed anything of value to the problem of serum therapy and antitoxins. If they have, it is kept as a trade secret, and their scientist nor physician would be in a position to estimate its value. If we intend to maintain only private laboratories for the preparation of antitoxin, there is no reason why Professor Behring should not have been granted patent rights for his discovery. The manufacturers fought him most energetically, yet all the objections raised in this country against granting a patent are personified in the manufacturers in their endeavor to suppress public institutions. Progress can come only through laboratories aided by the universities by special funds and by public institutions authorized to prepare such biological products. The mentioned are in the best position for investigation, and thus far they have done most to further our knowledge of these valuable preventives and remedies.

Respectfully yours,

THEODORE SMITH, M.D.,

Pathologist to the Massachusetts Board of Health.

APRIL 15, 1903.

MR. EDITOR: The Committee of the Massachusetts Legislature, before which hearings were held recently on a bill proposed by the antivivisectionists, has given the petitioners leave to withdraw. X.

BOSTON, April 10, 1903.

MR. EDITOR: For some time I have had in mind asking, through the medium of your esteemed JOURNAL, what is the origin of the spring medicine idea, if I may so call it, which seems to prevail at this period of the year, but have omitted doing so for one reason or another. Some practitioners seem to countenance the custom, but I cannot seem to get any justification for it that appeals to reason. The popular mind has the idea so deeply graven upon it that it seems a hopeless task to combat it. The origin of the custom would prove interesting to

A CONSTANT READER.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 4, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|--------------------|-----------------------------|--------------------------|--------------------------|---------------------------|----------------------|-----------------------|-----------------|----------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Measles. | |
| New York . . . | 3,785,156 | 1,250 | 417 | 20.24 | 20.32 | 4.16 | .32 | .88 | |
| Chicago . . . | 1,935,270 | 549 | 148 | 24.57 | 19.11 | 1.45 | 1.27 | .91 | |
| Philadelphia . . . | 1,378,527 | 535 | 132 | 25.23 | 16.07 | 2.24 | 2.50 | .37 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 187 | 50 | 25.13 | 12.83 | 1.06 | .53 | 1.06 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 162 | 49 | 20.37 | 17.28 | 1.23 | 3.08 | .62 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 72 | 23 | 27.78 | 19.44 | 1.39 | 2.68 | 6.94 | |
| Boston . . . | 603,163 | 214 | 56 | 21.03 | 15.88 | 1.40 | 3.70 | .47 | |
| Worcester . . . | 132,044 | 47 | 15 | 17.02 | 27.65 | — | — | — | |
| Fall River . . . | 115,549 | 34 | 15 | 26.47 | 23.52 | 2.94 | — | — | |
| Lowell . . . | 101,959 | 41 | 17 | 14.63 | 12.19 | 4.88 | — | — | |
| Cambridge . . . | 98,639 | 27 | 9 | 14.81 | 22.22 | — | 3.70 | — | |
| Lynn . . . | 72,497 | 18 | — | 10.10 | — | — | 5.55 | — | |
| Lawrence . . . | 69,766 | 17 | 7 | 52.93 | 11.76 | 11.76 | — | 11.76 | |
| Springfield . . . | 69,389 | 36 | 14 | 19.44 | 16.67 | 2.78 | 5.55 | 2.78 | |
| Somerville . . . | 68,110 | 21 | 7 | 20.83 | 16.67 | 4.16 | — | — | |
| New Bedford . . . | 67,198 | 28 | 13 | 25.00 | 21.43 | — | 3.57 | — | |
| Holyoke . . . | 49,286 | 12 | 3 | 8.33 | 8.33 | — | — | — | |
| Brockton . . . | 44,873 | 13 | 4 | 7.70 | — | — | — | — | |
| Haverhill . . . | 42,104 | 14 | 5 | 14.28 | 35.70 | — | 7.14 | — | |
| Newton . . . | 37,794 | 11 | 1 | — | 18.18 | — | — | — | |
| Salem . . . | 36,876 | 12 | 4 | 25.00 | 25.00 | — | 16.67 | — | |
| Malden . . . | 36,286 | 11 | 3 | 18.18 | 18.18 | — | 9.09 | — | |
| Chelsea . . . | 35,876 | 16 | 5 | 6.25 | 31.25 | — | — | — | |
| Fitchburg . . . | 35,069 | 16 | 9 | 31.25 | 18.75 | 6.25 | 12.50 | 12.50 | |
| Taunton . . . | 33,656 | 19 | 3 | 15.79 | — | — | 5.26 | — | |
| Everett . . . | 28,620 | 7 | 3 | 14.30 | — | — | — | — | |
| North Adams . . . | 27,862 | 10 | 2 | 30.00 | 20.00 | — | — | — | |
| Gloucester . . . | 26,121 | 10 | 1 | 20.00 | — | — | — | — | |
| Quincy . . . | 26,042 | 7 | 5 | 28.60 | — | — | 14.30 | — | |
| Waltham . . . | 25,198 | 6 | — | 16.67 | 16.67 | — | — | — | |
| Brookline . . . | 22,608 | 6 | — | 16.67 | 16.67 | 16.67 | — | — | |
| Pittsfield . . . | 22,589 | 6 | 2 | 16.67 | — | — | — | — | |
| Chilcopee . . . | 21,031 | 8 | 5 | 12.50 | 50.00 | 12.50 | — | — | |
| Medford . . . | 20,962 | 3 | 1 | — | 33.33 | — | — | — | |
| Northampton . . . | 19,883 | — | — | — | — | — | — | — | |
| Beverly . . . | 15,302 | 5 | — | — | — | — | — | — | |
| Clinton . . . | 15,161 | 7 | — | 28.60 | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . . | 14,478 | 7 | 2 | 14.30 | — | — | — | — | |
| Woburn . . . | 14,300 | 2 | — | — | 50.00 | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 1 | 0 | — | — | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 5 | 1 | — | 40.00 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 2 | — | 50.00 | — | — | — | — | |
| Frammingham . . . | 12,534 | 3 | 2 | 66.67 | — | — | 66.67 | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 1 | — | — | 100.00 | — | — | — | |
| Southbridge . . . | 11,268 | 1 | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 4 | 2 | — | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,466; under five years of age, 1,035; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 761, consumption 375, scarlet fever 42, whooping cough 55, cerebrospinal meningitis 10, smallpox 8, erysipelas 6, measles 32, typhoid fever 46, diarrheal diseases 18, diphtheria and croup 90.

From whooping cough, New York 4, Chicago 7, Philadelphia 13, Baltimore 1, Pittsburg 5, Providence 2, Boston 8, Springfield, Framingham, Salem and Fitchburg 2 each, Cambridge, Lynn, New Bedford, Haverhill, Malden, Taunton and Quincy 1 each. From erysipelas, Chicago 2, Philadelphia 1, Providence 1, Worcester 1, Cambridge 1. From smallpox, Chicago 1, Philadelphia 2, Pittsburg 4, Boston 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending March 21, the death-rate was 17.0. Deaths reported, 4,905; acute diseases of the respiratory organs (London) 282, whooping cough 111, diphtheria 72, measles 163, smallpox 12, scarlet fever 42.

The death-rate ranged from 9.0 in Kings-Norton, to 28.5, in Wigan; London 17.2, West Ham 15.5, Brighton 12.9, Portsmouth 12.0, Southampton 12.8, Plymouth 17.2, Bristol 13.2, Birmingham 19.4, Leicester 14.0, Nottingham 16.5, Bolton 18.3, Manchester 17.8, Salford 21.4, Bradford 15.3, Leeds 14.8, Hull 15.0, Newcastle-on-Tyne 18.8, Cardiff 13.9, Rhondda 18.3, Liverpool 19.4, Ipswich 15.2.

METEOROLOGICAL RECORD.

For the week ending April 4, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---------------|-------------|----------------|----------------|-----------|--------------------|-------------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily maximum. | Daily minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 29.30.52 | 35 | 42 | 28 | 78 | 56 | 67 | N | N W | 17 | 6 | C. | C. | .03 |
| M . 30.30.24 | 38 | 43 | 32 | 58 | 92 | 75 | N | N E | 7 | 15 | O. | R. | .04 |
| T. . 31.29.54 | 47 | 55 | 39 | 98 | 71 | 84 | N | W | 13 | 8 | R. | C. | 1.47 |
| W. . 1.29.33 | 48 | 54 | 41 | 66 | 56 | 61 | W | N | 13 | 12 | C. | C. | O. |
| T. . 2.30.14 | 46 | 57 | 36 | 83 | 72 | 78 | E | S E | 5 | 15 | F. | O. | O. |
| F. . 3.29.56 | 57 | 65 | 49 | 86 | 86 | 86 | S W | S W | 29 | 22 | T. | F. | .18 |
| S. . 4.29.56 | 44 | 60 | 29 | 83 | 73 | 78 | S | N W | 13 | 24 | O. | O. | .29 |
| Mean | 29.93 | 54 | 36 | | 76 | | | | | | | | 2.01 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. **Mean** for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE, FOR THE SEVEN DAYS ENDING APRIL 9, 1903.

MURRAY, R. D., surgeon. Granted leave of absence for fourteen days from May 1. April 6, 1903.

MCINTOSH, W. P., surgeon. To proceed to Lumpkin, Ga., for special temporary duty. April 5, 1903.

PIERCE, C. C., assistant surgeon. Detailed to represent the service at the meeting of the Florida State Medical Association to be held at St. Augustine, Fla., April 8-10. April 3, 1903.

ALTREE, G. H., acting assistant surgeon. Granted leave of absence for five days, from April 8. April 7, 1903.

RODMAN, J. C., acting assistant surgeon. Granted five days' leave of absence from April 8. April 7, 1903.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence for two days. April 5, 1903.

PROMOTION.

E. M. HOLT, pharmacist of the third class, promoted to be pharmacist of the second class, effective March 2, 1903. April 3, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING APRIL 11, 1903.

C. BIDDLE, surgeon. Detached from the Navy Yard, League Island, Pa., and ordered to the "Minneapolis."

G. T. SMITH, surgeon. Detached from the "Puritan" and ordered home to wait orders.

C. D. NORTON, surgeon. Detached from the "Minneapolis" and ordered to the Navy Yard, League Island.

J. H. HALLOWAY, assistant surgeon. Detached from the Museum of Hygiene, and ordered to the "Franklin."

E. M. BROWN, assistant surgeon. Detached from the Museum of Hygiene, and ordered to the Nav. Hospital, Norfolk, Va.

D. P. MCCORD, acting assistant surgeon. Appointment revoked, to take effect April 4, 1903.

E. S. BOGART, surgeon. Ordered to the Naval Academy, Annapolis.

T. M. LIPPITT, assistant surgeon, retired. Detached from the Naval Hospital, New York, and ordered home.

C. F. KLY, assistant surgeon. Ordered to the Naval Hospital, New York.

SOCIETY NOTICES.

THE MASSACHUSETTS MEDICAL BENEVOLENT SOCIETY was incorporated in 1871 to carry into practical effect upon a larger scale the purposes of the Massachusetts Medical Benevolent Association, which dates from 1856.

ARTICLES OF ASSOCIATION adopted March 19, 1857.

"Whereas it sometimes happens that worthy members of the medical profession become reduced in circumstances, whose names are underwritten (all being residents of Massachusetts) do hereby associate ourselves as a body corporate for the relief of such especially as become members of this Society or of their families should they need assistance; and of such other members of the medical profession, or their families, as may be deemed by the Society suitable objects of its beneficence."

The present officers of the Society are:

DR. DAVID W. CHEEVER, *President*.

DR. J. C. WHITE, *Vice-president*.

DR. W. L. RICHARDSON, *Treasurer*.

DR. W. H. PRESCOTT, *Secretary*.

The names of those wishing to become members must be presented to the Secretary at least two months before the annual meeting, which is held in Boston, on the last Thursday in October. Any physician in good standing is eligible for membership. Blank applications may be obtained from the Secretary, Dr. W. H. Prescott, 285 Marlboro Street. Admission fee \$5.00, annual dues \$2.00, life membership \$25.00.

The Society now cares for sixteen beneficiaries. Its motives appeal to the medical profession, and this notice is published to solicit new members.

BOSTON, April 1, 1903.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

— The twelfth annual convention of this Association will be held in Boston, May 19-22.

BOOKS AND PAMPHLETS RECEIVED.

Essays on Clinical Medicine, being Reprints of Papers published at various times in the *American Journal of the Medical Sciences*. By Beverley Robinson, A.M., M.D. (Paris), Philadelphia: William J. Dorman. 1903.

Twenty-fifth Annual Report of the Board of Health of the City of Lowell for the year 1902.

Fifth Annual Report of State Hospital for Crippled and Deformed Children. St. Paul, Minn.

Pelvic Deformity in New York City. By James Clifton Edgar, M.D., of New York. From the Transactions of the American Gynecological Society. 1902.

Some Problems of Preventive Medicine. By Burnside Foster, M.D., of St. Paul, Minn. Reprint. 1903.

The Local Use of Iodine in Corneal Ulcers. By J. Lawton Hiers, M.D., of Savannah, Ga. Reprint. 1902.

Variations des Echanges Respiratoires, sous l'Influence de l'Altitude, de la Lumière, de la Chaleur et du Froid. By MM. Albert Robin de Paris and Maurice Binet of Saint-Honoré-les-Bains. Grenoble. 1902.

Twelfth Report of the State Board of the State of Maine for the Two Years ending Dec. 31, 1901.

Through Shot and Flame, the Adventures and Experiences of Z. D. Kestell, Chaplain to President Steyn and General Christian de Wet. London: Methuen & Co. 1903.

Transactions of the Obstetrical Society of London. Vol. XLIV. For the year 1902, with a list of officers, fellows, etc. Part IV, for October, November and December. Edited by Amand Routh, M.D., and Alban Doran, F.R.C.S.

A System of Clinical Medicine dealing with the Diagnosis, Prognosis and Treatment of Disease for Students and Practitioners. By Thomas D. Savill, M.D., London. Vol. I. Illustrated. London: Z. & A. Churchill. Philadelphia: P. Blakiston's Son & Co.

A Laboratory Textbook of Embryology. By Charles Sedgwick Minot, LL.D. (Yale). D.Sc. (Oxford). Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

The International Medical Annual: A Year Book of Treatment and Practitioner's Index. By various writers. Twenty-first Year. Illustrated. New York and Chicago: E. B. Treat & Co. 1903.

Original Articles.

THE REACTION TIME OF CORROSIVE SUBLIMATE IN DIFFERENT DILUTIONS AGAINST VARIOUS SPECIES OF BACTERIA.

BY CHARLES HARRINGTON, M.D., BOSTON,
Assistant Professor of Hygiene, Harvard Medical School,

AND HAROLD WALKER, M.D., BOSTON,
Assistant in Hygiene, Harvard Medical School.

WHEN Koch, in 1881, gave to corrosive sublimate the first place as a disinfectant, stating that an exposure of but a few minutes to a 1:5,000 solution is sufficient to ensure the destruction of the most resistant organisms, and that with weaker preparations the results of longer exposure begin to be uncertain only when the dilution reaches 1:20,000, the object of all experimental work in disinfection was the discovery of the best agent for general purposes; that is, for disinfection of houses, ships, railway cars, furniture, hangings, linen, excreta and other vehicles of infection. The element of rapid action did not enter very largely into the experiments made at that time and considerably later; and, as a rule, the period of contact of the organisms with the poison was measured by hours rather than by minutes. The results of work by other investigators who followed Koch, and of Koch's later experiments as well, demonstrated that the original estimate of the value of the agent had been placed much too high; but notwithstanding this fact, corrosive sublimate has retained its place as the favorite and most reliable chemical disinfectant. Indeed, it appears that very many who employ it regard it as almost instantaneous in its germicidal action, without reference to the extent of its dilution; and the very common habit of immersing the hands in weak solutions for a few seconds and then proceeding to dry them, on the assumption that the brief contact has sufficed to kill all of the bacteria present, has led us to determine the length of time necessary to accomplish the destruction of a number of different species under the most favorable conditions with the dilutions commonly employed.

If one looks into the literature of the subject it will be observed that the number of species used in experimental work is not large — chiefly anthrax spores and *Staphylococcus pyogenes aureus*. These have been employed, as a rule, in the dry state on silk threads. It will be observed, too, that the subject of sterilization of the hands for operative work was, in the investigations which conferred the place of honor on this substance, not under consideration, and that only occasionally has the time of contact been measured by minutes and seconds. Differences in technique, in the strength of solutions, and in conditions generally, have led, naturally, to different conclusions; but unfavorable results have evidently been overshadowed by those which were confirmatory of the first estimate. The methods followed in many of the earlier investigations were such as would not now be employed. Thus, the threads were sometimes transferred after immersion in the disinfectant to solid media, upon which, in consequence of the presence of the accompanying poison at the point of contact, no growth would occur, although living organisms were present in the fibers; thus, a negative, rather than a positive, result would

be recorded. Again, broth cultures have been mixed directly with the disinfectant, in disregard of the consequent formation of precipitates of proteid compounds of mercury, which might encompass the suspended organisms. And again, in many instances, the threads employed have been washed in alcohol after treatment with the disinfectant and before planting, in ignorance of the fact that, under favoring conditions of moisture, this agent in various concentrations may exert a destructive influence very quickly.

In our experiments the cultures employed were made in bouillon, into which, at the time of inoculation, sterile silk threads about three quarters of an inch in length were introduced in sufficient numbers. After twenty-four hours' incubation, at 37° C., the infected threads were removed from the bouillon and divided into two equal parts, one of which was used forthwith, the other being returned to the incubator in a sterile Petri dish, and kept therein until dry. In the shorter exposures, the time elapsing from the instant of immersion of the threads in the disinfectant until the transference to sterile bouillon, or, in case of washing, to sterile water, was measured accurately by means of a stopwatch. In the longer exposures, the time was measured in the usual way. The tubes of bouillon in which the threads were planted after treatment were incubated at 37° C. for twenty-four hours, or longer if no growths had then occurred. All the experiments were conducted at room temperature.

The organisms employed included the following: *Bacillus pyocyaneus*, *Staphylococcus pyogenes albus*, *Staphylococcus pyogenes aureus*, *Bacillus coli communis*, *Bacillus diphtherie*, *Bacillus typhosus* and *Bacillus anthracis*. They were obtained, through the courtesy of Prof. H. C. Ernst, from the stock cultures of the Laboratory of Bacteriology of the Harvard Medical School, and were grown on agar for forty-eight hours, at the end of which time the bouillon cultures were made.

The solutions of corrosive sublimate used were 1:1,000, 1:5,000 and 1:10,000.

In the moist state the threads were used just as they came from the bouillon, but in order to determine what influence the presence of the very small amount of proteid material withdrawn with them might have by uniting with the corrosive to form inert protective coverings, one series of experiments was conducted in which the threads were carefully washed for forty seconds in sterile water. As will be observed, the results obtained in this series were not essentially different from those of the others. The dried threads were not washed, and the results obtained indicate that they did not need it.

Since, in case of negative results, it has sometimes been asserted that in the transference of the threads directly from the disinfectant to bouillon a sufficient amount of the poison to inhibit growth has been carried over, a number of tubes which showed no growth after forty-eight hours were inoculated directly and returned to the incubator. In every instance abundant growth occurred within twenty-four hours.

The results of the several series of tests with each organism are given below in tabular form. Growth is indicated by +; sterility by —. Where neither sign is given in any column, no planting was made.

In the statement of time, half-seconds are disregarded.

In order to save repetition, we will say here that each set of experiments was controlled, and that in every instance the controls grew luxuriantly.

BACILLUS PYOCYANEUS.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 12 | + | | |
| | 23 | | + | |
| | 24 | | | |
| | 35 | | | + |
| | 36 | — | | |
| | 40 | — | | |
| | 50 | — | | |
| | 60 | — | | |
| 1½ | | — | + | + |
| 2 | | — | + | |
| 2½ | | — | + | + |
| 3 | | — | + | + |
| 4 | | — | + | + |
| 5 | | — | + | + |
| 10 | | — | + | + |
| 15 | | — | + | + |
| 30 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 20 | + | + | |
| | 40 | + | + | + |
| 1½ | | + | + | + |
| 4 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |

Series 3. Culture C.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 5,000 |
| | | Unwashed. | Washed. | Washed. |
| | 12 | + | + | |
| | 24 | — | — | |
| | 40 | — | — | |
| 1½ | | — | — | + |
| 2 | | — | — | + |
| 3 | | — | — | + |
| 4 | | — | — | + |
| 5 | | — | — | + |
| 10 | | — | — | + |
| 15 | | — | — | + |

DRY THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 10 | — | | |
| | 20 | — | | |
| | 30 | — | | |
| | 45 | — | | |
| | 60 | — | | |
| 2 | | — | — | — |
| 4 | | — | — | — |
| 6 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 5 | — | + | + |
| | 10 | — | + | + |
| | 15 | — | — | + |
| | 20 | — | — | — |
| | 40 | — | — | — |
| | 60 | — | — | — |
| 2 | | — | — | — |
| 4 | | — | — | — |
| 6 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | — |

seconds, and by 1: 10,000 in less than 20 seconds; but that the moist organism may survive 15 minutes' exposure to 1: 1,000 and is not affected at all in that time by 1: 5,000 and 1: 10,000.

STAPHYLOCOCCUS PYOGENES ALBUS.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 5 | + | + | + |
| | 8 | + | + | + |
| | 12 | + | + | + |
| | 15 | + | + | + |
| | 18 | + | + | + |
| | 20 | + | + | + |
| | 24 | + | + | + |
| | 30 | + | + | + |
| | 50 | + | + | + |
| | 60 | + | + | + |
| 2 | | + | + | + |
| 3 | | + | + | + |
| 4 | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |
| 30 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 20 | + | + | + |
| | 60 | + | + | + |
| 1½ | | + | + | + |
| 5 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | + | + |

Series 3. Culture C.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 5,000 |
| | | Unwashed. | Washed. | Washed. |
| | 2 | — | — | + |
| | 3 | — | — | — |
| | 4 | — | — | — |
| | 5 | — | — | — |
| | 10 | — | — | — |

DRY THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|----------|-----------|
| Minutes. | Seconds. | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| | 10 | — | | |
| | 20 | — | | |
| | 30 | — | | |
| | 45 | — | | |
| 1 | | — | — | — |
| 2 | | — | — | — |
| 4 | | — | — | — |
| 6 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|--|-----------------------|----------|-----------|
| Seconds. | | 1: 1,000 | 1: 5,000 | 1: 10,000 |
| 3 | | — | + | + |
| 4 | | — | — | + |
| 5 | | — | — | — |
| 6 | | — | — | + |
| 7 | | — | — | — |
| 8 | | — | — | — |
| 9 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | + |
| 20 | | — | — | + |
| 25 | | — | — | + |
| 30 | | — | — | + |
| 45 | | — | — | + |
| 60 | | — | — | + |
| 75 | | — | — | + |
| 90 | | — | — | — |
| 105 | | — | — | — |
| 120 | | — | — | — |

From the above, we see, in the first place, how two cultures of the same organism may show a very great difference in resistance to the same solution, under exactly similar conditions of experimentation; and in the second, how the resistance is affected by a condition of dryness. So far as they go, the results indicate that dried *B. pyocyaneus* is killed by 1: 1,000 in less than 5 seconds, by 1: 5,000 in less than 15

Here, again, we observe differences in resistance on the part of different cultures of the same organism, and still more conspicuously is shown the influence of dryness. Whereas, the 1: 1,000 solution may not kill the moist organism in ten minutes, it destroys it in the dry state within three and one-half seconds; and although neither the 1: 5,000 nor

the 1:10,000 affects the moist organism in a half-hour, the former destroys it, when dried, within seven seconds, and the latter within a minute and a half.

STAPHYLOCOCCUS PYOGENES AUREUS.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION, | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 4 | | + | + |
| | 5 | + | | |
| | 8 | + | | |
| | 10 | | + | + |
| | 12 | + | | |
| | 14 | | + | |
| | 15 | + | | |
| | 17 | | | + |
| | 19 | + | + | |
| | 25 | + | + | |
| | 30 | + | + | + |
| | 40 | + | | |
| | 50 | + | + | + |
| 1 | | + | + | + |
| 2 | | + | + | + |
| 3 | | + | + | + |
| 4 | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |
| 30 | | + | + | + |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 20 | + | + | + |
| 1 | | + | + | + |
| 1½ | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |

Series 3. Culture C.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|--|-----------------------|---------|----------|
| Minutes. | | 1:1,000 | 1:5,000 | 1:10,000 |
| | | Unwashed. | Washed. | Washed. |
| 2 | | — | — | + |
| 3 | | — | — | + |
| 4 | | — | — | + |
| 5 | | — | — | + |
| 10 | | — | — | + |

DRY THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 3 | + | + | + |
| | 3 | + | + | |
| | 4 | + | + | |
| | 4 | + | + | |
| | 6 | + | + | |
| | 6 | + | + | |
| | 7 | + | + | |
| | 7 | + | + | |
| | 9 | + | | + |
| | 9 | + | | |
| | 12 | + | | |
| | 12 | + | | |
| | 15 | + | + | + |
| | 20 | + | | |
| | 25 | + | | |
| | 30 | + | + | + |
| | 45 | + | + | + |
| 1 | | + | + | + |
| 1½ | | + | + | + |
| 1¾ | | + | + | + |
| 1¾ | | + | + | + |
| 2 | | + | + | + |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 20 | + | + | + |
| 1 | | + | + | + |
| 1½ | | + | + | + |
| 4 | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |

The results yielded by the dried *Albus* would naturally lead one to anticipate similar ones in the

case of *Aureus*, but the above tables indicate how unsafe it is in problems of disinfection to reason by analogy and to employ the results of experimentation with one organism in generalizing as to others closely related. While *B. pyocyaneus* and *Staph. pyogenes albus* offer practically no resistance to 1:1,000 and 1:5,000 when dried, and are killed very shortly by even so weak a preparation as 1:10,000, this organism is not affected by drying, except in a slight degree. It succumbs a little more quickly to 1:1,000, but is quite as resistant as before to 1:5,000 and 1:10,000.

From the work with this organism we may conclude that 1:1,000 may be ineffective until between five and ten minutes' exposure, and that the other dilutions require, respectively, more than fifteen and thirty minutes' contact to produce sterility.

BACILLUS COLI COMMUNIS.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION, | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 4 | + | + | |
| | 5 | | + | + |
| | 9 | | + | + |
| | 11 | + | | |
| | 13 | | + | |
| | 15 | + | | + |
| | 17 | | + | |
| | 22 | + | + | |
| | 30 | + | + | + |
| | 43 | + | | |
| | 52 | + | + | + |
| 1 | | + | + | + |
| 1½ | | + | + | + |
| 2 | | + | + | + |
| 3 | | + | + | + |
| 4 | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |
| 30 | | + | + | + |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 10 | + | + | |
| | 20 | + | + | |
| | 45 | + | + | |
| 1 | | + | + | + |
| 1½ | | + | + | + |
| 3 | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |

Series 3. Culture C.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|--|-----------------------|---------|----------|
| Minutes. | | 1:1,000 | 1:5,000 | 1:10,000 |
| | | Unwashed. | Washed. | Washed. |
| 1 | | — | — | + |
| 1½ | | — | — | + |
| 2 | | — | — | + |
| 3 | | — | — | + |
| 5 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | — |

DRY THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 10 | — | | |
| | 20 | — | | |
| | 30 | — | | |
| | 45 | — | | |
| 1 | | — | — | — |
| 2 | | — | — | — |
| 4 | | — | — | — |
| 6 | | — | — | — |
| 10 | | — | — | — |

| Series 2. Culture B. | | STRENGTH OF SOLUTION. | | |
|----------------------|--|-----------------------|---------|----------|
| EXPOSURE. | | 1:1,000 | 1:5,000 | 1:10,000 |
| Seconds. | | | | |
| 3 | | — | + | + |
| 5 | | — | + | + |
| 6 | | — | — | — |
| 9 | | — | — | — |
| 10 | | — | + | + |
| 15 | | — | — | + |
| 20 | | — | — | + |
| 40 | | — | — | + |
| 60 | | — | — | + |
| 75 | | — | — | — |
| 90 | | — | — | — |
| 105 | | — | — | — |
| 120 | | — | — | — |

From the results of these series we may conclude that 1:1,000 is reasonably prompt in destroying moist colon bacilli, and almost instantaneous in its action against them when dry; but the two weaker solutions, although very effective against the dried organisms, are practically useless under other conditions.

BACILLUS DIPHTHERIÆ.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 17 | — | — | — |
| | 22 | — | + | — |
| | 35 | — | + | + |
| | 45 | — | — | — |
| | 55 | — | + | + |
| | 65 | — | + | + |
| 1½ | | — | + | + |
| 1½ | | — | + | + |
| 2 | | — | + | + |
| 4 | | — | + | + |
| 5 | | — | + | + |
| 10 | | — | — | + |
| 15 | | — | — | + |
| 30 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | | |
|-----------|----------|-----------------------|---------|----------|---|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 | |
| | 5 | + | + | — | |
| | 10 | + | + | — | |
| | 15 | — | — | — | |
| | 30 | — | — | — | |
| 1 | | — | — | — | |
| 2 | | — | — | + | — |
| 3 | | — | — | + | — |
| 4 | | — | — | — | — |
| 5 | | — | — | — | — |

DRY THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 10 | — | — | — |
| | 20 | — | — | — |
| | 30 | — | — | — |
| | 45 | — | — | — |
| 1 | | — | — | — |
| 2 | | — | — | — |
| 4 | | — | — | — |
| 6 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|--|-----------------------|---------|----------|
| Seconds. | | 1:1,000 | 1:5,000 | 1:10,000 |
| 4 | | — | — | — |
| 5 | | — | — | — |
| 10 | | — | — | + |
| 15 | | — | — | — |
| 20 | | — | — | — |
| 40 | | — | — | — |
| 60 | | — | — | — |
| 75 | | — | — | — |
| 90 | | — | — | — |
| 105 | | — | — | — |
| 120 | | — | — | — |

and to be almost equally powerless in the dry state against 1:5,000 and 1:10,000. But the two weaker preparations are too ineffective against the moist bacilli to be of practical value.

BACILLUS TYPHOSUS.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 13 | + | — | — |
| | 20 | — | + | — |
| | 35 | — | + | + |
| | 40 | — | — | — |
| | 54 | — | + | + |
| | 64 | — | — | — |
| 1½ | | — | + | + |
| 1½ | | — | + | + |
| 2 | | — | + | + |
| 3 | | — | + | + |
| 4 | | — | + | + |
| 5 | | — | — | + |
| 10 | | — | — | + |
| 15 | | — | — | + |
| 30 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 10 | + | + | — |
| | 20 | — | — | — |
| | 30 | + | + | — |
| | 45 | + | + | + |
| | 60 | + | + | + |
| 2 | | — | + | + |
| 5 | | — | + | + |
| 10 | | — | + | + |
| 15 | | — | — | + |
| 30 | | — | — | — |

Series 3. Culture C.

| EXPOSURE. | | STRENGTH OF SOLUTION. | |
|-----------|----------|-----------------------|---------|
| Minutes. | Seconds. | 1:1,000 | |
| | | Unwashed. | Washed. |
| | 5 | + | + |
| | 10 | + | + |
| | 15 | + | + |
| | 30 | — | — |
| | 45 | — | — |
| | 60 | — | — |
| 2 | | — | — |
| 3 | | — | — |
| 4 | | — | — |
| 5 | | — | — |
| 10 | | — | — |

DRY THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 10 | — | — | — |
| | 20 | — | — | — |
| | 30 | — | — | — |
| | 45 | — | — | — |
| | 60 | — | — | — |
| 2 | | — | — | — |
| 4 | | — | — | — |
| 6 | | — | — | — |
| 10 | | — | — | — |
| 15 | | — | — | — |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 3 | — | — | — |
| | 4 | — | — | — |
| | 5 | — | + | + |
| | 7 | — | — | — |
| | 10 | — | + | + |
| | 15 | — | + | + |
| | 20 | — | + | + |
| | 25 | — | + | + |
| | 40 | — | + | + |
| | 60 | — | — | — |
| 1½ | | — | — | — |
| 1½ | | — | — | — |
| 1½ | | — | — | — |
| 2 | | — | — | — |

The diphtheria organism is shown to be very weakly resistant to 1:1,000, whether moist or dry,

From the results obtained with this organism, it appears that *B. typhosus* and *B. diphtherie* differ

but little in resistance in the moist state. When dry, the former is considerably more resistant than the latter to the weaker solutions.

BACILLUS ANTHRACIS.

MOIST THREADS.

Series 1. Culture A.

| EXPOSURE. | | STRENGTH OF SOLUTION. | | |
|-----------|----------|-----------------------|---------|----------|
| Minutes. | Seconds. | 1:1,000 | 1:5,000 | 1:10,000 |
| | 20 | | | |
| | 60 | + | + | + |
| 1½ | | + | + | + |
| 3 | | + | + | + |
| 5 | | + | + | + |
| 10 | | + | + | + |
| 15 | | + | + | + |

Series 2. Culture B.

| EXPOSURE. | | STRENGTH OF SOLUTION. | |
|-----------|----------|-----------------------|---------|
| Minutes. | Seconds. | 1:1,000 | |
| | | Unwashed. | Washed. |
| | 30 | + | + |
| | 40 | + | + |
| | 60 | + | + |
| 2 | | + | + |
| 3 | | + | + |
| 5 | | + | + |
| 10 | | + | + |
| 15 | | + | + |
| 20 | | + | + |
| 30 | | + | + |
| 40 | | + | + |
| 60 | | + | + |
| 90 | | + | + |
| 120 | | + | + |

DRY THREADS.

Culture A.

In this series the exposures to each solution ranged from ten seconds to thirty minutes in length. Luxuriant growth occurred within twenty-four hours in every one of the twenty-five tubes in which the threads were planted. Here, then, is another instance of the impossibility of reasoning by analogy in questions of disinfection.

We have seen five different species greatly affected in their power of resistance by a condition of dryness, and had it been that those were the only kinds employed, it would have been but natural to formulate a general rule that dryness always reduces resistance. But in the case of anthrax and *Staphylococcus aureus* the resistance is not changed at all.

GENERAL CONCLUSIONS.

(1) Different species of pathogenic bacteria, and different cultures of the same species, vary very greatly in their resistance to the action of corrosive sublimate.

(2) With some species, resistance is diminished in a remarkable degree by a condition of dryness, so that even the 1:10,000 solution can bring about sterility in a very short time. But some species are not materially affected in this respect by dryness.

(3) Corrosive sublimate in as weak solution as 1:5,000 is ineffective against the common pathogenic bacteria, including the pus organisms, when they are moist, excepting after prolonged contact. Since fifteen minutes' contact is not sufficient for the destruction of *B. coli communis*, *B. pyocyaneus* and *Staph. pyogenes albus* in the moist state, or of *Staph. pyogenes aureus* whether moist or dry, the use of this and of weaker preparations in surgical work and for irrigation and similar purposes should be abandoned.

(4) Corrosive sublimate in the 1:1,000 solution is very slow in its action on some of the commonest of the skin bacteria, and since under the most favorable conditions more than ten minutes' contact may be necessary for it to kill *Staphylococcus pyogenes albus*, it should not be relied upon to any great extent to ensure sterility of the hands or of instruments. The mere dipping of the hands for a few seconds into solutions of this strength can serve no useful purpose, but, on the contrary, can lead to much harm by inducing a false sense of security. In order to produce sterility of the hands through the use of this preparation, absolute dryness of the bacteria present would be essential; but a condition of the skin which would ensure such dryness would also ensure the bacteria not on the very surface against contact with the poison.

(5) Corrosive sublimate in any of the strengths commonly employed is a much over-rated disinfectant, and, under the best of conditions, is so uncertain in its action that it would be of advantage to abandon its use altogether in surgery.

THE CORTICAL CELL CHANGES IN EPILEPSY; THEIR SIGNIFICANCE AND CLINICAL INTERPRETATION.

BY L. PIERCE CLARK, M.D., NEW YORK,

Formerly First Assistant Physician at Craig Colony, Sonoma, N. Y.; Clinical Assistant in the Department of Neurology of Vanderbilt Clinic (Columbia College),

AND THOMAS P. PROUT, M.D., NEW YORK,

Formerly Second Assistant Physician and Pathologist at New Jersey State Hospital for Insane at Morris Plains; Clinical Assistant in the Neurological Department of New York Hospital.

WE do not intend to discuss at this time the voluminous literature on the pathology and pathogenesis of epilepsy. The lesion of epilepsy, as that of many other similar affections, has been placed in nearly every organ of the body. But investigations of the last ten years has definitely placed the point of beginning nervous discharge in the cerebral cortex.

In considering the pathological changes in epilepsy, a sharp distinction should be drawn between the lesions of the cortex, which are a direct result of the epileptic discharge, and those abnormal states of the cortex which precede and predispose the individual to epilepsy by producing an unstable nervous organism. As the paper will be confined to the former, changes consisting of prenatal causes, which are comprised in heredity and degeneracy, on the one hand and postnatal causative factors, such as trauma, cerebral palsy, thrombosis and the like, on the other, will not be dealt with. The more or less remote sequences of the disease comprised in chronic cell degeneration and gliosis, however tempting, will be taken up at another time. The morbid processes with which we are directly concerned are the earlier cortical lesions, the immediate sequence of the cortical poisoning and the epileptic fit.

The central idea which prompted the beginning of this study four years ago upon status epilepticus

¹ Preliminary communication to the authors' clinical and pathological researches upon Status Epilepticus; read before Boston Society of Neurology and Psychiatry, Mar. 19, 1903.

was that the latter is the most pronounced state of the disease. It has been aptly characterized as acute epilepsy. If, therefore, there are distinct cortical cell changes in epilepsy, such must be present in the most pronounced form following the status.

The study comprises an examination of the cortex in eighteen cases of epilepsy from the Craig Colony, seven of which died during status. Inasmuch as the postmortem changes in brain tissue interfere seriously with a clear judgment of the extent of pathological states, these changes were as far as possible eliminated by performing the autopsy at the earliest possible moment after death. In the eighteen cases studied the longest period of time elapsing after death before the material was placed in the fixing agent was seven hours; the shortest period was one hour. We are reasonably justified therefore in ruling out the question of postmortem changes in the tissues examined. The fixing and hardening agent was absolute alcohol, and the tissues were stained by the Nissl method, slightly modified to insure uniformity and to stain all the cellular elements of the cortex.

For purposes of comparative study some sections of normal brain were prepared in like manner to the pathological material, the sections being of like thickness, cut by the same instruments and stained in the same manner. The material itself was taken from a case of accidental shooting, dying instantly, which chanced to come into our hands, the tissue being placed into *absolute alcohol within two hours* after death.

The condition of the cells of the cortex, especially those of the second layer and other cells of that type, was most striking, and differed only in degree in the several cases of epilepsy. The cells were swollen, some being ballooned out to twice the normal size; the chromatic substance was almost entirely gone, nothing but a bare framework remaining of the body of the cell itself; the nucleus was often swollen out of proportion to the swollen cell body. In the majority of instances the outline of the nucleus was difficult to define, all traces of the nuclear membrane having disappeared. The nucleus itself presented a finely granular appearance, and in very many instances the nucleolus had been abstracted from the nucleus by the knife in making the section. This is brought about by the destruction of the intranuclear network, giving the nucleus its granular appearance and rendering the nucleolus a loose body within the nucleus, so that it is readily abstracted from it in the process of section making. It was a very frequent occurrence, especially in the status cases, in which condition the lesion was most pronounced; for example, in the last case of status examined, over one hundred and twenty examples of nucleolar abstraction were found in going over one square centimeter of surface in a single slide. The importance of this artefact will perhaps be better appreciated if it is stated that in examining through every portion of thirty-two slides of normal brain tissue this artefact occurred but six times.

We believe these facts point to a destruction and ultimate disappearance of the cell as a unit in the cerebral cortex. The involvement of the nucleus in a process which produces such vital changes in its structure is of most serious import. The nucleus

is the highest biologic portion of the cell; as an organ of the cell, recent biologic facts prove its high physiologic rôle. That it presides over the vital processes within the cell, and that without it the cell dies, are facts which are especially true of cells of the higher type.

We do not wish to be understood as interpreting these lesions as representing the final pathology of epilepsy. The conditions found in these cases indicate cell death, and teach us something as to the manner of its occurrence. The real pathogenesis of epilepsy, however, is to be sought, first, in those hereditary and acquired conditions which produce an unstable nervous organism, and, second, in those products of faulty metabolism comprised in the various toxic and autotoxic agents which act as excitants to a poorly developed nervous system.

We have refrained from discussing chromatolysis and cortical gliosis; it will not, however, be out of place to arrange these pathologic incidents of epilepsy in the order of their sequence as we conceive them. In order to do this, we must put together the facts of biology and histology. Inasmuch as chromatolysis in the last analysis is to be regarded as a nutritional change within the cell, and since the nucleus is the organ of the cell which presides over the processes of nutrition and assimilation, we must assume the action of some toxic influence upon the nucleus which determines the degree of chromatolysis. The order of sequence of the other changes found and usually described in epilepsy are of simple explanation. Since the nuclear changes ultimately result in cell death, we are in a position to better understand a condition so frequently found after status—the infiltration of the cortex with leucocytes. The gliosis, of course, occurs as a remote sequence of the cortical cell destruction, and since cells of the second layer suffer especially in the acute epileptic process, the great frequency of extreme gliosis in the outer layer of the cortex is readily understood. These facts are also in accord with the sequence of pathological changes in other tissues of the body.

The constancy of the lesion just described in all the varying states of epilepsy, from the mildest type to the severest climax of status itself, warrants the general conclusions of the significance of the epilepsy lesion. Epilepsy must be considered mainly a sensory phenomenon with a motor manifestation, which is practically the conclusion of Prus, Hering and Bischoff, from experimentally induced cortical fits. The disease is a highly organized sensory motor reflex of the cerebral cortex. This is proven not only experimentally and pathologically, but is susceptible of therapeutic demonstration.

The bromides appear to act upon the sensory, the afferent side of this reflex arc, either at the periphery or, what seems more probable, upon the sensory type of cells of the cortex itself. Bromides control the fits by reducing the intensity of afferent impulses to motor cells, which we believe to be immediately engaged in the cerebral discharge. When the bromides are given in toxic doses, acute and chronic poisoning is produced quite identical to the immediate and remote effects of the disease itself. Consequently bromides have been ungenerously burdened with the effects of the disease.

Bromides are but negative aids to cerebral inhibition.

Additional evidence of the essentially sensory character of epilepsy is shown in that bromides are of but little avail in those cerebral affections supposed to be largely motor in character, such as myoclonus, paralysis agitans, athetosis and post-epileptic disorders of motility. The anatomical and physiological integrity of the large motor cells in the cerebral cortex, even after a life long epileptic career which may end even in fatal status, is convincing proof of the autonomy of these elements. The immunity of these cortical elements from great structural change, aside from exhaustive shrinking, has caused pathologists to classify epilepsy with the neuroses, and vestiges of this nomenclature still remain. With attention still directed during the last decade to the motor cells of the cortex, the detection of glial overgrowth was urged as the initial histo-pathological change of the disease process, and thus obscured the truly initial change in cell nucleus.

Probably the most practical lesson to be drawn from the study is that epilepsy is a diffuse lesion of the entire cortex.

An order of muscular march in the fit shows only the successive order of spread of discharge in the motor centers, and this remains identically the same for years, almost without exception; yet the disease steadily undergoes important modifications, shown in a continuous destruction of cortical elements. The aura, which is probably always subjectively sensory in type, gives us definite information of the sensory changes. In its absence the degree and character of mental changes indicate the disease progress. Some convenient means of accurately recording the latter would aid much in diagnosis, prognosis and treatment. To the diffusion of the cortical lesion in idiopathic epilepsy must be ascribed the almost certain failure of surgical interference, although focal symptoms still remain. The coincidence, however, of sensory and motor symptoms both in the Rolandic area in acute traumatic cases largely explains the good results of surgical treatment in the absence of an hereditary predisposition.

The ultimate disappearance of the involved cortical cell element is the most serious clinical phase of its pathology. This fact explains many of the permanent symptoms of the disease, especially the slowness, awkwardness and inco-ordination of muscular movements, which amounts in many instances to paralysis in effect. The local and general exhaustion seen after local or general fits, especially in those parts which participate most in the discharge, are true exhaustion paralyses in type; but the chronic slowness, awkwardness and inco-ordination seen in long-standing cases are really of the sensory type in which the damage or loss of sensory elements not only permits cortical motor overaction as seen in the fit, but also leaves these motor elements uninformed of the normal nature and character of movements required. Analogous explanations hold good for tabetic ataxia.

The mental changes in epilepsy are analogous, but not commensurate, with the defective motility. However, to establish an adequate coefficient be-

tween the occurrence of fits and the degree of dementia is a difficult and complex problem.

Finally, we have in this study adequate evidence for the present empirical treatment of the disease in which the individual is given first attention. This consists, largely, to overcome hereditary tendencies and exclude toxic and autotoxic agents, in giving the patient a thoroughly detailed plan of diet, exercise, recreation, baths and sedatives comprised in the administration of bromides. In the light of the pathogenesis, the histo-pathological changes and their sequence which result in more or less prominent impairment of normal cerebral functions, the importance of the earliest treatment is obvious; the disease is also too profound in its changes for anything less than the most comprehensive attention.

In conclusion, we must say that the missing links of our knowledge of epilepsy consist in the fact that its pathogenic agents and the organic anomaly of the cortex, which constitute its predisposition, still hold the mystery of frequent relapses. By this study, however, we claim to have narrowed the gap between the terminal gliosis and the toxic and autotoxic agents in the disease pathogenesis, and we believe this is largely comprised in cell changes and those particularly of the nucleus.

DOUBLE UTERUS AND VAGINA.¹

BY C. H. HARE, M.D., BOSTON,

Gynecologist to Boston Dispensary and Woman's Charity Club Hospital and to Out-Patients at Carney Hospital and St. Elizabeth's Hospital.

Miss 2,370, age twenty-eight, single. A well-developed Scotch woman came under my care with the diagnosis of a discharging pelvic abscess needing freer drainage. Menstruation had always been regular and normal. There was at intervals free discharge of pus from the vagina which showed colon bacilli. There was also pus in the urine, though no bladder complaints. She was anemic with hemoglobin 50%, and heart murmurs. There was a question of trouble in the lungs.

Under ether the pulse soon passed 140, and became intermittent. The external genitals were normal. She had a tough normal hymen, and just inside it and to the right and anteriorly was what looked like a very small hymen, which admitted a probe one-half inch. What seemed otherwise like a normal vagina ended with a constriction the size of forefinger, beyond which was a small cervix and os, into which the writer could pass a sound only one and one-half inches. On the side of the above vagina just to the right of the median line anteriorly and beginning about an inch and a half from the hymen was a pouch into which the forefinger easily passed for two inches, where it met another cervix, into the os of which a sound easily passed two and a half inches. With a sound in each canal no touching was detected. By rectum the tubes and ovaries seemed normal, and there seemed to be a distinct fundus for each cervix both retroverted. No pus pocket was found, and owing to her condition further search was postponed. She gained

¹ Read before the Obstetrical Society of Boston, Feb. 16, 1903.

rapidly, and so satisfactorily to herself that she declined further investigation. Since leaving the hospital the writer has not been able to trace her.

Mrs. 374, an Assyrian, unable to speak English, of ordinary size and development, about thirty-five years of age. Married two months. Never pregnant. She came to my clinic at the Boston Dispensary May 5, with the story, through an interpreter, of abnormal flow and pelvic pain for four days. She refused to go to the hospital until May 13, when she entered the Carney Hospital, where the writer, owing to the kindness of Dr. Swift, had the privilege of operating and of reporting her case to-night.

The external genitals were normal. There was a double vagina, the right one perhaps slightly the smaller, with the dividing septum beginning about an inch from the introitus. There was a slightly smaller than normal cervix in each vagina. With a sound four inches in each os, no touching was detected. There were scant curettings, but free bleeding. The fundus was in good position, about the width of two, with a slight sulcus in the middle. Round ligaments and tubes came off as if from one normal fundus. There were general adhesions and double pyosalpinx. The appendix, both tubes and right ovary were removed. She had a very large and some six or eight inches too long sigmoid flexure, which was the first thing seen on opening the abdomen. Fresh smears from the tubes showed gonococci and a pure growth later. The husband told me he had gonorrhea five years ago, but was cured in fifteen days.

Among other peculiarities her left breast was covered with a flabby, tough, reddish-brown skin, several times the needed size; this condition extended upon the left arm from the breast and a similar small area of the same was upon the right breast. There were also queer patches upon the skin in other places, especially on the legs and feet. Two doctors from the Skin Department saw her, but had not seen such before and had no opinion to submit.

Dr. Storer can tell you the subsequent history of this case.

Mrs. 445, a third case, came to the writer because of dysmenorrhea and dyspareunia. She was seventeen years and eleven months old. Had been married nine months. Never pregnant. Menstruation began at fifteen, yet had never been regular, but occurring as a rule every six to twelve weeks, when she would flow from five to ten days, using about two dozen napkins and having some clots. Dysmenorrhea has kept her in bed during menstruation from its beginning. She had been operated under ether two years previously for her dysmenorrhea, but without any benefit. She had had "convulsions" since the age of two, and for some years a distinct hysterical story. She was in fair general condition, weight 115 pounds, which was a gain of 17 pounds in nine months. The clitoris and labia minora were unusually large, labia majora normal. There was a double vagina, with septum the entire length. Both were good size with the right perhaps a little the larger. There was a small cervix in each. The right canal measured two inches, the left two and a half. There seemed to be one ante-flexed freely movable fundus.

A fourth case of double vagina and cervix was seen by the writer in Quénu Clinie in Paris which, to look at, was exactly like my second case. Quénu was dividing the septum, and said there was a double fundus, but the abdomen was not opened that day.

A fifth case was examined with and seen, operated upon by a colleague. She was a large, well-developed woman. Married seven years. Never pregnant. External genitals were normal. There were no evidences of hymens. To inspection and touch the vaginae and cervices were like my second case, except the septum began at the introitus. Each canal was three inches, and no touching with a sound in each. There was really one broad fundus, though there were two distinct knobs with a marked sulcus anteriorly and posteriorly. Both tubes were normal, and like the round ligaments came off as if from a normal fundus. The right ovary was normal. A lemon-size cyst of the left ovary was removed, and a suspension done for a retroversion.

A CASE OF UTERUS BICORNIS DUPLEX, WITH TWO CERVICAL CANALS ABOVE, ONE EXTERNAL OS AND STRICTURE OF VAGINA.¹

BY W. L. BURRAGE, M.D., BOSTON.

M. C., single, thirty-one, a native of Prince Edward Island, first came under observation at the Carney Hospital in May, 1895. She complained of constant backache, worse at the catamenia, burning pain in the abdomen extending into the hips and down the thighs, and lasting for two weeks before each monthly period. Pain relieved on the appearance of the flow. She also had swelling of the feet, palpitation and dyspnea, leucorrhea constant. Catamenia every twenty-eight days, ten to twelve napkins, well soaked. Frequent micturition.

The diagnosis was made of endometritis and stenosis of the vagina, the vagina being constricted in its upper portion so that the opening admitted only a probe. The vagina was dilated, and the uterine curet, and a rubber plug left in the vagina.

In 1898 the patient again applied for treatment at the hospital, having had only temporary relief.

She was etherized again, the stricture was dilated and the uterus was curetted, a large amount of hyperplastic tissue being obtained.

Additional symptoms at this time were tenderness in the groins on going upstairs, fainting spells just before the catamenia, and headaches. Her occupation was children's nurse, and she found it difficult to follow it.

Jan. 23, 1903, she entered the Carney Hospital for the third time, and came under my care. She had not been well since she was last in the hospital. She had more pain in the right side than in the left, and during the two weeks preceding each period attacks of abdominal pain lasting for twenty to forty-five minutes, and coming on half an hour to four hours apart. Vaginal discharge enough in amount to necessitate wearing a napkin, thick and yellow in color.

Examination showed a well-developed and nour-

¹ Read before the Obstetrical Society of Boston, Feb. 17, 1903.

ished woman of dark complexion, tall and well formed. External genitals normal; vagina normal in its lower course, narrowed at a point 2 cm. below the cervix, so that it barely takes the tips of two fingers; cervix small, and situated in the right posterior portion of the pelvis; os single and of good size. The abdominal walls were rigid, and the shape of the uterus was difficult to make out, because of the rigidity of the walls and the situation of the uterus, which was fixed far back near the right sacro-iliac synchondrosis.

The sound went upward into the uterine cavity (probably the right one) a distance of two inches. An abdominal operation was performed Jan. 27, 1903, for the purpose of exploration and relief of symptoms. On opening the abdominal cavity it was seen that the uterus was double, as shown in the specimen, and adherent near the right sacro-iliac joint. Although the ovaries and tubes appeared to be normal, it seemed best to remove the uterus in view of the persistence of the dysmenorrhea, notwithstanding two curettings and much treatment extending over eight years. The patient desired to be relieved at any cost.

Accordingly supra-vaginal amputation was performed in the usual manner. When the uterus was amputated at about the middle of the length of the cervix, two distinct canals were found, as shown in the specimen, the stump of the cervix being broader than normal.

The patient is now, Feb. 17, convalescing.

Examination of the specimen shows the two ovaries and two tubes normal in appearance; the uterus cleft about half the distance from the fundus to the internal os; two separate uterine cavities extending downward nearly to the external os; several fibroid nodules imbedded in the substance of the uterine tissue, and much soft tissue lining each uterine cavity.

PREGNANCY IN A UTERUS BICORNIS SIMULATING EXTRA-UTERINE PREGNANCY.¹

BY FRANK A. HIGGINS, M.D., BOSTON,

Instructor in Obstetrics, Harvard Medical School; Senior to Out-Patients, Boston Lying-In Hospital; First Assistant Visiting Physician for Diseases of Women, Boston City Hospital.

Cases of double uterus or of uterus bicornis are not very rare. They are much more common than generally believed, probably they are of more frequent occurrence than any other congenital anomaly of the female pelvic organs. Undoubtedly many cases are never recognized. In going over the literature of the reported cases, one is impressed by the fact that many of these cases are discovered only by accident. It is fair to presume, then, that the average case gives rise to no symptoms whatsoever, and if occasion did not arise from other causes, for some form of operative measure in the pelvis, many cases would remain unnoticed indefinitely. Those forms of double uterus, in which the septum is continued into the vagina, are naturally more commonly observed in married women, because they occasionally give rise to difficulty in intercourse, and then again they are likely to be discov-

ered in making vaginal examinations in the course of labor. Yet cases of double uterus are frequently reported, in which a patient has passed through several perfectly normal labors, until finally, in a subsequent labor, the abnormal condition becomes evident, although giving rise to no obstruction to delivery. In reading the reports of recently published cases the writer was impressed by the comparative frequency of twin births in connection with the various forms, partial and complete, of double uterus. Attention to this may have been called before; if so, it has not been noticed, neither is the fact explained. It may have been merely a coincidence in these cases.

Pregnancy in one horn of a uterus bicornis has, in a number of instances, been mistaken for extra-uterine pregnancy, and that the differential diagnosis, except in particularly favorable circumstances, is oftentimes impossible, is generally well known.

The writer has operated upon two cases of uterus bicornis. In the last one, the subject of this paper, the abdomen was opened with the expectation of finding in a large and rapidly-growing tumor a tubal pregnancy. The patient was first seen by me at my office on Sept. 9, 1902. The history is interesting and instructive. Mrs. A., thirty years, married seven years, one normal full-term delivery five years before; two premature, four and three years ago, both accidental. The regular menstrual period was from May 29 to June 3, 1902. On June 18, at a private hospital, she had an operation for repair of the cervix and a curettement. She did not flow again until six weeks after operation, and then flowed for six days profusely. She stopped two days, commenced again and continued four or five days, on the second day passing a clot the size of an egg. Since then she continued to flow nearly every day until the operation. Blood was dark and many clots were passed. No pain, chills or fever, but had considerable nausea. She had been seen and examined by the physician who performed the cervix operation, who believed that there was an extra-uterine pregnancy, and advised operation.

On examination I found the uterus not increased in size, but crowded down into the pelvis and somewhat to the left, while in the abdomen above the pelvis could easily be felt a rounded mass somewhat to the right side and apparently connected with the uterus. This mass was rather soft, and resembled in consistency a pregnant uterus or a cyst, was about the size of an orange and seemingly containing fluid. The patient stated that she had not been with her husband since her operation of June 18. She was a Jewish woman, and if pregnancy existed, conception must have occurred in all probability some time between June 10 and 17. In view, then, of the mass on the right connected with the uterus, the repeated hemorrhages and the continued nausea, it seemed that the diagnosis of extra-uterine pregnancy of three months' duration was comparatively easily established. Moreover, the fact that the uterus had been curetted and the cervix repaired since sexual intercourse had occurred, would seem to exclude the possibility of an intra-uterine pregnancy. The fact that the pregnancy was not made out at the time of the cervix operation was not to be wondered at, because of the short time, probably not over a week, since conception. A

¹ Read before the Obstetrical Society of Boston, Feb. 17, 1903.

pregnancy of this short duration would scarcely make any noticeable difference in the size, even of a normal tube, when palpated through the abdominal and vaginal walls.

The patient was referred to the City Hospital, where a review of the history and a second examination only seemed to confirm the previous diagnosis. On opening the abdomen an oval mass about four inches in diameter, slightly to the right, was found. It had every appearance of the normal pregnant uterus, except that the left tube and ovary were then not seen in their normal positions, while the right tube and ovary were absolutely normal. On reaching deep into the pelvis on the left side, the tube and ovary were found, the ovary being normal. The tube in its outer two thirds was normal, but the inner third apparently suddenly enlarged, and was continued in its normal shape as a hard body about one-half inch in diameter and one and a half inches long, and ending at the uterus just above the internal os. The question at once arose whether the apparent enlargement of the tube was the small cornu of a uterus bicornis, or a fibroid enlargement of the tube. The latter condition is rare, but the fact that the tube ran directly into the end of the mass and not at one side, as would be expected if the body was uterus, seemed to make its removal advisable. It was accordingly dissected out at the uterine surface by a V-shaped incision, and the uterus closed in. Through the center of the body was a canal continuous with the lumen of the tube. The tumor was firm and dense, and was found by the pathologist to be uterus.

The patient recovered without reaction. She was kept in bed for four weeks in order to give the abdominal wall extra time to become firmly united, in view of the strain which was soon to be put upon it by the growing uterus. At the time of the patient's discharge from the hospital, pregnancy was about four and one-half months advanced, and there were no indications of an abortion. There was no further hemorrhage after the operation. Why the patient should have had so much flow during the early months of her pregnancy I am unable to explain.

I have no apology to make for the diagnosis or for the operation. As was stated in the early part of the paper, similar instances have been reported before under more or less similar conditions. The fact that the uterus had been curetted and the cervix repaired, after conception had occurred, would appear to exclude the possibility of an intra-uterine pregnancy. We must assume, therefore, that it was the left cornu of the uterus which was curetted, while the ovum was lodged in the right cornu. The two operations serve to demonstrate the remarkable tolerance of the pregnant uterus, in many cases, to operative procedure.

It has been repeatedly pointed out that with a rapidly-growing tumor to one side of and distinct from the uterus, with an irregular discharge of blood, and without the presence of any of the other so-called typical symptoms, the diagnosis of extra-uterine pregnancy should be made. The differential diagnosis of pregnancy in a uterus bicornis, from extra-uterine pregnancy, is oftentimes impossible except when the condition of the pelvis is known before.

Medical Progress.

PROGRESS IN THERAPEUTICS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

IMMUNIZATION OF CATTLE TO TUBERCULOSIS.¹

In a former report on Progress in Therapeutics we referred to v. Behring's work on the protective inoculation of cattle with dried human tubercle bacilli. V. Behring has continued his studies and experiments, extending their scope. On March 12, 1903, he announced in Vienna that he considered the immunization of young cattle to tuberculosis by his method as established. Henceforth he will devote his energies to the study of immunization in man. An abstract of the paper follows, but the reader will be well repaid by a perusal of the original communication. V. Behring is more convinced that the results which he has obtained are definitely useful than he was eight years ago, when he announced in the same city his work on Diphtheria Antitoxin.

Dried human tubercle bacilli are injected into one of the cervical veins. The bacilli were obtained from a laboratory culture eight years old. Four thousandths of a gram emulsified in 4 cc. water are employed for an initial dose. The injections give rise to a reaction varying with the age of the animal and apparently with the presence in it of some tubercular infection. The reaction increases in intensity with the age of the animal; very young animals are not at all sensitive. Fever and anorexia usually occur on the day following the injection, and in many animals persist for a week. Such animals either were tuberculous, or tuberculosis was suspected. Cattle more than one year old react alarmingly to the injections. They become dyspneic, present the signs of pulmonary edema, and a serous effusion in the pleural cavities appears. Death occasionally occurs. As a rule, after a few weeks these symptoms disappear, and if the animals are killed all traces of disease are absent. If the animals are killed at the height of the reaction, a pleuro-pneumonia with tubercle bacilli is found. The hypersensibility of such animals to the injections goes hand in hand with the power of their blood to agglutinate tubercle bacilli and with a positive tuberculin reaction. Behring interprets these phenomena as proof that such hypersensitive animals have suffered a tuberculous infection, even though they show no tuberculous focus. Protective inoculation is therefore contraindicated in animals over one year old, because they so often have been infected with tuberculosis. Calves under three months are the most favorable subjects.

In an earlier communication v. Behring showed that calves immunized with human tubercle bacilli were proof against direct inoculation with bovine tubercle bacilli. To test the immunity in another way, in the last year and a half he has kept immunized calves in stables with cattle in advanced tuberculosis. Several of these calves have been killed, and no tuberculous foci found. Antopsies have also been made on immunized cattle which have been distributed during this time in agricul-

¹ Berl. klin. Woch., March 16, 1903, p. 233.

tural communities, and in no instance was tuberculosis discovered.

Fourteen cattle, shown to be free from tuberculosis by the tuberculin test, were exposed for one year to tuberculosis in a stable. Three of these fourteen cattle were previously immunized. At the end of one year these three cattle showed no tuberculin reaction, but the reaction was positive in all the other cattle. Further tests with tuberculin must, of course, be made to determine the duration of the immunity.

It will naturally be impossible to immunize children in the same way as calves; instead, v. Behring will seek to attain the same result by the use of anti-bodies. In infancy infectious material as well as anti-bodies are readily absorbed. Making use of this fact, v. Behring will attempt immunization by the use of milk obtained from immunized cows.

In conclusion, he comments on the usefulness of sanatoria, especially those which are designed for advanced cases of tuberculosis; on the rapidity with which the sanitarium idea has spread; on the possibility that we are increasing the number of tuberculous individuals in our community by prolonging the average duration of life of such individuals; on the futility of preventing infection even by better dwellings for workmen; on the dangers to which new-born children are exposed by contact with tuberculous parents.

KOCH'S REPORT ON METHODS OF COMBATING TYPHOID FEVER.²

Klemperer in this article summarizes Koch's Collective Investigations on Typhoid. Typhoid has diminished in cities, but not notably in country districts, because there the feces are used on the soil and privies are even in direct contact with the dung heap. Inevitably some of the feces are tracked into the house.

There are two conditions which must be fulfilled for successful treatment of an infectious disease: (1) The discovery of the infectious material must be easy and sure; (2) The infectious material must be destroyed. The first condition is not met by the Widal test or by the demonstration of the presence of typhoid bacilli in the stools. The former reaction often occurs too late, the latter is impracticable. Two of Koch's assistants, however, — v. Drigalski and Conradi, — have discovered a procedure which enables a positive diagnosis to be made within twenty to twenty-four hours. The method is only suitable for use in a laboratory. It depends on the selection of a medium favorable to the growth of typhoid bacilli but inimical to other intestinal bacteria, and takes advantage of the acid-forming qualities of colon and typhoid bacilli.

(2) It is an easy matter to destroy typhoid bacilli in the stools, but are we sure that they exist only in man? Koch thinks that we are. The more he has studied the question, the more he has become convinced that they do not live for long periods in water and soil. The epidemics which he has investigated show an infection from case to case. The typhoid bacilli, like the malarial parasites and cholera bacilli, are obligate parasites, and though the typhoid bacilli can perhaps live longer outside

the body than the cholera bacilli, they are finally destroyed.

An epidemic of typhoid was investigated at Trier. Eight cases were reported, but by diligence in investigations seventy-two cases in all were discovered. Of these seventy-two cases, fifty-two were in children, and of these only three had been reported. Koch explains the few cases in adults on the ground that in childhood they acquired an immunity; the many cases in children are due to their mode of life exposing them to infection. In this epidemic water had nothing to do with the spread of the disease. It was transmitted from one person to another. The epidemic was finally conquered by isolating all the patients and allowing none their liberty until the typhoid bacilli had disappeared. At the end of three months the epidemic ceased. One institute has already been founded to study the typhoid fever problem and to combat the disease when found. Two other similar institutions will soon be established. Koch considers that this same method of isolation is the one to be pursued with diphtheria and tuberculosis.

THE DIAGNOSTIC AND THERAPEUTIC USES OF TUBERCULIN.³

Moeller and Kayserling have observed no harmful results in an experience based on 3,000 injections of $\frac{1}{10}$ mg. to 1 gm. tuberculin. The old tuberculin was used for diagnostic purposes. The injection was made with a Luer-syringe between the shoulder blades. Fever, even the slightest, night sweats and hemorrhages were contraindications. They began with 0.1 mg. and a rise in temperature of $\frac{9}{10}$ of a degree F. (0.5 C.) counted as a reaction. Injection was performed in the evening in order that the temperature might be accurately measured in the morning. If no rise in temperature occurred, at successive intervals of three days the dose was raised to 1, 5, 10 mg. Not until this point was a reaction considered negative. Patients were kept in bed if the reaction exceeded 100.4 F. (38 C.). Acute cases as a rule reacted with small doses more actively than chronic cases.

The authors treated therapeutically twenty-six cases with old tuberculin and twenty-two with new tuberculin. An advanced stage of the disease and poor general condition with emaciation were contraindications. The initial dose was 0.1 mg. old tuberculin, increased every third day by 0.1 mg. or 0.2 mg. The dose was lowered in case of a reaction, otherwise increased to 0.5–1 mg. As a rule, at the end of one month 10 mg. were reached. Having overcome the first susceptibility, the dose could be quickly increased by 5–60 mg. The course of all these cases was favorable. New tuberculin was employed in the same doses, but with still greater care, being increased only with gain in body weight. The indications for the different tuberculin preparations are not yet defined, but no doubt can exist as to their therapeutic value.

OXYGEN INHALATIONS.⁴

The doubts which the physiologists and pharmacologists have expressed concerning the usefulness

³ Cent. für Inn. Med., 1903, March 7, p. 270.

⁴ Rev. in Cent. f. d. med. Wissenschaften, 1903, Feb. 28, p. 145.

² Die Therap. der Gegenwart, 1903, p. 74.

of inhalations of oxygen have lessened the employment of this remedy. This has led Von Leyden to reopen the question and Rogovin to publish two clinical and experimental studies upon the subject. Koryani explained the action of oxygen in conditions of cyanosis and dyspnea by experiments in which he proved that the accompanying increased osmotic tension of the blood serum could be lowered to normal by means of inhalations of oxygen. Increased absorption of oxygen takes place without doubt from an atmosphere rich in oxygen. The quantity of oxygen in the blood serum can be raised with pure oxygen four times and more. This is a matter of vital importance in severe anemia. Oxygen is indicated when the blood fails to be sufficiently saturated with it in the lungs and enters the left heart and the general circulation more or less venous in character. Rogovin has observed its favorable action in the diminution of cyanosis and in the lowering of the rate of the respiration and pulse. The volume and regularity of the latter were also favorably affected, and it was noteworthy that the quantity of the urine rose too.

The therapeutic employment of oxygen in cases of poisoning was studied in animals. In strychnia poisoning, for instance, the continual use of oxygen lowered the increased reflex excitability, and directly appeared to save life. The result was by no means so favorable in morphine poisoning, but still good. Toxic symptoms appeared later and in less intensity in those animals which inhaled oxygen, and they remained longer alive. The same held true for chloroform, illuminating gas and anilin poisoning.

TREATMENT OF OBESITY.⁵

Kisch recommends the following diet and *régime* in the treatment of obesity. Between 5 and 6 A.M. three or four glasses of water containing Glauber's salts at intervals of fifteen to twenty minutes. Thereafter one to two hours' exercise (walking) systematically and gradually increased. *Breakfast*, one cup coffee or tea without milk or sugar, or with a dessertspoonful of milk; 50 gm. (1½ oz.) zwieback, neither fat nor sweet; and 35–50 gms. lean ham or other meat.

During the forenoon a salt bath, rich in carbonic acid, at 80°, for fifteen minutes, followed by a cold rain douche over the whole body except the head; one hour's walk. With an intact and strong heart, twice a week a steam bath followed by a cold rub, douches and packs. One hour before the noonday meal one glass Sauerling with the addition of unsweetened lemon-juice.

1–2 P.M. *Dinner*: Generally no soup; 150–200 gms. roasted lean meat of the most hearty sort (except pork and goose) or fish (except salmon); 25 gms. zwieback, 50–100 gms. vegetables selected according to taste, except potato; fresh fruit for dessert, one or two small glasses white or light red wine; no water.

Afternoon. A long three hours' stroll — mountain climbing — during which is taken a cup of coffee or tea without sugar or milk. At six o'clock a glass of water containing Glauber's salts.

7–8 P.M. One hundred and fifty grams of a warm roast or cold meat or lean ham with vegetables

or stewed fruit prepared without sugar; 15–20 gms. zwieback. This is followed by an hour's walk, and occasionally by general massage. A cold bath or rub before retiring. Not over seven hours' sleep.

The above diet amounts to 160 gms. albumen, 11 gms. fat, 80 gms. carbohydrates.

The walks should cover twenty to twenty-five thousand steps measured by the pedometer.

The amount of calories and of exercise must be regulated for each patient according to the degree of adiposity, the age, stature, customs, condition of the blood and heart. During a four to six weeks' "cure" a patient should lose 6.5% body weight. The loss of weight shows first in the breasts and neck, then in order the chin and face, thighs and arms, buttocks, and last of all the abdomen. The heart can be controlled by carbonic acid baths, and the nervous system of the patient and his spirits by a change of scene. Exercise favors the albuminous metabolism.

(To be continued.)

Reports of Societies.

NEW YORK NEUROLOGICAL SOCIETY.

STATED MEETING Feb. 3, 1903, PEARCE BAILEY, M.D., President.

PARADOXICAL PSEUDO-HYPERTROPHY IN INFANTILE CEREBRAL HEMIPLEGIA.

DR. L. PIERCE CLARK presented a boy of ten years with a family history of epilepsy, insanity, alcoholism, rheumatism and tuberculosis. The personal history was good, except that when five years old he had suffered from a severe attack of smallpox. This had been followed by infantile cerebral hemiplegia, the convulsions being general and lasting for hours. A left hemiplegia was noticed the day after the convulsion. Three months after the initial stroke he had *status hemiplegicus unilateralis* attended by high fever. There were forty-seven *grand mal* fits in four hours. At present there were from three to five epileptic attacks daily with an epigastric aura. Hypertrophy of the calf on the paralyzed side was first noticed three years ago, but the left arm was moderately atrophic. The ankle also showed bony hypertrophy, a still rarer condition.

A CASE OF MYOCLONUS.

DR. CLARK presented a Jewish boy of eleven years having a negative family and personal history. Two years ago, without known cause, a spasm developed in the left biceps, triceps, pectoralis major, latissimus dorsi and sternomastoid muscles, and in a few weeks the same muscles in the right side became involved. The spasm was clonic in character, and occurred from twenty to forty times a minute, with never more than a few minutes of entire freedom from the spasm. In a few months the muscles of the pelvic girdle became affected, particularly the glutei, quadriceps and sartorius. Arsenic had been of no avail in suppressing the spasms. No spasms had been observed in the fingers or toes. The musculature was good, and there was no atrophy or sen-

⁵ Therap. der Gegenwart, 1903, p. 57.

sory change. All the reflexes were normal. The diagnosis of myoclonus was made on the bilateral, clonic, lightninglike character of the spasms of the proximal muscles.

A CASE OF MULTIPLE NEURITIS WITH INTACT REFLEXES.

DR. CLARK also presented this case, a child of five years, an imbecile and possibly epileptic. The boy had apparently had an attack of meningitis last July. He now presented the high-stepping gait and the exaggeration of all the reflexes. There was a marked diminution in the response to the faradic current. At present he was in the recovery stage of multiple neuritis, apparently of lead origin.

DR. J. RAMSEY HUNT asked if in the case of myotonia there was a history of fright; also if the term "myoclonus" was used in the generic sense. The case had much in common with Henoch's chorea.

DR. W. M. LESZYNSKY asked on what basis it was concluded that the multiple neuritis was due to lead. The distribution corresponded more to that of alcohol, and from the fact that the child had been taking beer, the probability was that it was an alcoholic neuritis.

DR. CLARK said that he looked upon the case of myoclonus as of the Friedreich type. The history of fright usually had to be taken with a good deal of allowance. He did not think it could be of the choreic type referred to because muscular atrophies occurred and ran a rapid course. The condition was not improved by the usual treatment for chorea. The case of multiple neuritis was first thought to be one of alcoholic origin, and an effort was made to obtain such a history, but the history of beer drinking was not at all satisfactory or definite. The child had been playing around a cellar, and had freely dabbled in lead paint a short time before the illness.

DR. PEARCE BAILEY thought the sharp, shocklike contractions of the muscles and the peculiar sound emitted by the boy should lead one to think of the type of electrical chorea.

A CASE OF MYOKYMIA.

DR. R. M. DALY presented a man of twenty-eight, a printer by occupation. There was no history of lead colic, and no family history bearing upon the case. For years he had engaged freely in athletic sports. About one year before coming under observation, after having walked for eleven hours, the calf muscles began to twitch. When first seen, last October, his general condition was good, as were also his habits. His gait and station were normal, and there was no paralysis of the muscles. Facial innervation was more marked on the right side. There was a fibrillary twitching of all the muscles of the legs and of the posterior muscles of the thigh. Sometimes the same bundle of muscular fibers would contract several times in succession. A blow upon the muscles brought out the contractions well. The electrical contractions were negative. There had been no evidence of atrophy during the time the patient had been under observation. There was no disturbance of the special senses, and the superficial reflexes were undisturbed. The knee jerk was increased; there was no clonus or Babinski. He had received increasing doses of strychnia and arsenic, galvanic and x-ray treatment, but all

without benefit. Quite recently he had been placed on gelsemium, and the twitchings had diminished somewhat.

DR. C. L. DANA said that while the condition was neither important nor grave, he thought it was of interest to recognize it as a distinct symptom. Fibrillary twitchings were common enough in states of exhaustion of any kind. Myokymia occurred in neurasthenic states, and sometimes also in alcoholics.

NON-SEPTIC CEREBRITIS.

DR. HARLOW BROOKS read this paper, reporting a case. He said that these cases had not been frequently reported in recent medical literature, and hence the case he had seen seemed to be worthy of reporting. The disease was not so very rare, but it was the exception for it to be recognized because of our scanty knowledge regarding it. Microscopical examination, in a considerable number of instances, had been found to be the only certain method of recognizing the condition. A considerable number of cases recovered wholly or partly. The cases going on to recovery were apt to be set down as examples of hysteria. Metabolic poisons and those toxins produced by the growth or action of bacteria should be just as competent to produce inflammation as injuries. In all inflammatory diseases the question of the occurrence of hemorrhages depended upon the severity of the inflammation and the situation of the lesions. He had no sympathy with those who insisted that an inflammation was necessarily dependent upon bacteria or their products. Acute encephalitis might terminate in death, if the disease involved parts of the encephalon essential to life. When complete recovery ensued it was probable that the inflammatory products were almost completely absorbed. When there was only partial absorption there would be more or less impairment of the functions of the brain. Such a condition not infrequently occurred in alcoholics or after severe attacks of insolation. The following case was then reported: The patient was a girl of nineteen years, by occupation a domestic. There was a history of headaches and bilious attacks. She was naturally rather dull. On the night previous to her entrance to the hospital she appeared to be as well as usual, but was found unconscious the next morning, and was thought to be suffering from poisoning. On admission, she was unconscious, and the respirations were stertorous. In response to pin-pricks the hands and feet were withdrawn. The pupils were moderately dilated, and reacted somewhat irregularly to light. She was unable to swallow, and did not respond to the usual forms of stimulation. Kernig's sign was absent. On Oct. 21, or two days later, the urine was normal except for a trace of albumin. The temperature varied between 100 and 101° F. Two days later some casts were found in the urine. On Oct. 25 a bed sore appeared to be forming over the sacrum, and the temperature was rising. There was a leucocytosis of 14,000. On Oct. 27 the patient took 2 oz. of water by mouth, but with this exception all nourishment had been by rectum. On Oct. 30 she spoke once, as she had done on the previous day. The bed sore was getting rapidly worse. On Nov. 1 she spoke rationally, and complained of

pains all over. Some nourishment had been taken by mouth. She was very uneasy during the night. On Nov. 6 the temperature varied between 102° and 105°, and the pulse between 140 and 160. She died with a temperature of 106° F. Several blood cultures were taken before death, and these proved negative. An examination of the eyes was also negative. The necropsy was begun two hours after death, and was conducted by Dr. Janeway. Nowhere in the body was there any inflammation except, of course, in the bedsores. Slight cerebrospinal meningitis was found of the cellular type. There was also a general non-septic cerebritis, most marked in the cortex and particularly in the motor area. There was degeneration of many of the ganglion cells in the cortex, apparently of recent origin, and of many of the fibers arising from the large pyramidal cell layer of the cortex. There was diffuse degeneration of many of the fibers passing through both internal capsules, and limited to no particular portion of the capsule. There was inflammation of the tissues of the cerebellum, though to a much less degree than in the cerebrum. There was degeneration of many of the descending fibers of the pons and medulla. There was also degeneration of the chief descending tracts of the spinal cord, and of some of the fibers in the ascending tracts. There were cytoplasmic changes in the ganglion cells of the anterior horns of the spinal cord. The examination showed the case to be one of organic, and not functional, disorder. It seemed safe to assume that the cause was not an infection, and the almost unavoidable conclusion was that the lesions were of toxic origin, possibly bacterial. The patient had been in the habit of taking headache powders, and it was possible that this was responsible for the cerebritis.

DR. J. ARTHUR BOOTH said he had seen this girl a few hours after her admission to the hospital, and had also been present at the autopsy. She was deeply comatose, and there was absolutely no previous history. The pupils were moderately dilated, and they reacted to light. There was absolutely no response to pin-pricks except in the feet and hands. He had been unable to make a diagnosis. At the autopsy, the brain appeared to him normal, except that it was rather soft.

DR. B. SACHS preferred to speak of this condition as a non-suppurative encephalitis. He had tried in a number of instances to recognize these cases and differentiate them from other cerebral conditions, particularly from apoplexy. He had however, found it extremely difficult to make the differential diagnosis. In children there was a special type in which the patient passed slowly into a state of unconsciousness, and remained there for some days or weeks, when consciousness was slowly regained. After this the most striking symptom was a persistent aphasia, though the general clinical picture was that of a cerebral hemiplegia.

DR. W. M. LESZYNSKY said that he had had an opportunity of examining this girl about one week before her death. At that time her condition was similar to that described by Dr. Booth. He learned that the rise of temperature had been coincident with the progress of the extensive sloughing bed-sore, and it was evident that the patient was then suffering from general sepsis. He was dis-

posed to think that this condition of general sepsis must have had considerable influence upon the post-mortem findings. He recalled a case in which a woman had remained unconscious for three months, requiring to be fed by the stomach tube during this time. Her condition was supposed to be due to ovarian trouble, and as at that time the fashion was to remove the ovaries for slight cause, both of her ovaries were removed without much benefit. She regained consciousness after the operation, and described her condition during the unconscious state. She died shortly afterward, and the postmortem findings failed to throw light upon the nature of the case.

DR. JOSEPH FRAENKEL said that the existence of non-purulent encephalitis had been proved in the monograph of Oppenheim. He would adopt Oppenheim's teaching with regard to these cases. The absence of the usual etiological factors, the presence of only very slight focal symptoms and the presence of fever should lead one to think of the existence of non-purulent encephalitis.

DR. JOSEPH COLLINS said that he was inclined to diagnose acute hemorrhagic nonpurulent encephalitis rather frequently — indeed, it was rare for a week to pass without this diagnosis being made. It did not seem to him that there was very great difficulty in making the diagnosis. For instance, a child of two and one-half years had been seen at his clinic that day. A short time ago it had become dull, inactive and irritable, and somewhat feverish. On the second day there was a convulsion lasting three quarters of an hour, most marked on the left side. After the child had remained stupid for ten or twelve days it gradually regained its normal activity. On examination, there was a condition of hemiparesis with normal mentality. This case seemed to him a very clear one of nonsuppurative encephalitis. In the class of cases referred to by Dr. Sachs he had never seen any rise of temperature, nor was there that degree of recovery which seemed to him so essential to justify the diagnosis of non-purulent encephalitis. He thought it was about as frequent as pneumonia, and the analogue of it. He had very grave doubt about the case reported by Dr. Brooks being one of nonsuppurative encephalitis. There must have been just as great changes in the spinal cord as in the brain, otherwise there would not have been such a rapid and extensive development of bed-sore. It was possible that there was present some intoxication that had not been revealed by the investigation, and which might explain the symptoms and the cause of death in some other way. The clinical description seemed to point to encephalomyelitis.

DR. R. H. CUNNINGHAM said that he had seen two somewhat similar cases. One of them was in Mount Sinai Hospital many years ago. The history was that the young woman after a disappointment in love had begun to be sleepy and stupid, and then became unconscious. Pin-pricks or faradic stimulation of the skin caused some response at first, but in a few days she became deeply comatose. The temperature was moderate for a few weeks, and then it suddenly rose and death soon ensued. The autopsy findings were negative. He had examined some sections of the brain and spinal cord, and had found leucocytes surrounding the blood vessels.

The Weigert method showed absolutely no change. The diagnosis at that time was subacute cerebritis. In 1895 he had seen a similar case, occurring in a school girl. The symptoms and course were about the same, but death occurred in about two weeks. The autopsy findings here also were negative. The microscopical examination of the brain gave exactly the same results. These findings were certainly not characteristic of any one disease.

DR. BROOKS said that undoubtedly the patient became septic from the large bed sore, but this was so shortly before death that the autopsy did not show the changes which were ordinarily observed in the organs under such conditions. On admission, the patient had fever, and the bed sore did not develop for a week or ten days afterward. If there were a septic condition arising from the bed sore there would have been a general infection of the blood, and various micro-organisms would have been found in the blood, yet a very competent bacteriologist failed to find any such condition. All of the classical stages of inflammation were represented in the brain. He had made careful sections of the cord, but had been unable to find the inflammatory process which one would naturally look for as the cause of the bed sore.

CASE OF MYOCLONUS MULTIPLEX, FRIEDREICH.

DR. J. RAMSEY HUNT reported a case of this kind that he had seen in July, 1901, together with the autopsy findings. The man was forty-five years of age, a tailor by occupation, and a man of good habits. A few months before admission to Bellevue Hospital one knee had been operated upon for tuberculosis. The peculiar tonic contractions of the muscles began some months previously. There was a history of despondency from financial straits. The muscles of the arms and legs, and of the shoulder girdle, showed very active twitchings. The whole muscle would bound forward as if by an electrical stimulation. No tetanic contraction was detected. The face muscles showed none of these contractions. The latter were most active when the patient was recumbent. The isolated contraction of individual muscles, such as the supinator longus and the sartorius, was the most noticeable feature. Sensation was undisturbed. The tendon and skin reflexes were very active. There were no stigmata of hysteria, and no evidences of mental impairment. A few weeks later he developed fever, and died apparently of general tuberculosis. The myoclonus persisted throughout the acute febrile attack, and for fifteen minutes or more after cardiac pulsations had ceased. A careful examination was made of the Rolandic and other areas of the cerebral cortex of the spinal cord at different levels by all of the usual methods, but with negative results. The affected muscles showed an unusually marked hypertrophy. The transverse striations were normal. In some places a central position of the nucleus of the sarcolemma sheath was noted.

CASE OF CHOREIC TIC, WITH REMARKS ON THE CLASSIFICATION OF MYOSPASMS.

DR. CHARLES L. DANA read this paper. He said that apparently no case had been observed in England, Scotland or Ireland, whereas fourteen

cases had been reported in this country, and two other cases had been reported under a different name. After carefully reading the descriptions he had come to the conclusion that no case of paramyoclonus of Friedreich had been reported in this country, not even the case just reported by Dr. Hunt, although it came nearer to that type than the others. The speaker then reported a case of paramyoclonus like those that had been published by other American observers. The patient was a man of forty-two with a history of the mother having had similar attacks during the time she was pregnant with this son. The man said he had been healthy until the age of eleven years, when he had been rendered unconscious by the kick of a horse. Shortly after this the first attack of myoclonus developed. The trouble continued with various remissions for the twenty-three years which had elapsed before coming under Dr. Dana's observation. When first seen he was nervous, anemic and badly nourished. There was no disorder of the sensory sphere. When the attacks came on he was seized with rhythmic movements of the head, and the hands and feet quivered. During the attack there was considerable palpitation of the heart; he perspired profusely and became exhausted. These contractions came on at very short intervals, and were apt to last for several days unless he took some narcotic, when the attack would cease. The patient had not been improved by any treatment he had employed, including hypnotism. A short time ago the patient reported that his general health was much better, and that the attacks were milder and less frequent. Myoclonus multiplex, Dr. Dana said, occurred also in connection with epilepsy. Mention was made of a case of myoclonus that had been under observation for a number of years. The attacks had developed after an operation on the thyroid gland following an abscess. The contractions were both clonic and tonic, and involved practically the whole musculature of the body. He looked upon the case as a mixture of chronic chorea and tic. Myoclonus occurred in association with epilepsy, chorea, tic and paresis; it also occurred in family forms. All these types of myoclonus were distinctly degenerative types of mobile spasm. There was another group of myoclonus multiplex which occurred in the form of recurrent spasmodic attacks, although sometimes the attacks were continuous. The trunk muscles and the proximal segments of the body were chiefly affected, and the contractions were very violent and of a rhythmic character. These cases had been called hysterical myoclonus, but in the cases he had seen there had been no distinct evidence of hysteria. Fright or shock was a common etiological factor; his own case was of the family type. The cases reported by American observers approached more closely to a disease entity than did the case of Friedreich. He was inclined to think that the case of Friedreich belonged more properly to the class designated as myokymia. There had been reported cases of paramyotonus which ran a course quite comparable with that of paramyoclonus.

DR. B. ONUF said that it was difficult to determine from the clinical reports found in the literature whether the muscles were hypertrophied or atro-

phied, and the subject was still further confused by the variations in the muscle fibers resulting from the use of various hardening fluids.

DR. L. PIERCE CLARK believed that Dr. Hunt's case was a typical one of myoclonus. It was very evident that others had not met with Friedreich's type. In some recent experiments the injection of carbolic acid into animals produced a condition of myoclonus multiplex. Recovery almost never took place in a well-marked case. The fact that over half of the cases reported had been associated with some form of disease, especially cortical, would seem to place the disease as cortical and not muscular. The treatment that he had found the most valuable consisted in the alternate use of bromides and chloral, with venesection and hyperdermoclysis or enteroclysis at the time of the attacks. In many respects the symptomatology of myoclonus simplex and status epilepticus was similar.

DR. HUNT said that the examination of many supposedly healthy muscle fibers had failed to reveal any like those in his case, the fibers in the latter being almost double the size of normal ones. It was not mentioned as an essential but as an interesting finding. In his opinion, the distinguishing feature of myoclonus of the Friedreich type was the occurrence of contractions of individual muscles not under the control of the will, except in conjunction with other muscles in the performance of co-ordinative acts.

DR. DANA said that it was evident that we were dealing with two very widely different diseases, one represented by the case reported by Dr. Hunt, and the other the myoclonus epilepticus described by Dr. Clark, and characterized by very violent contractions and co-ordinate movements. Dr. Clark had shown that the myoclonus of epilepsy was distinctly a cortical disease.

THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of Feb. 17, 1903. The President, DR. J. B. SWIFT, in the chair.

DR. W. L. BURRAGE reported,

A CASE OF UTERUS BICORNIS DUPLEX WITH DOUBLE CERVIX ABOVE, ONE OS, AND STRICTURE OF THE VAGINA,

(See page 442 of the Journal)

and showed specimens from the same removed by operation.

DR. C. H. HARE, by invitation, reported,

CASES OF DOUBLE UTERUS AND VAGINA.

(See page 441 of the Journal.)

DR. F. A. HIGGINS reported,

PREGNANCY IN A UTERUS BICORNIS SIMULATING EXTRA-UTERINE PREGNANCY.

(See page 443 of the Journal.)

DR. W. F. WHITNEY spoke at length on

MALFORMATIONS OF THE UTERUS.

DR. STORER: The case upon which Dr. Hare operated has been recently under my observation.

Since operation her condition has been vastly improved. Menstruation is practically painless, although coming every three weeks.

DR. CHARLES M. GREEN: I have seen but one such case, a uterus bicornis with complete septum. An interesting peculiarity was that she had gonorrhea in one uterus and vagina and not in the other.

DR. G. J. ENGELMANN: I once saw a case in consultation in which there was a pregnancy in each uterus, but they were of different ages. From one side there was a miscarriage at four months, while pregnancy went to term in the other side, and it was evident that the two conceptions were not simultaneous. I remember a peculiar case in the hands of a prominent surgeon, which occurred many years ago. A woman with the history of great pelvic suffering was operated upon. A supposed tumor was found and thought to be one of the ovary. It was removed and proved to be the smaller of two uteri.

DR. S. J. MIXTER: Once on being asked to curette a woman after a miscarriage, I found a double uterus, with the division at the cervix. I remember another case in which there was a distinct tumor to one side of the uterus, with signs of pregnancy and exquisite pain, — the typical history of extra-uterine pregnancy. I opened the abdomen and found an asymmetrical uterus. The diagnosis then lay between an interstitial pregnancy and a pregnancy in a bicornate uterus. It seemed to me best to leave it alone, even if it were an interstitial pregnancy, as I thought it was, and the result justified this, as she was finally delivered at term.

DR. CHARLES M. GREEN: I saw this case in consultation, and am firmly convinced that it was an interstitial pregnancy. Seeing her afterwards from time to time I had an excellent opportunity to watch the uterus become symmetrical.

DR. J. B. SWIFT: Besides the case reported by Dr. Burrage and one of Dr. Hare's I have seen one other case of double uterus, in which the diagnosis of pus tubes was made. The symptoms came on after a miscarriage. In the hospital, under ether, the peculiar feeling of the tumor made me suggest a double uterus. On opening the abdomen I found that to be the case, and the operation became merely an exploratory one. I would like to ask whether in these cases menstruation may not go on from each uterus, independent of the other.

DR. G. J. ENGELMANN: A case I observed many years ago with symptoms of congestion seemed to menstruate as if from one uterus. Both sides needed to be curetted, the only feature being that more menstrual fluid was discharged from one uterus than from the other.

DR. J. L. HILDRETH presented a paper entitled, RESULTS OF THE BACTERIOLOGICAL EXAMINATION OF COMMERCIAL SUTURE MATERIAL AND SPONGES.

In this paper it was shown that of a very large number of specimens of catgut, silk, tendon and sponges bought in the open market, by far the greater part presented evidences of bacterial contamination after a longer or shorter culture in bouillon. It was not claimed that these bacteria were necessarily of pathogenic nature, but it was insisted that such materials should be above suspicion.

DR. E. A. DARLING: It seems to me that the weak point in a study like this is that we do not know that these bacteria that render the test tubes cloudy do any harm. Many of them may be molds which we know are very difficult to destroy, and yet are harmless.

The tests that a bacteriologist employs in testing such material do not enable him to say that bacteriological sterility is the same as surgical sterility.

DR. F. B. MALLORY: We go through a series of tests like this once in three months or so at the City Hospital, testing practically everything in the surgical outfit. Of course we aim at surgical sterility.

DR. M. H. RICHARDSON: It seems to me that in investigating the sources of infection of wounds men are too prone to lay the blame on things that can be made absolutely sterile and think that they thereby excuse themselves. When it is possible to fulfil the requirements of absolute bacteriological sterility we should do it. But some things cannot be made absolutely sterile—the field of operation and the hands, for instance. Another thing of great importance that cannot be rendered sterile is the environment, that is, the atmosphere. Recently we have been in a period of great zymotic activity, and patients are just now especially susceptible to infection of every sort. Under such conditions it is not always fair to hold catgut, etc., to blame for accidents.

DR. F. B. HARRINGTON: For some time I have not used animal ligatures in any except septic cases. I like silk because it can be boiled practically indefinitely. I often boil it as much as thirty minutes. I agree with Dr. Richardson that atmospheric conditions are of importance. Any operation involves some infection, and the longer the operation lasts the greater is the chance of more infection than the body can resist. I think it is much harder to make sponges sterile than catgut. However, absolute sterility is not as necessary in sponges as in catgut, since sponges are not left inside the abdomen.

Recent Literature.

Vari Metodi Anestesi e Loro Indicazioni. Manuale teorico-pratico per medici e studenti. Dott. GIOVANNI PALLERONI, già 1° assistente alle Clinica Chirurgica Generale della R. Università di Palermo; Professore pareggiato di Patologia speciale chirurgica dimostrativa e propedeutica clinica chirurgica. Napoli, 1902.

The title-page of this manual is a good index of its contents. It begins with a rather full but well condensed history of anesthesia, which is followed by a short disquisition on the general action of anesthetics. Under each general anesthetic, Palleroni considers its purification, its physiological action, its elimination and the causes of death. Under each also, he considers the treatment of accidents, the technique of administration, and the indications and contraindications for the use of each one, chloroform, sulphuric ether and nitrous oxide, and the more uncommon ones, such as ethyl bromide, amylene, bromoform and the various A. C. E. mixtures.

Concerning general anesthesia by hypnosis, the author has little that is favorable to say, although he speaks of the practice of Luys, who for twenty minutes a day, during the seventh or eighth month of pregnancy, hypnotizes the patient and obtains an obstetric anesthesia, said to be effectual during labor.

Part II of the manual deals with local anesthesia, by compression, cocaine, liquid carbon dioxide, and the ethyl and methyl salts.

The third part is the portion of the work most interesting to American readers. Palleroni quotes freely from the works of Bier (*Deut. Zeits. f. Chir.*, 1899) and Tuffier (*Euvres, Med. Chir., de Critzmann*, n. 24, 1900, and *Comptes Rendues de la Soc. de Biol.*, 1900, p. 899). Concerning anesthesia induced by subarachnoid injection of cocaine, after reading the author's collection of subjective symptoms—vomiting three or four hours, headache up to eight days, chills, sweating, pallor, sighing respiration, and involuntary relaxation of sphincters—one is inclined to pause. F. Carini, who worked under Tramusti (*Polielinico*, 1900) found in animals the same changes in the cord following the temporary anemia which results from compression of the abdominal aorta that he found in cocainization under the membranes. Ossipon (*Deutsch. Zeits. f. Nerven*, Bd. XIX, 1901) found, experimentally, hyperemia of the meninges, punctiform hemorrhages, particularly of the gray substances of the cord, and apparent nutritive changes in the cells.

The technique of these injections and Tuffier's *résumé* of 252 operations by this method are reviewed at great length.

In conclusion, concerning general anesthesia, the author believes the best method for general surgery, obstetrics and eye work, to be by chloroform after a considerable dose of morphine; he believes that this form of narcosis is only rarely warrantable for diagnostic purposes and to be absolutely contraindicated in degenerations of the myocardium and in severe arterial atheroma. For dentistry he prefers local anesthesia, but favors nitrous oxide if a general anesthetic is needed.

For local anesthesia Palleroni stands for Kelene in most instances, and has many objections, which seem insufficient, to the method of Schleich. For spinal anesthesia by cocaine he seems to have a leaning, but wisely concludes that it is still too early to decide in its favor. In the conclusions, ether has no word of commendation.

A Course in Botany and Pharmacognosy. By HENRY KRAEMER, Ph.B., Ph.D., Professor of Botany and Pharmacognosy and Director of the Microscopical Laboratory in the Philadelphia College of Pharmacy. Illustrated with plates from original drawings by the author. Philadelphia: Henry Kraemer, Publisher. 1902.

This work hardly answers as a textbook of botany because the descriptions of plants are not complete enough and it is not classified in a manner facilitating the study of that subject. As a handbook of pharmacognosy, a subject dealing with the description of drugs used in medicine, with methods of recognition, it answers fairly well as far as crude organic drugs are concerned.

M. V. T.

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THE PANAMA CANAL, YELLOW FEVER AND ASIA.

THE experience of the past makes it plain that a change of trade routes brings with it a change in the distribution of many things besides the usual articles of commerce — such as products of the soil and manufactures. Among the most important problems connected with such changes in trade routes is the possible distribution or redistribution of flora and fauna, of diseases and especially of diseases belonging to the epidemic group. Nothing is more surely destructive of commerce than pestilence.

This is forcibly stated by Dr. Patrick Manson in a paper presented at a recent meeting (Feb. 25) of the Epidemiological Society of London. Dr. Manson is an ex-president of this society, and is at present medical adviser to the British Colonial Office. Dr. Manson's labors as an epidemiologist in China, and his discovery twenty-four years ago of the relation of the mosquito to filarial disease, are widely known and appreciated; when, therefore, he raises a warning voice on such a subject as the "Relation of the Panama Canal to the Introduction of Yellow Fever into Asia," he speaks as one having authority and on a subject whereof he knows.

There is no doubt but that our government is alive to the possibilities involved in this question and to the necessity of meeting them. But the question having much more than a national, having in fact an international, interest and importance, it is proper that it should meet with an international consideration. In fact, the questions raised are of direct and immediate moment. Apart from the opening of a Panama Canal, the establishment of direct steamship lines between ports in China and ports in Mexico precipitates the problem, although its solution, as far as our national responsibilities

are concerned, may still be delayed. Dr. Sambon informs us that the China Commercial Steamship Company has already inaugurated a regular monthly service between Hong Kong and Mexican ports. This service was to have begun March 1 last, and the steamers are designed to carry both passengers and freight.

As Dr. Manson points out, hitherto there has been no direct communication between the endemic haunts of yellow fever and Asia; hitherto the course of ships has been well to the north or well to the south of the tropic belt, and generally in cold or temperate zones, in temperatures inimical to yellow fever and the distributor of yellow fever — the *stegomyia fuscata*. Moreover, the time of transit will be reduced from about fifty days to three or four weeks, and the coaling stations en route will constitute convenient centers of distribution.

With its vast commercial interests in the tropical and subtropical Orient no nation is more, or even as much, concerned than is Great Britain in the proper and prompt solution of the problem of protecting Asia from yellow fever, and that problem apparently is already urgently demanding attention not because of a Panama Canal, but from the increasing trade of Mexico and the all-pervading British steamship. Fortunately, — and largely owing to the good work of Reed, Carroll, Agramonte, Guiteras, Gorgas, — sanitarians and epidemiologists are now in a position to grapple with this pressing problem with promise of success. Measures of quarantine at terminal ports will be given less or little attention; but the mosquito, if still allowed to exist at points of departure, will be made an unwelcome guest on shipboard and carefully secluded from water supplies.

Dr. Strong, director of the United States Biological Laboratory in Manila, and several members of the Epidemiological Society, emphasized the value of Dr. Manson's paper by an appreciative discussion. In his concluding paragraphs Dr. Manson pays such a generous tribute to American energy and enterprise that we permit ourselves the pleasure of reproducing them: "To have a thin red band across the Isthmus of Panama with the canal in the middle of it would gratify my patriotism. I am sorry the Panama Canal is not to be a British work. But I must confess that my regret is tempered by the knowledge that it is an American one; for I feel more confidence in American energy as regards sanitary matters than in our own. We are too slow, too timid, too niggardly, too much afraid of failure, too unbusinesslike. I like the prompt and autocratic way in which the great democracy deals with these things. America, ever since her

colonial expansion began, only a few years ago, whether in Honolulu, or in China, or in Manila, has shown an intelligence and practical appreciation of the benefits of medical and sanitary science, and an energy in these things to which we in England are not always accustomed. I cannot but feel, therefore, that in this matter of the Panama Canal the public interests are in the best hands. Still, this does not free us from our obligations to India, to Australia and the East generally; and I trust that this society will do something, by expressing its views freely, to strengthen the hands of government; or, if necessary, to stimulate our government to back up America in any measures that may be proposed or instituted with a view to keeping yellow fever out of Asia."

It so chanced that our readers are given this very week a letter from a most competent observer, which portrays in vivid colors the unhygienic condition obtaining at Canton and other Chinese cities, which is, in fact, characteristic of China; and our correspondent shows only too clearly what a field awaits the ravages of such a disease as yellow fever introduced *de novo* among such a population in tropical latitudes.

THE PROBLEM OF THE PREVENTION OF PUERPERAL SEPSIS.

The recent exploitation in the lay press of a supposedly new and wonderful cure for puerperal sepsis, which has generally been designated by the name of intravascular antiseptis, and the almost equally sudden and pronounced failure and abandonment of the cure, are perhaps sufficiently fresh in the minds of the medical public not to need special comment at the present time.

Such publications in the daily press are for obvious reasons generally to be deprecated. Yet looking at it from another standpoint, in the case of this particular disease the wide publication of the occurrence of every case of puerperal infection to the general as well as to the medical public might not in the end prove to be altogether an unmixed evil. It would at least serve to emphasize the fact that there is always more or less sepsis with us. We do not wish to be interpreted as advocating such measures as this would involve, but it does seem at times as if some such drastic means must be employed before so easily prevented a disease is to become less frequent.

The study of preventive medicine at the present time occupies a prominent place in the medical world. Large sums of money are annually spent, institutions are founded, and professorships and

fellowships are endowed for the furtherance of this object. Nevertheless, puerperal sepsis, which was perhaps the first to be recognized absolutely as a preventable disease, still continues to flourish in all communities and with considerable frequency. To what cause must this be attributed? The methods by which puerperal infections are to be avoided are readily formulated, and are easily learned and put in practice.

It is granted that occasionally a case of infection may arise as the result of a necessary break in the aseptic technique of delivery, when in the presence of a great emergency the medical attendant may suddenly be obliged to actively interfere. At such a time the immediate greater danger must take precedence over the more remote contingency of an infection. In the great majority of cases, however, infection must be due to one of two causes, either ignorance or wilful carelessness.

It is true that a few men still deny the existence of puerperal sepsis, while others deny that it may be avoided by the general practitioner under the ordinary precautions. Another class of practitioners refuse to accept the fact that the introduction of bacteria is an active agent in the production of the disease. Such men may be classed as hopeless, and will remain obdurate against any form of argument. We believe, however, that the great majority of cases occur through carelessness on the part of the medical attendant. Some cases undoubtedly arise from ignorance, which, with our present knowledge of the subject and the amount of literature which has been directed to it, can scarcely be said to be anything less than inexcusable. Repeated success with no bad results is unfortunately apt to beget over-confidence, and with it sometimes carelessness. In fact we have heard it stated by physicians, more or less in excuse for a case of sepsis, that having practised obstetrics for years without any bad results, they had become careless of their methods in delivery, and the natural results had sooner or later come. With these men the worry incident to even a moderate infection is usually a sufficient illustration of its dangers to lead them to correct bad habits. Nature is wonderfully kind in many instances to the parturient woman, but it is nevertheless true that eternal vigilance is the price of success in obstetrics, and every case should be treated on strictly surgical principles.

That puerperal sepsis is easily prevented is not difficult to prove to the ordinary mind. It is said that the statistics of lying-in hospitals are of no value for comparisons, because their patients are surrounded by safeguards which it is impossible to provide for the average patient in private practice.

This may be true of the in-patients, but it is far from true as it relates to the out-patients of a lying-in hospital in a large city. These patients, as a rule, are derived from the poorest classes in the community, to whom the supposed necessities for the conduct of an aseptic delivery, such as baths, clean clothing and fresh bed linen, are utter strangers. These patients are also attended by young doctors with very little or no experience in surgical or obstetric work. The results under these circumstances are marvelously good, and they so continue year after year in a very large number of cases. The accomplishment by these men of the prevention of infection, in so many cases, may be attributed almost wholly to the great emphasis which is laid in their obstetrical teaching upon the importance of the surgical cleanliness of the attendant, and, as far as possible, of the genitals of the patient. If such results can be obtained and maintained year after year by men of practically no experience, among surroundings of poverty and filth, there would seem to be very little reason why the practitioner of obstetrics, who is reasonably careful in his aseptic technique, should be troubled by cases of infection.

These statements will probably be accepted generally without serious question. Yet cases of puerperal sepsis are always present in considerable numbers, and the problem of prevention still remains unanswered. The medical public is ordinarily influenced and educated in two ways — first, by medical teaching, and, second, by medical literature. Obstetrical teaching, if it does anything, certainly emphasizes the importance of thorough surgical cleanliness in the conduct of confinement cases. Medical literature is constantly teeming with the subject of puerperal infections.

It seems to us that there are two other factors which must ultimately be of considerable influence in this direction. The first of these is the examination of young practitioners for the license to practice medicine. We believe that too much importance can scarcely be given to the subject of the prevention of puerperal infection by the State Board of Medical Registration, in the conduct of their examinations. This is certainly one of the most frequent and constant conditions that will ever confront us in the practice of medicine. The second factor, and we believe one that will ultimately be the most important in influencing against the careless practice of obstetrics, is public opinion. Already many people among the higher classes are beginning to realize that in a death from blood poisoning after confinement the question of personal responsibility is likely to arise. It is our belief that this tendency is sure to increase until it reaches such proportions

that no physician will be able to withstand its influence, unless he shall have surrounded his patient with every possible safeguard.

MEDICAL NOTES.

TYPHOID FEVER AT LELAND STANFORD UNIVERSITY. — It is reported that typhoid fever has appeared in epidemic form at the Leland Stanford University, in California. Upward of a hundred cases have already occurred.

COMMEMORATION OF REAPPEARANCE OF THE "INDEX MEDICUS." — Professors Osler and Welch of Baltimore gave a dinner at the Maryland Club April 18, to celebrate the reappearance of the *Index Medicus*. The editor, Dr. Robert Fletcher, was the guest of honor.

WOMEN PHYSICIANS IN RUSSIA. — Upwards of 100 women, out of about 850 candidates in medicine, have recently successfully passed the examinations permitting them to practice in Russia. It is stated that the women in general took a higher rank than the men. It is noteworthy that, in the various universities of Europe admitting women, a large proportion of Russians are usually in evidence.

A DEGREE FOR LORD LISTER. — It is reported that the honorary degree of doctor of science is to be conferred upon Lord Lister in June by the University of London.

APPROPRIATIONS FOR PHILADELPHIA HOSPITALS. — The Jefferson Medical College and Medico-Chirurgical hospitals have each received an appropriation of \$260,000 from the State for the purpose of erecting new buildings. The hospital of the University of Pennsylvania receives \$175,000 for maintenance and improvements, the latter including an x-ray building and outfit. — *Medical News*.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, April 22, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 22, scarlatina 30, typhoid fever 9, measles 34, smallpox 0.

NEW YORK.

APPROPRIATION FOR TUBERCULOSIS. — The Legislature has passed an appropriation of \$115,000 for the State Hospital for Tuberculosis in the Adirondacks.

DELEGATES TO THE MADRID CONGRESS. — The Medical Association of the Greater City of New York will send as delegates to the International

Medical Congress, at Madrid, its president, Dr. Andrew H. Smith (who as president also represents the New York Academy of Medicine), and Drs. Reginald H. Sayre, Ramon Guiteras, A. E. Macdonald, Davison H. Smith and W. Freudenthal.

Miscellany.

A TRIBUTE TO DR. T. GAILLARD THOMAS, NEW YORK.

AN admirable tribute to the late Dr. T. Gaillard Thomas was paid at the last meeting of the Medical Association of the Greater City of New York, of which he was one of the founders. The chairman of the committee having the matter in charge was Dr. Henry F. Walker, who was formerly associated with Dr. Thomas in practice. The following extracts from their report are of special interest:

"On graduation from the Charleston Medical College, in 1852, Dr. Thomas came to this city [New York] and entered, as interne, Bellevue Hospital. This was at a time when an epidemic of typhus fever was raging in the city, and the hospital wards were crowded with it. Several of the house staff had died from the disease, contracted in service, and it was to fill a vacancy made by such deaths that Dr. Thomas entered the hospital. This early action was typical of his whole career. He saw opportunity and he seized upon it. No man took tide at the flood more frequently than he. . . . Dr. Thomas made a success from the first. He had the cordial manner of his early Southern home, and he never lost it. He was of sanguine temperament, and that made him cheerful in the sick-room. His smile did as much good as his medicine. His personal confidence inspired trust, and his ready mind had a resource for every emergency. . . . He had the determination to teach. . . . As a lecturer, Dr. Thomas was most attractive. He had an animated and facile delivery and a keen discernment of the important point. This was forced home by change of phrase, iteration of idea without repetition, and by abundant illustration. He used the blackboard, picture, manikin—anything that would fix a thought in a pupil's memory. As a result, his rooms were always crowded. Students came, and graduates, who found there was always something to be learned. Dr. Thomas' didactic lectures were admirable, but his clinical lectures were better still. The very diversity of cases and the impossibility of preparation put him on his mettle and brought out his best efforts. . . . As a surgeon, he was confident in his diagnosis, deft with his hands, and quick in emergency. He was inventive, not only of instruments and appliances, but of methods. In obstetrics, in 1867, he suggested and used, in a family very near to him, the 'incubator' for an infant born at six and a quarter months, and the child lived to manhood. That apparatus, somewhat modified, is now part of the equipment of all lying-in hospitals. He waited for years to find an inverted uterus which he might operate on, if otherwise irreducible, by abdominal section and dilatation of the constricting ring. Everything comes to the man who waits,

and the case, at last found, was operated upon with immediate and permanent success. In gynecology he was first to remove a small ovarian tumor by cutting through the vagina instead of by abdominal section, a method now fully accepted. . . . Dr. Thomas was a favorite consultant. Other physicians valued his opinion and trusted his support. He was quick in observation, rapid in decision, firm, though not obstinate, in his opinion. He always had 'the courage of his convictions.' He was an honest man in every phase of his professional life; without disregard of his own rights, he recognized and respected the rights of others. He was a man of broad hospitality, kind, generous and helpful to younger men, a good adviser and a staunch friend. . . . Born at the South, and ardent in his sympathies, he accepted the arbitrament of war, and there was no more loyal citizen than he."

RITUAL CIRCUMCISION IN ITS OPERATIVE ASPECT.

CONSIDERABLE interest has recently been aroused both within the Jewish community and outside that body by the deaths of two infants shortly after the rite of circumcision, and under circumstances which left no doubt that in both cases death resulted directly from the operation. It appears, further, that in several other cases serious consequences have followed on circumcision, and it is stated that death after that operation has more than once come under the notice of the staff of the London Hospital. There can be little doubt that when the operation has been skillfully performed and the subsequent dressings carefully carried out, the mortality after infantile circumcision is extremely small. Indeed, until within the last few years deaths from this cause were so rare that many Jews were of opinion that it never occurred. Although this was at no time actually the fact, still such accidents were almost unknown. The increased frequency of misadventure during the last decade is chiefly, if not entirely, due to the Russian immigration, in consequence of which there is considerable overcrowding among the Jewish population of East London, so that the sanitary conditions are often far from satisfactory. Under these circumstances it is evident that evil results are likely to follow even the slightest operation unless this be performed with the greatest care and with the strictest aseptic precautions. The responsible heads of the Jewish community have always been alive to the necessity of taking means to secure that the rite of circumcision should be performed with due care, and for more than a century a charitable association with this object, known as the Initiation Society, has been in existence. In addition to receiving a money gift, every poor Jew applying to this society on the occasion of the circumcision of a child is provided, free of charge when necessary, with the services of a skilled circumcisor. Unfortunately the society has not found it possible to grant its license to circumcise only to qualified surgeons, but the candidate has always been called upon to satisfy the society's medical officer as to his skill after having received special instruction. It appears on inquiry that since the deaths referred to

above the Initiation Society has recast its rules, and it is now proposed to establish a medical board consisting entirely of registered surgeons to examine candidates and to compile a register of circumcisors approved after examination. Such circumcisors will be called upon, under pain of removal, to conform strictly to the rules laid down by the medical board, and these rules as drafted include every precaution which can be required to safeguard the child both during and after the operation. As far as the Initiation Society is concerned, the precautions proposed to be taken appear to be sufficient. The greatest difficulty will probably arise in dealing with those parents who from ignorance or obstinacy insist on having their children circumcised by operators other than those of the Society. However, when once the system is in full working order it will be less difficult to discourage unlicensed persons from operating. In cases where evil results follow the action of an unrecognized circumcisor the Society for the Prevention of Cruelty to Children might well be asked to take up the case, and it seems probable that the legal obligation on a parent to provide a proper operator for circumcision could be enforced in the same way as the obligation to call in a qualified practitioner when a child is ill. The dangers from circumcision should not be very serious, and considering the large number of Jewish children yearly submitted to the operation accidents are rare; but the matter calls for watchfulness on the part of the leaders of the Jewish community, and will no doubt receive from them the attention which it requires. — *British Medical Journal*.

MISUSE OF THE WORD LORGNETTE.

DR. WALTER L. PYLE contributes to *American Medicine* the following editorial comment on the misuse of the word lorgnette: With due deference to the authority of common usage, there seems good reason for believing that the ordinary interpretation of the word lorgnette, as used in American ophthalmic practice, is not correct. The word is derived from the French *lorgner*, to spy or peep; perhaps allied to *loren* of German dialect. In all the standard French dictionaries the word *lorgnette* is distinctly defined as an opera glass or a spyglass, while the word *lorgnon* is used to indicate an eyeglass or eyeglasses mounted on a handle, or to be more explicit, a quizzing glass. *Lorgnon à deux branches* is a double eyeglass. There is, however, the French term *lorgnette de spectacle*. Worcester defines lorgnette as an operaglass, giving Spiers as the authority. The last edition of Webster interprets lorgnette as an operaglass; *pl.* elaborate double eyeglasses. The Century dictionary defines lorgnette first as an operaglass, but gives a second definition as an equivalent to lorgnon. Lorgnon is described as an eyeglass or a pair of eyeglasses shutting into a frame, which, when in use, serves as a handle intended for examining objects at a little distance. This is a perfect description of the common American acceptance of the word lorgnette.

"She raises to her eyes of blue
Her lorgnon, as she looks at you."
— *The Atlantic*, lxiii, 649.

It is also stated in the Century that lorgnon is sometimes used synonymously with operaglass or lorgnette. The definitions of lorgnette in the Standard dictionary are: (1) A pair of eyeglasses carried on a long ornamental handle, into which glasses shut when not in use. (2) An operaglass, especially one with a long handle. Lorgnon is made synonymous with lorgnette and is also defined as a monocle.

Obituary.

WILLIAM SCOLLEY WHITWELL, M.D.

DR. WILLIAM SCOLLEY WHITWELL, whose death in New York occurred recently, was a Bostonian by association and parentage. His father was an engineer of distinction who lived in Boston the greater part of his life, and whose work, the large granite reservoir on Beacon Hill (removed a few years ago), was for a generation a testimonial of unusual professional skill and thoroughness.

Dr. Whitwell was born April 14, 1847, at Keene, N. H., while his father was living there in charge of the engineering work in that region.

Dr. Whitwell was educated in Boston schools, at the Phillips Exeter Academy, and at Harvard College, being graduated in 1869. He afterwards entered the Harvard Medical, and was graduated there, studying also in New York and at Vienna.

He served as a resident physician at the Charity Hospital, Blackwell's Island, New York, and as an assistant in Dr. Gray's asylum at Utica. Later he commenced practice in San Francisco, where for a time he was editor in charge of the leading medical journal of San Francisco. Subsequently he devoted especial attention to mental diseases, and established a private sanitarium in a suburb of San Francisco. A few years ago he moved to New York and practiced his specialty there until his death, having in connection with his city practice a sanitarium at Fishkill.

His death came unexpectedly, although his health has been somewhat impaired in the last two years.

Of an unusually attractive personality, he made warm friends among all who came in contact with him. All who knew him will always recall with pleasure his friendliness, geniality and the indefinable attraction which made his companionship something to be prized and not to be forgotten. He left a widow with three sons.

Correspondence.

MEDICAL IMPRESSIONS OF THE FAR EAST.

SPECIAL CORRESPONDENCE FROM CHINA AND JAPAN.

NATIVE LIFE IN HONGKONG AND CANTON AND OTHER CHINESE CITIES. — THE CHINESE UNASSIMILABLE AND UNABSORBABLE. — A MENACE TO HEALTH. — MEDICAL PRACTICE IN CHINA. — THE CONTRASTS OFFERED BY JAPAN.

MARCH, 1903.

MR. EDITOR: Hong Kong is, without doubt, the show city of Eastern Asia, and illustrates the admirable way with which the English administer their colonies. Of

course, in Hong Kong, they did not have the work of the past to undo, for the city is only some sixty years old, but the English are not deserving of any less credit for what they have accomplished. Hong Kong labors under the disadvantage of being built on the side of a mountain, but this very fact secures admirable drainage. The streets are broad and well paved, the houses are well constructed, and many of the large European buildings are magnificent. There is an efficient board of health, and the hospitals and other public institutions are admirable. The medical men are mostly English, and seem to represent a high type of professional excellence. The city is clean, well lighted and sewered, and is pervaded by a spirit of order and business enterprise. The great sanitary defect of Hong Kong is its water supply, which is not free from suspicion. It is understood that typhoid fever and dysentery are far too prevalent. Cholera does not exist, but plague cases are developing constantly in the Chinese section of the city. With the short distances intervening between Hong Kong and Macao, Canton, Amoy and other Chinese seaports, and the extensive trade carried on between them by Chinese junks, it would seem almost impossible for the former city to remain free from plague infection even should it become a clean port for a short period.

Unfortunately for the prospect of stamping out plague in the city, the lower class of Chinese in Hong Kong manifest strong opposition to the work of the Board of health with respect to the cleaning up and disinfecting of premises where plague has occurred. Plague cases are concealed by them as far as possible; and where detection is unavoidable, those attacked with plague are carried out into the streets under cover of darkness and left to die unattended, so that their associates may not be put to the discomforts attached to the cleaning up and disinfection of the houses in which the cases occurred. Much of the work of the Hong Kong Board of health is thus made of no avail through the impossibility of determining the premises in which plague cases develop and which are undoubtedly infected, and this kind of opposition is difficult to handle.

At present, plague exists in all the large seaport cities of China, such as Canton and Shanghai, and has apparently become an endemic disease there, liable to be carried at any time to uninfected ports. While of course there is no means of knowing how many Chinese are dying of plague in these cities, it is nevertheless certain that this number is large, though by no means as great as a couple of years ago, when hundreds and even thousands of Chinese died in a single day in Canton and their buried bodies lay in the streets of that city. The great difficulty of controlling plague even under relatively good sanitary conditions has been exemplified by the unavailing efforts of the health authorities of Singapore, Hong Kong, Manila and San Francisco, where, in spite of heroic measures, the disease still maintains a foothold; though the actual possibility of exterminating the infection has been demonstrated at much cost in Honolulu. When one realizes the persistency with which the plague infection, once established, manages to exist, and, knowing the conditions under which it flourishes, the visitor to a Chinese city marvels not at the number of its victims, but at the fact that any Chinamen at all are left alive. In the large Chinese cities every fundamental sanitary law — as to the necessity for plenty of sunlight and fresh air, the avoidance of overcrowding, a pure water supply, cleanliness of the surroundings, a proper disposal of the excreta, isolation of infectious disease, the disinfection of infectious matter — is totally disregarded.

In Canton, for instance, about four million people are packed together on a ground space which would be overcrowded with one fourth their number; this was probably primarily due to the desire to secure protection behind the old city walls, but is also a result of the instinctive racial desire of the Chinese to herd together. Throughout the entire city of Canton there is scarcely a bit of vacant ground. The houses are built as closely together as they can be packed. The main streets are never more than ten or twelve feet wide, the side streets are often so narrow as not to permit a sedan chair to pass, and the alleys so narrow that when two persons meet one must step into a doorway to let the other pass.

The houses are fortunately never more than two stories high, but to offset this advantage in regard to sunlight and air, the projecting eaves of the houses on both sides of the streets usually nearly, if not quite, touch each other. As the houses are several rooms deep, even the front rooms are almost like caves, gloomy even at mid-day. As is the case with many of the streets, sunlight never enters these houses. Foul air has little opportunity for escape — while the purifying influence of the winds can never make itself felt in the narrow, crooked streets. The soil is saturated with the organic filth of ages, while the roughly hewn slabs of stone with which many of the streets are paved, worn smooth by countless generations of naked feet, are slippery with foul-smelling slime. Sewerage or public water supply there is absolutely none. An open stone drain sometimes runs down the center of a larger street, loosely covered in by stone slabs; but as those drains seem to begin nowhere and end nowhere, and to have been constructed wholly without reference to fall, they serve simply to catch all liquid refuse and hold it in one vast stinking, putrid pool. As the houses have no drains, much of the liquid refuse is thrown into the streets, whence it runs through the crevices between the stone slabs into the drain beneath. Fortunately urine and feces have a steady commercial value as a fertilizer for the countless truck gardens around the city, so the excreta voided at home is preserved in the open buckets which are prominent articles of furniture in every Chinese house. The contents of these buckets are collected from time to time, and every ounce of it is carried out of the city in large tubs borne on the shoulders of Herculean coolies. With the crowded streets, accidents are not uncommon, and a part of the contents of these tubs is splashed out while being carried through the city. There are also many public sinks and urinals scattered at short intervals throughout the city. These are not as filthy as might be expected, as the urine and feces are being constantly removed by coolies. This frequent removal is not due at all to any sanitary reason, but because the Chinaman has found that as a result of putrefaction the excreta loses much of its qualities as a fertilizer — hence the contents of these public latrines are removed to the truck gardens with as little delay as possible. The urinals in these public latrines are merely open tubs — the closets consist of a rail behind which is a layer of wood or straw ashes, several inches thick, upon which the feces are passed. After a movement, an attendant sprinkles a little ashes — also a good fertilizer — over the fecal matter, and carefully removes it to a tub in which it is carried out of the city. It is said that the Chinamen caring for these latrines receive no pay, but secure quite an income from the sale of the excreta to gardeners. In addition to these public latrines, all the narrow alleys are used as urinals and frequently as closets by wayfarers. In view of the method of disposal and carriage of the excreta, it is no wonder that the city reeks with the foulest odors, which cling to the clothing and hair of the traveler for some time, in spite of airing and shampooing, and that the characteristic stench of a Chinese city has become proverbial. The odor of feces and putrid urine is everywhere.

Canton draws its water supply either from the filthy waters of the Pearl River, upon which about one million of the population are said to live in boats and into which they cast their excreta and refuse, or from shallow wells, the quality of the water in which is vile beyond description. Probably the greater part of the water supply is obtained from the latter source. Canton is built on low ground in which the level of the ground water is but six or eight feet below the surface. These wells are loosely walled with rough stones, possess no curb, and are located on any available piece of open ground. In many instances they are on the open street, perhaps in some blind corner, where they are not a yard away from the feet of hurrying thousands. Foul liquids from the open drains of the streets seep into them, storm waters flush the foul pavements into them during the rains, and dust blows into them when the weather is dry. There is no protection for them against pollution, and filth of such inexpressibly foul character is always so close to them that their contamination and infection cannot be avoided. Even the act of drawing the water contaminates the

well, for the coolie invariably sets his buckets into the slimy corruption on the pavement before lowering them and their adherent filth into the well. If the Chinese did not boil their drinking water in the preparation of tea, it would seem as if nothing could save the race from extermination. Of course, with no provision for the disposal of waste water, and with all the water used in a household carried by hand, often from long distances, proper bathing of the person and cleanliness of the clothing and surroundings are impossible. Hence all kinds of skin diseases are prevalent, and Chinese houses are dirty and foul smelling to the last degree.

As with water, food is contaminated by filthy habits of handling and by exposure to dust and flies. The fertilization of truck gardens with dilute human excreta makes the use of raw vegetables a highly dangerous matter. The Chinese, however, usually cook their food well in its preparation.

In their mode of life, the Chinese crowd together in a way which the American must see to understand. This they seem to do from choice as well as necessity. Twenty or thirty of them will crowd themselves at night into a filthy room, unlighted and unventilated, which with us would be regarded as close quarters even for a single white man. Tiers of bunks, each with only space to barely hold a recumbent Chinaman, rise to the ceiling and extend around the room, leaving a small passage in the center and cutting off all light and air.

In case of infectious disease occurring in a Chinese house, all the occupants are certain to be exposed to the infection. There is no attempt at isolation of the sick, nor are there usually facilities for carrying this out. Packed together in a small space, all are brought into close contact with the sick, and under conditions of lack of ventilation which favor the development of the disease in all those who are susceptible. The nature of the infectious matter is not understood, and no effort whatever is made for its disinfection. The operation of nature's disinfectants, sunlight, drying and fresh air, is carefully prevented by the Chinaman.

Under the conditions of life roughly outlined above, it is no wonder that plague has become endemic in the larger Chinese cities, and that nothing short of adverse meteorological changes or burning the cities to the ground will be able to destroy the plague infection. Smallpox and typhoid fever infection is everywhere; cholera makes periodic raids on these cities, but is unable, from climatic or telluric causes, to maintain a permanent foothold. So prevalent is disease and so unfavorable to life are the unsanitary conditions in Chinese cities that the sanitarian is forced to ask himself if the Chinese have not secured a higher resistance to infectious disease, as a result of their existence for hundreds of generations amid most unsanitary surroundings, than is the case with European peoples. It is true that the death-rate among the Chinese is high, especially the infant mortality, but life under the conditions which surround the Chinaman from his birth would mean almost the extermination of the white race. It is in China a case of the survival of the fittest; that is, the survival of those whose inherited immunity to infectious disease, transmitted from ancestors whose acquired immunity depended on an exceptionally high vital resistance, enables them to pass their lives under conditions to which the individual with a less power of resisting disease would succumb. An instance of the development of such immunity is seen in the case of the carnivora, who are relatively insusceptible to septic infection; in fighting over putrid carcasses these beasts of prey inflict wounds on each other which heal kindly, but which would mean death from septicemia to man or the herbivore. This is purely the result of the survival of the fittest; those susceptible to septic infection disappeared ages ago from the earth. The remainder have had their higher vital resistance fortified by an inherited immunity depending upon the septic inoculation of many generations of ancestors. May it not be some such influence as this which keeps the Chinaman hardy where other races succumb?

A visit to China also impresses another point upon the sanitarian. The Chinese are unassimilable and unabsorbable, retaining their customs and beliefs under all conditions and refusing to be influenced by modern ideas. Wherever they go they take the mode of life and habits

of China with them, and they will become a serious menace to the health of any community to which they may gain access in any numbers. They will treat all sanitary laws and regulations with indifference and passive resistance if not by open opposition, and they will create and keep alive centers of pestilence from which disease will spread from time to time to the surrounding population. We need look no further than San Francisco or Honolulu for an example of this fact.

Medical practice in China is of course most crude and empirical, as was to be expected in a country where there is no knowledge of anatomy, physiology, pathology or other branches of medical science. The Chinese physician's materia medica is most varied and extraordinary, and includes a large number of articles disgusting to civilized ideas. A common form of medical practice is based upon a chart of a human figure, ruled off into a dozen or so numbered squares. A medicine chest with correspondingly numbered jars of medicaments goes with this chart. Nothing could be simpler than the method of their use. If the patient complains of pain in the chest, the doctor looks over his chart, notes the number of the square over the affected region, and administers a dose from the jar having the same number, to the patient.

As illustrating the haphazard method of practicing medicine in China, mention may be made of a certain temple in Canton erected many hundred years ago to a Chinese physician, now worshiped as a god. This temple is largely resorted to by the sick in search of relief. On payment of the necessary fee to the priests, the sufferer is given a bamboo cylinder in which are about fifty flat strips of wood, all numbered. Standing before the image of the god, the afflicted individual recites his symptoms and prays for relief, at the same time shaking the cylinder until one of the strips of wood separates itself from the others and falls to the ground. This strip is then taken to the priest, who looks up the prescription entered in his book under the same number, together with the horoscope of the person securing this number. The patient can thus secure a sure cure for his disease or he can have his fortune told — if he will pay a double fee he can have them both.

In Japan the medical visitor finds sanitary and medical matters in refreshing contrast to those in China. A thoroughly modern quarantine service efficiently guards against the importation of disease from the plague spots of the Asian mainland, and uses in its work the latest scientific methods and appliances for diagnosis. Every quarantine launch carries its microscope and accessories for making diagnoses on the spot by bacteriological examination. The medical men are of a high order of intelligence and professional attainment, and such men as Kitasato stand among the world's leaders in scientific medicine. The Imperial University at Tokio has upwards of three thousand students, of whom five hundred are in the school of medicine. In size, equipment and methods of teaching the Tokio school ranks favorably with our schools of medicine in Chicago and other cities. The Japanese people are instinctively cleanly, and a daily hot bath is attained by even the poorest coolie. The acme of cleanliness as to garments, houses and surroundings is maintained, and plenty of sunlight, fresh air and space regarded as essential. There is none of the tendency to herd together, so characteristic of the Chinese. Earth or bucket closets are used for the excreta, and these are kept in the highest degree of sanitary neatness. Sewers are being installed in many places. The streets are wide and well paved, and are kept scrupulously clean by street scavengers. Much importance is placed upon the purity and sufficiency of the water supply. Food is handled in the most cleanly manner. Vegetables and fruits are scrubbed to the last degree of cleanliness and offered for sale in the most attractive way, decked with flowers and foliage. The people are happy and industrious, with a profound respect for law, order and official authority, submitting cheerfully to heavy taxation to improve their country and anxious to demonstrate the fitness of Japan to take its place among the best of the nations of the civilized world. Their charitable and medical institutions are admirable in their construction, equipment and administration, and

would be a credit to communities of equal size in the United States. The whole country is kept like a garden, and everything is cleanly, artistic, picturesque and pleasing to the eye. In fact no more dissimilar peoples, traits and conditions can be found than in China and Japan, and the medical man will be surprised at the high and low medical and sanitary extremes to be met with in those countries so close together.

"THE DOCTOR IN THE NAVY."

APRIL 17, 1903.

MR. EDITOR: In your issue of April 9, 1903, there is such an extraordinary and peculiar mass of misinformation under the caption "The Doctor in the Navy" that I feel obliged to enter a protest. Knowing your desire for accuracy, I hope you will correct some of the misstatements therein contained.

To begin with, we have the statement that in "Early times"—*antiquissimis temporibus*—the naval surgeon was "before the mast, with small pay and the privileges of an ordinary seaman." This is news to me, and while laying no claim to be an antiquarian, I feel quite certain that the naval surgeon was a commissioned officer in our service from its very beginning, and long before that time in other services. We get a very good idea of what the English naval surgeon was in the time of Smollett by reading his "Roderick Random." Smollett himself was a surgeon's mate, which corresponds pretty nearly with our present hospital steward. A surgeon's mate was not a commissioned officer, while the surgeon was. Yet the writer says that he was classed as "surgeon or surgeon's mate"—a distinction which is without a difference to him. Of course if we go back to medieval times, we find that all surgeons were barbers and bathers.

He proceeds: "At the present time in the navy he has no actual rank." This is not true. A medical officer has actual rank. But we can pass over many unimportant inaccuracies such as the statement that "examinations were formerly held at the Brooklyn Navy Yard," while, as a matter of fact, they were never held there, but at the Naval Hospital in Brooklyn.

We have a long description of the physical examination, which can be dismissed with the statement that the law requires that every candidate for the army or navy, no matter in what capacity he enters, must be sound in every respect. We learn that "the eyes also come in for a rigid but rather out-of-date form of examination." The method is nothing more than testing by Snellen's test types, which is used by oculists all over the world. This is the quickest and simplest test for acuity of vision. Where the necessity is apparent, this is followed by other methods of examination, even in the case of an enlisted man.

We can pass over many things until we are halted by the following remarkable sentences: "The results of the navy system have not as yet been in actual test, as every shore station has direct communication with large civil hospitals for consultation, and on sea-going ships they have a picked body of men under their observation. The war with Spain was not long enough to bring out the surgeon's value." The naval surgeon has had a pretty fair test in every war in which this country has been engaged—not to mention outside wars in which his services have been gratefully accepted by foreign governments. His reference to consultations with civil hospitals, I fail to understand. It is not a fact that every shore station has direct communication with civil hospitals; and military hospitals, whether army or navy, are no more apt to consult with civil hospitals than civil hospitals are apt to consult with each other. It is true that everybody on a ship is a picked man, but a picked man is as liable to injury and sickness as an "unpicked" man—from the exigencies of the service, often more so. The war with Spain was not long. But we can ask Cervera's men—many of them frightfully wounded—if it did not "bring out the navy surgeons' value."

Our writer then enters into the particulars of the sur-

geon's uniform with extreme minuteness. It seems to him to be a very important matter, but the surgeon of any length of service does not worry about such matters. He is mostly unconscious of the fact that he wears a uniform. After all the purpose of a uniform in any organized body of men is simply for identification. A naval officer wears a uniform for the same reason that a policeman or letter-carrier does—that he may be identified. But let it not be forgotten that the naval surgeon when operating wears the same uniform that Professor Lorenz does.

Our writer goes on to say: "The grade of surgeon is the last on which a regular physical and mental examination is required." This statement does not matter much, only it is not true. And so with most of the other information—it startles at first and then amuses.

We are gravely informed that "if the United States was to offer one half the entrance salary, they would have all the men they wanted and as competent surgeons." As a matter of fact there has been great difficulty in inducing competent and desirable young men to enter the service in view of its many hardships and deterrents. Under the present wise and energetic direction of Admiral Rixey, there is every prospect that the many vacancies now existing will be filled with the better class of medical graduates.

But of what use is it to contradict statement after statement—to say that there is no allowance for a ration at sea, etc.?

The writer speaks of an officer becoming surgeon-general through "influence." It is true that there is such a thing as influence in all walks of life, but there is far less of it in the navy than in a single civil hospital appointment with all its medical politics. After all this influence cannot be very pernicious when it permits such men as General Sternberg and Admiral Rixey to rise to the heads of their respective corps. President Roosevelt sent the nomination of the latter to the Senate with the significant words, "For eminent fitness." I hope it will rarely be the misfortune of the JOURNAL to publish an article on a subject of which the writer is so profoundly ignorant as in the present case.

A NAVAL SURGEON.

CONSERVATISM IN MASTOID OPERATIONS.

BOSTON, April 14, 1903.

MR. EDITOR: Wise and progressive aurists, especially those who have studied under Professor Politzer of Vienna, will rejoice as they read his latest edition of his "Ohrenheilkunde," a notice of the English translation of which, by Ballin and Heller, your JOURNAL published April 2.

The thoroughly conservative method of operating upon the mastoid had found advocates in this country long before Politzer wrote this edition of his handbook.

Few aurists in America appreciate the value of a thorough knowledge of pathology in undertaking this very radical procedure of opening the mastoid cells. If they were as carefully and thoroughly educated as Professor Politzer is, they might understand, as he unquestionably does, the intimate relationship existing between the various varieties of mastoid inflammation, with their etiology and their treatment.

It has been stated, and with truth, that "the occurrence of mastoid inflammation in cases under professional treatment is an indication of neglect." This should refer to all classes of cases. The acute very plainly, the chronic similarly.

Every earache case is readily amenable to treatment, and yields promptly to such when properly applied by the skillful and wise physician. In these days of destructive surgery it is encouraging to find honest teachers advocating constructive measures. It is far easier to tear down than to build up. It is also less difficult to prevent mastoid infection by having knowledge of its causation and applying suitable remedies than it is to remove it when well established. It is to be hoped that many more medical men will read Politzer.

Very truly yours,

EDMUND D. SPEAR, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 11, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|----------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Measles. | |
| New York . . . | 3,785,156 | 1,363 | 411 | 22.73 | 19.36 | 3.45 | .37 | .88 | |
| Chicago . . . | 1,885,000 | 592 | 176 | 23.81 | 22.80 | 2.02 | 2.20 | 1.69 | |
| Philadelphia . . | 1,378,527 | 500 | 144 | 24.60 | 14.00 | 3.00 | 1.40 | .26 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 164 | 41 | 22.56 | 12.80 | — | 1.21 | — | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 150 | 51 | 20.00 | 33.33 | .66 | 1.33 | 1.33 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,367 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 68 | 26 | 22.05 | 17.65 | 1.47 | 2.94 | 4.41 | |
| Boston . . . | 603,163 | 219 | 52 | 23.74 | 14.60 | 3.65 | .31 | — | |
| Worcester . . . | 132,044 | 38 | 13 | 5.26 | 15.78 | — | — | 2.63 | |
| Fall River . . . | 115,549 | 31 | 9 | 22.58 | 38.71 | — | — | 3.22 | |
| Lowell . . . | 101,959 | 26 | 10 | 19.25 | 23.10 | — | — | — | |
| Cambridge . . . | 98,639 | 17 | 3 | 18.51 | 22.22 | — | — | — | |
| Lynn . . . | 72,497 | 29 | 9 | 5.26 | — | — | 5.26 | — | |
| Lawrence . . . | 69,766 | 24 | 8 | 41.66 | 8.33 | — | 4.16 | 4.16 | |
| Springfield . . . | 69,389 | 23 | 8 | 30.43 | 8.70 | — | — | 4.35 | |
| Somerville . . . | 68,110 | 15 | 2 | 13.33 | 13.33 | — | — | — | |
| New Bedford . . | 67,198 | 26 | 10 | 19.25 | 23.10 | — | — | — | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brockton . . . | 44,873 | 14 | 4 | 28.56 | — | — | — | — | |
| Haverhill . . . | 42,104 | 12 | 2 | 33.33 | 8.33 | — | — | — | |
| Newton . . . | 37,794 | 9 | 3 | 11.11 | 22.22 | — | — | — | |
| Salem . . . | 36,876 | 11 | 3 | — | — | — | — | — | |
| Malden . . . | 36,286 | 11 | 1 | — | 18.18 | — | — | — | |
| Chelsea . . . | 35,876 | 15 | 1 | 20.00 | — | — | — | — | |
| Fitchburg . . . | 35,069 | 10 | 3 | — | 30.00 | — | — | — | |
| Taunton . . . | 33,656 | 11 | 4 | 27.27 | 9.09 | — | — | — | |
| Everett . . . | 28,620 | 8 | 3 | 37.50 | — | — | — | — | |
| North Adams . . | 27,862 | 8 | 1 | 12.50 | 12.50 | — | — | — | |
| Gloucester . . . | 26,121 | 11 | 1 | 18.18 | — | 9.09 | — | — | |
| Quincy . . . | 26,042 | 13 | 5 | 23.10 | — | — | 7.70 | — | |
| Waltham . . . | 25,198 | 5 | 3 | 40.00 | — | 20.00 | — | — | |
| Brookline . . . | 22,608 | 6 | 2 | 16.67 | — | — | 16.67 | — | |
| Pittsfield . . . | 22,589 | 11 | 3 | 27.27 | 9.09 | — | — | — | |
| Chicopee . . . | 21,031 | 12 | 5 | 25.00 | — | 16.67 | — | — | |
| Medford . . . | 20,962 | 2 | 1 | — | 50.00 | — | — | — | |
| Northampton . . | 19,883 | 7 | 1 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 1 | 5 | 14.30 | 14.30 | — | — | 14.30 | |
| Clinton . . . | 15,161 | 3 | 1 | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 4 | 0 | — | 25.00 | — | — | — | |
| Woburn . . . | 14,300 | 4 | — | — | 25.00 | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,669 | 4 | 2 | 25.00 | 25.60 | — | — | — | |
| Melrose . . . | 13,660 | 5 | 2 | 20.00 | — | — | 20.00 | — | |
| Westfield . . . | 13,418 | 2 | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 6 | 1 | 16.67 | 16.67 | — | — | — | |
| Framingham . . . | 12,534 | 2 | — | — | 50.00 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 4 | 0 | — | 50.60 | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 0 | — | — | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,499; under five years of age, 1,027; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 789, consumption 394, acute lung diseases 636, scarlet fever 46, whooping cough 38, cerebrospinal meningitis 8, smallpox 12, erysipelas 6, measles 33, typhoid fever 53, diarrheal diseases 85, diphtheria and croup 88.

From whooping cough, New York 5, Chicago 13, Philadelphia 7, Baltimore 2, Pittsburg 2, Providence 2, Boston 2, and Lynn, Lawrence, Quincy, Brookline and Melrose 1 each. From erysipelas, Chicago 1, Philadelphia 1, Boston 4. From smallpox, Chicago 3, Philadelphia 5, Baltimore 1, Pittsburg 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending March 28, the death-rate was 16.2. Deaths reported, 4,682; acute diseases of the respiratory organs (London) 250, whooping cough 121, diphtheria 68, measles 157, smallpox 13, scarlet fever 35.

The death-rate ranged from 6.3 in Handsworth, to 26.1 in Stockton-on-Tees; London 16.5, West Ham 13.7, Brighton 12.5, Portsmouth 16.3, Southampton 12.3, Plymouth 20.9, Bristol 13.5, Birmingham 16.6, Leicester 14.2, Nottingham 15.9, Bolton 12.9, Manchester 21.9, Salford 18.4, Bradford 17.8, Leeds 11.6, Hull 17.1, Newcastle-on-Tyne 15.3, Cardiff 16.0, Rhondda 16.1, Liverpool 19.3, Kings-Norton 10.6, Wigan 20.1.

METEOROLOGICAL RECORD.

For the week ending April 11, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- om- eter. | Ther- mometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'thr * | | Rainfall in inches. |
|----------------|----------------------|-------------------|----------------------|-----------------------|--------------|----------------|-----------------------|--------------|----------------------|--------------|--------------|--------------|------------------------|
| | | Daily mean. | Maximum. Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . . | 30.22 | 32 | 37 | 29 | 64 | 52 | N | W | N | W | 24 | 9 | C. C. T. |
| M. . . | 30.46 | 35 | 44 | 26 | 47 | 62 | N | E | S | E | 4 | 13 | C. O. O. |
| T. . . | 30.06 | 45 | 54 | 36 | 88 | 89 | S | W | S | W | 7 | 15 | R. O. O. |
| W. . . | 29.82 | 49 | 55 | 43 | 88 | 96 | S | W | N | N | 3 | 11 | R. R. 1.01 |
| T. . . | 29.84 | 51 | 63 | 44 | 71 | 35 | N | W | N | W | 12 | 7 | F. O. O. |
| F. . . | 29.96 | 50 | 55 | 45 | 79 | 54 | N | N | N | W | 12 | 8 | O. C. O. |
| S. . . | 30.10 | 48 | 55 | 42 | 46 | 55 | N | W | S | E | 14 | 4 | C. C. O. |
| Mean for week. | 30.07 | 52 | 38 | — | 66 | — | — | — | — | — | — | — | 1.71 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

SOCIETY NOTICES.

THE AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION. — The sixth annual meeting of this association will be held at Washington, D. C., at the Stoneham, Thursday, May 14.

AMERICAN ACADEMY OF MEDICINE. — The twenty-eighth annual session of the American Academy of Medicine will be held at the "Arlington," Washington, D. C., on Monday and Tuesday, May 11 and 12, 1903.

AMERICAN GYNECOLOGICAL SOCIETY. — The twenty-eighth annual meeting of the American Gynecological Society will be held in Washington, D. C., May 12, 13 and 14, 1903. The sessions will be held in Lecture Hall No. 2, Medical Department Columbian University, No. 1325 H Street.

MEETING OF THE NATIONAL ASSOCIATION OF UNITED STATES PENSION EXAMINING SURGEONS. — On the 13th and 14th of May, 1903, the second annual meeting of the National Association of United States Pension Examining Surgeons will be held at Washington, D. C.

AMERICAN UROLOGICAL ASSOCIATION. — The second annual meeting of the American Urological Association will be held in the amphitheater of the New Orleans Polyclinic, May 8 and 9, 1903.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The annual meeting will be held at the Medical Library, 8 The Fenway, Saturday, April 25, 1903, at 8.15 P.M.

Papers: A Preliminary Report on Five Cases of Decapsulation of the Kidneys, Dr. J. B. Blake; The Blood in the Typhoid of Children, Dr. Frank S. Churchill of Chicago; The Formation of Loose Cartilages in the Knee Joint, Dr. E. A. Codman.

Business: Reports of Librarian and Treasurer, Election of Officers.

Supper after the meeting.

THOMAS MORGAN ROTCH,
President.

F. J. COTTON,
Secretary.

RECENT DEATHS.

DR. HOBART CHESMAN of New York, for many years a medical examiner for the Equitable Life Assurance Society, died in St. Luke's Hospital on April 11. He was born in the northern part of the State of New York, August 13, 1844, and was graduated from the medical department of the University of the City of New York in 1878. He served as interne at St. Luke's Hospital from 1878 to 1880.

CHARLES HOWE, M.D., M.M.S. S., died in Taunton, Feb. 12, 1903, aged eighty-two years.

BOOKS AND PAMPHLETS RECEIVED.

Cutaneous Blastomycosis. A Summary of the Observations of James Nevins Hyde, A.M., M.D., and Frank Hugh Montgomery, M.D. Reprint. Chicago, 1902.

To What Extent can General Practitioners Make Use of the Newer Diagnostic Methods? By Addison S. Thayer, M.D., of Portland, Me. Reprint. 1902.

Twenty-seventh Annual Report of the Managers and Officers of the New Jersey State Hospital at Morris Plains, for the year ending Oct. 31, 1902.

Address.

ADDRESS TO THE NURSES GRADUATING FROM THE FRAMINGHAM HOSPITAL IN 1902.

BY ARTHUR TRACY CABOT, A.M., M.D., BOSTON.

THIS is a significant occasion. I am sure that this audience will accept me as their spokesman when I say that we are here to show our appreciation of the good medical work that is going on in our Framingham Hospital; especially do we desire to give encouragement and evidence of our appreciation to these young women who have finished their formal studies there, and are now entering upon the wider field of study that the world opens before them.

Colleges have their commencements with much pomp and consequence, announcing to the world the entry into it of another company of learned men. This is your commencement, and in a quiet way you are celebrating here the graduation of another trained band of scholars.

All are familiar with the great advances in medical knowledge that have come in the past thirty years. Coincident with the advance in the knowledge of diseases that has been made in that time has come a very great advance also in the understanding of what proper medical care is, and how to obtain it for our patients. The treatment of patients based on more exact scientific understanding requires a scientific training in those who are to carry it out.

The professional nurse of fifty years ago was a careful, sympathetic attendant, often with a real genius for care of the sick, but without any training, except what she finally acquired by the practice of her calling. Nurses of that day varied so greatly in their qualifications that it was a common saying that nurses were born, not made." If one was not born a nurse she could never become a really good one. Now, we find that something more than natural aptitude is necessary. The nurse of the present day has become so indispensable an assistant to the physician; carries out so many important details of treatment; requires so much knowledge in order that her watchfulness may both safeguard the patient that she is attending and also protect the community from possible contagion from him, that a thorough scientific training is necessary to prepare her for her practice.

I well remember the earnest young women who made up the first class in the Training School of the Massachusetts General Hospital, and who were, therefore, the pioneers for our community in this sort of study. When they graduated, the physicians at once perceived that this training had indeed added greatly to their value.

As this became more and more understood, it was found that the large hospitals that first started training schools for nurses were inadequate to supply the demand, and the smaller hospitals throughout the Commonwealth were obliged to take up this duty in addition to their simpler requirement of caring for the sick.

Some years ago — not so many — I came down to this hospital of yours in Framingham to a housewarming. One of the other guests was a brother

surgeon from one of the small cities of the Commonwealth; a man who, although busy and driven with a large practice, still found time to devote a large measure of his indomitable energy to the problem of educating trained nurses. I refer to Dr. Alfred Worcester of Waltham. He was a pioneer in the establishment of small training schools for nurses.

He has shown how much may be accomplished in this way. Indeed, I am not sure that the small hospital is not better adapted to this work than the large institutions.

It has been found in medical education that much of the most valuable teaching must be done in small classes. Most of the manipulations and niceties of care that a nurse has to learn must be similarly taught to one or two at a time.

In a small hospital there is less rush and hurry than in a large one, and this quiet, persistent drill often receives more personal attention from the physician and head nurses than is possible in larger places, where they are constantly interrupted by other calls on their time. It is a mistake, therefore, to suppose that a crowded hospital is the best place to learn the nursing art.

One case well cared for gives a nurse more of the deft skill that makes things easy for the sick person than a dozen cases less perfectly attended to in the public wards of a great hospital.

I have had good reason to appreciate the value of nurses trained in many of these smaller schools, and remember with pleasure good services rendered me by graduates of this Framingham Hospital.

The advance in medicine is still going on, and the teaching of nurses must keep pace with this. Their training must be more thorough, and the range of subjects taught them must gradually become wider. At the same time, the public is coming to a greater and greater appreciation of the value of trained nursing. The demand is constantly increasing. This demand must be met, and in the future more nurses must be taught than in the past, and they must be taught more, and a large part of this added burden must fall on the small hospitals.

Fortunately, these smaller hospitals are growing in size and importance. They are becoming more and more able to do this added work, and they are making themselves more and more valuable to the neighborhoods that they are thus serving. It is well for the community that recognizes these services and gives to this largely gratuitous medical work the support that it so richly merits.

And now I wish to say a few words to the graduating class. Much might be said about the beauty of the profession you have chosen, and it is a delightful thing to feel your power to assuage suffering and to avert woe.

Your choice of a physician to address you to-day makes me feel sure that you wish to hear words practical rather than sentimental on this occasion. You are entering on a career which you can make an interesting calling, or an absorbing profession, according as you regard your studies as now finished, or as only just beginning. If you go forth in the community to practice the arts that you have been already taught, you will do great good, and be, no doubt, successful as the world measures success. If, however, you feel that what you have already learned is merely the beginning of life-long

endeavor to learn more, then you may rightly say that yours is indeed a learned profession. You will then enjoy all the delights that learning and investigation bring. You will be constantly moving forward, reaching new points of interest, and will be contributing to the general advance of medicine.

During your tutelage here you have learned many important facts and have had thorough training in the practical work of a nurse. Your studies in physiology and anatomy have informed you as to some of the functions of the body, and have prepared you for further study.

All of this knowledge is a valuable possession, but if your training has cultivated and established in you the habit of close, accurate observation, you have acquired something more important than all the rest. Your senses and perceptions will be then so sharpened by constant use that you will discover, as by an instinct, the wants and needs of your patients. Fleeting signs that would escape an unobservant person will serve as guides for you in your care of the sick person, and you will have acquired that great gift of trained sympathy or tact which knows when to interfere and when to let alone. Then will you have reached the summit of the nursing art. You will save the strength of the feeble and will give courage to those that are stronger than they think. In this way are many feet turned back from the brink of the grave.

To the physician too, the nurse's value depends largely upon her watchfulness. He is with his patient occasionally; the nurse is on the ground all of the time. She must serve, then, as eyes for the doctor, and he must learn many things about his patient from her observation and report. Every physician knows the comfort of feeling that the observation is correct and the report intelligent.

As I said in commencing, the nursing art has advanced with the advance in medicine. As I believe, this advance in medicine is but now commencing. I am of opinion that the training in nursing must be prepared for constant advance in the future. I believe that the two years usually given to the curriculum is already too short for a nurse of moderate capacity to acquire the knowledge and training that she really ought to have. It would be better for our hospitals to have the nurse stay for a longer course; changes would come less frequently, and they would get, during the third year, some of the fruits of the drill which they have put into the first two years of their training. It would, also, I am sure, be time well spent for the nurses. They would be far better equipped when they began their private work, and would easily show their superiority to those who had had a shorter training.

I should hope that in this longer course of study which I believe is coming in the near future, exercises would be devised which would train the nurse in making her own observations.

I well remember that when I began the study of natural history, Prof. Louis Agassiz put in my hand a dried coral, and told me to study it and learn about it from my own unaided observation all that I could. For many hours I sat turning this dried skeleton of a dead community over in my hand, and well remember the way in which its various characteristics gradually forced themselves upon my attention, and how the method of its

growth slowly unfolded itself before me. That was an invaluable lesson and one which every observer ought to learn for himself.

There are abundant opportunities in the wards of every hospital for giving this sort of training, and I think it should be given in the manner that I have described, by obliging the students to discover for themselves without help from their instructors. This sort of observation can and will be constantly exercised by you in your coming labor.

Do not tire of patient looking. You all have heard the old proverb and know why you have two eyes and only one tongue.

Use your eyes well first and only after thorough examination report what you have seen and ask, if you wish, its significance.

The nurse who does this will commend herself to patient and doctor; will find success, and will spread the fame of the school from which she came. This is the best return she can make for the debt she owes.

I thank you all for your kind attention to these few thoughts upon the higher education of women. It is a subject we are all interested in, and we wish these young women success in their chosen profession.

Original Articles.

ALBUMOSURIA.¹

BY CHAUNCEY REA BURR, M.D. (HARV.); PH.B. (YALE),
PORTLAND, ME.

ALBUMOSURIA is the term used to describe that condition in which albumoses are present in the urine. It is a pathological state, and its importance has been but dimly appreciated till very recently. Together with albumosuria I shall also consider peptonuria, or the condition in which peptones are present in the urine. The line which divides the two is a very artificial one, and recent investigation has shown that many of the cases formerly described as peptonuria were, in reality, albumosuria, the real proteid present being deuteralbumose.

Albumoses are intermediate products in the digestion or hydration of proteids. There are four, to wit; proto-albumose, hetero-albumose, dys-albumose and deuteralbumose. The latter closely resembles peptone.

The passage from one to the other is effected by hydrolytic cleavage, that is, by the absorption of water. If deuteralbumose absorbs water it becomes peptone, and if peptone absorbs water it is split up into the waste products of digestion, leucin, tyrosin, etc.

Hydrolysis is effected through the agency of a proteolytic ferment, or enzyme. When occurring in the gastro-intestinal tract, these ferments are furnished by glands attendant thereto, as the gastric glands, the pancreas and the intestinal glands. The spleen and liver probably have proteolytic powers also. In addition to these, there are the ferments furnished by the bacteria contained in the ingested food and drink. The number of bacteria which have been found to flourish in the intestinal

¹ Read before the Portland Medical Club, Feb. 5, 1903.

contents is already large, and their ranks are constantly growing. Some fifty varieties have been described. A certain number are undoubtedly always present in health, while in disease, of course, the number may be considerably augmented. Some of these ferments form sugar from starch, some peptone from proteid, while others disintegrate fats. If for any reason these products are not absorbed, digestion or rather disintegration may be carried to its later results. The sugar becomes lactic acid and alcohol; the peptone is replaced by the amido-acids, leucin and tyrosin, by skatol, indol and phenol; the fats split up into valeric acid, butyric acid, etc. It is thus evident that the bacteria found in the chyme are a very considerable aid to digestion though by no means an essential to the process.

Peptone is the final product of proteid digestion, and as such is absorbed. But here a very remarkable fact comes into view. Peptones and albumoses are both found in the chyme, but neither occur in the normal blood. Their place in the latter is taken by serum albumin. No mechanical theory of absorption will account for this paradox. Peptones are diffusible and readily pass through animal membranes, and it is undoubtedly by virtue of this property that they are absorbed when and where they are. But the diffusion proceeds no farther. We are face to face with a vital process.

The peptones are absorbed by the epithelial cells which cover the intestinal villi and also probably by the leucocytes, which during digestion crowd the crypts and the submucous spaces. Within these cells (both leucocyte and epithelial) a reversible zymolysis or dehydration occurs, whereby the peptones are changed back again into albumin. The facts admit of no other interpretation. As to the details of the process, considerable light has been furnished recently by the work of physiologists. Jones and Hunt in Gould's "American Year Book of Medicine and Surgery for 1902," say: "The law that the continual removal of one of the products of a chemical reaction causes its continual formation was known to exist in the early part of the [nineteenth] century. Conversely the retarding action which is caused by the accumulation of the products of a chemical reaction is just as universally recognized. This law itself would furnish an explanation of the failure of enzymes to produce complete hydrolysis, but in several instances it has been experimentally shown that the decompositions produced under the influence of enzymes do reach completion when the products of the reaction are removed as they are formed.

"Hill,² however, gives an explanation of the law itself. He found that maltose not only decomposes into dextrose, but is capable also of forming a synthesis of maltose from dextrose. Thus whenever dextrose or maltose is submitted to the influence of the enzyme, the one is converted into the other till a certain condition of equilibrium has been established and no further decomposition follows. When, however, either one of these substances is removed, more of this must be formed at the expense of the other till equilibrium has again been established."

What Hill has shown to be true of maltose, Kastle

and Loewenhart³ have shown to be true of lipase (a new fat-splitting ferment). They not only decomposed ethyl-butyrate into its corresponding acid and alcohol, but out of these, by the aid of lipase, they reconstructed ethyl-butyrate.

The conditions for reversible zymolysis in the intestinal mucosa are very favorable. Peptones are continually being absorbed, and the equilibrium can only be restored by the reconversion of these into albumin. As this is removed by the portal circulation, more peptones are absorbed. Just where the change occurs, whether in the epithelial cell or the leucocyte, or in both, has not, as yet, been determined. But at all events I offer this suggestion of a reversible zymolysis in one or the other, as the explanation of an otherwise unexplainable phenomenon.

Albumoses, though present in the chyme, are never absorbed into the blood under normal conditions. This is doubtless due to the fact that they are not diffusible, that is, that they pass through animal membranes with difficulty, and very slowly.

This is all changed, however, when there is a break in the continuity of the intestinal mucosa. They are then absorbed into the blood with ease and reappear in the urine.

Chrostek and Stromayer⁴ administered to patients free from albuminuria, but in whom either gastric or intestinal ulceration was suspected, a mid-day meal of one or two ounces of peptone or somatose (which is a patented preparation of beef albumoses), mixed with water or broth. After two or three hours, the urine was examined for albumoses.

In six out of nine cases albumosuria was found to be present, and in every one of these tuberculous ulcers of the intestines were found at the necropsy.

On the other hand, a diet of albumoses administered to twenty healthy individuals failed to produce albumosuria in a single instance.

When once in the circulation, albumoses tend to remain there till further digested. They appear in the urine mostly as deutero-albumose and peptone. If proto-albumose or hetero-albumose are injected subcutaneously they are excreted as deutero-albumose; while if deutero-albumose is injected, it is excreted as peptone.

Albumosuria may appear independently of or in connection with albuminuria. In fact, the latter condition often masks the former.

The intestinal tract is not the only source whence albumoses are derived.

Gillespie⁵ believes that albumosuria is due to the excessive production and destruction of leucocytes.

Clinically, albumosuria is found where there is leucocytosis, and peptonuria where there is pus.

The leucocyte has a digestive ferment of its own, as shown by Rossbach and Leber, and is quite capable of producing albumoses, as in the case of a sterile abscess caused by hypodermic injections of croton oil, carbolic acid or ammonia water.

We also know that in the state in which leucocytosis occurs, there is nearly always a disturbance of the osmotic relations of the blood. The chlorides leave the serum for the cells, and the albumins and phosphates leave the cells for the serum. It is

² Am. Chem. Journ., xlix, p. 491.

³ Wien. klin. Woch., No. 47. 1896.

⁴ Lancet, July 6, 1897.

⁵ Journ. Am. Chem. Soc., lxxiii, p. 634.

highly probable, therefore, that a large part of the albumoses present in the blood of febrile cases are derived in this manner from the leucocytes.

Dead leucocytes are digested. This occurs in general where there is coagulation necrosis, and the process is greatly assisted by the ferments of the pyogenic bacteria which may happen to be present. Pus consists of serum albumin, albumoses, peptones, leucin, tyrosin, cholestrin, etc.

Fleischer found albumoses in the medulla of normal bone — the breeding-place of the polynuclear leucocyte.

Zuelger⁶ produced albumosuria in dogs by the administration of pyrocin. The albumosuria was soon obscured by albuminuria. There was also marked progressive anemia, and the bones were filled with lymphatic tissue.

DETECTION.

Clinically it is not necessary to distinguish between the different forms of albumoses present in the urine.

For their detection I prefer the methods given by Ogden,⁷ which are as follows:

(1) Take a small portion of urine in a test tube, and warm gently — a precipitate appears which is redissolved on boiling and reappears on cooling.

(2) Acidulate the urine with acetic acid, and add a few drops of a saturated solution of sodium chloride — a precipitate forms which disappears on heating and reappears on cooling.

(3) Add a few drops of nitric acid to the urine in a test tube. If the acid is not in excess a precipitate is formed which disappears on boiling and reappears on cooling.

(4) Add acetic acid, avoiding an excess, and then add a few drops of a solution of potassium ferrocyanide (1:10). A precipitate is formed which disappears on boiling and reappears on cooling.

(5) Completely saturate the urine at boiling point with neutral ammonium sulphate; filter and wash the precipitate with saturated solution of ammonium sulphate. Dissolve the precipitate in water or dilute sodium chloride solution and apply the beuret test. If albumoses are present a rose color results.

The beuret test is commonly applied in cases of peptonuria. It is unreliable because not only peptones, but albumoses and urobilin respond to it as well.

The only sure test is to proceed as in No. 5; that is, to saturate the urine (which should be acid in reaction) with ammonium sulphate, filter out the precipitate, and add to the filtrate either potassium mercuric iodide or picric acid. If a precipitate appears it is peptone.

PATHOLOGY.

Albumosuria occurs in a variety of conditions. Aldor⁸ found it present in almost 90% of febrile diseases. Krehl and Matthes⁹ found it of almost constant occurrence in both infectious and aseptic fevers. Other observers have found it in multiple myelosarcoma, osteomalacia, carcinoma, tertiary syphilis, hemiplegia, pneumonia, diphtheria, muscu-

lar atrophy and myxedema; it has also been found in leukemia and after prolonged exertion and in many other diseases. Peptonuria has been observed in suppurative diseases, as empyema, chronic bronchial catarrh and mixed tuberculosis, psoas abscess, purulent meningitis and acute articular rheumatism; it is also found in typhoid, typhus, variola, scarlet fever, mumps, erysipelas, carcinoma, catarrhal jaundice, apoplexy and pneumonia.

In nearly all of these diseases there is leucocytosis, and the degree of albumosuria (and peptonuria) may be expected to run parallel with this.

The pathology of the affection has not been exhausted when the diseases in which it occurs have been named. Albumoses are toxic, and the question may well be asked, and has been asked, whether the symptom complex to which the term "fever" is applied may not be due to albumose poisoning. Krehl and Matthes and Aldor¹⁰ are of the opinion that it is, and I am in thorough accord with them. Some of the deadliest toxins known are albumoses. Cobra venom consists of 98% of albumose and peptone and 2% of globulin. Its toxicity resides in the albumose.

The primary albumoses are more toxic than the secondary, and the peptones less toxic still. Pepsin itself is highly toxic.

Matthes showed that .07 gm. of deutero-albumose injected subcutaneously produced in healthy men a marked febrile reaction. In three cases of lupus there was also a decided local reaction exactly similar to that produced by tuberculin. Indeed, he considers tuberculin to be a mixture of deutero-albumose and peptone. As we approach the other end of the albumose scale the symptoms increase in severity. Thus injections of primary albumoses give rise not only to fever, but to hemorrhagic extravasations. The coagulability of the blood is lessened, secretion ceases and paralyses develop. There are neurotoxic and hemolytic principles in albumoses just as there are in serpent venoms. They unite with the neurons and the blood cells readily and rapidly, and cannot be removed therefrom by chemical reagents as can morphia or strychnia.

The higher centers of the brain and cord appear to be specifically affected, and in particular those of the medulla oblongata. Thus, in febrile diseases the tongue is generally coated and the fauces parched and dry. Deglutition is more or less painful and difficult, and there may be angina. The glosso-pharyngeal nerve supplies all these parts, and its origin is in the medulla oblongata. Its impaired function is the cause of these particular symptoms.

Again, the pneumogastric nerve has its origin in the medulla. Paresis of this causes pulmonary congestion and dyspnea, a rapid pulse, impaired motility of the stomach and dilatation, enlargement of the liver and spleen, and disordered digestion and absorption.

Space does not permit me to enlarge on the full pathology of albumose poisoning, but in general it is co-extensive with that of the septic state.

I wish, however, to add a few words as to the effect of albumoses on the blood. Most infectious diseases are accompanied by inflammatory leucocytosis. There is more or less anemia and a progress-

⁶ Berlin klin. Woch., XXXVII, S. 894.

⁷ Clin. Exam. of Urine and Urin. Diag., 1900, p. 136.

⁸ Berl. klin. Woch., Sept. 4, 1899.

⁹ Arch. f. exper. Path. u. Pharmacol., Band XLI, S. 218.

¹⁰ Op. cit.

ive loss of serum albumin. Coagulation may be increased or retarded, and appears to be dependent upon the amount of hemoglobin dissolved in the plasma. Degenerative changes in the erythrocytes, whatever their nature, are believed to result in a dissociation of the hemoglobin from the stroma of the latter.

The hemorrhagic extravasations and the lessened coagulability of the blood which occur in albumose poisoning are the direct effect of the hemolytic principle contained in the albumose. There is thus erythrolysis and possibly leucolysis. The anemia is thus accounted for.

The progressive loss of albumin is undoubtedly due to the increased metabolism of the body at large. The blood is drawn upon heavily for food.

As the blood becomes hydremic, which it does in most fevers, the isotonic tension between the blood cells and the serum is entirely upset.

This has been particularly investigated with regard to erythrocytes, but I doubt not applies equally well to most of the soft tissue body cells. To my mind it accounts for the emaciation which accompanies so many acute febrile diseases.

The osmotic law is that when two solutions of different concentration are separated by an animal membrane, the solutions pass through the membrane till the quantity of salt in each is equal.

In the case of erythrocytes, the chlorides pass from the serum to the cell, and the albumins and phosphates from the cell to the serum.

The disappearance of chlorides from fever urines is thus explained, as well as the increased output of nitrogenous waste products, sulphates and phosphates.

TREATMENT.

The treatment of albumosuria and peptonuria is, in general, that which is employed for the septic state. The most that we can do at present is to neutralize as far as possible the effects of the poison.

The neurotoxic element is best combated by oxygen and strychnia. Since albumoses form a chemical combination with the neurons, nothing short of an antitoxin will dislodge them. Antitoxins are cellular secretions. Such being the case, anything which increases cellular activity will, *ceteris paribus*, increase cellular secretion. Oxygen is one of these substances. The living body cell is aerobic. Again, oxygen assists in the digestion of proteids, and particularly in the disintegration of peptones. The excretion of urea is increased under its use, and it is therefore a diuretic. I have tried various methods of administering oxygen, but the one from which I have seen most benefit is by the ingestion of a new chemical compound, magnesium dioxide, called "Biogen" by its pharmaceutical sponsors. This preparation is claimed to contain 28% of oxygen.

Another agent of value is normal salt solution. It ought to be used much more frequently in septic states than is at present customary. It not only restores the isotonic tension of the blood where this has been disturbed and thereby prevents the drain of albumins and phosphates from the body cells, but is itself an antiseptic of no mean power. Solutions of sodium chloride are dissociated in the blood

into sodium and chlorine. The sodium unites with carbon dioxide to form sodium carbonate and bicarbonate, and the chlorine is left free to exert its antiseptic action.

The normal salt solution may be given hypodermically, but I prefer rectal injections of a pint or half a pint morning and night, the bowels having previously been emptied by an enema.

The circulation improves under its use, but it is well to remember that an excess produces dyspnea, headache, cardiac pain and even pulmonary edema.

Where albumosuria is the result of an intestinal lesion, this of course must be treated by itself, and the same is true of any local collection of pus.

In closing, I would again call attention to the clinical fact that apart from lesions of the digestive tract, albumosuria is indicative of leucocytosis, and peptonuria of pus absorption.

Treatment based upon these indications cannot go far astray.

A CASE OF JUVENILE AORTIC STENOSIS, WITH SUBSEQUENT INSUFFICIENCY. SUDDEN DEATH: AUTOPSY.

BY ALBERT N. BLODGETT, M.D., BOSTON.

THE subject of this paper was a man of twenty years, who had been under my observation for a period of about two and a half years. He had always been "well," according to his own statement, though he belonged to a family which adheres to a peculiar sect which does not acknowledge the existence of disease, but occasionally recognize a "claim" of pneumonia, rheumatism, etc., so that statements in relation to his former health may not have been wholly reliable. His father died after a long illness, with confinement to the bed, of what was called "curvature of the spine." The mother and one brother are in good health. The patient was about five feet eight inches in stature, and his weight varied slightly around 150 lbs. He had been much devoted to athletics, and was interested in anything which related to muscular exercise. He was fond of boxing in particular, and rode the bicycle with much enthusiasm. His face was partially covered with stains due to grains of powder. His nose was somewhat distorted from an accident, and his left arm was slightly deformed from a reputed fracture of the ulna; but this in no way interfered with its free use, or restrained him from any of his favorite exercises. He had no regular occupation, and passed his time mainly in the pursuit of pleasure, which generally took the form of active muscular sport. He had dissipated to some extent, and pointed with an evident sense of pride to a depressed cicatrix on the glans penis, as proof of his claim to be called a "sport." He gave a very unsatisfying account of this lesion and its behavior; no rational history of treatment or of subsequent developments, and during the period while under my observation there were no symptoms of specific character.

My attention was attracted to the patient by a casual examination of the pulse, which was 58 to 60, suddenly relaxing under the finger. It was fairly regular, but was accelerated by any excite-

ment or on moderate exertion. He stated that he could not run any distance, could not blow a cornet, on which he had become quite proficient, and that upon stooping he felt a pressure in the head, with shortness of breath. The complexion was rather dark at all times, so that any unusual afflux of blood to the skin was not very apparent; but the mucous membranes were the seat of more marked change in coloration. He was subject to a short and rather loose cough on exertion, unaccompanied by expectoration, and said that he "took cold" often during athletic exercise or other exertion, and he had frequent nosebleed, and was obliged to sleep on a high pillow; appetite and sleep were normal; all organic and voluntary functions otherwise in normal state; capillary pulse was not observed. He willingly consented to physical examination for purely scientific purposes, with the following results: Removal of his clothes revealed a most perfect muscular development, of which he was very proud. He might have served as a model for a Hercules. The several muscles were under unusual individual control, and he could contract independently many muscles not usually subject to voluntary control. The surface of the body resembled a superficial dissection. The several bodies of the recti abdominis were especially developed. The body was everywhere symmetrical except over the left cardiac area, where there was a slight prominence of the chest, extending from the third rib to the lower border of the sixth in the axillary line. Over this area could be felt a diffused heaving with a distinct and uniform thrill, coincident with the pulse at the wrist, and accompanied by a visible wave over the carotids, and seen also in the temporal arteries. There was also visible elevation in the epigastrium. The sensation to the hand over the precordium was that of painful effort, with tremulousness in the execution of function, such as is seen in forcible labor in a voluntary muscle.

Percussion revealed dullness over an area from the level of the seventh rib in the nipple line on the left to a line corresponding to the right border of the sternum, near ensiform cartilage, at the lower portion passing slightly beyond this bone; thence upward in a slightly curved line to about the union of the second costal cartilage with the rib; and from this point it passed inward and across the sternum at the second rib; thence descending in a large curve to the point first mentioned, thus including a roughly triangular space with its base across the lower part of the chest. The liver dullness was increased somewhat; that of the spleen normal.

Auscultation disclosed a loud, rough, systolic murmur, resembling the sound of a saw, occupying almost the whole of the enlarged heart area, and obscuring the other heart sounds to a marked degree. It was propagated into the axillæ, into the neck, and could be detected over the femoral artery. This murmur was systolic in time, of definite pitch, but hardly musical tone, and reached its greatest intensity over the second interspace of the right side, thus replacing wholly the normal first sound of the heart. The second sound was low in intensity, and followed so closely on the murmur that it could at times hardly be differentiated. There was also a faint murmur accompanying and following the closure of the aortic valves, indicating slight

incompetence, or at least this was suspected. No signs of insufficiency were detected over the seat of the mitral valve when the patient was quiet, but a slight murmur was heard in this region after exertion. This was thought to indicate a moderate regurgitation from distention of the left ventricle and stretching of the mitral orifice. The pulmonary second sound was intensified, and heard somewhat higher in the chest than its normal position. There were no friction or other abnormal sounds. No sphygmographic charts were taken. As the young man was not "sick," no treatment was prescribed; but he was earnestly advised to abstain from sudden or violent exertion, to drop tobacco and alcohol, and to refrain from harmful and vicious indulgences. (He stated that he knew his heart was affected, but would not promise to follow advice.)

The patient was examined about one year later, at which time he stated he was very well, except that he was easily "put out of breath." His resting pulse was 68, respiration was 24, color dusky, but he felt well otherwise. He had followed his ordinary mode of life without intermission, and freely indulged in athletics. Examination of the chest revealed the signs before observed, but in addition there was now a distinct and permanent murmur during diastole, heard loudest over the aortic area, the combination being that of a to-and-fro sawing murmur, of harsh character and without musical quality. The heart area was enlarged about 1 cm. above each of the former dimensions, and the chest was more prominent; he had also contracted a fresh gonorrhea, to which he gave little heed.

At the end of another year he was again examined with some care. His figure remained about the same, he kept up muscular exercises, principally boxing, and claimed to feel well, except from becoming more easily exhausted and "out of breath." His complexion was, however, quite dark, the mucous membranes were dusky, the conjunctivæ were slightly injected and of mildly cyanotic color. No capillary pulse detected. He stated that he had a persistent "cold" with a cough which he could not "shake," was obliged to sleep on a high pillow, and was "getting lazy." At this time a rough, harsh murmur could be easily heard through the patient's clothes at a distance from the chest. The pulse was sharp, quick, and its impulse was followed by sudden collapse of the vessel, the typical water-hammer pulse. In addition to what had formerly been found there was now no difficulty in detecting a murmur over the mitral area, and the pulmonic second sound was distinctly intensified. The liver dullness was increased, the spleen could be detected, and there seemed to be a slight amount of fluid in the abdominal cavity. There was also at this time a heaving pulsation at the top of the sternum, which had not been before present. The double aortic murmur was the same as at the last examination.

Six months later this young man fell dead while boxing with a college companion in a purely friendly encounter. He had received no severe blow, nor been in any way hard pressed; but fell after a moderate direct blow which landed on the side of the face. In his fall his body struck an earthen spittoon, which was broken, and from which several

slight cuts about the arms were received; otherwise no bodily injuries were found.

The body was at once taken in charge by the police and a judicial autopsy ordered, at which the writer was present. Rigor mortis was strongly marked; no appearances of cadaveric change were observed; no marks other than those noticed above were found. There was a pledget of cotton over the glans penis, which was soiled by secretion. The entire surface of the body and limbs was of a uniform dusky red color, so that the appearance resembled that of a red Indian. The face seemed turgid, but no ecchymosis was observed. The conjunctivae were injected and suffused.

The following notes of the autopsy, conducted by the medical examiner, were taken by Dr. Whitney, who has kindly allowed me to add them to the account of the clinical conditions reported above:

Jan. 27, 1903. *Autopsy* at 10.45 A.M., nineteen hours postmortem.

Body of a finely developed man, about twenty years of age, weighing 160 lbs., five feet nine inches in height. Rigor mortis everywhere present, and well marked. Extreme lividity of the dependent parts of the body. A slight recent bruise on the bridge of the nose, also an old white cicatrix quite indistinct on the left side of the nose. Over the left elbow was a somewhat jagged, incised wound about one-third inch in length by one-third inch in depth, quite recent, with blood on the adjacent skin. There were also two small abrasions of the skin over the ulnar side of the arm. There were no other external marks of injury. No edema of extremities.

Head.—The scalp was normal and there was no extravasation of blood or evidence of any injury.

Calvaria.—On cutting through the bone, very abundant, dark fluid blood poured out from the cut sinuses mixed with abundant cerebrospinal fluid. The bone was of normal thickness and appearance, and there was no fracture anywhere of the skull, nor hemorrhage between the dura and bone.

Dura mater and meninges.—Normal.

Brain.—Firm, vascular injection well marked, with a little clear fluid in the ventricles. Sections of the brain showed only the normal appearances everywhere. Pons, medulla oblongata and cerebellum, normal.

Vertebrae.—Normal.

Pericardium.—Normal glistening appearance except at one spot over the lower part of the left ventricle of the heart, where there was a fibrous thickening. The cavity contained a normal amount of fluid.

Heart.—Enlarged, especially on the left side; weighed 585 gm. It was firmly contracted, and contained but little blood in the ventricles, elsewhere the blood was dark and fluid. The left auricle was slightly hypertrophied, its walls measuring 2.75 cm. The mitral valve measured 8 cm., its curtains were normal. The aortic valves were sufficient to the water test, but although the free edges of the cusps were smooth, the orifice was greatly narrowed by partial fusion of the cusps, and by fibrous thickenings extending from the cusp to the surface of the aorta, which also prevented their free opening. This condition seemed to be an extension of a simi-

lar process which was on the surface of the aorta just above the valves, in the form of a slightly elevated, yellowish plate. The opening of the right coronary artery was somewhat contracted, the artery itself, with the exception of a very small, yellowish thickening in one part of its course, was normal. The opening of the left coronary artery was drawn out and valvelike in appearance, and suggested the possibility that it might not have freely admitted blood at all times; but the cut had passed in such a way that this could not be absolutely established. The papillary muscles showed a slight fibrous degeneration in places, as well as in the wall of the left ventricle, otherwise it was normal.

The walls and cavities of the right side of the heart presented nothing remarkable. The tricuspid valve measured 12 cm.

Pleura.—The diaphragm stood at the fourth interspace on the right side and at the fifth rib on the left. There were no adhesions and nothing abnormal in the cavities.

Lungs.—Rather voluminous, with abundant dark fluid blood, but everywhere crepitant. Trachea and bronchi injected; with no foreign substance anywhere.

Peritoneum.—Normal, everywhere smooth and glistening.

Stomach.—Contained a moderate amount of partly digested food, with chyme in the small intestine and rather soft feces in the large intestine.

Liver.—Of normal size, firm, of dark reddish-brown color and abundant blood, otherwise not remarkable.

Pancreas.—Of normal size, vessels injected, appearance normal.

Spleen.—Slightly enlarged, of a dark red color, follicles and trabeculae distinct.

Kidneys.—Of normal size, of a dark reddish blue color and abundant blood.

Bladder.—Empty and normal in appearance.

Testicles.—Normal.

DIAGNOSIS.

Chronic aortic endocarditis with stenosis of the opening.

Hypertrophy of the left heart.

General venous engorgement.

(Warren Museum, Specimen No. 9674, 22-2)

The clinical history of this case taken in connection with the results of my observation during many months, in which I had been able to detect the progressively increasing involvement of the structures at the aortic orifice, with the subsequent appearance of the signs of regurgitation, with its impending consequences, had led me to attribute the affection to the results of the syphilitic infection of some years before, the traces of which were still distinctly visible. There was no history of rheumatism or any other infective disorder to which the lesion of the heart could be ascribed, and it was most certainly not congenital. My reason for calling attention to these facts is that in conversation with Dr. Whitney he stated that he was disinclined to think syphilis the cause of the cardiac lesion. I hesitate to differ from the opinion of so accurate an observer and so experienced a pathologist as Dr.

Whitney, but I cannot free my mind from the conviction that the changes in the aorta, heart structure and valves in this case might have been due to the syphilitic infection. Since writing this paper, a short paragraph upon this topic has fallen under my eye in the *British Medical Journal*, which I have taken the liberty to abstract, and which applies very closely to the case here reported.

David Drummond,¹ in writing upon Cardiac Lesions, specially alludes as follows to "Syphilitic Heart": "The diagnosis of syphilitic disease of the heart is to be reckoned amongst the notable advances in clinical medicine of modern times. We now talk of a syphilitic heart as we do of a rheumatic heart or a kidney heart; and this, it need not be said, is important from a treatment point of view.

"It is true that so far attention has been limited to aortic lesions, and no doubt syphilis affects the aortic orifice much more frequently than the mitral; indeed with such frequency as to make up for the neglect of the latter.

"The absence of a rheumatic history in a case of cardiac disease in middle life will naturally suggest the cause next in order of frequency, which is probably syphilis, and this is of especial importance when a well-marked lesion exists. Aortic disease at this age has seldom existed from childhood, and therefore the patient is familiar with the history of its incidence if rheumatic; but it is not safe to attach too much importance to history, as a number of cases of aortic disease have come under observation with a rheumatic history, in which syphilis was recognized on the postmortem table. The patients are usually men between forty and fifty, the period of life when aneurism is common, and they generally complain of pain in the chest, which in some cases is felt on exertion and in others when at rest, though both varieties may occur in the same case. It is quite common for the patient's face to present the appearance of health, and, indeed, the pallor of aortic disease is seldom noticed till cardiac failure has set in. The murmur is usually double [too and fro], and well conducted into the vessels of the neck, which are generally dilated, and pulsation can be often felt in the episternal notch. This point forms one of the most characteristic signs, and when associated with pain and double aortic murmur in early middle life should always suggest syphilis as a cause.

"It is in syphilitic cases that the history of so-called 'ruptured valves' is to be met, as it is quite common for the statement to be made that the symptoms began suddenly. It is also common in this form of heart disease for compensation to fail whilst the patient is taking matters easily, indicating a progressive lesion. Sudden death is frequent, and particularly so when alcoholic excesses have been indulged in. If the case has been watched carefully during the earlier part of the history, when the lesion is confined to the aortic valves, it will be found that secondary mitral and tricuspid mischief very frequently show themselves by the development of systolic musical murmurs in their respective areas; this is of value as indicating that the lesion is primarily aortic and progressive. Careful examination will often lead to detection,

and in few cases of syphilitic disease of the heart recognized in the postmortem room is aortic dilatation absent."

MOUNTAIN SANATORIA FOR TUBERCULOSIS.

BY WALTER LINDLEY, M.D., LOS ANGELES, CAL.,

Professor of Gynecology, Medical College of the University of Southern California; Ex-President of the California State Medical Society.

"To the mountains for health" has been the cry from time immemorial. It was Celsus who in the 250th year of the Christian era wrote: "Soon as a man finds himself spitting and hacking on rising in the morning, he should immediately take possession of a cow, and go high up into the mountains and live on the fruit of that cow." While a large class of feeble patients may be better off in a low altitude and semi-tropical climate near the sea, yet there is no doubt but that the great mass of cases of tuberculosis, for whom there is yet hope, can find the surest avenue to health in the stimulating surroundings of the pine-clad mountains. The empirical idea of the ancients, in regard to the beneficial effects of the mountains, has been scientifically substantiated in our later days. Professor Roger of Paris, in his valuable work entitled, "An Introduction to Medicine," says when a person remains for some time in the mountains the blood is modified in three ways; namely, increased oxygen capacity, increase in number of red corpuscles, and increase in the iron content. Prof. Thomas J. Mays, in his work on the treatment of pulmonary consumption, says: "It is probably true that no other element in our environment has greater power of modifying bodily structure more palpably than mountain elevation. Its influence pertains especially to the respiratory organs, and is principally, if not entirely, exerted by the thinness or attenuation of the atmosphere, or by diminution of air pressure on the outside of the body. Protracted residence in an altitude of 6,000 feet increases the chest capacity to a marked extent. The therapeutic action of this altitude is that of a strong stimulant to the whole constitution, and especially to the nervous system. The air is cold, dry and attenuated, and is markedly invigorating."

In a recent work published in Mexico,¹ which won the Hodgkins Prize of the Smithsonian Institute, Herreta and Lope devote a chapter to the treatment of tuberculosis by altitude, noteworthy in many respects. They find that statistics show that not only in men, but in lower animals, tuberculosis is decreased in high regions. In 1885, out of 73,000 cattle killed in the general abattoir of the city of Mexico, only 45 were tuberculous. This favorable effect they attribute to the high solar illumination in high altitudes, and the dryness and coolness of the atmosphere as working against the existence of microbes. The benefits of rarefied air in consumption are given by the authors from their experimental and other observations as follows: "(1) Lessening pressure increases the circulation of air in the lungs, dilates them and obliges torpid parts to functionate. (2) Lessening pressure determines a greater quantity of blood in the lungs. (3) Lessening pressure permits a uniform distribution of

¹ Brit. Med. Journ., Nov. 1, 1902; p. 1418.

¹ La Vie sur les Hauts Plateaux.

blood, regulates its circulation and combats congestion. (4) Lessening pressure diminishes intrapulmonary tension in general, and particularly intervalvular tension. (5) Augmentation of red and white globules. (6) Desiccation of mucous surfaces; the favoring of evaporations. Besides experiments upon animals, observations of actual cases of tuberculosis, treated by rarefied air, are reported by the authors. Of thirteen patients thus treated, only one lost weight, one remained stationary, and eleven notably increased, one increasing 300 gm. in one day. In none, either healthy or tuberculous, were the alarming symptoms described by Paul Bert experienced."

The establishment of mountain sanatoria for health was first begun in the Alps, and the most popular place has been in the Davos Platz. This is an elevated valley about fourteen miles in length, and contains often as many as 10,000 people. The three miles of the valley in which the health resorts, Davos Platz and Dorfli, are located, has an altitude of 5,100 feet, and is surrounded by Alps ranging from 9,000 to 10,000 feet above sea level. St. Moritz is another noted resort, which lies in the Engadine over 6,000 feet above the level of the sea. The *Cyclopædia Britannica*, in describing this section, says they have nine months of winter and three months of cold weather. Another noted sanatorium is that of Arosa, which is reached from the railroad station of Chur by stage within five or six hours. The altitude here is 6,150 feet.

In our own country we have moderate altitude sanatoria in the mountains of the Carolinas, the Adirondack Cottage Sanitarium at an elevation of 1,500 feet, and the Loomis Sanitarium at an elevation of 2,200 feet, and several resorts in Colorado that have elevations of from 4,500 feet to 7,000 feet.

In the Alpine resorts the ground is uninterruptedly covered with snow for four months in the year, and the sun shines in the valley during the winter but five or six hours daily.

We have briefly related these facts in order to show faintly the great interest that is now being taken in the mountain treatment of tuberculosis.

There are several points that in an ideal mountain resort should be covered:

(1) An altitude of about 5,000 feet; (2) the greatest amount of sunshine; (3) the greatest possible number of days when outdoor exercise can be pleasantly taken; (4) purity of the atmosphere; (5) purity of the water supply; (6) pine forests for their balsamic effect on the atmosphere; (7) beauty of scenery, and inviting short tours.

A recent number of the *Brooklyn Medical Journal* in discussing this subject says: "Evidence is now accumulating that the mountain resorts are as beneficial in winter as in summer. Both the tendency to general hyperpyrexia and the local process are indications for the use of cold. So long as the body heat is not too much depressed — and that is easily within control — the inhalation of cold air is a positive advantage. The mountain air means, besides antipyresis, more oxygen per cubic inch, less moisture and sometimes the presence of ozone due to the friction of dry air upon the pine-clad hills."

It was with all this data, and much more that could be referred to, before us, that we felt the need in California of a mountain resort for tuberculosis

For the advanced cases, the hemorrhagic cases and the gouty cases of tuberculosis, the low altitude and marine resorts of Southern California already supplied ideal climate; but for the moderately advanced cases, and more hopeful cases, a mountain resort was needed, and after twenty-five years of personal investigation we finally chose the point where is now located the Idyllwild Sanatorium, in Strawberry Valley, San Jacinto Mountains, Riverside County. Why have we chosen this place? Because both winters and summers there are delightful. During the summer in the shade of the forest trees there is never an unpleasant day, while in the winter the sun shines almost every day; and, instead of six or eight hours of sunshine that can be had in the Alpine resorts, we have here long, sunny days throughout the winter. The fuhr, that annoying wind, that is so disagreeable in the Swiss Alps, is never experienced in these California mountains. While it is cold enough to be invigorating, and sometimes there are heavy snows, yet the coldest that has every been known was 13° F. above zero. This was one night in the winter of 1900. The next day was sunny and enjoyable. These mountains jut out into the Colorado desert, and during the night there is a pure air that comes in over this vast, arid plain, while on the west are seventy miles of fertile fields and orchards reaching to the Pacific Ocean; and during the day there is a refreshing ocean breeze. While immediately around the sanatorium the trees are sparse enough to admit abundance of sun, yet there are such extensive pine forests that the air is literally laden with balsamic fragrance.

There are many springs over this tract, and many springs through this valley, some of them sending forth quite large streams, and it is from one of these that the water is piped through all of the buildings, giving pure, soft drinking water that is cold enough for use even during midsummer.

This valley, which has an altitude ranging from 5,000 to 6,500 feet, is about six miles long and from one-half mile to a mile wide, and on each side of it the mountains range from 7,000 to 10,000 feet in height.

The government has recently established there a branch of the weather bureau, and from this time on accurate statistics will be available. This much is known — that the rainfall ranges from fifteen to twenty-five inches per annum.

As to the sanatorium itself, it consists of one fifty-room building, and of four cottages, two of which contain three rooms each, and two six rooms each. This building and the cottages are lighted by electricity, heated by steam, and furnished with liberal quota of private and public baths. There are also seven cottages for rent about one third of a mile away — these cottages also being lighted by electricity and fitted up for housekeeping. They all have bath tubs, and connected with the kitchen stove are boilers for furnishing hot water.

There is a store, dairy and meat market, from which the necessities and the comforts of life can be purchased for those who desire to live independently of the sanatorium.

At the sanatorium itself is a resident physician, and there are also trained nurses. The patients in the sanatorium have the attention of the doctor without extra charge.

There is also an excellent school for younger children, which has now been in successful session for three months. This gives an opportunity for educating the delicate children and the children of the delicate parents who may be in the sanatorium.

At present besides the numerous beautiful walks in the vicinity, there is a shooting range, golf links, lawn tennis, croquet, billiards and bowling alleys. Croquet is particularly suitable for the tuberculous; it is reasonably interesting, not so exciting as to lead to indiscretion, and gives a fair amount of exercise in the open.

As to the means of reaching the sanatorium it is one hundred miles east of Los Angeles, and the nearest railway station is Hemet. One takes the Santa Fé train at Los Angeles at 8.30 A.M., and reaches Hemet about 12 o'clock; after lunch one leaves Hemet by stage and arrives at Idyllwild at 5 P.M. The four and one-half hours' stage ride is picturesque and invigorating.

We have thus pointed out this new mountain resort, which from now on we believe will prove to be a great factor in contending with this disease. One other advantage is that if this location does not agree with a given patient it is so easy to change to a marine climate, or a low, equable, warm inland climate. Two hours will bring the patient from this altitude of a mile down into the midst of orange groves, and a short time longer will take the patient directly to the sea. It is also very accessible because the patient, or the resident physician, can consult with the patient's regular attendant at San Diego, San Francisco, Pasadena or Los Angeles in a few minutes by telephone.

The fact that we, who have resided in Southern California so many years, have finally taken up this enterprise is more convincing of our confidence as to its virtues than any amount of words, and we ask of the profession such co-operation as will make this new sanatorium of the greatest good to the greatest possible number.

New Instruments.

AN APPARATUS FOR ETHERIZING IN OPERATIONS ABOUT THE NOSE AND THROAT.¹

BY D. CROSBY GREENE, JR., M.D., BOSTON.

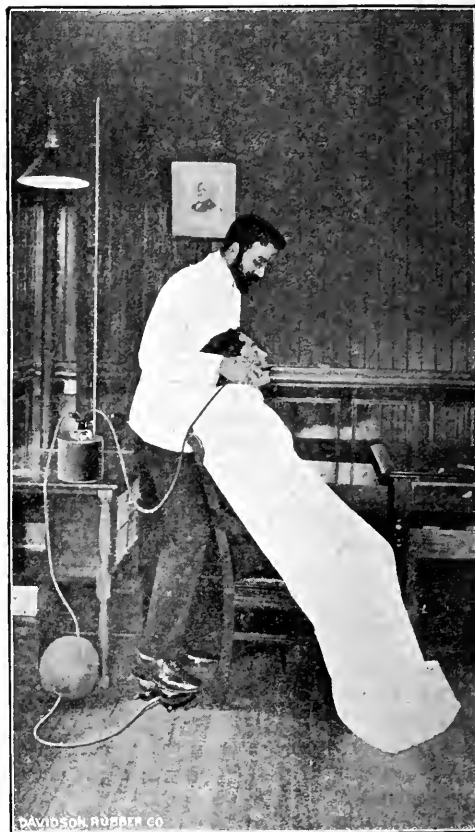
THE disadvantage of using a cone in etherizing for a prolonged operation about the nose or throat is that it necessitates frequent interruptions of the operation while the anesthetic is being administered.

The apparatus which I wish to demonstrate is one by which anesthesia is maintained by a stream of ether vapor, introduced into the mouth through a tube, while the operation is in progress.

A similar apparatus was described a year ago by Dr. H. P. Mosher of this city in the *BOSTON MEDICAL AND SURGICAL JOURNAL*.² His was a modification of one used for the last five years in cleft

palate operations by Dr. Fillebrown of the Harvard Dental School. Using this apparatus as a model, I have made some changes in the direction of simplicity and efficacy.

The object in view is to produce a strong stream of ether vapor which can at any moment be cut off, in whole or in part, at the will of the etherizer without wasting ether. Subjected to heat, ether becomes more volatile, and the vapor more anesthetic and less irritating to the mucous membrane of the air passages. The ether container is therefore placed in a warm-water jacket in a brass double cylinder. The object of having a double cylinder is to keep the ether at an approximately equable temperature of about 110° F. Water heated to this temperature is put into the inner cylinder and much hotter water (150° to 180° F.) into the large outer cylinder. In practice this



serves to keep the ether sufficiently warm for half or three quarters of an hour. In operations lasting longer than this it is advisable to replenish the hot water in the outer cylinder from time to time.

The glass ether container is connected with an air foot pump by a rubber tube, which at its middle expands into a dilatable rubber bag. A steady current of air is thus pumped into the ether chamber, becomes saturated with warm ether vapor, and escapes from the container through another tube which leads into the mouth of the patient.

The mouth tip is a bent hard rubber tube provided with an automatically closing stopcock, which is the distinctive feature of this apparatus.

¹ Read by invitation before the Eastern Section of the American Laryngological, Rhinological and Otolological Association, Boston, Feb. 14, 1903.

² *Boston Med. and Surg. Journ.*, Vol. cixvi, No. 4, pp. 84 and 85, Jan. 23, 1902.

By its use the etherizer is enabled to admit ether into the mouth during inspiration alone, thus avoiding waste of ether and sparing the operator the annoyance of having the strong vapor blown into his face during expiration. The ether can be kept under fairly high pressure from the foot pump and at the same time perfectly under the control of the etherizer.

In order to use the apparatus successfully, a fairly deep preliminary anesthesia with a cone is necessary. Otherwise there is likely to be considerable reflex cough and choking at the start, owing to the irritation of the strong ether vapor. In almost cases a satisfactory prolonged anesthesia can be obtained by using this apparatus alone, but in very difficult subjects it may be necessary at times to reapply the cone. When this has to be done, a rapid and deep anesthesia can be secured by connecting the mouth tip with a rubber breathing bag attached to a face piece which excludes air, the ether entering directly into the breathing bag and being inhaled thence through the face piece.

In brief, the procedure in managing a case with this apparatus is as follows: The patient is first deeply anesthetized, with gas and ether or ether alone, by the ordinary methods. Just before the cone is removed the apparatus is pumped up to a good pressure and the ether container placed in the warm-water jacket. As soon as the cone is removed, the mouth piece is inserted into the patient's mouth, which is kept open by a gag. The etherizer watches the respiration carefully and regulates the current of ether by the stopcock so that it is admitted into the patient's mouth during inspiration alone. In the case of an exceptionally difficult subject for ether anesthesia, it may become necessary to apply a cone in the manner I have described, but ordinarily the anesthesia runs smoothly for an indefinite length of time.

Clinical Department.

STRANGULATED HERNIA IN AN INFANT SIX WEEKS OLD—OPERATION—RECOVERY.¹

BY GEORGE TULLY VAUGHAN, M.D., WASHINGTON, D. C.

Assistant Surgeon General Marine Hospital Service, Washington, D. C.

STRANGULATED hernia in infants is probably more frequent than is generally supposed, the mother or nurse, no doubt, often attributing to colic the symptoms caused by hernia; yet the number of such cases reported is very small. Bull and Coley, with a very large experience, report only seven cases operated on under two years of age. The same authors report the youngest case operated on, according to Dowd's one hundred cases, as two months of age. The following case is of interest on account of its extreme youth:

E. L. F., colored male, aged forty-six days, was admitted to the Emergency Hospital, Jan. 8, 1903, with the diagnosis of strangulated hernia. The patient had been healthy until a few days before, when he was taken with a cough, and in the evening of Jan. 7 the mother noticed a swelling in the right

side of the scrotum and inguinal region, and between that time and the time of admission to hospital—twenty-four hours—the child seemed to be in pain, cried a great deal and vomited several times. On admission to hospital, at 6 P.M., a tight swelling about the size of a hen's egg was seen in the scrotum and inguinal region. It was without impulse on coughing and straining, and gentle taxis made no impression on it. The patient was anesthetized with chloroform and the intestine exposed by the usual incision—about eighteen inches of ileum being found in the sac of the tunica vaginalis testis, highly congested and a portion adherent to the bottom of the sac. This portion looked almost gangrenous in patches, and was observed for several minutes before deciding to restore it without resection. The constriction was at the internal ring, and this had to be slightly enlarged before the intestine could be reduced. The peritoneum and transversalis fascia were sewed across with kangaroo tendon as high up as possible, the cord was raised from its bed and one suture introduced to bring together the conjoined tendon and Poupart's ligament, the cord replaced, and the aponeurosis of the external oblique and fascia united over the cord by a continuous kangaroo tendon suture. The skin was united with continuous silkworm gut suture and sealed with collodion. No attempt was made to dissect the funicular process of the peritoneum from the cord—it was simply closed above by means of a kangaroo tendon suture carefully inserted so as not to injure the cord. Considerable difficulty was caused by the disproportion between the anatomy of the patient and the fingers of the surgeon.

There was no further trouble, no vomiting nor excessive crying. The stitches were removed on the 19th, eleven days after operation, and the patient was discharged well on the 24th.

Medical Progress.

PROGRESS IN THERAPEUTICS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

(Concluded from No. 17, page 446.)

THEOCIN.⁶

THEOCIN (theophyllin) is a dimethyl xanthin. It was isolated from tea in 1888 by Kossel, but on account of its cost has never been used medicinally. In 1891 Traube succeeded in making it synthetically, and gave to it the name of theocin. Caffeine, a trimethyl xanthin, and theobromin, a dimethyl xanthin and isomer of theocin have long been known to have diuretic power, but theocin appears to be far more powerful than either.

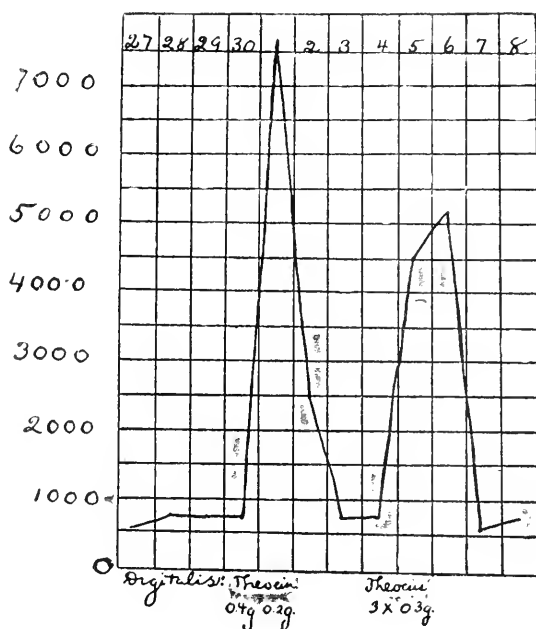
Theocin is more readily soluble than theobromin, 1:179 parts instead of 1:1600 parts water. The toxicity corresponds to that of caffeine. Convulsions occur in cats with a dose of 0.1 gm. per kilo. body weight. On the heart and pulse, unlike caffeine, but similarly to theobromin, it exerts no action. It resembles caffeine in its exciting action on the nervous system.

¹ Read before the Fairfax County Medical Society, Feb. 5, 1903.

⁶ Die Therap. der Gegenwart, 1902, Nov., p. 490.

Dresler called attention to the diuretic action of theocin, which Ach some three years ago had also noted. Minkowski now has confirmed their statements, and reports his results with theocin in fourteen cases,—heart disease with passive congestion, nephritis, and a case of dropsy in consequence of a cardiac cirrhosis. The following case was the most remarkable: Man, thirty-five years old. Aortic insufficiency, with dilatation of the left ventricle. Large, hard liver. Albuminuria. Edema of the lower extremities. Quantity of urine at entrance 900 cm., but increased with digitalis to 1,300–1,700 cm., to fall later to 500–800 cm. The edema then increased and micturition was difficult on account of edema of the penis. On the 30th the quantity of urine was 820 cm. The digitalis was omitted, and the patient received 0.4 gm. (6 gr.) theocin, and in the next twenty-four hours the quantity of urine rose to 7,600 cm.! The following chart best shows the action of the drug.

In no other case was the diuresis as extensive, but it generally rose to 3,000–5,000 cm. when theocin was given. It was striking that theocin was found to act even where other diuretics had failed. The action of theocin is temporary, and it loses its efficiency when repeated. Nausea and anorexia may occur after its use. It does not disturb the sleep and exerts no deleterious influence upon the kidneys.



Schlesinger confirms the diuretic action of theocin claimed by Minkowski, having tested it in more than forty cases. These were chiefly cases of cardiac dropsy. Some of the patients had arterio-sclerosis or renal disease, and there were a few with inflammatory collections of fluid in the pleura or peritoneum. The diuretic action of theocin in cardiac cases was unquestioned. The quantity of urine increased in the first twenty-four hours, and the diuresis lasted for one to three days, and then

gradually subsided. The quantity of urine reached six liters in one case, and repeatedly was over three liters. Among these cases were those which had resisted all other internal medication.

Schlesinger also used theocin in renal cases—subacute Bright's and granular kidney with dropsy. The excretion of albumin was not unfavorably influenced.

The action of theocin in inflammatory affections of the pleura and peritoneum was far less favorable, and the same held true with two cases of hepatic cirrhosis with ascites.

The following observations are recorded: Theocin in 0.2-gm. (3-gr.) doses was prescribed for a patient with heart disease but normal kidneys, five times daily for two days. On the second day the patient was seized with convulsions, epileptic in character. The drug was continued, and the convulsions recurred on the next day. Theocin was then omitted, and during the several weeks which elapsed until the death of the patient no convulsions appeared. The convulsions lasted for several minutes, were accompanied by loss of consciousness, biting of the tongue and incontinence of urine and stools. An analogous case underwent the same experience after the use of only 0.2 gm. (3 gr.) theocin, repeated five times. The diuresis continued undiminished on the days of the convulsions.

Schlesinger considers the convulsions to be the direct result of the theocin, and adduces in confirmation the experimental evidence by which cramps were produced in cats by the administration of 0.1 gm. (1½ gr.) theocin per kilo body weight.

The diuretic action of theocin is so excellent that Schlesinger has combined with it, in order to lessen its exciting action, adonis vernalis. The bromides act unfavorably on the diuretic action, but adonis vernalis does not, but rather enhances it. Schlesinger omits the theocin as soon as headache or vomiting—signs of intoxication—appear. He gives the following formula:

| | | |
|-------------------------|-----|--------|
| Theocin, | 0.6 | (—1.0) |
| Infus. adonis vernalis, | 5 | 0 |
| Syrp. simplic., | 20 | 0 |
| Aqua, | 180 | 0 |

Sig. Take during twenty-four hours.

Using this prescription, he has met with no ill results in twenty cases, and recommends strongly its further use. Theocin is a powerful diuretic, but heroic remedy, and should be controlled by the simultaneous administration of adonis vernalis.

Meinertz⁸ confirms Minkowski's results, except that he has found theocin lost none of its power if repeated after intervals of a few days.

THE USE OF BORIC ACID AND BORAX AS A PRESERVATIVE.⁹

Oscar Liebreich comments on the law in Germany which prohibits the use of these materials as preservatives for meat, yet allows them in other foods. Their use is declared harmful to health in Germany, but in England no objection is raised against them. The laboratory belonging to the Imperial Health Department is occupied with work which aims to show by experiments on animals and

⁷ Schlesinger: Die Therapie der Gegenw. 1903, March. p. 115.

⁸ Therap. Monats. 1903, February. p. 58.

⁹ Therap. Monats. 1903, Feb. p. 36.

man the injurious effects of these preparations. Scientifically these experiments do not prove their point. More experiments are to follow. [The scientific zeal and the desire for the protection of the public health which our German friends manifest is interesting.]

PRURITUS.

The article of Robin and Dalche on the "Treatment of Vulvar Pruritus" is summarized in *American Medicine* for April 11, 1903. "Among the means employed are prolonged hot applications of 1:1000 solutions of corrosive sublimate, 10% solutions of chloral hydrate and 5% to 10% solutions of cocain. The following powder may be applied locally:

| | |
|---------------------|-----|
| Powdered orthoform. | |
| " diiodoform. | — |
| " tale, | aa. |

"The anesthesia produced by orthoform lasts longer than that by cocain. The following ointment may also be used:

| | |
|-----------------|----------------------------------|
| Menthol | 0.05 gm. ($\frac{1}{4}$ gr.) |
| Guaiacol | 0.3 gm. ($\frac{1}{2}$ –15 gr.) |
| Zinc oxid | 10.0 gm. (2½ dr.) |
| Vaseline | 30.0 gm. (1 oz.) |

"Ichthol may be used in 10% aqueous solution or in an ointment containing 15%. Ruge of Berlin washes the parts with soap, then with a solution of corrosive sublimate, followed by an application of 3% or 5% carbolized vaseline. Leredde uses a 5% ointment of methyl salicylate. When there is dyspepsia with fermentation, Robin prescribes erythrol with calcium fluorid as follows:

| | |
|-------------------------|--|
| Erythrol | 0.02 to 0.1 gm. ($\frac{1}{2}$ –1½ gr.) |
| Calcium fluorid | 0.02 to 0.1 gm. ($\frac{1}{2}$ –1½ gr.) |
| Calcined magnesia | 0.1 gm. (1½ gr.) |

"For one cachet. One cachet at the end of each meal. Erythrol is particularly indicated in butyric acid fermentation; if lactic acid fermentation is present, ammonium fluorid should be substituted, as follows:

| | |
|--------------------|----------------------------|
| Ammonium fluorid.. | 0.1 to 1.0 gm. (1½–15 gr.) |
| Water | 300. cc. (10 oz.) |

"One dessertspoonful during the two chief meals."

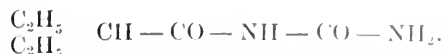
TREATMENT OF RECURRENT VOMITING IN CHILDREN.¹⁰

Edsall concludes that in one case, which he describes, the symptoms were due to an acid intoxication similar to the type seen in diabetes. Treatment directed toward this acid intoxication was successful. The child in question exhibited soon after vomiting a very marked odor of acetone. Twenty grains of bicarbonate of soda were ordered to be given every two hours. The child retained this perfectly, and after four or five doses the vomiting and nausea stopped. Another child, accustomed to attacks of vomiting a week in duration, under the alkaline treatment, was relieved of an attack in two days and a half. Three other similar cases were reported.

¹⁰Amer. Journ. of Med. Sci. 1903, April. p. 629.

VERONAL.¹¹

Veronal is a crystalline colorless body which melts at 191° C., tastes mildly bitter, is soluble in about 12 parts boiling water and in 115 parts water at 20° C. The chemical name is diethyl-acetyl urea.



The ordinary dose for sleeplessness is 0.5 gm. ($\frac{7}{16}$ gr.), which can at will be increased to 1 gm. (15 gr.). In weak patients 0.3 gm. ($\frac{1}{2}$ gr.) may suffice. If the veronal is given in solution, effect occurs in half an hour. It is best administered dissolved in a cup of warm tea, though it may be given as a powder. The authors have observed no untoward accompanying symptoms.

Emil Fischer and J. v. Mering have studied the chemical constitution and pharmacological action of the synthetic hypnotics now commonly used. Of these, chloral hydrate ($\text{CCl}_3\text{CH}(\text{OH})_2$) and its derivative, chloralamid ($\text{CCl}_2\text{CHOH} - \text{NHCHO}$), and in all probability paraldehyde ($\text{C}_6\text{H}_{12}\text{O}_3$), form

one class; amylene-hydrate $\left(\begin{array}{c} \text{CH}_3 \\ \text{CH}_3 > \text{C} - \text{OH} \\ \text{C}_2\text{H}_5 \end{array} \right)$

forms a second, and its action appears dependent upon, besides the alcohol group, the carbohy-drate atom, which is bound to three alkyl groups. Dormiol comes between these two classes, because it is a mixture of chloral and amylene-hydrate. Urethan ($\text{CO}(\text{NH}_2)(\text{OC}_2\text{H}_5)$), and its derivative, hedonal, form the third class. The fourth class is

represented by trional $\left[\begin{array}{c} \text{CH}_3 \\ \text{C}_2\text{H}_5 > \text{C} < \text{SO}_2\text{C}_2\text{H}_5 \end{array} \right)$

with its sulphur group. This is similar to amylene-hydrate, because of the carbon atom forming the center of the molecule, and being connected with two alkyl groups, and again by the presence of an ethyl group in each. With this in mind, they studied other compounds which contained a carbon atom united with several ethyl groups. The one which showed the greatest hypnotic power they named veronal.

Reports of Societies.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

STATED meeting, April 13, 1903. The Vice-President, RANSFORD E. VAN GIESON, M.D., in the chair.

DR. SAMUEL G. GAUT read a paper on

THE NON-MEDICINAL TREATMENT OF CONSTIPATION.

The successful treatment of chronic constipation, he said, still remains a difficult problem. In many instances the failure to obtain good results is due to the fact that the physician, in his desire for prompt effects, is apt to over-drug the patient, instead of adopting more rational methods, which, while perhaps less satisfactory in the beginning, will eventually accomplish a permanent cure. A

¹¹Die Therap. der Gegenw. 1903, March. p. 97.

large number of cases are due to irregular habits, improper diet, lack of intestinal tonicities and secretion, or insufficient exercise, and must be treated by remedying such of these factors as are present. In another class of cases the trouble is dependent on abdominal or diseased conditions of the lower bowel, which require operation or local treatment.

In 1891 Dr. Gaut reported before the Kansas City Academy of Medicine a number of cases cured by the non-medicinal method, and since then he has treated by this several hundred cases, the majority of whom were permanently cured, while the remainder, with but few exceptions, were relieved to a greater or less degree. The principal features of the treatment practiced by him consist of the proper education of the patient, together with the administration of enemata when necessary, massage, electricity, divulsion or division of the sphincter muscle, and valvotomy, any or all of these being carried out as the case demands. Persistence in the treatment is an essential requisite for success. Regularity in the manner of living must be insisted on. The patient should abstain from foods which disagree with him or tend to clog the bowel, and laxative fruits, to be eaten preferably in the morning or at bed-time, should be included in his dietary. Two or three glasses of water taken on rising constitute an excellent laxative, and the free drinking of water throughout the day is of service in softening the feces and stimulating intestinal peristalsis. Those engaged in sedentary occupations should take plenty of systematic indoor or outdoor exercise. In the numerous cases in which the constipation is complicated with auto-intoxication, a morning cold bath, followed by a salt rub or vigorous friction of the skin with a Turkish towel, is of much service in promoting elimination. A systematic effort (to which sufficient time must be devoted) to evacuate the bowels should be made at a given hour daily.

Dr. Gaut regards the regular daily use of enemata as a most pernicious practice. In some instances, however, rectal or colonic injections are advisable early in the treatment, in order to secure necessary evacuations and prevent fecal impaction. Massage is an essential feature of the treatment. In addition to kneading the larger intestine, special massage is given over the liver and small intestine and locally to the rectum. The table on which the patient is placed is so arranged that the head may be raised or lowered and the body rotated from side to side, so that the intestines may be changed from one position to another. With the palm of the hand and ball of the thumb the operator makes firm but gentle pressure over the large intestine, beginning in the right iliac fossa and following the course of the colon over to the left; accompanying the pressure by thorough kneading of the parts with the fingers. These manipulations are repeated several times at each *séance*, and the treatment should occupy ten or twelve minutes. It is practiced every day at first and later twice a week. If unable to pay for the services of a masseur, the patient may receive much benefit from daily rolling, while lying in a recumbent position, a cloth-covered metal or bowling ball over the course of the colon.

In combination with other measures he has found electricity of value in many instances. The positive

electrode is placed over the spine or in the rectum or sigmoid colon, while the negative is moved about the abdomen over the region of the liver, the small intestine and the colon. As, in his opinion, hypertrophy or irritability of the sphincter muscle is an important factor in the etiology of constipation, its divulsion or division is frequently indicated. Gradual divulsion may be accomplished by the introduction of one, two and then three fingers, until the muscle has become sufficiently relaxed, or by the use of the Kelly or Pratt anal dilators or of Wale's graduated rubber bougies. Forceful or rapid divulsion, for which general anesthesia is required, is accomplished by stretching the muscle in every direction by means of the thumbs. In cases in which the sphincter is so thick and rigid that sufficient relaxation cannot be obtained by divulsion, division is necessary. After the injection of a 3% solution of beta-eucaine into the section of the sphincter to be incised, a bistoury, guided by the finger, is introduced well above the muscle and then withdrawn; in this way all the fibers are completely divided laterally or in the posterior median line. The after-treatment is the same as that for cutting operations for fistula.

When one or more of Houston's valves have become so hypertrophied as to obstruct the descent of feces, as is occasionally found to be the case, valvotomy is indicated. Martin was the first to suggest division of the thickened valves for the relief of constipation. After describing his operation Dr. Gaut stated that it was open to serious objections. Among these are its difficulty of performance, the considerable time required, the danger of hemorrhage, infection and peritonitis, the great pain due to the presence of the tampon left in the rectum, the confinement of the patient in bed for a week or more and the fact that no part of the obstructing valve is removed. As a substitute for the Martin operation Pennington suggested a clip for the purpose of dividing the valves by pressure-necrosis. With this idea in mind, Dr. Gaut has devised a fenestrated valve-clamp and forceps applicator, which render the operation extremely simple and devoid of danger. For the performance of his procedure the patient is placed in the knee-chest posture, and a proctoscope so adjusted that the border of the valve crosses the center of its aperture. The applicator carrying the open clamp having been introduced, the clamp is slipped well down over the valve and released, and the forceps and proctoscope are then withdrawn. The clamp should divide the valve in from four to six days (the time depending on the amount of fibrous tissue present), and when it is then discharged with the feces it carries the section of tissue within its grasp.

This clamp operation can be painlessly performed in the office in from one to five minutes. It is attended by no danger of hemorrhage, infection or complications; no dressings are required, and the patient, who is not detained from his usual vocations, suffers but little, if any, discomfort. Furthermore, it is more effective than the cutting operation, since it removes a section of tissue nearly half an inch wide and about an inch long, thus insuring wide separation of the remaining segments of the valve. Valvotomy, while unquestionably indicated in certain instances, is not called for in so

large a proportion as its most enthusiastic advocates would have us believe. In cases of long duration it is sometimes necessary, after the rectal valves have been divided, to properly educate the patient, and carry out the various other measures mentioned in order to overcome the habitual constipation. In conclusion Dr. Gaut stated that in his experience the results obtained from the non-medicinal method were far more satisfactory than those following the use of drugs.

DISCUSSION.

DR. ROBERT T. MORRIS said he at first felt suspicious as to the rectal valves constituting an obstruction to the passage of feces. He was skeptical because some of his friends failed to find these valves at all. Afterwards, however, he had himself seen them congested and thickened, and it seemed to him hardly possible that any one who had observed them in such a condition could deny their evident mechanical agency in promoting chronic constipation. The results were certainly very marked in a number of cases which he had seen operated upon. As to the proportion of instances in which valvotomy was of value, this could be determined only from statistics very carefully collected by experts. It was his own conviction that the percentage was fairly large. In his personal experience he had found that in a number of cases in which he had expected prompt relief from the procedure, the good results had not been so prompt as he could have desired. In other instances, however, immediate relief had resulted. There could be no question, he thought, that the condition of the valves spoken of in the paper constituted the chief factor in the distress from which a certain number of individuals suffered all their lives. He here referred to the case of a young lady of a wealthy family who had been a lifelong sufferer from obstinate constipation. She had had for many years the best medical advice both in this country and abroad, yet her condition remained unimproved. By valvotomy, however, she was instantly and permanently relieved. If, therefore, his procedure acted so favorably in only one case out of a hundred, he thought it was deserving of recognition as a valuable resource.

DR. EDWARD W. PETERSON said chronic constipation was both a symptom and a cause of a number of rectal as well as constitutional affections. In order to get a satisfactory result it is necessary to treat all the factors of the condition, whether local or general. It is well known that constipation frequently results from the passive congestion due to cardiac disease or cirrhosis of the liver, and also from the muscular relaxation which often follows acute diseases. Here it is of service to use mechanical means to give tone to the intestine, and the various measures referred to by Dr. Gaut are valuable adjuncts to the treatment. But these will prove inefficient in cases where the trouble is due to another class of cases, such as leadpoisoning, for instance, where antidotes to the poison must be resorted to. There are many cases where constipation results from reflex influence, and we should always endeavor to find out the real cause.

DR. C. F. WAINRIGHT said that while he could in general heartily endorse the views expressed in the

paper, there were manifold causes for constipation which could not be reached by the methods described. Especially is such treatment inadequate in those cases which have to do with the circulation, as where there is a vascular stasis on account of obstruction of the portal circulation. The same is true where constipation exists in connection with pulmonary conditions, and particularly tuberculosis. Again, it may be present in consequence of relaxation of the abdominal walls, and here the strapping of the abdomen, as advocated by Dr. A. Rose, is often followed by good results in patients who have been constipated for years. The function of the rectal valves is an important one, and it is the duty of physicians to see that the surgeons do no harm by cutting. It still remains to be seen whether valvotomy may not be followed by injurious results, in consequence of the lack of support thus withdrawn from the rectal walls.

DR. E. WALLACE LEE said he had been particularly interested in the rectal valves, which assumed prominence not only in constipation, but also in diseased conditions of the rectum and anus, such as hemorrhoids, fistula, etc. In such he had often looked for them, and in no single instance had he failed to find them. In fact, he had found congestion and hypertrophy of all the tissues composing the rectum. He was not enough of an anatomist to say whether the valves were a normal feature of the rectum or constituted a pathological condition. Whether they could strictly be called valves or not, he must say that he had never seen any reason to believe that they were anything more than simply folds of thickened mucous membrane.

DR. JOSEPH FRAENKEL spoke of the very great frequency of constipation in association with neurasthenia and hysteria, and said he had never seen a case of these in which it was not present. When patients suffering from disease of the heart, lungs or liver came for advice, they did not ask to be treated for their constipation, which was simply incidental. Neurasthenic and hysterical patients, however, applied to the physician expressly to obtain relief from constipation. In these cases he left the nerves to take care of themselves, and devoted his attention to the intestinal condition. He believed that chronic constipation was a disease *per se*, and that the great cause of it was rachitis. Most rachitical persons, he said, were born constipated, and he believed that over 90% of those who suffered from habitual constipation were the subjects of rickets. Concerning the mentioned hypertrophied valves, he was convinced that these were merely a result of constipation.

DR. L. F. BRIDGEMAN spoke on the medicinal treatment of habitual constipation. He said he always told his patients, if they did take a laxative, to take it regularly every day, and not simply at times when they were particularly constipated. Personally, he relied chiefly upon cascara, and his favorite preparation was an aromatic fluid extract. The patient was instructed to take every night a dose sufficient to produce a movement the next morning. This daily quantity was continued for a considerable time, and then gradually reduced. In this way a good many cases were permanently cured, and a good many not. He thought we must depend pretty largely on moral influence in the treat-

ment (the patient must be trained), and all physicians recognized the importance of measures other than drugs.

After several others had taken part in the discussion, it was closed by Dr. Gaut, who said that his paper had been by no means intended as a surgical one. In the great majority of cases he depended entirely on the various measures of hygiene to which he had alluded, and resort was had to surgery in exceptional instances only. He had made no attempt to deal with the etiology. He had treated of habitual constipation from carelessness on the part of the patient. Reference had been made in the discussion to toning up the intestinal muscular fibers by means of medicines, but he believed that this could be accomplished better by massage and systematic indoor and outdoor exercise. Valvotomy was sometimes justifiable, but, as he had stated, was not called for as frequently as some enthusiasts would claim. As a matter of fact, he himself performed it oftener in cases of colitis than of constipation. In colitis, by the obstruction of the bowel which they presented, the valves not infrequently caused detrimental accumulations of mucus. The rectal valves, he wished to say, were found to be normally present in the fetus, in the infant and at every age throughout life. He felt confident that he could demonstrate them in any individual to the entire satisfaction of the most skeptical. He had never examined the rectum of a patient without finding them. There were usually three valves, but sometimes four, and they passed most of the way around the walls of the bowel. In order to observe them, it was necessary that the rectum should be distended, and they could be readily seen in any individual in the knee-chest position when a proctoscope four inches long was employed for the examination. With a small speculum they might easily escape notice. These valves were not simply folds of mucous membrane, but were constructed of three coats, — mucous, fibrous and muscular, the latter consisting of both longitudinal and circular fibers. As regards the use of medicines, it was very difficult to effect a cure by them, and, in most instances, they had to be continued indefinitely. In the case of cascara he had sometimes found the drug to set up a catarrhal condition of the intestinal mucous membrane. Personally, he had not given a drop of medicine in this class of cases for over ten years. A permanent cure could usually be brought about by the non-medicinal method, but for this it was absolutely essential that it should be carried out systematically for a considerable length of time. He therefore made it a point never to undertake a case in which the patient would not pledge himself to take the treatment for a definite period.

Recent Literature.

The Medical Epitome Series. Obstetrics. A manual for students and practitioners. By W. P. MAXTON, M.D., Adjunct-Professor of Obstetrics and Professor of Clinical Gynecology, Detroit College of Medicine, etc. Series edited by V. C.

PEDERSEN, A.M., M.D., Clinical Assistant in Surgery at the New York Polyclinic Medical School, etc. Illustrated with 82 engravings. Pages 265. Philadelphia and New York: Lea Brothers & Co.

The author says in the preface that in a work of this scope only the essentials of obstetrics can be presented. The reviewer would qualify the author's statement by saying that only the barest outlines of the essentials of obstetrics can be presented.

The book is undoubtedly intended and arranged for a quiz, and as such and as a short cut to the examination should not be encouraged. It has been decreed that there are no short cuts to knowledge, and why, therefore, should there be to the examination paper, supposedly a test of knowledge?

The book as it appears, however, is one of the best of its class, and the author has written a text that, as far as it goes, very little exception can be taken to.

The Mycology of the Mouth. By KENNETH WELDON GOADBY, D.P.H., L.R.C.P., M.R.C.S., L.D.S., Bacteriologist and Lecturer on Bacteriology, National Dental Hospital, etc. London, New York and Bombay: Published by Longmans Green & Co. 1903.

The student of mouth bacteria will find more interesting and useful information compressed into the 220 odd pages of this work than in any work of a similar nature that has yet appeared.

The first five chapters are given up to the classification of the micro-organisms usually grouped under the general heading of bacteria. Attention is called to the methods of growth, and the influences which encourage development and those which retard it. Three chapters describe the usual laboratory methods, and call attention to the utensils needed for laboratory work. This part of the book is much the same as that which one usually meets with in most of the textbooks on the subject.

The chapter on immunity and susceptibility is inadequate, as might be expected in so brief a work.

The value of the work lies largely in its accurate descriptions of a number of mouth forms which have not been adequately described in other books, and we regret that the list is not a longer one and the identification carried out even more fully. It is a step in the right direction, and the book marks an advance in the study of the subject.

The author quotes liberally from other writers, giving full credit and in many instances giving the name and page of the volume referred to. This brings a great amount of valuable information to the reader's notice, and enables him to refer to the original volume for more detailed knowledge.

The book does not throw much new light on the influence of specific forms in the various diseases of the mouth and teeth, and in this is disappointing. It is only by the expenditure of an enormous amount of time that such problems can be worked out, and this book will serve as a useful guide to the student in doing such work.

It is also of interest to the general practitioner, and the intelligent dentist will find between the covers, in a simple form, that which he wishes to know and that which he ought to know concerning the mycology of the mouth.

The Elements of Bacteriological Technique. A Laboratory Guide for the Medical, Dental and Technical Student. By J. W. H. EYRE, M.D., M.S., F.R.S. (Edin.); Bacteriologist to Guy's Hospital, London. With 170 illustrations. Philadelphia and London: W. B. Saunders & Co. 1902.

This is an admirable book. It is sure to find favor with all workers in bacteriology. The various procedures are clearly yet concisely described. The numerous illustrations are instructive, and are nearly all original. As the author says, a picture, if good, possesses a higher educational value and conveys a more accurate impression than a page of print. Among the chapters of special merit are those on staining methods and methods of identifications. A portion of the book is arranged to furnish the outlines of a course for laboratory classes. Under each exercise a detailed list of the apparatus required is given.

The advances in technique made by American bacteriologists are recognized and incorporated. The use of phenolphthalein, instead of litmus, as the indicator for the reaction of media, is advocated. A standard reaction $+1.0$ is recommended; although this is lower than that of the American Committee of Bacteriologists, it is too highly acid or the optimum growth of most pathogenic bacteria. The descriptive terms for cultural appearances introduced by Chester have been adopted.

The preparation of blood serum as described in this and most other laboratory guides is a difficult and time-consuming task. The simple and satisfactory method devised by Councilman and Mallory is not mentioned. Blood serum prepared by their method is not only easy to make, but is probably the best for the routine examinations of pathological material. It can be sterilized in the autoclave.

Physical Chemistry for Physicians and Biologists. By DR. ERNST COHEN, Professor of General and Inorganic Chemistry in the University of Utrecht; authorized translation from the German by MARTIN I. FISCHER, M.D., Instructor in Physiology in the University of California. New York: Henry Holt and Company. 1903.

This book is a good introduction to the science of physical chemistry as applied to physiological chemistry. It is clear and comprehensible, and especially well adapted for the use of physiological experimenters and of physicians who wish to make themselves acquainted with the facts and theories on which are based new methods of diagnosis dependent on physical chemistry such as cryoscopy.

M. V. T.

An Introduction to Dermatology. By NORMAN WALKER, M.D. Second edition. Revised and enlarged. New York: William Wood & Company. 1902.

In the second edition of Dr. Norman Walker's work we find a considerable number of new cuts and illustrations of varying degrees of excellence. As was emphasized in the preface to the first edition, the book embodies the substance of the writer's lectures to elementary students, and as such serves its purpose very well.

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THE ETIOLOGY OF SMALLPOX.

At a meeting of the Boston Society of Medical Sciences, held April 28, at the Harvard Medical School, Dr. W. T. Councilman announced the discovery of the probable etiology of smallpox. The work which has led to this announcement, the importance of which can hardly be overestimated, has been carried on for the past two years by Drs. W. T. Councilman, G. B. Magrath and W. R. Brinkerhoff, with the assistance of Dr. E. E. Tyzzer and others, at the smallpox hospitals of Boston and at the pathological laboratory of the Harvard Medical School. The material for the investigation was provided through the co-operation of the Board of Health, from the epidemic of smallpox which visited the city during the winter of 1901-02.

Bodies of uncertain origin and significance, for upward of ten years, have been observed in the epithelial cells of the skin in cases of smallpox. Inasmuch as no life history of these bodies could be made out, opinion varied as to whether they were actually organisms or merely indicative of cellular degenerations. In general the latter opinion prevailed. Dr. Councilman and his co-workers, going over this work and carrying the research much further, have been able to demonstrate the fact that these bodies are certainly organisms, belonging to the group of the protozoa, and further, that they have a definite life cycle, both without and within the nuclei of the deeper layer of epithelial cells of the skin.

The following points were clearly brought out in Dr. Councilman's admirable exposition of the results of the investigation:

That smallpox passes through certain perfectly definite stages in its development on the clinical side, to which correspond equally definite changes in the form of the causative organism; that these

changes in form consist first in the appearance in the cell protoplasm of small, homogeneously staining, structureless bodies, about one micron in diameter, not staining so deeply as nuclei, which gradually increase in size, coincidently with the degeneration of the cells in which they lie; that with this increase in size the character of these bodies changes, small granules surrounded by circles appear in them, the general outline becomes irregular, with increasing resemblance to an ameba; that a process resembling sporulation takes place with the breaking up of the ameboid forms into smaller, sporelike bodies; and that this constitutes the first cycle in the life of the organism. Up to this period the nuclei of the epithelial cells show no changes whatever, but the following alterations in these structures now appear: penetration of nuclei by the small sporelike bodies before spoken of, with the disappearance of such bodies from the cell protoplasm; small ring-shaped bodies become apparent in the nuclei; they also increase in size; the ring shape is at first preserved, which is soon surrounded by a spongelike body. This whole structure grows, fills and finally destroys the nuclei, and the bodies become free; the bodies again become more homogeneous; ring-shaped bodies again become evident; finally each ring appears to have a central dot. These final bodies are regarded as the infecting agent of the disease. Two cycles of the organism, corresponding in general to what we know of the protozoa, have therefore been demonstrated: the first — extranuclear — simple, and the second — intranuclear — very probably sexual.

It also appears to be demonstrated by this work that vaccinia represents the extranuclear phase of the organism, but that the production of true smallpox is dependent upon the invasion of the nuclei — the intranuclear cycle. Vaccinia may be produced by inoculation, for example, in the calf or the rabbit; variola under similar conditions is produced in the monkey. This, also, Dr. Councilman and his colleagues have shown. The organism was found in the blood in one case. The difficulties of study are very greatly increased by the extreme rapidity with which the entire process takes place and by the ease with which the organisms are destroyed; the life history is completed with the formation of the vesicle, hence the absolute necessity of securing early and perfectly fresh material. The rôle of bacteria is regarded as entirely subordinate to the organism described, though the influence, particularly of streptococci, must be taken into consideration in the development of the disease.

Dr. Councilman expressed the opinion with confidence, that the organism which he described belonging to the protozoa was the essential etiological

factor in the production of smallpox. This opinion received confirmation from the apparently conclusive lantern-slide demonstration, illustrating phases in the life history of the organism, and also from the testimony of Prof. G. N. Calkins of Columbia University, who was present, and who had previously identified certain of the ameboid forms as unquestionably protozoa. Professor Calkins' recognized knowledge of the protozoa adds weight to the statement he made at the meeting, that "there is absolutely no doubt that we have to do in the process with an organism which belongs to the protozoa."

It requires no stretch of the imagination to see in this work of Dr. Councilman and his assistants a discovery of the most far-reaching significance. If it stand the test of criticism, which will forthwith be turned upon it from all parts of the world, it must unquestionably be regarded as one of the great medical discoveries. If, in the future, it requires modification, it will still stand as an investigation of vital importance for having directed attention to the probable great significance of the protozoa in the production of diseases, for example, the exanthemata, which have hitherto wholly eluded the most painstaking research. The enthusiastic reception which the preliminary announcement received at the hands of the representative audience to whom it was addressed, will no doubt forthwith find an echo wherever scientific work is appreciated.

ARSENIC IN LIVING ORGANISMS.

IN the pursuit of medico-legal examinations of bodies for the detection of poisons, as well as in the examination of food preparations and drugs for arsenic, which is sometimes present as an accidental impurity, the chemist is often confronted with the argument that this poison exists as a normal constituent of many living organisms.

If this is the fact, it is desirable to know to what extent arsenic enters into their composition, in order that comparison may properly be made between quantities which are possibly normally present and those which are introduced either accidentally or intentionally.

In a recent paper Dr. Bertrand¹ considers this question, his object being to determine the amount of arsenic present in living organisms, existing under perfectly normal conditions, and to find out whether arsenic is a primordial element of the living cell, as much so as carbon, nitrogen and other elements.

It was necessary to make observations under the

¹Nouvelles recherches sur l'arsenic de l'organisme. Par M. Gabriel Bertrand. *Annales de l'Institut Pasteur*, January, 1903.

most severe conditions, upon animals living in a normal medium, and entirely free from the conditions which exist upon land where arsenic enters into the operations of agriculture and other industries to a large extent. For this purpose the cetaceans, sea-birds, fishes and animals which inhabit the depths of the sea presented favorable opportunities for such examination.

All of the specimens were taken, and much of the chemical work was performed in the course of a cruise undertaken for scientific purposes, in the summer of 1902, on board the yacht "*Princess Alice*," with the exception of the sheep, which came from the pastures of Mt. Pico, and the grampus, which was harpooned by the Prince of Monaco in the Mediterranean Sea. All the other specimens were collected from the sea, mostly by dredging, in an area bounded by Gibraltar, the Azores and the British Channel. Precautions were taken not to soil the specimens. The dissections were made upon a wooden table. The birds were shot and the feathers only were examined, since leaden shot usually contain arsenic. Some of the specimens were collected from the bottom, at a depth of one mile or more.

The reagents were carefully examined to ensure the absence of arsenic. Many of the analyses were made at sea during the cruise, and some of them were repeated at the Pasteur Institute after returning; in all instances the results of the latter confirmed the former.

The following table presents the results of the examinations, including the following points: (1) the name of the animals examined; (2) the organs or parts examined; (3) weight of the material submitted to analysis; (4) weight of reagents employed; (5) amount of arsenic found:

| Name of species examined. | Organs or parts examined. | Weight of dry matter exam'd in gms. | Weight of reagents empl'd. | | Arsenic found in mgm. |
|---------------------------|---------------------------|-------------------------------------|----------------------------|--------------|-----------------------|
| | | | Nitric Acid. | Sulp'c Acid. | |
| Sponge . . | Entire. | 36.7 | 67.5 | 17.5 | .005 |
| Actinia . . | Entire. | 13.1 | 18 | 7 | .002 |
| Starfish . . | Entire. | 29.0 | 40.5 | 19.5 | .002 |
| Sea-urchin . | Entire. | 30.4 | 32.5 | 33.5 | .0045 |
| Poliothuria. | Entire. | 81.8 | 72 | 15 | .003 |
| Crustaceans . | All except the shells. | 31.5 | 147 | 26 | .002 |
| Small fish . | All except the bones. | 40.8 | 81 | 14 | .002 |
| " | Testicles. | 12.5 | 16 | 7 | .0015 |
| Tunny . . | Skin. | 26 | 180 | 40 | .0035 to .004 |
| " | Skin. | 24.7 | 45 | 15 | .0025 to .003 |

| Name of species examined. | Organs or parts examined. | Weight of dry matter exam'd in gms. | Weight of reagents empl'd. | | Arsenic found in mgm. |
|---------------------------|---------------------------|-------------------------------------|----------------------------|--------------|-----------------------|
| | | | Nitric Acid. | Sulp'c Acid. | |
| Tunny . . | Skin. | 32.7 | 36 | 14 | .005 |
| " | Muscle. | 30.1 | 71 | 14 | .0015 |
| Sea-bass . . | Skin. | 22.2 | 45 | 12 | .001 |
| " | Muscle. | 17.1 | 33 | 8 | .001 |
| " | Scales. | Ab't 20 | 33 | 8 | .001 |
| Sea tortoise, | Scales. | 20 | 40.5 | 9.5 | .0035 |
| Petrel . . | Feathers. | 34 | 43 | 15 | .0025 |
| Grampus . | Horn. | 50 | 45 | 10 | .0025 |
| " | Epidermis. | 40 | 86.5 | 19.5 | .0035 |
| " | Skin. | 11.4 | 36 | 9 | .002 |
| Sheep . . | Thyroid gland. | 20 | 50.5 | 10.5 | .001 |

Bertrand adds that specimens of sand dredged from the bottom at different depths, and dried, gave variable results, in one instance a scarcely perceptible trace, and in another, collected from a depth of 1,187 meters (two thirds of a mile), furnished an arsenical ring of about four to five thousandths of a milligramme, the specimen weighing 38 gm. He concludes from this and other similar researches that arsenic exists as a fundamental element of living organisms, and believes it necessary, in all medico-legal investigations, to make careful quantitative analyses, and not to be content with merely determining the presence of arsenic.

THE ANNUAL REPORT OF THE MASSACHUSETTS GENERAL HOSPITAL.

THE eighty-ninth annual report of the Massachusetts General Hospital for the year 1902 has recently appeared. The total number of patients treated at the institution, exclusive of the Out-Patient Department, was 5,199 as against 5,353 in 1901, giving a daily average of one less than in the previous year. A somewhat smaller number of free patients were treated than in 1901, and about 1,800 patients paid in part or in full for their treatment. There was a certain increase, however, in the cost per patient, due to the increased price of various necessary supplies. In the Out-Patient Department 27,662 new patients were treated, five less than in 1901. The number treated in the accident room was about 1,000 less than in the previous year, due, no doubt, in a measure to the establishment of the Relief Station of the City Hospital in Haymarket Square. It was expected that the falling off in this department of the hospital's work would be much greater.

Several buildings, which have been in process of

construction for the past few years, are now fully equipped and in use. It is worthy of note that a ward, to be known as the Weld Ward, for the treatment of diseases of the skin and certain other diseases, has been completed, though it has not yet been put into active service. A children's ward has also been added to the hospital, so that a further classification of the patients than has hitherto been possible may now be made. It is expected that the new out-patient building will be ready for occupancy sometime during the summer. When this is accomplished, the facilities, both for the adequate treatment and study of patients and for teaching, will be very greatly increased. Work for several years past in the present quarters of the Out-Patient Department has been done under great and increasing difficulties. The establishment of so complete and commodious an out-patient department as this promises to be is a further indication of the significance to the hospital at large which the treatment of ambulant patients is coming to have. The mere dispensary is by degrees giving place to adequately equipped departments for the proper study of so-called dispensary patients.

A number of pages of the report are taken up with the consideration of the instruction in the training school for nurses. The system which is now in vogue went into effect Feb. 1, 1902. The general medical and surgical instruction in nursing is under the charge of two physicians, who devote a very considerable amount of time to the work. The course is intended to be more systematic than hitherto and to go somewhat further into the clinical manifestations of disease than perhaps has ordinarily been taught in training schools. Section work for the nurses is adopted, and the clinical material in the wards has been used to illustrate important practical points. We have no doubt that this method is correct in principle and feasible in practice. It is simply a further recognition of the fact of the necessity of first-hand knowledge in the practical medical work of nursing.

The report of the McLean Hospital is as usual full of suggestions for the further development of psychiatry. The public is coming to look to this report for a general expression of progressive views, both in the treatment and in the study of the insane. The present report is no exception to the standard which has hitherto been set. The important needs of this branch of the hospital are a house for women patients and a special fund for permitting the scientific study of the causes, treatment and prevention of insanity.

A large section of the report is taken up with medical and surgical statistics elaborately classified. The Out-Patient Department is not entirely neg-

lected, although two departments give merely the number of patients treated without details as to the character of their diseases. In the classification of the occupations of patients admitted to the hospital exception may with justice be taken to the use of the word "salesladies." As an occupation, also, 57 are put down as "spinsters," and 115 as "widows." This is possibly a questionable use of language.

GOVERNMENT LABORATORIES IN MANILA.

We have from time to time commented on the needs of medicine and on the opportunity offered for investigation in the Philippines. The recent report of the superintendent of government laboratories for the year ending Aug. 31, 1902, gives many suggestions which are of practical interest to the development of medicine in general. It appears that only a few years ago such government laboratories as existed in the Philippine Islands had but a small stock of apparatus, a meager library, and were housed on the ground floor of a building which had been rented for the use of the civic hospital. Less than two years ago the necessity was felt of providing a better building for laboratory purposes. This was provided, and necessary journals and apparatus were introduced from America and Germany. It is now felt that the present quarters, although an improvement over the preceding, are altogether inadequate for the extended work which the medical department is called upon to do. A new plan has, therefore, been drawn up which will provide laboratory space for chemical and biological laboratories and for a serum institute. This will consist of sixty rooms. So far as one can see, from looking over a description of this building, it should fully meet the present demands and any future demands that may be made upon it, at least for many years. In planning the laboratory building and its equipment it has been kept in mind that the opportunities for investigation of tropical disease, and of related problems, will induce scientific men of high attainments to resort to Manila for the prosecution of their researches. It is pointed out that hitherto various expeditions have been fitted out at very considerable expense to investigate the diseases of the tropics. Hereafter by the establishment of adequate laboratory facilities it is hoped and expected that such investigations can be carried out less expensively and more effectually. It is unquestioned that the active work being done by men prominent in the medical profession in the Philippines has been not only a stimulus to professional men already in the islands, but also to men of ambition in various parts of the world. Particularly

is there an opportunity for young men of good training and promise of scientific attainment, who find small opportunity for work in the crowded medical centers of their own country. We have no doubt that the establishment of a laboratory as proposed will go far toward attracting men of ability to what must certainly prove to be a rich field of investigation.

MEDICAL NOTES.

JAPANESE ANTHROPOMETRY.—In 1878 the government of Japan requested President Seelye of Amherst College to detail a competent person to go to Japan and spend at least three years for the purpose of instituting the Amherst system of physical culture in the schools of Tokio. Dr. George A. Leland was selected for this work, and some of the results, which will be of interest to students of anthropometry, have been embodied in a table which has been published.

THE INDEX MEDICUS.—We have several times called attention to the importance of financial support for the *Index Medicus* from the profession and from medical libraries. A medical subscription of \$1,255 goes but a little way towards the annual sum required—about \$12,000. Let us show an appreciation of our blessings ere they again take their flight.

FOURTH PAN-AMERICAN MEDICAL CONGRESS.—At a meeting of the International Executive Committee of the Pan-American Medical Congress, held April 1, 1903, it was decided to accept the proposal of the Argentine Republic to hold the Fourth Pan-American Medical Congress in Buenos Ayres, in 1905, instead of 1903, as had been announced in their invitation of February, 1901. This was considered by the committee much more advantageous for the meeting, as it has long since been realized that it would have been impossible to have had a good representation of the delegates from this and other countries had the convention been held there in June of this year.

The meeting of the American Medical Association in New Orleans and of the Congress of Physicians and Surgeons in Washington would have prevented a number of physicians of this country from attending; while the meeting of the International Medical Congress in Madrid would have probably attracted many from the Spanish-American countries who would otherwise have been disposed to have taken an active interest in it.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, April 29, 1903, there

were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 18, scarlatina 36, typhoid fever 14, measles 27, smallpox 0.

BOSTON MORTALITY STATISTICS.—The number of deaths reported to the Board of Health for the week ending April 18 was 220 as against 243 the corresponding week last year, showing a decrease of twenty-three deaths, and making the death-rate for the week 19.57. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 26 cases, 6 deaths; scarlatina, 25 cases, 1 death; typhoid fever, 9 cases, 1 death; measles, 3 deaths; tuberculosis, 25 cases, 22 deaths; smallpox, no cases. The deaths from pneumonia were 36; whooping cough 4; heart disease 16; bronchitis 5, and marasmus 2. There were 12 deaths from violent causes. The number of children who died under one year was 33; under five years 61; persons over sixty years 45; deaths in public institutions 76.

VERDICT FOR DEFENDANTS IN A SUPPOSED UNAUTHORIZED AUTOPSY.—In a suit recently brought against the Massachusetts General Hospital, to recover damages for an autopsy upon a Hebrew, a verdict has been returned for the defendants. It was claimed by the family of the patient that the autopsy had been performed without permission. The evidence, however, showed that through a misunderstanding it was believed that permission had been granted.

NOMINATION FOR BOSTON BOARD OF HEALTH.—Among a number of appointments about to be made, the mayor of Boston has sent the name of Dennis J. Hern to be a member of the Board of Health, in place of Robert Cox, whose term expires April 30. Mr. Hern is reported to have accepted the nomination.

BEQUEST TO THE SHARON SANITARIUM.—The Sharon Sanitarium has recently received \$10,000 from the Billings Fund.

BEQUEST TO THE NEW ENGLAND BAPTIST HOSPITAL.—By the will of Phebe R. Sturtevant the New England Baptist Hospital receives \$10,000.

AMERICAN SOCIAL SCIENCE ASSOCIATION.—The meeting of the American Social Science Association will be held in Boston, May 14, 15 and 16. One section of the Association will devote itself to the discussion of questions relating to preventive medicine and matters of general medical interest. This section is under the chairmanship of Dr. S. H. Durgin. Dr. E. M. Hartwell, Prof. W. T. Sedgwick, Prof. Theodore Hough and Dr. W. T. Councilman are expected to take part in this meeting.

DR. SAMUEL FULLER OF THE "MAYFLOWER," 1620. — Dr. Thomas F. Harrington of Lowell Mass., read a paper before the Johns Hopkins Historical Society at Baltimore, Monday evening, April 20, entitled "Dr. Samuel Fuller of the 'Mayflower,' 1620. The Pioneer Physician of America."

NEW YORK.

RESIGNATION OF DR. DOREMUS. — At a meeting of the Board of Trustees of the College of the City of New York, held April 11, the resignation was accepted of Dr. R. Ogden Doremus, for many years professor of chemistry in that institution, and also for many years in Bellevue Hospital Medical College.

FACSIMILE OF EARLY MEDICAL PAMPHLETS. — A series of reproductions in facsimile of early medical pamphlets is announced, to be issued under the editorial supervision of Dr. Albert T. Huntington, librarian of the King's County Medical Society, Brooklyn. The first of these will be a monograph by William Douglas, printed by Franklin at Boston, in 1722, entitled "The Abuses and Scandals of Some Late Pamphlets in Favour of Inoculation of the Small Pox, Modestly Obviated, and Inoculation Further Consider'd in a Letter to A— S—, M.D., & F.R.S., in London." There is to be an illustrated prefatory sketch (historical, biographical and bibliographical), written by Dr. Lewis S. Pileher. According to Dr. John S. Billings, we had at the commencement of the Revolutionary War but one medical book by an American author ("Plain, Precise, Practical Remarks on the Treatment of Wounds and Fractures," by Dr. John Jones, New York, 1775), three reprints and about twenty pamphlets. This monograph is one of the latter, and the earliest of the pamphlets is a broadside written by the Rev. Thomas Thatcher, the first minister of the "Old South" in Boston, dated January 21, 1677-8. The title is "A Brief Rule to Guide the Common People of New England How to Order Themselves and Theirs in the Small Pox, or Measels."

TENEMENT-HOUSE BILL. — The governor has signed the new tenement-house bill. This measure is the result of a compromise between those who sought a modification of the existing law and Mr. De Forest, the tenement-house commissioner. While the latter was willing to grant some concessions, he took a firm stand as to yielding any essential points in the improved construction of tenements. In this position he was backed up by the sentiment of the community, and the result is to be regarded as a victory for the health and welfare of the poor over greed. The amendments will permit a semi-fire-proof construction in four-story tenements having

not more than two families to a floor, with apartments running through from front to rear, and with courts of such a size that the buildings may be erected on lots twenty-five feet in width. This, it is believed, will reduce the cost of such a building by about \$1,000, thus lowering the rentals. In buildings of three stories, covering not more than 65% of the lot area, a slightly smaller interior court is allowed. Outside the fire limits the law will permit the erection of wooden tenements of three stories, to contain not more than one family to a floor.

CHILD LABOR BILL. — The governor has also signed a child labor bill which forbids the employment in or in connection with any factory in the State of any child under sixteen years of age without a certificate issued by the local health authorities, showing its age and that up to the age of fourteen it has attended school for the equivalent of 130 days in the school year. It limits the employment of children to fifty-four hours in any one week and nine hours in any day. It also limits the work of women to sixty hours in a week or ten hours in a day.

Correspondence.

LETTER FROM THE PHILIPPINES.

SPECIAL CORRESPONDENCE.

RAIDS ON UNSANITARY BARBER SHOPS, SQUATTERS AND OPIUM "JOINTS." — THE HABIT OF OFFICIAL CORRUPTION. — THE PHILIPPINE CENSUS. — PLAGUE AND THE HAFKINSE SERUM. — DR. HAN KEE, AN ENGLISH-SPEAKING CHINESE DOCTOR. — THE CARE OF THE PERSON IN THE TROPICS. — BENZOZONE AS A STERILIZER. — LOW STANDARD OF SURGICAL PRACTICE IN PHILIPPINES.

MANILA, March, 1903.

MR. EDITOR: There has lately been some wholesale raiding by the police, acting under instructions of the Board of Health, of unsanitary barber shops in Manila. In one district, more than forty Chinese and Filipino barbers were arrested in a single day for violation of a sanitary regulation requiring the sterilization of all instruments and brushes, the use of good soap, and cleanliness of the hands and the wearing of white coats by the barbers. This regulation, passed some time ago, has been completely ignored by the Chinese and Filipino "tonorial artists," and hence the recent arrests. There is much skin disease in Manila, and the unsanitary barber shops have been rightly regarded as one of the chief factors in its transmission.

A number of native families now squatting on unoccupied government land on Calle San Marcelino are to be shortly removed by the authorities because of the unsanitary condition of their houses and surroundings. This action was taken at the instance of the Manila Board of Health. In order not to work too great hardship on the natives to be removed, a tract of government land in the Paco district is to be divided into small plots, and such of the evicted families as desire to take advantage of the privilege can rent one of these new building sites at a small cost. The proposed action is in line with the constant effort of the health authorities to do away as rapidly as possible with the congestion and highly unsanitary conditions existing in certain of the native districts of the city.

A sanitary crusade has also been started by the health officials against the many filthy opium dens in the Chinese districts of the city. These "joints" are all in a

highly unsanitary condition, and the police and health department are co-operating in the effort to break them up or at least place them in a more cleanly condition. Of course the effort is not regarded with favor by the Chinese proprietors.

Like the other departments of the government over here, the sanitary service still feels the influence of the official corruption so rife under the Spanish administration, when the enforcement of laws was not carried out so long as some official could have his pockets lined as a result of his leniency. The Malay expects all officials to be open to bribery, and the Chinese can understand no system based on simple right and justice. Efforts to bribe the sanitary inspectors, by both Filipinos and Chinamen, are still not rare, and when the sanitary service was first organized the handing over of a few Mexican dollars to the inspector was rather the rule than the exception. The Filipino inspectors did not hesitate at first to take advantage of their opportunities, and the system of corruption was finally broken up only by summary discharge and careful supervision of the manner in which the inspection duties were performed. At present, subordinate sanitary inspectors are assigned to districts and held responsible for sanitary conditions within those limits. Their work is verified by medical inspectors, who are Americans. Should the latter find a house presenting an unsanitary condition, the report of the native sanitary inspector is looked up. Should this be favorable, the native inspector receives an official warning for what is either carelessness or an attempt at fraud, and should complaint be made against him a second time for similar cause, he is summarily discharged. With such a careful system of supervision, a subordinate sanitary inspector cannot receive bribes for failing to perform his duty without his dishonesty being soon detected and promptly punished. It is by measures like this that the old Spanish system of bribe-taking and bribe-giving is being broken up, and the native, in spite of himself, is being brought to occupy a position of inflexible official honesty. One obstacle to the improvement of the natives in respect to honesty in the Board of Health as well as other departments was found in the character of many of the Americans first appointed to positions under the civil government. Some of these were political adventurers, of no standing at home, and desirous of filling their pockets by hook or crook — usually by both. These men, at the onset of affairs, exerted a bad influence on the natives, but as fast as their undesirable character was determined, the civil government has put better men in their places.

The enumeration for the Philippine census began on March 2, and is being pushed as rapidly as possible. This census will have results especially valuable to the sanitary work in forming a reliable basis for sanitary statistics, and in the creation of a more satisfactory sanitary organization throughout the islands. At present the statistics for sickness and death have been based on estimates of population and thus could not be regarded as accurate.

Many cases of plague are continually cropping up in Manila in spite of the efforts of the health authorities. In nearly every case that occurs the infection appears to have taken place through some lesion of the foot or lower extremity in the barefooted Filipino or Chinaman. So many Chinese have been attacked that the Board of Health has been obliged to give up the practice of cremating Chinese plague corpses, and these are now covered with quicklime and enclosed in hermetically sealed metallic coffins for burial. The Chinese are thoroughly opposed to cremation as a method of disposal of the dead, as all desire to have their bones interred in China. The Board of Health is anxious to secure the good will of the Chinese as far as possible, and for this reason cremation has been abandoned and metal coffins supplied at the expense of the municipality.

Word comes from India that bubonic plague is very severe in certain districts there. The Haffkine preventive inoculation has been largely employed under government auspices and seems to have much effect in preventing the development of the disease. Unfortunately, Haffkine himself is said to have lately been guilty of gross carelessness in the preparation of his anti-plague serum, both as to the purity of the plague

cultures employed and as regards their subsequent sterilization. As a result, nineteen deaths from tetanus have been directly attributed to the use of contaminated and improperly sterilized serum, and the matter is now being made the subject of official investigation, with the probability that Haffkine will be proceeded against in the courts, or that the government will at least refuse to permit him to continue his work in India.

The services of Dr. Han Kee, an English-speaking Chinaman, educated at the English Medical-School at HongKong, have been secured by the Manila Board of Health as a medical inspector. He will pay special attention to plague among the Chinese, which disease is now on the increase, and will also be the medical superintendent of the Chinese hospital. The services of a properly qualified Chinese physician have been much needed in Manila, as the sixty thousand Chinese in the city have practically no good medical men of their own, and many of them speak neither English nor Spanish. They also regard with distrust any one not of their own race, and for this reason the Board of Health has been handicapped in its sanitary work among them. It is believed that the appointment of Dr. Han Kee will largely remove these obstacles.

As an aftermath of the cholera epidemic, a large number of claims have been presented to the government authorities of the islands for settlement. During the epidemic the sanitary officers, sent out by the general government in Manila to fight cholera in the provinces, hired natives as inspectors and nurses, seized buildings for use as cholera hospitals, and in many cases burned infected native houses as a means of staying the progress of the disease.

At the regular March meeting of the Manila Medical Society a paper was read by Dr. H. W. Yemans on the care of the person in the tropics. He believes that foreigners should dress more lightly during the hot days and more warmly during the cool nights. At present they are not as rational in their clothing as the Filipinos or Chinese, this particularly applying to the American women, who still retain the use of corsets and tight clothing. Chilling at night as a result of insufficient clothing is a great cause of diarrhea and menstrual disorders. While frequent bathing is to be commended, the use of much soap and friction with coarse towels is to be deprecated, as impairing the integrity of the outer protective epithelium and creating minute skin lesions, upon which the germs of parasitic skin diseases attach themselves and multiply rapidly. He believes that much skin disease results from this cause.

Dr. W. B. Wherry read a paper based upon work at the Government Pathological Laboratory relative to the sterilization of drinking water by the use of the new germicide, benzozone. He stated that when benzozone was present in the proportion of 1-60,000 and acted over a period of five minutes, all the micro-organisms found in the Manila water supply, with the exception of a few moulds and a few spores of the hay bacillus, were destroyed. On experimenting with the typhoid bacillus, as representing a class of non-sporulating micro-organisms to which the cholera and Shiga's dysentery bacillus also belonged, it was found that benzozone, in a solution having a strength of 1-60,000, absolutely destroyed the typhoid bacillus in water at the end of five minutes. As benzozone is completely harmless when taken internally, many persons in Manila having habitually used it in solutions of 1-2,000 strength for all drinking purposes during the cholera epidemic, the possibility of sterilizing drinking water by its use, as far as the pathogenic bacteria are concerned, is both interesting and important. It was found by Dr. Wherry that by substituting a 1-60,000 solution of benzozone for the distilled water now purchased for the San Lazaro Hospital, more than two hundred dollars per month could be saved to the government at this institution alone. Unfortunately, the action of dilute solutions of benzozone upon the ameba found in water is not yet understood, and amebic dysentery, which is always with us, is far more to be feared in the long run than cholera, which scourges the islands only about once in a generation.

An interesting statement, illustrating the low standard of surgical practice in the Philippines prior to the arrival of the surgeons with the American army, was

made to the society by Dr. Donelan, an English physician who had been in Manila for many years, on the exhibition by Dr. Banister of a case of gunshot wound of the intestine with recovery after operation, and the exhibition by Dr. McDill of a large multilocular ovarian cyst and large dermoid cyst, both of which he had removed from the same patient, a young Filipino girl. In his remarks, Dr. Donelan stated that prior to the arrival of the Americans he had never heard of a laparotomy in the living body having been performed in the entire Philippine archipelago.

“THE PREPARATION AND DISTRIBUTION OF ANTITOXIN BY THE MASSACHUSETTS BOARD OF HEALTH.”¹

BOSTON, MASS., April 24, 1903.

MR. EDITOR: I notice on page 431 of the BOSTON MEDICAL AND SURGICAL JOURNAL of the issue of April 16, 1903, an article signed Theobald Smith, M.D., that so seriously reflects upon my veracity, I feel in justice to myself and the public that it is my duty to reply to the same.

Dr. Smith says: “If such men as Mr. Bartlet shall be allowed to play havoc in the public press . . . I doubt that any well-trained men would be found willing to direct the work under such conditions.” Again, Dr. F. L. Morse, who is claimed by the Boston *Advertiser* to be an officer of the Board of Health, and is alleged to have said in the issue of the *Advertiser* of April 21, 1903, “Mr. Bartlet does not know the first thing about the manufacture of antitoxin, in my opinion, and is not competent to give an opinion on the subject.” I would like to say for the information of these gentlemen that I am a graduate with honors from the Massachusetts College of Pharmacy, a regularly incorporated institution, whose standing cannot be questioned. That I served on the Board of Trustees of this college, and was for some years chairman of its Committee on Education, and at one time its first vice-president; that I have done much original research work, especially in connection with digestive ferments, and was actively engaged in business as a pharmacist for thirty years.

I have taken special pains to inform myself by actual inspection regarding the very best and most scientific methods for preparing both antitoxin and vaccine virus under the very best modern aseptic conditions in the laboratories of Messrs. Parke, Davis & Co., and the H. K. Mulford Company. These plants are under the personal supervision of trained biologists and bacteriologists of the highest standing, free from the slightest taint of “commercialism.” The commercial aspect never enters into consideration in the *manufacture* of these products, and is only present when the goods are ready for sale on the market.

When we compare the precautions and methods pursued in these establishments with those of the Bussey Institute plant, to say the least, the latter compares very unfavorably with the former. Take, for instance, one precaution that the manufacturers take, that of immunizing the horses from tetanus; this precaution is not taken, as I understand it, at the Bussey Institute plant. Is it not due rather to good fortune than to any other fact that an epidemic of lockjaw has not followed the use of the serum made at the Bussey Institute, as happened by the use of the product of the Board of Health of St. Louis? And yet the Board of Health of St. Louis was just as confident that their product was perfectly safe before the accident happened. It is not possible for this to happen from the use of the products of the leading reputable manufacturers of today.

It is simply idle to contend that there is no need of preparing antitoxin under sanitary and aseptic conditions and to intimate that these precautions are taken by the manufacturers for mere show. The boards of health have preached the germ theory too long and too well for that, as physicians and others know. Dr. Smith complains that Mr. Bartlet discussed this matter in the public press. In reply to this, I will simply say, when the petitioners felt that their cause before the leg-

islative committee was a lost one, they, in despair, as a last resort, rushed into the press and abused me for exposing their weak points. It was then, and only then, as now, that I felt bound to reply, in order that I might not be misrepresented. Dr. Smith says that my remarks about antitoxin standards and filters are full of misstatements. All I have to say about that is, that these remarks were his and not mine. I simply quoted what he said to me. In this matter I am simply endeavoring to get at the facts in the case, and believe that nothing is gained in the end by trying to advance theories by suppressing facts.

In order to show you how inconsistent the statements of the petitioners have been during this controversy I quote the following:

Question to Mr. Lawrence, counsel for the petitioners, by a member of the Committee of Public Health: “The State Board, I think, takes the position that they want them to have facilities, laboratories and stable in which to prepare antitoxin and vaccine, do they?”

Answer, by Mr. Lawrence: “Yes, as I understand from my talks with Dr. Walcott and Dr. Abbott; the State Board of Health is not satisfied with the present condition of affairs.” (Hearing of March 12, 1903.)

Member of the committee to Dr. Theobald Smith (same hearing): “Are you satisfied with these stables?”

Answer: “The stable, so far as our experience goes, it seems to me that this is quite good enough after an experience of nine years, everything has gone entirely satisfactory.”

Now let us look at Dr. Smith's statement in the article of the BOSTON MEDICAL AND SURGICAL JOURNAL for April 16, 1903:

“The present unsatisfactory arrangements make it necessary for me to give a great deal of personal attention to the work which would not be required with better equipment.” Again, Dr. Smith says: “That the equipment is unsatisfactory we all know, otherwise there would be no reason for legislation.” Again, Dr. Smith says: “No one officially connected with the work has claimed that the board had a model plant, or a plant at all.” Again, Dr. Smith says: “No one would welcome more than I a model plant which represented the simplicity as well as the high standards of our State, and to which all interested strangers would be welcomed.” How can we reconcile these statements with his statement to the Committee on Public Health “that the stable was quite good enough”?

To those who are interested in what Massachusetts is doing, Dr. Smith replies, “that the antitoxin plant is still in the experimental stage, and there is nothing to be imitated, at present.”

President Eliot of Harvard College testified before the Committee of Public Health that there was no test for antitoxin and vaccine virus, and said, “We don't know enough to do that yet, gentlemen.” Dr. Smith says: “The druggist in the case of antitoxin must appeal to the State Board of Health to make the test for strength or sterility, and this body must, therefore, be prepared to maintain standards for such a purpose.” Dr. Smith, speaking of the honesty of the antitoxin, said “that it could only be ascertained by the prolonged inspection and special tests.”

Dr. Smith told me that the serum prepared at the Bussey Institute was tested by comparison with samples sent from Germany that had been approved by the German Government. How can this happen if there is no test, as President Eliot states? If there is no test for antitoxin, how can the board, authorized by Act of Congress, July 1, 1902, to go into effect Aug. 21, 1903, collect samples of antitoxin in the open market and test them as provided for by that act?

These represent but a few of the many inconsistent statements made by the petitioners or their friends all through this contest.

To summarize the evidence on the part of the petitioners—

(1) Mr. Lawrence, counsel for the petitioners, states that Dr. Walcott and Dr. Abbott both were not satisfied with the present condition of affairs at the Bussey Institute.

(2) Dr. Smith in an article in the BOSTON MEDICAL AND SURGICAL JOURNAL of April 16, 1903, states: “That

¹ A reply to Dr. Theobald Smith's letter, April 16, 1903.

the equipment is unsatisfactory, we all know; otherwise there would be no reason for legislation."

(3) Again, Dr. Smith says: "No one officially connected with the work has claimed that the board had a model plant or a plant at all."

(4) Dr. Smith again says: "No one would welcome more than I a model plant which represented the simplicity as well as the high standards of our State, and to which all interested strangers would be welcomed."

(5) Dr. F. L. Morse of Somerville, said to be an officer of the State Board of Health, is quoted in the *Boston Advertiser* of March 12, 1903, as saying: "A good deal of what Mr. Bartlet said [about Bussey Institute plant] is true. That is precisely why the State Board of Health is asking for a thoroughly modern outfit now."

(6) Mr. Bartlet says (see *Boston Transcript*, April 2, 1903): "They know that things at the Bussey Institute are not in the condition that they should be. The Bussey Institute plant is a disgrace to the State." Observe how they all seem to agree with me, that affairs at the Bussey Institute are unsatisfactory, and yet find fault when I criticise the same. That it is of great importance that the bleeding should take place under perfect aseptic conditions, I still contend, and in this I am supported by two biologists of fully as high a standing as Dr. Smith.

The manufacturers agree to furnish a perfectly satisfactory antitoxin and vacciner virus, made under perfectly aseptic conditions and vaccinating all tests prescribed by the Board of Health for one half the price that it would cost the State to maintain a proper plant and make these products. Under these conditions these products would be supplied to the physicians of the State as now at no additional cost to them.

I am pleased to learn that mats are now to be found in the Bussey Institute building, and hope soon to hear that the Herculean effort has been made to turn the hose on to the Augean halls of biological research free from "commercialism" where the horses are kept.

Mr. Lawrence, counsel for the petitioners, remarked that "I went out there with a critical eye;" that disposes of one eye. Dr. Smith declares in this article that I have a "peculiar psychological squint;" and that disposes of the other eye. Handicapped by such an ophthalmic malformation, you must concede in the short space of fifteen or thirty minutes spent at the Bussey Institute plant, that I did remarkably well to see so much. It is fortunate for the petitioners that I did not stay a week, as Dr. Smith suggested that I should have done, for had I done so, no one could have foretold the disastrous conditions that I might have brought to light.

In conclusion, allow me to add that:

You may excuse or deny the filth as you will,
These two dirty stables still stand on the hill.

Very truly yours,

WM. W. BARTLET, PH.G.

"PEYRONIE'S DISEASE—STRABISME DU PENIS."

PHILADELPHIA, April 24, 1903.

MR. EDITOR: I fear J. W. W., Jr., of Pittsburg, Pa., has been listening to many valuable "over the Scotch and soda" clinics of one of the distinguished members of our profession, and has unconsciously become guilty of plagiarism, palming off another's erudition for his own (see *JOURNAL*, Feb. 26, 1903, p. 245). The earmarks of plagiarism are: (I) the title (I have heard S and S" lectures with such title). (II) "Codger," (III) "Yard," (IV) Hutchinson's Archives (see a visit to the Hutchinson's County Home by etc., etc.), (V) *Dictionnaire Encyclopedique* (none such in Pittsburg). Is it possible, like everything else that is good from Pittsburg, it is a "steal"?

Moreover, no one in Pittsburg would ever think of writing a sentimental letter of such character on Valentine's Day. There is too much iron in his soul.

Finally, I find by Polk's that Dr. Ricord lives in Baltimore.

Regretting this further "gold from salt water" tempt to "take in" the Yankees,

I am,

E. T. D., JR.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 18, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|--------------------|-----------------------------|--------------------------|--------------------------|---------------------------|----------------------|-----------------------|-----------------|----------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,343 | 417 | 24.57 | 18.54 | 3.80 | .30 | 2.85 |
| Chicago . . . | 1,885,000 | 640 | 174 | 26.23 | 20.77 | 2.03 | 1.56 | .94 |
| Philadelphia . . . | 1,378,527 | 530 | 136 | 23.49 | 13.96 | 1.50 | 1.87 | .75 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 233 | 45 | 29.60 | 14.16 | 1.28 | — | .85 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 163 | 55 | 33.13 | 18.07 | 1.81 | 1.20 | 1.20 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 72 | 29 | 22.30 | 24.38 | — | 6.94 | — |
| Boston . . . | 603,163 | 220 | 61 | 22.27 | 18.63 | 2.72 | 1.81 | .45 |
| Worcester . . . | 132,044 | 34 | 13 | 20.58 | 29.58 | — | — | — |
| Fall River . . . | 115,549 | — | — | — | — | — | — | — |
| Lowell . . . | 101,959 | 39 | 10 | 10.25 | 15.38 | 2.56 | — | — |
| Cambridge . . . | 98,639 | 26 | 10 | 11.55 | 34.65 | 3.85 | — | — |
| Lynn . . . | 72,497 | 19 | 5 | 10.52 | — | 5.26 | 5.26 | — |
| Lawrence . . . | 69,766 | 22 | 8 | 31.81 | 18.18 | — | 4.54 | — |
| Springfield . . . | 69,389 | 25 | 6 | 12.00 | 16.00 | — | 8.00 | — |
| Somerville . . . | 68,110 | 27 | 3 | 11.11 | 7.40 | — | — | — |
| New Bedford . . . | 67,198 | 21 | 10 | 14.28 | 14.28 | — | — | 14.28 |
| Holyoke . . . | 49,286 | 22 | 8 | 9.09 | 18.18 | — | — | — |
| Brockton . . . | 44,873 | 2 | 1 | 50.00 | — | — | 12.50 | 12.50 |
| Haverhill . . . | 42,104 | 7 | 1 | 28.60 | 28.60 | — | 14.30 | — |
| Newton . . . | 37,734 | 4 | 2 | — | — | — | — | — |
| Salem . . . | 36,876 | 6 | 3 | — | — | — | — | — |
| Malden . . . | 36,286 | 10 | 2 | — | 20.00 | — | — | — |
| Chelsea . . . | 35,876 | 11 | 2 | 9.09 | 9.09 | — | — | — |
| Fitchburg . . . | 35,069 | 10 | 4 | 20.00 | 30.00 | — | — | — |
| Taunton . . . | 33,656 | 11 | 2 | 18.18 | 27.27 | — | — | — |
| Everett . . . | 28,620 | 4 | — | 75.00 | — | — | — | — |
| North Adams . . . | 27,862 | 9 | 4 | 33.33 | 11.11 | — | — | 11.11 |
| Gloucester . . . | 26,121 | 9 | 2 | 33.33 | — | — | — | — |
| Quincy . . . | 26,042 | 5 | 2 | 60.00 | — | 20.00 | 20.00 | — |
| Waltham . . . | 25,198 | 8 | 1 | 37.50 | 25.00 | 12.50 | — | — |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — |
| Pittsfield . . . | 22,589 | 5 | — | — | 40.00 | — | — | — |
| Chicopee . . . | 21,031 | 19 | 9 | 52.63 | 15.79 | — | 5.26 | 31.57 |
| Medford . . . | 20,962 | 2 | 1 | — | — | — | — | — |
| Northampton . . . | 19,883 | 3 | — | — | — | — | — | — |
| Beverly . . . | 15,302 | 1 | 1 | — | 100.00 | — | — | — |
| Clinton . . . | 15,161 | 4 | — | 50.00 | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . . | 14,478 | 7 | 1 | 14.30 | 28.60 | — | — | — |
| Woburn . . . | 14,300 | 1 | 1 | — | — | — | — | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — |
| Adams . . . | 13,745 | — | — | — | — | — | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | — | — | — | — | — | — | — |
| Melrose . . . | 13,600 | 3 | — | 33.33 | — | — | 33.33 | — |
| Westfield . . . | 13,418 | 4 | — | 50.00 | 25.00 | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 3 | 1 | 33.33 | 66.67 | — | — | — |
| Framingham . . . | 12,534 | 2 | 1 | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 5 | — | — | — | — | — | — |
| Weymouth . . . | 11,344 | 5 | 1 | 40.00 | 20.00 | — | — | — |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 2 | — | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,607; under five years of age, 1,033; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 890, consumption 446, acute lung diseases 643, scarlet fever 54, whooping cough 44, cerebrospinal meningitis 8, smallpox 11, erysipelas 11, measles 32, typhoid fever 64, diarrheal diseases 102, diphtheria and croup 89.


From whooping cough, New York 4, Chicago 10, Philadelphia 10, Pittsburg 2, Providence 5, Boston 4, Springfield 2, and Lynn, Lawrence, Brockton, Haverhill, Quincy, Chicopee and Melrose 1 each. From erysipelas, Chicago 2, Philadelphia 1, Baltimore 2, Pittsburg 1, Providence 1, Boston 4. From smallpox, New York 1, Chicago 2, Philadelphia 1, Pittsburg 7.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending April 4 the death-rate was 15.08. Deaths reported, 4,578; acute diseases of the respiratory organs (London) 238, whooping cough 132, diphtheria 58, measles 141, smallpox 13, scarlet fever 39.

The death-rate ranged from 2.7 in Hornsey to 26.8 in Sunderland; London 15.7, West Ham 13.5, Brighton 9.6, Portsmouth 11.0, Southampton 10.9, Plymouth 18.6, Bristol 14.2, Birmingham 15.6, Leicester 13.7, Nottingham 17.4, Bolton 15.9, Manchester 19.1, Salford 18.6, Bradford 15.8, Leeds 14.0, Hull 19.4, Newcastle-on-Tyne 18.5, Cardiff 15.7, Rhondda 17.4, Liverpool 21.1, Handsworth 3.6, Stockton-on-Tees 13.0.

METEOROLOGICAL RECORD.

For the week ending April 18, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather | | Rainfall in inches. | | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. | |
| S. 12 | 29.91 | 49 | 61 | 37 | 55 | 72 | 64 | N | W | E | 7 | 4 | C. | C. | O. |
| M. 13 | 29.96 | 42 | 46 | 39 | 60 | 88 | 74 | N | E | E | 8 | 12 | C. | R. | T. |
| T. 14 | 29.96 | 41 | 43 | 39 | 92 | 88 | 90 | N | E | E | 20 | 24 | R. | O. | T. |
| W. 15 | 29.76 | 40 | 42 | 39 | 96 | 100 | 98 | N | E | E | 36 | 26 | R. | R. | 2.05 |
| T. 16 | 29.66 | 38 | 40 | 37 | 91 | 91 | 91 | N | E | N | 24 | 24 | R. | R. | .13 |
| F. 17 | 29.62 | 41 | 45 | 37 | 95 | 61 | 78 | N | N | W | 24 | 16 | R. | O. | .07 |
| S. 18 | 29.62 | 46 | 57 | 36 | 52 | 46 | 49 | W | N | W | 8 | 13 | C. | C. | O. |
|  | 29.78 | | 48 | 38 | | 78 | | | | | | | | | 2.25 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING APRIL 25, 1903.

T. H. STREETS, medical director. Detached from the Naval Laboratory, New York, and to duty at the Naval Hospital, Philadelphia, Pa.

G. E. H. HARMON, medical inspector. Ordered to the Naval Laboratory, New York.

J. STEPP, assistant surgeon. Ordered to the Naval Hospital, Portsmouth, N. H.

J. B. PARKER, medical director. Detached from the Naval Hospital, Philadelphia, and ordered home to wait orders.

H. H. HAAS, passed assistant surgeon. Detached from the Naval Hospital, Portsmouth, N. H., and granted sick leave for four months.

J. D. GATEWOOD, surgeon. Detached from the "Lancaster" and ordered to the "Yankee."

SOCIETY NOTICES.

CENSORS' MEETING SUFFOLK DISTRICT MEDICAL SOCIETY. — The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, on Thursday, May 14, 1903, at 2 o'clock. Candidates should make personal application to the Secretary and present their medical diploma before the examination.

F. J. COTTON, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY. — The ninth annual meeting of the American Laryngological, Rhinological and Otolological Society, Lexington, Ky., April 30, May 1 and 2, 1903. The sessions will be held in the Merrie Lodge Building. The profession is cordially invited to attend.

WENDELL C. PHILLIPS, M.D., Secretary.

40 West 47th Street, New York.

BOSTON MEDICAL LIBRARY. MEDICAL MEETING. — The regular meeting will be held in the John Ware Hall, Medical Library Building, The Fenway, on Monday, May 4, 1903, at 8.15 P.M. sharp.

Program: "The Pathology and Etiology of Smallpox." Statement by the President. Dr. Ralph L. Thompson, "The Bacteriolytic Complement Content of the Blood Serum in Variola;" Dr. E. E. Tyzzer, "Experimental Studies in Vaccinia;" Dr. William T. Councilman, "The Skin Lesions in Variola."

ARTHUR K. STONE, M.D., Secretary.

543 Boylston Street.

RECENT DEATHS.

FRANKLIN A. SHERMAN, M.D., of Ballston Spa, N. Y., died on April 22, aged seventy-four years. He was born in Castleton, Vt., and was a grandson of Dr. John A. Woodward, a physician of great repute in the early part of the last century. One of his children, Dr. Frank J. Sherman, is a medical practitioner in Ballston.

RAYMOND W. SHATTUCK, M.D., of New York, died on April 20, of pneumonia, at the age of thirty-one years. He was a native of New York City, and a graduate of the College of Physicians and Surgeons. At the time of his death Dr. Shattuck was serving as a school inspector of the Health Department.

WILLIAM HOLBROOK, M.D., M.M.S.S., died in Palmer, April 27, 1903, aged seventy-nine years.

RESIGNATION.

DR. ROBERT F. WEIR and DR. GEORGE M. TUTTLE have resigned their professorships in the College of Physicians and Surgeons of Columbia College. The reason given for the resignations is that they feel unable to undertake the extra amount of work which the proposed new curriculum for next year will entail.

BOOKS AND PAMPHLETS RECEIVED.

Uterine and Tubal Gestation, a Study of the Embedding and Development of the Human Ovum, the Early Growth of the Embryo, and the Development of the Syncytium and Placental Gland. By Samuel Wyllis Bandler, M.D. Illustrated. New York: William Wood & Co. 1903.

Bacteria in Daily Life. By Mrs. Percy Frankland. New York and Bombay: Longmans, Green & Co. 1903.

Nothnagel's Practice. Diseases of the Liver, Pancreas and Suprarenal Capsules. By Leopold Oser, M.D.; Edmund Neusser, M.D.; Heinrich Quincke, M.D., and G. Hoppe-Seyler, M.D. Edited, with additions, by Reginald H. Fitz, M.D., and Frederick A. Packard, M.D. Authorized translation from the German, under the Editorial Supervision of Alfred Stengel, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Nothnagel's Practice. Diseases of the Stomach. By Franz Riegel. Edited, with additions, by Charles G. Stockton, M.D. Authorized translation from the German, under the Editorial Supervision of Alfred Stengel, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Surgical Emergencies. The Surgery of the Head. By Bayard Holmes, B.S., M.D. Illustrated. New York: D. Appleton & Co. 1903.

Practical Physiology. By A. P. Beddard, M.A., M.D.; Leonard Hill, M.B., F.R.S.; J. S. Edkins, M.A., M.B.; J. J. R. Macleod, M.B., and M. S. Pembrey, M.A., M.D. Illustrated. New York: Edward Arnold, London, agent for Longmans, Green & Co. 1902.

The Mycology of the Mouth, a Text-Book of Oral Bacteria. By Kenneth Weldon Goadby, D.P.H. (Camb.), L.R.C.P., M.R.C.S., L.D.S., Eng. Illustrated. London, New York and Bombay: Longmans, Green & Co. 1903.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden. Authorized American Edition, translated under the direction of Boardman Reed, M.D. Part III. New York: E. B. Treat & Co. 1903.

Conservatism in the Treatment of Acute Mastoiditis. By Sargent F. Snow, M.D., Syracuse, N. Y. Reprint. 1903.

Salient Points in the Treatment of Catarrhal Deafness. By Sargent F. Snow, M.D., of Syracuse, N. Y. Reprint. 1903.

Observations on the Morphology of B. Diphtheriae, B. Pseudodiphtheriae and B. Xerosis. By Francis P. Denny, M.D., of Brookline, Mass. Reprint. 1903.

The Giant Magnet in Ophthalmic Surgery. By Laertes Connor, A.B., M.D., of Detroit, Mich. Reprint. 1903.

Vessels as Carriers of Mosquitoes. By Passed Assistant Surgeon S. B. Grubbs, Public Health and Marine Hospital Service, U. S. Treasury Department. Washington, D.C. March, 1903.

Three Cases of Colitis. By W. Hale White, M.D., and C. H. Golding-Bird. London, England. Reprint. 1902.

Les Indications Prophylactiques et Thérapeutiques de la Phtisie Pulmonaire, fondées sur la Connaissance de Son Terrain. By MM. Albert Robin et Maurice Binet. Reprint. Paris. 1902.

Du Ferment Lab Technique et Séméiologie. By MM. Albert Robin et F.-X. Gouroud. Reprint. Paris. 1902.

Les Echanges Respiratoires aux Hautes Altitudes. By MM. Albert Robin, Maurice Binet et Dupasquier. Reprint. Paris. 1901.

Les Dangers de l'Antisepsie Interne. Mercure et Fièvre Typhoïde. By M. Albert Robin, M.D. Paris.

L'Anémie Plasmatique. By M. Albert Robin, M.D. Reprint. Paris. 1903.

Case of Bubonic Plague, with Exhibition of the Bacillus. By Judson Daland, M.D., of Philadelphia. Reprint. 1903.

Aneurysm of the Heart with Thrombosis of the Left Coronary Artery. By Judson Daland, M.D., of Philadelphia. Reprint. 1900.

Regulations of the Sale of Viruses, Serums, Toxins, and Analogous Products in the District of Columbia, etc. Treasury Department, Washington, D. C. 1903.

Addresses.

PRESIDENT'S ADDRESS: MEDICAL EDUCATION IN THE UNITED STATES.¹

BY FRANK BILLINGS, M.S., M.D., CHICAGO.

ONE of the chief objects of the organization of the American Medical Association was the elevation of the standard of medical education in the United States. In the president's address the father of the association, Dr. N. S. Davis, stated that "the purpose of the organization was the improvement of our system of medical education and the direct advancement of medical science and practice."² That medical education in that day was defective, as recognized by the founders of the association, is shown by the report of the Committee on Medical Education in the year 1850. The committee said in part as follows: "Medical education is defective because there are too many medical schools; the teachers are too few; there are too many students. The quantity of medicine taught is too limited; the quality too superficial, and the mode of bestowal of the honors of medicine too profuse and too unrestricted."

For many years the association showed its interest in, and attempted to influence, the elevation of the standard of medical education through a committee on medical education. The Transactions of the association of the earlier years show many reports of this committee, which display much thought and effort on the part of the Association to improve the status of medical education at that period of time. James R. Wood, as chairman of the committee, in the year 1858, recommended that the various medical colleges of America be requested to send delegates to a convention of medical colleges, to consider the matter of medical education. This movement finally resulted in the formation of the Association of American Medical Colleges, which thereafter represented, to a degree at least, the American Medical Association in its efforts to improve medical education. Later the Southern Medical College Association was formed. Together these associations represent about 80% of the regular medical schools of the country, and these colleges have, in a general way at least, fulfilled the minimum requirements prescribed by the rules of the associations in regard to the preliminary education of students, the length of the college course, and the character of the curriculum.

About twenty-five years ago the Illinois State Board of Health, through the splendid efforts of Dr. J. H. Rauch, its secretary, made a report on the number and character of the medical schools of the country. This board adopted a minimum of requirements of medical schools as a necessary step toward the recognition of their diplomas by the State Board of Health of Illinois. This minimum requirement of the State Board of Health was gradually increased from time to time, with the result that many of the medical schools were obliged to raise the standard of medical education to enable their graduates to obtain licenses to practice in Illi-

nois. Other states followed Illinois in requirements for better methods of medical education, with the result that the standard of education in the country was very much improved.

MEDICAL SCHOOLS OF THE COUNTRY.

In the earlier days of our country the need of physicians was met by the organization of medical schools which were, as a rule, proprietary in character. These schools attempted the education of physicians on the then existing conditions of medicine by teaching in a didactic way the principles and theories of medicine and surgery. The branches usually taught at that time consisted of anatomy, physiology, chemistry, materia medica, obstetrics, the practice of medicine and of surgery. But little opportunity was offered in the great majority of the schools for extensive, practical teaching in anatomy or chemistry, and but a moderate amount of clinical work in the so-called practical chairs. The course of medicine in the college consisted of two annual sessions of four or five months. The course was not graded. The student attended all the lectures and clinics taught during his first year, and the second year was a repetition of the first. This class of schools was rapidly increased in the course of time. The chief reasons therefor were the fact that it was recognized that a connection with a medical school was profitable, directly and indirectly. The prestige which the teacher enjoyed among the graduates and the laity brought him a remunerative consultation and private practice. In most of the states it was easy to incorporate and obtain a charter for a medical college. It cost comparatively little to conduct and maintain the institution. Lecture rooms were obtained at trifling cost. The dissecting room was not worthy of the name of a laboratory, and the chief expense in maintaining it was the cost of dissecting material, which was usually deficient in quantity and poor in quality. Medical schools were organized all over the country, without reference to the needs of the people. Medical education was prostituted. To obtain a sufficient number of students many institutions showed a most degraded disregard of the moral and mental qualifications of the matriculates. The income of the school was wholly derived from the tuition of students, and no applicant was turned away who had the cash with which to pay his way. To add to the facility of obtaining a medical college course, there were organized in some cities evening schools, the hours of college attendance occurring from seven to nine or ten o'clock at night. These sundown institutions enabled the clerk, the street-car conductor, the janitor and others employed during the day to obtain a medical degree.

In spite of the general tendency to increase the facility by which a medical degree could be obtained, there was a force at work to improve the methods of medical education. A few older medical colleges and an occasional new one set the standard high in relation to the existing status of medicine. There were earnest, forceful medical men in some of the schools who fought for a higher standard for matriculation and graduation.

The medical college associations exerted a splendid moral influence for good, and the state boards in all the more advanced states have, by mandatory

¹ Delivered at the fifty-fourth annual session of the American Medical Association, at New Orleans, May 3-8, 1903. Published by courtesy of Journal of the Association.

² Transactions A. M. A., vol. xvi, 1865.

legislation, compelled the colleges to raise the requirements in reference to the preliminary education, the length of the annual session, the time of medical college study, the character of the curriculum, etc. As a result, the status of medical college education has been very much improved in the last twenty, and chiefly in the last ten, years. But, improved as it is, there are evils which menace us, the chief of which still are too many medical schools, too many students, and inadequate facilities for the proper teaching of medicine.

The improvement in medical college requirements has increased the cost of the maintenance of the medical college to a degree that it is no longer a profitable financial venture. There can be no dividends. Indeed, the proprietors of the private institution must often make up a deficiency in the annual budget. In spite of this fact, medical colleges have continued to increase steadily.

In 1877 there were 65 medical schools in the United States; in 1882 this number had increased to 89, and 1901-02 to 156. The enrollment of students and the number of graduates have also increased, in spite of the fact that the requirements for matriculation and graduation have been increased. In 1882³ there were 14,934 matriculates, and this number was increased in 1901 to 26,417, and in 1902 to 27,501, an increase of about 100% in twenty years.

The number of graduates in 1882 was 4,115; in 1901, 5,444; in 1902, 5,002, an increase of about 25% in twenty years. If, in 1850, there were too many medical schools and too many students, what can we say of the condition today?

It has been estimated that there is an average of one physician to 600 of the population of the United States at the present time. The natural increase in the population of the country, and the deaths in the ranks of the profession, make room each year for about 3,000 physicians, based on the proportion of one physician to 600 of the population. With 5,000 or more graduates each year, a surplus of 2,000 physicians is thrown on the profession, overcrowding it, and steadily reducing the opportunities of those already in the profession to acquire a livelihood. The evil of an overcrowded profession is a sufficient cause of complaint, but the cause thereof is the important point for us to consider, and, if possible, remove. To correct the evil, the ease and facility with which a medical degree may be secured in this country must be diminished. As before stated, there are now 156 medical schools in this country. Of these, 30 are sectarian, and 136 are so-called regular schools. Fifty-eight are medical departments of universities, of which 24 are state institutions. The relation of the medical school to the university in most instances is a nominal one only. In but few of them is the control of the faculty, or the finances of the medical department, vested in the university proper. In a very few of them the sciences fundamental to medicine are taught in the university. In the majority of these schools these departments are duplicated in the medical department, and are taught by members of the medical faculty. In most instances, too, the teachers of the fundamental branches are physicians who devote but a part of their time to teaching.

They teach without salary, or for a nominal one only. Their remuneration is obtained by private practice, to which they must devote their best energies, to the detriment of their value as teachers. The clinical department of these schools is, in most instances, wholly inadequate. The majority of such schools depend on the general hospitals, situated near them, for the privilege of the use of clinical material. Necessarily, these clinical advantages have great limitations, inasmuch as they cannot be fully controlled for the purpose of proper bedside teaching, or for scientific investigation. Some of the medical schools which are connected with state universities are situated in small cities where it is impossible to command an adequate amount or variety of clinical material. The connection with a university, which many of the schools enjoy, is, therefore, almost valueless in a pedagogic sense. The majority do not differ materially from the private or proprietary schools in their value as teaching institutions. Ninety-eight of the medical schools in the country are private corporations, organized, maintained, and, as a rule, owned by the faculty. If, in earlier years, these institutions were sources of direct financial profit to the owners, they have ceased to be so now—at least most of them. The evolution of medicine has made it necessary to extend the laboratory method of teaching. As these schools attempt to teach the whole curriculum, the erection, equipment and maintenance of the necessary laboratories have so increased the cost of conducting the schools that they are usually no longer self-supporting. The temptation is in such schools to conduct them on a plane which shall just comply with the minimum requirements of the various state bodies, which regulate medical practice in the several states. They are maintained ostensibly to teach medicine, but in reality for the prestige which a professorship affords the teacher in his private and consultation practice. Proprietary schools depend on general hospitals and dispensaries for clinical material. What was said of the status of clinical teaching of the medical departments of the universities is true also of the proprietary college. These schools cannot hope to improve their present standards. The majority attempt to maintain laboratories and other expensive means of teaching which a modern medical education demands. But in how many are the laboratories worthy of the name? What kind and variety of instruments and apparatus do they afford? Are their teachers of the sciences of the fundamentals of medicine capable? They cannot hope for better conditions, because the time when a student's tuition will pay the school for his instruction, if he is properly taught, will never return. Medical education of the future must be based on the status of medical science. That basis is recognized now, but is attempted in the great majority of our medical institutions in a very superficial way.

SCIENTIFIC MEDICINE.

The great and important discoveries of Pasteur and the practical methods devised by Koch in bacteriology marked a new era in medicine. Before the facts made clear by these discoveries, the hypotheses and theories of other days have dis-

³ The Journ. A. M. A., vol. xxxix, No. 10, p. 574.

appeared. Our knowledge of man and the lower animals and of the diseases and evils which afflict them has been revolutionized within the last twenty years. The advance in medical knowledge has been greater in that period than in all preceding time. Medicine now embraces many more subjects, chiefly fundamental ones, than were known twenty years ago. Formerly a very superficial knowledge of a few isolated facts in general chemistry and human physiology and a memorized knowledge of human anatomy and of *materia medica* enabled the student to learn the practice of the art of medicine and surgery. Now, the problems which confront the clinician and investigator in medicine and surgery compel him to have a good and working knowledge of general, physical and physiological chemistry, of general biology, bacteriology, pathology, physiology, embryology, pharmacology, histology and anatomy. The physician who has not a practical knowledge of these fundamental subjects cannot clearly understand the methods of others engaged in scientific investigation, nor can he rationally utilize the discoveries of others in his work. Medicine today is applied science. If we utilize the knowledge of today in an attempt to cure and prevent disease, it must also be an experimental science. No one can practically apply or rationally experiment with what he does not know. The fundamental studies of medicine, must, therefore, be acquired by all who desire to successfully apply them as sciences. The successful experimental application of these sciences has given us within ten years a knowledge of the method by which the invading bacteria affect the host, and has likewise developed a principle of wide application as a preventive and cure of certain diseases by the use of antitoxic sera. It has confirmed the principle of preventive inoculation, accidentally discovered by Jenner, and has enabled us to apply the principle in other diseases than smallpox. It has enabled us to know the methods of transmission of certain infectious diseases, and to know how to stamp out scourges like yellow fever, the plague and malaria.

Through the evolution of Listerism, it has enabled the surgeon to invade every region of the animal body, and to save scores of lives formerly doomed to death. The freedom with which the surgeon may now operate has not only saved lives, but, indirectly, the knowledge of disease processes so studied during life has taught us many new facts in symptomatology, and has cleared away many fallacies concerning pathologic processes. It has given us many new methods of clinical study, and furnished data from the blood, the spinal fluid, the exudates, the sputa, the sweat, the feces and urine, which enable us to recognize disease much more readily than before.

Much has been accomplished by experimental medicine in a comparatively brief period of time; there are vast fields to which the method has not been applied. With most of us, our present methods of clinical observation enable us to do little more than name the disease. In the vast majority of the infectious diseases we are helpless to apply a specific cure. Drugs, with the exception of quinin in malaria, and mercury in syphilis, are valueless as cures. The prevention and cure of

most of the infectious diseases is a problem which scientific medicine must solve. What is true of the infectious diseases is also true of the affliction of mankind due to chemical influences within the body. We know but little of diabetes, of the primary blood diseases, or of the various degenerative processes of age and disease. We hopefully look to chemistry to reveal to us the cause of these and other conditions. Experimental medicine must be the means of removing the ignorance which still embraces so many of the maladies which afflict mankind. Not every student, nor every physician, can become an experimenter in applied medicine. Nevertheless, every physician must be so educated that he may intelligently apply the knowledge furnished him by experimental medicine in the cure of such diseases as can be cured. He will no longer juggle with the life of his patient by an attempt to cure with drugs or otherwise, where no help is possible.

METHODS OF MEDICAL EDUCATION.

The phenomenal evolution of medicine has multiplied the subjects of medical study. The character of these sciences requires that they shall be taught by the laboratory method. The laboratory method, too, has been adopted as the chief method of instruction in anatomy, pharmacology and chemistry, formerly almost wholly taught in medical schools by didactic lectures. The laboratory method, while necessary to the proper and practical instruction of the student, involves an expense which is appalling when compared with the methods of teaching formerly practiced in all schools, and still adhered to in many medical schools. The method is expensive, inasmuch as it involves more extensive buildings, much expensive apparatus and an increase of the teaching force. The instruction must be individual or to small groups of laboratory workers, and this involves also an extension of the time of instruction. A physician engaged in private practice cannot possess and retain the general and technical knowledge necessary to enable him to teach one of the fundamental sciences properly, nor can he devote an adequate amount of time to it. The teachers of these fundamentals must be investigators in the province of their respective sciences. They must give their whole time to the instruction of students and to original investigation. The thoroughness and accuracy of the training of the special senses, and in experimenting, which a student will receive from such teachers in properly-equipped laboratories, will make him keen in intellect and sound in judgment. His desire for knowledge will be stimulated by the atmosphere of his surroundings, and will awaken in him a consciousness that through him and his work the knowledge of the world will be increased and humanity benefited thereby. But teachers of this character must be paid salaries quite as large as the remuneration of professors in the departments of arts, literature and science. The salaries of such professors and of the corps of assistants which the laboratory method implies make the cost of the university or college far beyond the income which could be derived from the tuition of students. I believe it has been estimated that the laboratory method of instruction, now followed by all first-

class institutions of learning, costs annually from four hundred dollars to five hundred dollars per student. But, great as the cost seems, it must be conceded that the present status of medicine demands the thorough instruction of students in these fundamental studies. It matters not whether his future may be that of a teacher or a practitioner of medicine. In either event, he must apply his knowledge of the fundamental sciences to his work, and the result will depend on the thoroughness of his education.

APPLIED MEDICINE AND SURGERY.

To enable the student to utilize the knowledge of a thorough training in anatomy, physiology, chemistry, pharmacology, physiologic and physical chemistry, embryology, neurology and pathology, he should be afforded facilities of equal rank in clinical medicine and surgery. To supply the student with proper clinical facilities involves several important features. Special hospitals, which would be absolutely under the control of the medical school, would be necessary. The hospital should be constructed with a definite idea of teaching students and of making researches into the nature, causes and treatment of disease, as well as to care for a definite number of patients. Hospitals for general medicine, surgery and obstetrics would be essential. Such hospitals, with laboratories and equipped with instruments, apparatus and library, would cost for their building and maintenance a very large sum of money. With such hospitals it would be necessary to choose the professors of medicine, of surgery and of obstetrics, with competent assistants, of the same type as the teacher of the fundamental sciences. They should give their whole time to the work of teaching and to original research in the hospital. They should be men who have proved their scientific fitness for the important positions, by the contributions they have made to medical knowledge. They should rank with and receive the pay given to professors of important departments in arts, philosophy and science. When so paid, they would be free to expend all their energy to teaching, and to experimental medicine—a career which would enable one to be of the greatest possible service to mankind. No life's work could be fuller or of greater self-satisfaction, and surely none would be more honorable. From these teachers and investigators the student would obtain instruction of the same systematic methods of accurate observation and investigation which were employed in the fundamental branches. He would receive thorough, conscientious drill in the fundamental methods of examination of patients, and his knowledge of the fundamental sciences would be constantly applied in this work. The trained clinical teachers would direct the student in thorough, careful observation in the wards and at the operating table, would collect data to be submitted to experimental tests, and would conscientiously carry out the experiments in the laboratories of the hospital.

The brilliant discoveries which have made our knowledge of the cause and means of transmission of many of the infectious diseases have been chiefly due to the introduction of the experimental method of investigation. Teachers and investigators of

the type mentioned will have the opportunity to make equally important discoveries in the broad field of the unknown in medicine. They will train students in the methods of research work and constantly increase the number of investigators in the domain of medicine. And there is need for such men. We may give the great practitioners who have taught clinical medicine their due meed of credit for their excellent, painstaking, unselfish efforts as teachers. They have added to the sum total of our clinical data, have utilized the knowledge of the pathologist and the physiologist in diagnosis, and have tested and judged the worth of therapeutic aids in the treatment of disease. But as teachers they have not made students investigators or experimenters. Not one of the recent great discoveries in medicine has been made by such a man. He has used as clinical material hundreds of cases of pneumonia, rheumatic fever, tuberculosis and chronic diseases by the score; his experience has taught him to recognize these diseases, even when the clinical manifestations are obscure, but he is no more successful, than when he began to practice, in saving the life of the patient with pneumonia, in preventing endocarditis in rheumatism, in curing tuberculosis, or in checking the advance of a chronic hepatitis. It is time, therefore, that the clinical teacher should have the knowledge necessary to carry on experimental investigation, with hospital facilities for the work, that the profession may become purged of the shame of helplessness in curing so many of the common diseases of mankind.

The patients who will be received in these hospitals will be fortunate. They will receive the most painstaking examination and study, and the experiments made on animals in the laboratory will benefit the patients directly, inasmuch as more rational therapeutic measures will be applied in cases so investigated. In addition to the clinical teachers who will devote all their time to teaching and research work in the special hospitals, there will be quite as much need for the clinical teacher who is in private practice in the general hospitals. Under his direction the student may himself investigate a hospital or ambulatory case, and undertake the care of the patient. His rich and varied experience in hospital and private practice will enable him to round out the student's college education. He will impart to the student a better idea of medicine as a whole. He will co-ordinate and arrange the isolated facts of clinical and laboratory investigation, and give them their true and relative value. He will teach the student the art of medicine; he will teach him that human sympathy and encouragement of the sick and dying are a part of his duty as a physician.

It would be most practical to make the clinical work of the third year a clinical drill and experimental course, given in the special hospitals, and assign the students of the fourth year to the general hospitals and to the clinical teachers who are in private practice. All the general hospitals and dispensaries controlled by the medical schools could be utilized in the fourth year for this purpose, and afford the student an abundance of clinical material and the benefit of the experience of many clinical teachers. Many of the assistants in the special hospitals, of the third year course, would doubtless

engage ultimately in private practice, and would, because of their scientific attainments, make excellent clinical teachers in the fourth year. A medical school conducted on the high plane advocated must necessarily be under the control of a university. Such a medical school would cost an enormous amount of money, and this can be commanded only by the trustees of a university of the highest order. That the money for the purpose of establishing and maintaining university medical schools with research hospitals and university extension clinical courses will be forthcoming cannot be doubted. The world is awake to the great discoveries recently made in medicine. The wealthy men of this country have had their interest aroused as never before in reference to the possibilities and benefits which medical investigation will give to mankind. They now recognize that they and all posterity will be benefited by every new fact discovered in medicine, and that physicians thoroughly and scientifically trained are necessary to conserve the health of the people.

Three years ago Prof. W. W. Keen, in his address as president, deplored the fact that medical schools received relatively little aid in the form of endowments as compared with universities and colleges of philosophy, art and theology. Since that time several millions of dollars have been given for medical education and scientific research. The signs of the times point to a brighter future of medicine in America.

EDUCATION PRELIMINARY TO MEDICAL STUDY.

The subject of the educational requirements for matriculation in medical schools has been discussed at many meetings of this association in its earlier years, and later by the college associations, by the American Academy of Medicine and by the various state boards of health.

The requirements were at first lamentably low, and the efforts of the Committee on Education of the American Medical Association and of the college associations had but little effect, because they possessed no legal power to control the schools.

The influence of the various boards of health of several states, notably Illinois, was more marked, inasmuch as these state boards possessed a mandatory power. The colleges were forced to adopt the minimum educational requirements of the state boards of health, if their diplomas were to be recognized by the respective state boards.

These moral and legal influences to improve the preliminary requirements were almost nullified by the practice of a majority of the medical schools in admitting students whose educational status was examined into and judged by a committee of the college faculty.

This practice is still followed by a majority of the medical schools, and results in the admission of many students who are unable to fulfil the prescribed requirements. As a subterfuge, students are often matriculated conditioned in one or even several subjects. Then the student and the faculty committee forget all about the subject, and the student completes his course, goes into practice, and dies with the conditions still undischarged.

The present requirements of the college associations and of the various state medical examining

boards and state boards of health amount, on the average, to a high-school education. The curricula and length of course of the high schools of the different states, and even in the same state, differ very substantially. However, if the medical schools now in existence would honestly require as a minimum education the diploma of a high school, without regard to the rank, it would be a marked advance over the present requirements as practiced by most schools.

We must admit, too, that there are medical schools of such a low educational grade that they have no right to demand of their matriculates as much even as a common school education. This fact that low-grade medical colleges exist is one of the most satisfactory explanations of the difficulty encountered in elevating the standard of preliminary requirements.

To get at the root of the matter, the medical college must be brought up to the proper educational standard, and then, and then only, can be made a proper preliminary educational requirement.

UNIVERSITY MEDICAL COLLEGE.

The present status of medical science requires and demands a university medical college course. By university medical college is meant a medical school which is directly connected with and a part of a university; the university fixing the requirements and controlling the admission of students to the medical department. The method of teaching both the fundamental and the clinical branches is on the principles outlined above. To properly prepare for such a course the student should have, as a minimum preparation, at least two years of study in a good college or university. The requirements to enter a good college or university would ensure a sufficient knowledge of the ordinary school branches and also Latin or Greek. During the two years' course in college his time would be well spent in the study of English, French, German, mathematics, history, philosophy, physics, chemistry, general and organic, and qualitative analysis, comparative anatomy and general biology. The amount of time to be devoted to each of these subjects would be the same as that of students of general science, as arranged in all college curricula, with the exception of a much more thorough course in chemistry, biology, physics and comparative anatomy.

So prepared, the medical matriculate would be able to grasp all the intricacies of the subjects of the fundamental branches of medicine. With the addition of the full medical college course, as outlined above, his education would be equal in culture to that of the graduate in arts and philosophy. At the same time it would be practical, and especially fit him for his work as a scientific investigator or practitioner, or for both.

With the medical profession so educated, a physician would be, in truth, a member of a learned profession. From an educational point of view, he would rank as an equal with the scholar in philosophy, law and theology. As a man he would be recognized as the greatest benefactor of mankind.

With the establishment of university medical schools the first two years of work in the medical school will consist of courses in pure science.

Then, doubtless, all universities will adopt the plan which two or three universities have already put in practice; that is, that the student who completes the first two years of the science course of a university, or at a college of good standing, may enter the sophomore year of the university and take the first two years' work in medicine as the sophomore and senior years of the bachelor's course, when he would receive the degree of S.B. The student who completes the three years of the arts or philosophy course at a university, during which he should take a large amount of work in physics, chemistry and biology, could then enter the medical college, and after two years receive the degree of A.B. or Ph.B. After two years spent in the clinical school he would receive the degree of M.D.

This telescoping of the literary and medical courses affords the advantage of an economy of time, while it does not in any way lessen the value of the result to the student. In the one case the student secures the degrees of S.B. and M.D. after about six years of study, and in the other the degrees of A.B., or Ph.B., and the degree of M.D. at the end of seven years' study.

THE OUTLOOK OF MEDICAL EDUCATION IN THE UNITED STATES.

Medical education must advance to its proper level if it complies with the present status of the medical sciences and the demands which continued evolution in medicine promises.

What does this imply? It means that the private—the proprietary—medical school which is conducted for commercial reasons must go. Acknowledge, as we must, the great value which the best of these schools have been to the profession and to the country, all such schools have lived past the time when they can be of value. The continuation of these institutions henceforth will be harmful. They cannot command the money to build, equip and maintain the laboratories and hospitals which a proper and adequate medical education demands. In the past their graduates have furnished the many great and influential medical and surgical clinicians of this country. In former days a graduate poorly prepared has been able, by indefatigable labor and post-graduate work, to place himself in the front rank as a clinical physician and surgeon.

Today medical science demands primary instruction to fit a man as an investigator and scientific physician. If not properly educated he cannot grasp the great problems which medicine presents today as he did the more simple clinical facts which comprised the art of medicine and surgery a few years ago. In the future medicine must be taught in the large universities of the country and in the state universities which are situated in or near large cities, where an abundance of clinical material may be commanded.

The state university and the college which desires to teach medicine, and is so situated that it cannot command clinical material, should confine itself to teaching the sciences fundamental to medicine. These should be taught as pure sciences, and should be included in the course for the degree of S.B. A college or state university ambitious to teach the medical sciences can do so without great cost. To

attempt to teach applied medicine without proper and adequate hospitals, and with an insufficient number of patients, would be irrational, nor can they command the necessary funds with which to do it. From such colleges and state universities the students could go to the larger institutions which are able to furnish the proper facilities for teaching applied medicine and surgery.

The general hospitals of many of the cities, now used by proprietary schools, could be utilized as clinical schools for both undergraduate and post-graduate teaching, conducted by the clinical teachers in the existing proprietary schools. Indeed, these hospitals could be utilized as university extension clinical courses. Necessarily they would have to be under the control and direction of a university medical school.

How many schools may be necessary to educate the number of doctors of medicine required annually in the United States? The question one cannot answer, but it is safe to say that twenty-five hundred graduates annually will fully supply the demand. This would imply about ten thousand to twelve thousand matriculates. A minimum number of twenty-five and a maximum number of thirty-five medical schools should offer sufficient facilities to educate ten thousand students. The various state universities and the colleges which offer adequate science courses would educate a great number of students in the fundamental branches, or in the first two years of the medical course.

MEDICAL RECIPROCITY BETWEEN THE STATES OF THE UNION.

The low requirements of some medical colleges, and the want of uniformity in the requirements for a license to practice in the different states, has resulted in a condition which entails much hardship on a physician who desires to remove from one and to engage in practice in another state. The rules of most state boards of medical examination and of health are so stringent that a physician or surgeon of years of experience and of acknowledged skill and education, and the specialist who may be renowned in his field of work, are obliged, like the recent graduate, to take an examination in all of the branches of medicine and surgery in order to secure a license to practice in the state of his adoption.

To correct this evil it has been suggested by a member of the American Medical Association, and concurred in by others, that a national board of medical examiners be organized; that the board hold examinations at different seasons of the year in the various large cities, and that the diploma so obtained shall be recognized as a license to practice in any one or all of the states and territories. The measure suggested seems to be practical and feasible.

In addition to this plan, it remains to be said that the degree granted by the future university medical school will be undoubtedly recognized as an evidence of fitness to practice in any state in the Union. When we shall have a less number of schools and annual graduates, the various states may safely and rationally become more liberal and discriminating in the conduct of their office.

THE INFLUENCE OF THE AMERICAN MEDICAL ASSOCIATION.

The American Medical Association should maintain its interest in the elevation of the standard of medical education, one of the chief reasons of its organization. Its influence in former years was principally moral. This was of considerable value, for the reason chiefly of the high ideals of the founders and first members of the association, who advocated and fought for a high standard of medical education. In the future its influence should be many fold that of the past, for with the reorganization of the profession the better methods of conducting its affairs, the increased and probably very large membership, and its great medical journal, should wield a great influence for good.

As the direct agent by which the American Medical Association may exert its influence in the elevation and control of medical education, the Committee on Medical Colleges and Medical Education should be made permanent and should be given adequate power and sufficient annual appropriation to make its work effective.

This association should, therefore, stand for, and should use its whole power to improve, medical education in this country. It is said that we never exceed our ideals in practice, and that if we lower our ideals our conduct sinks to a lower level.

The American Medical Association should take as its ideal and standard of medical education the university medical college, with all the name implies in regard to the fundamental medical sciences, and to the clinical branches. It should use its influence to drive out of existence those proprietary medical schools, which are conducted solely as money-making institutions. These measures cannot be accomplished at once; but medical science demands it, the profession demand it, the people demand it, and look to the American Medical Association as the chief influence which shall accomplish this end.

CANCER AND IMMUNITY.¹

BY A. F. JONAS, M.D., OMAHA, NEB.,

Chairman of the Surgical Section.

ON such occasions as this we take great pleasure in recalling the past and dwell with great delight on the achievements along the lines that have most engaged our attention. We, as surgeons, especially those whose professional activity began in the pre-antiseptic period, review the successive changes from that period of expectancy to the present period of aseptic accuracy with the greatest satisfaction. No one can fully appreciate the present status of surgery who is not personally familiar with the period when wound complications were the rule and when faith was pinned on the belief in "laudable pus." . . .

Surgical advance in the future will not consist so much in the radical changes in operative technique as in improvement in diagnosis and diagnostic aids. Many of our diagnostic formulæ are even now undergoing complete changes, and the future will lead us to a precision in the recognition of disease

that we little dream of now. The early recognition of malignant disease is a problem of future development, especially malignancy affecting the internal organs. With our present aids it is impossible to recognize internal cancers sufficiently early to do a radical operation. Our only course at the present is an exploratory incision as soon as reasonable grounds for malignancy exist.

The field that seems full of promise and gives us hopes for great expectations in the future is that of immunity and immunization. It now seems that many tissue changes will be solved along these lines. From our present viewpoint the question of immunity seems to tower above and overshadow all others. . . . The two greatest problems of the future, cancer and immunity, shall engage our attention today. Malignant disease seems to be on the increase. We stand so helpless in its presence when fully developed that we exert our feeble energies and grasp eagerly for any fact that seems to offer new light for its better understanding. It will be our effort at this time to as briefly as possible review the more important facts known regarding the etiology of cancer and then, after making clear to ourselves the revelations thus far made in the recent studies of immunity, determine if possible what relations, if any, exist between the two.

These considerations were prompted by personal observations made in a number of cases of undoubted malignancy that indicated the probable infectiousness of cancer. It is well known to us all that the infectiousness of most infectious diseases was first determined clinically and that the clinical observations were later determined and confirmed microscopically and experimentally. . . .

The term cancer, so commonly employed, refers to growths made up chiefly of epithelial cells. There is really no good reason why the term cancer should be limited to epithelial growths. Cancer signifies "crab." It was originally used to signify malignancy and meant connective tissue growths as well as those of epithelial origin. For our purpose at this time we will limit the term cancer to epithelial neoplasms and we will confine these considerations to its etiologic factors.

The mystery of its origin seems as deep almost as in the days when cellular pathology was unknown. No problem in pathology has received more thought and speculation, no subject has had bestowed on it more earnest effort and unremitting toil. Regarding etiologic evidence we must confess that we have only a mass of negative proof. When observers believed that they had found the specific organisms, scores of workers in the same field soon demonstrated their error. So, today, we can only say that the evidence which shows what we do not know of the cause of cancer is voluminous, and we must admit that we know little of its etiology.

We know something of its cell characteristics. We know that malignant disease is essentially a cell proliferation that has, biologically, many features that are opposed to the physiological tissues in which they take their origin. We find an atypical life history in the cancer cells. The nucleus divides in an asymmetrical way. We note that unusual karyokinetic figures in the nucleus are usual in new growths, pointing to changes in the cellular life his-

¹ Oration in surgery, delivered at the fifty-fourth annual meeting of the American Medical Association, held at New Orleans, May 5-1903.

tory. Regarding carcinoma, certain bodies have been demonstrated, believed by some to be parasites, having some causal relation to the cell changes.

It is a well-established fact that the nucleus perpetuates the nature and function of the cell, and any change in the nucleus changes the cell in its function and process of division. According to W. V. Shaw, "The growth of cancer cells is then to be looked on as an effort of reproduction in damaged tissue, the incidence of the damage falling on the nuclear structures."²

This statement is based on observations made by him in connection with experiments on free swimming larvæ which developed from the stimulation of ova of certain lowly organized animals, causing a proliferation of cells. The ova had not been fertilized by spermatozoa. Adult organisms were not developed, but larvæ capable of independent life. These results were obtained by stimulating the ova with strychnia and by mechanical movements of the ova. This cell growth was compared to growth of tissue in partially damaged structures. Shaw believes that such damage alters the nature of these cell structures so that the vegetative functions of the cell run riot and the cells become parasitic toward the organism in which the growth is taking place. This view seems to find support in those connective tissue growths that develop in tissues that have sustained a trauma and in which the sarcoma develops; or in epithelial growths that form on surfaces that have been subject to prolonged irritation, as exemplified by the chimney-sweep's and paraffin-worker's cancer forming on an old chronic dermatitis; or a cancer forming on the site of a prolonged irritation by the smoker's pipe-stem on the lower lip. We have seen many times that cancer develops in epithelial tissue that has been subjected to irritation for a long time, usually extending over a period of years. We have long recognized irritation to be at least one of the causative factors. Just what metabolic disturbances take place, and what the underlying causes are, is not yet clear. That cancer is infectious has been proven by many clinical observations. This has been shown by Eberth, who collected twenty-two cases where cancer was transmitted from lip to lip, tongue and palate. Behla reported eight instances of death from malignant growths in physicians and surgeons who were inoculated from tumors, and four instances of apparent human infection from cancerous animals, dog and hen. He also alludes to a cancer epidemic among the white mice in the Pathological Institute at Freiburg as evidence of the contagiousness of cancer (Hektoen). Roswell Park believes that, for New York State at least, cancer is increasing at an alarming rate.

Attempts have been made to show that cancer is endemic, peculiar to certain localities. Behla cites cases of Behrens, who found in a village ten deaths out of thirty-eight to be due to cancer. Pfeiffer, Powers and Friesinger maintain that in certain houses (cancer houses) and marshy districts in the vicinity of ditches and streams containing sluggish water, especially if the stagnant and polluted water were used for watering garden vegetables and for drinking purposes, cancer is relatively frequent

(Hektoen). This would point rather to a microphyte than to a microzoon as the etiologic factor.

Since infection of living tissue is believed in every instance to be due to bacterial invasion, naturally bacteriologists directed their attention toward the discovery of a specific germ. Very soon we had a long list to enumerate. Plimmer of London examined in six years 1,298 carcinomata, and in 1,130 he believed that he found parasitic bodies. Sjöbring laid much stress on cell inclusions. Russell described his fuchsin bodies which were spherical or oval. L. Pfeiffer of Weimar published several monographs on the protozoa as a cause of cancer. Eisen brought out his *Canceri Amebe*. Korotneff believed that he had found an organism which he termed *Rhopalocephalus carcinomatosus*. Bosr found and described an organism that he called *Myxosporidia coccidia*. Gaylord of Buffalo described at great length bodies that he believed bore an etiologic relation to cancer. Sanfelice of the University of Cagliari emphasized the etiologic importance of bodies that he named *Saccharomyces neoformans*. A very large number of other publications on this subject made their appearance, none of which differed in any essential point from those bodies just mentioned.

While the presence of the aforesaid bodies described by the different observers can be demonstrated and are present in a large proportion of the cases of cancer, all the requirements necessary to prove them to be the organisms solely responsible for cancer have not been fulfilled. The requirements necessary are: (1) the organism must be isolated; (2) a cancer must be produced when the organism is introduced into another body; (3) the organism must be recovered from the cancer produced. It has been shown that, while the first requirement has only apparently been fulfilled, the second has been, in a number of cases, seemingly produced. More careful investigations have proven that the experimental growths were not cancer. The third requirement has not been fulfilled.

All of the work mentioned above was carefully reviewed in all its details by the cancer committee, who, in their second annual report to the surgical department of the Harvard Medical School, showed conclusively that the bodies described by the various investigators under different names were not cancer nor the cause of cancer. I can do no better than to quote in full the results of their labors. They bear the marks of painstaking and conscientious work. The conclusions of the Harvard Cancer Committee were written by Edward H. Nichols and were as follows:

It has been claimed by the adherents of the theory of the parasitic origin of cancer that

(1) A proliferation of epithelial cells analogous to the lesions seen in cancerous tumors can be produced by certain well-known protozoa (nodules caused by the *Coccidium oviforme*).

(2) Certain skin lesions characterized by epithelial cell proliferation are due to the action of a so-called protozoon (*Molluscum contagiosum*).

(3) Blastomycetes are constantly present in human cancers and are the cause of the lesion.

(4) By experimental inoculation of animals with blastomycetes, true epithelial or cancerous nodules can be produced.

(5) Finally, the well-known endocellular bodies seen

²The Lancet, Sept. 20, 1902.

the protoplasm of cancer cells have a definite morphology, are parasites and the cause of cancer.

It has been the object of the investigators, the results of whose work appear in the preceding pages, to study each of these questions. As a result of the lines of work pursued by them under the direction of the Cancer Commission during the past year, it is concluded that:

(1) The lesion produced by the *Coccidium oviforme* is essentially a process of chronic inflammation and is not analogous to the lesion seen in cancer.

(2) The lesion of *Molluscum contagiosum* is characterized by certain changes in the epidermis, is not due to the action of a protozoon and is not analogous to cancer.

(3) The so-called "blastomycetes" (*saccharomycetes*) *Sanfelice* and *Plimmer* are *torulæ*.

(4) The lesions produced by these "blastomycetes" (*torulæ*) are, essentially, nodules of peculiar granulation tissue, are not cancerous, nor, in any sense, true tumors.

(5) Blastomycetes are not constantly present in human cancers.

(6) The peculiar bodies seen in the protoplasm of a cancer cell are not parasites, nor the cause of the lesion, but probably are, in part, at least, atypical stages of the process of secretion by glandular epithelium.

It is clear that in the present status of the etiology of cancer, bacteriologically considered, the case has not been proven. But it does not follow that it will not be shown that cancer is due to a specific and well-defined organism. It may be an organism so minute as not to have been brought within the range of the microscope. It is possible that no stains have yet been found that possess the requisite affinity for its complex molecular constitution. The necessary artificial medium for its cultivation remains for some future investigator to solve. Be that what it may, since the clinical features give strong evidence of the infectiousness of cancer, the search must and will be continued along the same lines.

In this search for a specific contagium, cellular metabolism must not be forgotten. Its consideration and study is perhaps more important than the isolation of a specific germ. It cannot be denied that the more exact our knowledge of cytomorphosis becomes the clearer will be our understanding of cell proliferation. It has long been understood that there must be certain stimuli that cause cell growth and certain inhibitors that limit cell development and exercise control in accordance with the requirements of the tissues. Certain other influences bring about a disturbance of the normal equilibrium between the stimuli and the inhibitors. It is evident that the exact nature of the stimuli, the inhibitors and the disturbers must be ascertained. This involves a study of the cell constituents and the fluids that surround it. As we see, it is a question of chemistry. . . .

What has malignant disease to do with immunity? The entire subject of immunity has to do with infection. It has to do with its nature, mode of action and control. Has cancer any characteristics that pertain to infection? Bacteriologically we have found none. Clinically we have a mass of evidence that would seem to place cancer among the infectious diseases.

In order to have a clear understanding of the modern conception of immunity, it is necessary to review, as briefly as possible and in barest outlines, without comment, the most important features of

our present knowledge of the subject. Much material that may seem essential to a complete elucidation of this great and important subject had to be eliminated on account of the limited scope of this dissertation.

More than a century ago we find that John Hunter was familiar with some antiseptic properties of the blood. He found that a small amount of putrefying material could be added to a given quantity of fresh blood without producing putrefaction. Consequently he advanced his doctrine of "the living principle of the blood." This, as an observation, was almost forgotten and its import was not fully realized until Nuttall, in 1888, began his systematic work, in Flügge's laboratory, studying the antibacterial properties of the body fluids, especially the blood serum.

The greatest impetus to the study of immunity was given by Metschnikoff in calling attention to the participation of the leucocytes and other cells in the process of infection, establishing his well-known theory of phagocytosis. His views are so well understood that we need only to call attention to them at this time.

Following Nuttall, Pfeiffer discovered, in 1894, "The extracellular disintegration and solution of cholera spirilla in the peritoneal cavity of immunized guinea pigs."

The greatest attention and interest was aroused by Behring's great discovery of antitoxic immunity. Bacteriologists at once endeavored to elucidate by elaborate researches the exact way in which immunity was established. Chief among these was Ehrlich. It was soon shown, however, that immunity in most bacterial infections did not depend, in the main, on the antitoxic principle.

Pfeiffer's phenomenon afforded a starting point from which Metschnikoff, Bordet, Ehrlich and Morgenroth began their labors and brought forth a series of discoveries that have been epoch-making.

A series of antibodies were differentiated and classified as antitoxins, antienzymes, cytotoxins, agglutinins, precipitins and coagulins. Antibodies were in turn produced by these, with the exception of the antitoxins.

It was determined that to every cellular group of an animal species there appears to correspond a specific cytotoxin. These various toxins have been termed leucotoxin, neurotoxin, spermotoxin, nephrotoxin, thyrotoxin, etc.

These antibodies have been divided into two groups; first, the antitoxins, which are single bodies; second, the cytolytins, whose antagonistic effects require the co-operation of two bodies.

Of these two bodies, the one which actually destroys the foreign cells is normally present in the cells or fluid of the organism; but it seems incapable of action without the intermediation of a body which is distinguished from it by a greater resistance to heat. The two elements composing cytolytins exist quite independently of each other, so that one may be present without the other, or be artificially removed without affecting the other.

To demonstrate the mode of action and constitution of the specific antibodies, Ehrlich has propounded the theory of receptors or side-chains. The atomic grouping of the toxin molecule, which affects the union with antitoxin as well as with a

particular cell, he has designated as haptophore groups.

In view of the fact that certain molecule groups of the living protoplasm favor the taking up of certain poisons, he has termed them receptors. According to his theory of antitoxic formation, after the introduction of toxins the receptors are produced in excess and finally are thrown off into the blood as useless ballast. The free circulating receptors are the antitoxins, termed amboceptors, intermediary bodies. The action of antitoxins is explained thus: They take charge of the haptophore groups of the toxin molecules and prevent them from approaching the receptors of the tissues.³ There are as many receptors as there are toxins, while almost every day new ones are discovered.

Behring gives the most exact and brief definition of Ehrlich's antitoxin theory: "The same substance which, when incorporated in the cells of the living body, is the prerequisite and condition for an intoxication, becomes the means of cure when it exists in the circulating blood." Every antiserum protects only against substances through which it becomes immunized. Every antiamboceptor protects only against its particular amboceptor.

Ehrlich and Morgenroth found, in experiments with goat's blood, thirteen different new lysins which represent so many receptors. "The receptors are in the cells, not for the purpose of linking poisons to the cells, but to seize certain foodstuffs, particularly proteids, and the toxins, bacterial and other foreign cellular substances, if capable of inducing the immunizing reaction, chance to have the requisite combining affinities for the receptors."

The living body possesses bactericidal and cytolytic substances which may protect it by destruction of invaders or may injure it by destruction of its own cells, according to the mates with which they are paired.

In considering the physiological mechanism of the cells we find that they are designed, primarily, for the assimilation of food, and, secondarily, to meet pathologic conditions, the production of antitoxins, cytolysins and other similar bodies. The receptors are in the cells for the purpose of taking up foodstuffs, chiefly proteids. The toxins and bacterial cellular substances have combining affinities for the food receptors, if they are capable of inducing an immunizing reaction.

In producing immunization against bacteria, it is the intermediary body (amboceptor) which is generated. It has been found that these antibodies have a specific relation to the substances which caused their formation, as has been shown by the injection of a specific serum into an animal at certain intervals, of toxins, against which an antitoxin is desired.

The specific nature of these antibodies is further shown in their application to serum diagnosis, as shown by the Widal agglutination test for typhoid fever and the serum test in the diagnosis of *B. dysenteriae* Shiga, an organism shown to be the cause of acute dysenteries by Flexner, Vedder and Duval.

When Roux and Yersin discovered diphtheria antitoxin, and Ehrlich the origin and mode of action of antitoxin, a lasting foundation for the study

of immunity was laid. It was positively shown that "soluble toxins enter, as assimilable substances, into combination with constituents of the body cells for which they have an affinity," and are enabled to produce immunity or to exert toxic effects.

The expectations that we should soon be enabled to solve all questions regarding the action of toxins after the discovery of soluble bacterial toxins have only partly been realized, especially regarding the action of the pyogenic micrococci, which concerns us most as surgeons.

However fruitless, hitherto, the practical results regarding toxins of many pathogenic and especially pyogenic organisms, the principle has been established, and it is only a question of method and time when all body toxins and their antitoxins shall be definitely known.

Pfeiffer directed his attention to the bacteria and found substances, toxins, in cholera spirilla, which became free only after the bacteria were dead and which were termed intracellular poisons. This was a most important step in advance, but we must acknowledge that we know as yet very little about the action and nature of intracellular bacterial poisons.

It is interesting to note from the result of Flexner's experiments with venom that its action on red blood corpuscles, leucocytes and nerve cells is like that of duplex cytotoxins, which depend on the combination of intermediary bodies contained in the venom on one hand, with corresponding complements in the cells or fluids acted on. This is shown by the addition of venoms to fresh blood, which brings about the quick destruction of the red blood corpuscles. If the fresh blood has been washed with an isotonic salt solution, so as to remove all the complement, we find that the corpuscles are not dissolved, but agglutinated. It seems that the venom serves chiefly to bring "into necessary relations with constituents of the body cells poisons we already harbor or may generate, but which are harmless without the intervention of intermediary bodies."

Flexner and Noguchi have shown that the leucotoxic, the neurotoxic and other cytotoxic properties of venom depend on combinations of venom, intermediary bodies with complements contained in the cells poisoned by venom, or in the fluids bathing these cells, indicating that the snake venom contains only a part of the complete poison.

Flexner and Noguchi also demonstrated that hemorrhages in various tissues of the body resulting from poisoning from certain venoms is due to the presence in venom of a cytotoxin which has the power to dissolve endothelial cells, which they termed endotheliolysin (hemorrhagin). It causes extravasation of blood through its direct solvent action on capillary endothelium.

The hemolysins have been most extensively studied because of their great pathologic significance, and it has been found that many bacteria have hemolytic power. The secondary anemias, so constant in streptococcus infections, in pneumonia, typhoid fever and other diseases, afford a most striking example.

Normal blood serum contains antihemolysins which protect red blood cells from bacterial hemo-

³ Ehrlich: *Schlussfolgerungen*, p. 176.

lytic agents. Associated with hemolysins are bacterial hemagglutinins, possessing the power to clump red corpuscles.⁴

Heuter and Klebs believed that thrombi were due to the coalescing of red blood corpuscles. Welch calls attention to hyaline thrombi formed by agglutinated red corpuscles. White corpuscles are agglutinated by certain bacteria and also by pus cells.

What is urgently needed is a separation of these poisons and a determination of their source, constitution, mode of action and degree of specificity.

It will not be out of place here to allude to the studies made of the ductless glands, because of their supposed bearing on immunity. Sajous urges that the adrenal extractives have a decided affinity for oxygen, offering a key to tissue respiration and to the functions of all other organs now classed as the ductless glands. It has been found that the red corpuscles are not the only carriers of oxygen, but that the blood plasma contains and distributes this gas. Schmiedeberg, Jacquet, Claud Bernard and others demonstrated the existence of an oxidation ferment in the plasma, and these bodies are now entertained as an oxygen-laden secretion. This secretion is believed to permeate nearly all the body elements. The blood also contains a fibrinogen body which combines in certain quantities with fixed portions of the plasma's oxygen. The changes in the temperature of the blood were traced to variations in the amount of the fibrinogen in the plasma. The adrenals have been shown to be connected with the anterior pituitary body by various sympathetic ganglia. The anterior pituitary body is regarded as the governing center of the adrenal system. Over-activity of this body increases the adrenal secretion, consequently oxidation, therefore vital resistance. Depression of the activity of the pituitary body causes decreased supply of oxygen, consequently depressed vital processes.

The thyroid secretion, thyreoidin, has been shown to sustain the efficiency of the pituitary body. Excessive thyreoidin production stimulates the pituitary body and produces exophthalmic goiter. Deficient thyreoidin production leads to myxedema. The adrenals, the pituitary body and the thyroid gland constitute the adrenal system. According to this line of research, it is believed that toxins act directly on the adrenal system, and, by decreasing or increasing its secretion, decrease or increase the oxidation process. Certain toxalbumins and many drugs stimulate the adrenal secretory powers to a certain limit, and, when exhibited in excessive doses, depress or arrest the functions of this system.

The posterior pituitary body has been shown by Berkley, Andriezen and others to be the chief functional center of the nervous system. It is the center for such emotions as shock, excitement, etc. It governs all organic functions through the nervous system. The secretions of the pancreas and spleen, according to Schiff, and later by Herzen, unite and change trypsinogen into trypsin, a solvent for the albuminous bodies in the pancreatic juice. This ferment performs an important part in immunizing processes, in that it destroys toxalbumins.

Viewing these labors in the light of Ehrlich's researches, the oxidizing substance represents the

amboceptor; the spleno-pancreatic internal secretion, trypsin, represents his complement. To produce a proteolytic action of trypsin, fibrinogen and the oxidizing substances are required. These views are somewhat at variance with those commonly accepted, but are of sufficient importance to deserve consideration in this connection.

From the foregoing it would seem that the doctrine of phagocytosis plays an unimportant rôle. But we find that the French, or phagocytic school, at the head of which is Metschnikoff, recognizes the full significance of acquired immunity and the cytolytic principles represented by the co-operative action of intermediary bodies and complements. The German, or humoral school, led by Ehrlich, recognizes the leucocytes to the fullest extent.

The chief difference between the French and the German schools consists in the belief by the advocates of phagocytosis that the complements reside in the leucocytes, whereas the adherents of the humoral school believe that they exist in the blood plasma.

While, in what has here preceded, we have been concerned in the consideration of chemical problems, we must not overlook the fact that behind all is a governing force which resides in the central nervous system.

The practical outcome of these studies has been found in the production of antitoxic sera, some of which have been proven to have a definite and exact effect under certain conditions. We find these sera divided into two principal groups: (1) those that have an antibacterial action, and (2) those that have a purely antitoxic action. Of all the sera the diphtheritic is best known. According to Welch the mortality of diphtheria has been reduced from 40% to 15% by its use.

Antitetanus serum has been disappointing. Reports coming to us from different sources are conflicting, the mortality ranging from 0% to 70% from practically the same methods, which consist in administering the serum by the subcutaneous, intracerebral and the spinal methods. Antityphoid serum has failed to fulfill expectations even more than antitetanus serum. The antistreptococcus serum of Marmorek, while it seems to have exerted a specific effect in purely streptococcic infections, appears to exert no influence in the presence of mixed infections. The antipneumococcic serum has not yet emerged from the experimental stage. Nothing can be said of its effects. The anti-plague serum of Haffkine and Yersin demonstrated that, as a preventive, it reduced the number of cases to one-twentieth and the mortality in a given number of cases was reduced from 33% to 13% (Calmette). The antitubercle serum has been shown to have a specific effect on tuberculous tissue, but remains powerless in the presence of mixed infections. The antivenom serum has been demonstrated to have a positive usefulness in certain snake bites. Calmette's antivenin has been proven to be of undoubted use in leprosy.⁵

Many other sera have been described, but their usefulness thus far has been shown to be of an uncertain nature. Consequently we will leave them out of consideration at this time.

⁵ F. A. Packard and Robert M. Wilson: Amer. Journ. of the Med. Sc., December, 1900.

⁴ Heuter-Klebs, p. 731.

When we pass in review all that is positively known in relation to the question of immunity, we cannot deny that some of the principles underlying this great question have, in a measure at least, been revealed. The evidence is conclusive that "the same substance which, when incorporated in the cells of the living body, is the pre-requisite and condition for an intoxication, becomes the means of cure when it exists in the circulating fluid."⁶

Ehrlich, in his investigations of diphtheria toxins, demonstrated "that soluble toxins enter as assimilable substances into direct combination with constituents of the body cells for which they have an affinity, and only thereby are enabled to bring about immunity or to exert toxic effects." Further, in connection with Metschnikoff, Bordet, Morgenroth and Ehrlich, it is shown that "the organism possesses a power to produce substances specifically antagonistic to all sorts of foreign cells, cellular products and derivatives. The substances capable of inducing this immunizing reaction appear to be mainly of an assimilable, albuminous nature, or at least intimately associated with such material."

The principle of toxins and antitoxins has become as firmly established as any other in medicine or surgery. We have noted that antitoxins from pure cultures have a certain affinity for and possess immunizing power in specific infections, but fail in the presence of mixed infections. We see at once that failure to immunize does not violate the principle, but that the method of application has been at fault. We know that diphtheria toxin has a specific effect for the products of the Klebs-Loeffler bacillus, and that it controls and cures in the presence of these, but fails when there is an admixture of other forms of infection. This is shown by the 15% mortality which still exists. We have noted that antistreptococcus, tubercular and plague sera have a specific and a decided effect in pure infections, but that they fail in the presence of other specific germs. We observe with satisfaction the certainty of the action of a given antitoxin in its union with the toxin from which it was produced. It at once becomes apparent that, in the presence of several toxins or a mixed infection, it will require several antitoxic substances, a combination of antitoxic sera, or a serum containing different kinds of amboceptors, so combined as to meet and unite with the several toxins in a given case. Coley endeavored to meet such indications by combining streptococcus and Bacillus prodigiosus sera in treating inoperable sarcoma.

These observations presage a revolution in therapeutics, which perforce means a refinement in diagnosis beside which what we do now will scarcely bear comparison.

The inferences to be drawn from the foregoing indicate that the future work will be biochemic. It appears that the solution of cell metamorphosis, as it is observed in pathologic conditions, will be in the field of chemistry. Ehrlich's theory of the side-chains has given us a working hypothesis almost as practical as the atomic theory when applied to chemistry. It is not an idle dream to believe that the revelations of the future will not only consist in a complete exposition of cells and body fluids, or a

perfect understanding of the governing brain centers, but may extend to the life principle itself, although life itself may and will ever belong to the unknowable.

Our chief interest, however, will always center in the cell and its governing influence. Just what influences are responsible for normal cell division may never be known. But it is within the bounds of human possibility to know what influences may be responsible for atypical and excessive cell growth. Excessive cell growth, both in the leucocytes and connective tissue cells in acute infections, we can assume to be due to toxins that are in excess of the amboceptors. The existence of cytolytins and anti-cytolysins is now undisputed. The one destroys, the other protects the cells. We have noted that the chief function of a receptor molecule is to combine with nutrient molecules a metabolic, a chemical process. The birth and growth of the cell is restricted within certain limitations and is regulated by chemical law. Now the problem depends on our ability to ascertain the exact influence that carries cell division beyond its normal bounds and causes excessive cell growth as we observe it in malignant new growths. That the process is one of localized excessive nutrition is apparent. The localities of predilection are frequently at points where the cellular elements are exposed to frequent insults, where the tissues are damaged, establishing a *locus minoris resistentiæ*, as, for example, in the mouth, gastro-intestinal tract and the female reproductive organs. A point of least resistance, damaged tissue, if you please, always offers a soil for bacterial invasion. Cancer very often develops in tissues that have long been irritated, no doubt liberating a complement that unites with a specific infection when introduced under proper conditions. Such is not always the case, however. In fact, we know that in the majority of cases tissues that sustain irritations and almost constant traumatism for many years never become malignant. The simple traumatism does not develop cancer. A specific toxin must be introduced, probably also an intermediary body to complete the side-chain, which increases karyokinetic energy. We have noted in our studies of immunity that the life or death of the cell depends on its intra- and extra-cellular composition, so we may say that the whole process, whether it relates to normal or excessive cell growth, is chemical.

An objection may be urged at this point, which consists of the fact that the propositions of immunization thus far considered affect groups of cells extending over a wide range, that is, the vascular, the muscular and the glandular or cerebrospinal systems. It has been shown that cancer is always at the outset, and often throughout its entire course, absolutely a local disease. It would not seem rational to attempt immunization of the entire system against a strictly local disturbance. We will naturally turn our hope toward a method that will enable us to effect local immunization.

That local immunization is possible has been demonstrated by P. Römer in the following convincing abrinimmunization experiment. As is well known, abrin, which is the toxalbumin of the jequirity bean, will produce a severe conjunctivitis in animals and men. Ehrlich had demonstrated that rabbits' conjunctivæ became immune after the in-

⁶ Welch: Behring's Definition of Ehrlich's Theory Concerning Antitoxin.

stillation of abrin. Römer instilled into the right eye of the rabbit weak abrin solutions, the dosage being rapidly increased until immunization was produced. In three weeks the rabbit was killed. It was then shown that if the right conjunctiva, which had undergone severe inflammation, were rubbed and macerated with a certain amount of abrin and injected into a healthy animal, it had no effect. But, if the conjunctiva of the left eye, which had received no instillation, were rubbed and macerated with abrin and injected into an animal, death always followed. Römer concluded from this observation that in conjunctival immunizations a part of the autotoxin existed in the conjunctiva itself. A local antitoxin was produced.

It would seem that these results established definitely the principle of local immunization in indifferent tissues. These observations have an important bearing on the adaptation of these cells to local affections. That local affections of various forms, or general affections with local manifestations, can be best managed by the local introduction of exceedingly small doses of the specific remedy, was shown by Professor Bouchard before a recent meeting of the Egyptian Congress. He found that articular rheumatism disappeared after the injection *in situ* of small doses of salicylic acid, in some cases only half a grain. We must conclude that local cell metabolism can be influenced by local rather than by general diffusion. The inhibition of excessive cell growth must be accomplished in the same way.

It would seem, then, that the cancer question must be solved along the lines of chemistry. Since we know that contagious or infectious energy does not depend on the bacterium itself, but on its products, which are purely chemical, it would seem that it matters little whether the specific parasite is found or not. Since the cancer germ has thus far successfully eluded the most vigilant search, it becomes more and more evident that in the field of chemistry will be found the solution for our problem.

It will be difficult to rid ourselves of time-honored views. Purely theoretical speculation, like the hypothesis of cell proliferation from inclusions of embryonal matrices according to Cohnheim, must give way to the demands of modern science that insist on actual observations and practical demonstrations.

Now, then, will it be unreasonable to hope that when protoplasmic changes are thoroughly understood and when the body sera have given up their secrets and the influences that govern cell growth, we may also find the antibodies which will inhibit cell multiplication beyond natural bounds?

The studies in the field of immunity have, as yet, only assumed the proportions of the initiatory stage. A vast unexplored wilderness lies before us. The pioneers have begun their work well. They have outfitted themselves in a manner that will, in the near future, enable them to throw unexpected light on the pathway of their conquest of discovery. They are only on the verge of this vast domain. What lies beyond the borders we can no more foretell than could Boyer know that in twenty-four years after his death we should have anesthesia and that in fifty years the world would have antiseptic surgery. And yet, in the light of our present knowledge, the hope, amounting to a conviction,

arises in us that even in our lifetime, if we are spared a few years more, we will have an exact bio-dynamic and bio-chemic science that will make diagnosis accurate and precise, and one that will enable us to treat and control all infections with an exactness not now possible. While the surgeon is now constantly encroaching on the field of the internist, the time is not far distant when the physician may not only reclaim his own, but with it that large group of neoplasms known as malignant growths that from time immemorial has been the exclusive property of the surgeon.

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Original Articles.

BRACHIAL PARALYSIS, POST-NARCOTIC.

BY F. J. COTTON, M.D., AND S. W. ALLEN, M.D., BOSTON.

THE following instances of post-anesthetic paralysis are presented because the writers believe that such cases should be put on record. Few of the cases are reported, and, as a consequence, the risk we run of having this accident occur is not always appreciated. It is apparently always avoidable, if the etherizer knows the risk and has it in mind.

CASE I. Miss P., aged twenty-five, healthy, moderately robust; etherized May 6, 1901, for an operation on the hip. The anesthesia lasted a little over two hours. During etherization both arms were raised: the left forearm was on the pillow above the patient's head (but not under any tension); the right arm lay abducted with the elbow flexed, only the supinated hand resting on the pillow. The position was practically unchanged during the whole operation.

After an uneventful recovery from ether, the patient showed a practically total paralysis of both arms.

On the right there was entire loss of power in the extensors of the hand and wrist and of all muscles supplied by the ulnar nerve. There was fair power of flexion in the fingers and good ability to pronate the forearm, but supination was lost. The triceps was paralyzed, the biceps and brachialis anticus only partly so. There was entire loss of power over the deltoid and supra- and infra-spinatus muscles.

On the left, flexion of the fingers was very weak. Neither pronation nor supination could be carried out — nor, in fact, any motions below the shoulder, save weak elbow flexion and flexion of the fingers. The deltoid retained better power than on the right, and the posterior rotators of the shoulder seemed to be intact.

There was no pain and no sensory disturbance beyond a very moderate hypoesthesia and paraesthesia mainly in the ulnar distribution on the left. The tendon reflexes could not be obtained. There were no changes in the pupils, nor in the width of the palpebral fissures.

Improvement in function began to show itself at three days, with recovery of power in the biceps and triceps on the left side, in the finger flexors on the right. At four days the extensors of the wrist on the left began to show improvement — the muscles of the ulnar supply on the right.

From this time on, improvement was irregular in progress but continuous. At ten days there appeared marked tenderness of the nerves in the axilla and to a less extent along their whole course in the arm. At the same time the muscles of the upper arm became tender. At sixteen days there was some power in all the affected muscles, least in the deltoid and shoulder rotators on the right, in the muscles of the hand and in the wrist extensors on the left. No electrical examination was made. No active treatment was used save for massage.

A month after the operation there remained only a slight weakness, some contracture of the flexor muscles (which rapidly yielded under massage) and some paraesthesia in the ulnar distribution on the left side. This paraesthesia lasted several months, but finally disappeared. When last seen the patient had recovered entirely.

CASE II. Seen by one of the writers in 1893 — the details are quoted from memory. The patient was a young woman of slender physique but healthy; the operation was for acute appendicitis, and was a relatively short one. During etherization both hands were held above the head on the pillow.

On recovery from ether, she was found to have a total paralysis of all muscles of shoulders and arms of both sides.

Feeble power returned to the hands in about ten days, and from this time there was gradual improvement, but a paresis of the shoulder muscles and of the intrinsic hand muscles and some sensory disturbance in the hands persisted for several months. Eventually there was entire recovery.

CASE III. (Seen by one of the writers some time after the accident.) A young man, operated on for appendicitis. His hands were said to have been above his head during the forty-five-minute etherization. After recovery from ether there was practically total paralysis of both arms, but not of the shoulder muscles, with a good deal of sensory disturbance. Partial recovery in a couple of days. A good deal of pain in the forearms persisted for some weeks, and some paraesthesia for about four weeks. Recovery of function was slow, and even up to date he has not recovered quite the normal flexor power of the left hand.

CASE IV. (Seen by one of the writers two weeks after operation.) A middle-aged, robust woman was operated on for an abdominal lesion; during the operation the arms are thought to have been above the head. On recovery she had a total paralysis of both arms. When seen there was still a nearly complete paralysis of the musculospiral supply right and left, with paresis in the supply of median and ulnar on both sides; there was then no involvement of the shoulder muscles; there was hardly a trace remaining of the initial hypoesthesia in the hands. The initial improvement here, as in the other cases, had been within a couple of days or so, after this a slower progress toward recovery.

These cases are typical post-anesthetic paralysis. The writers believe such cases to be much more frequent than the scanty literature would suggest. A cursory search of the literature has yielded only thirty cases of this type. The type we would define as that in which paralysis of a part or the whole of

the brachial plexus has evidently resulted during anesthesia from mechanical causes. We would exclude from consideration the many cases recorded where the paralysis has had a central or reflex origin, or those evidently due to direct pressure on the peripheral nerve trunks from pressure of the body on the arm in lateral postures, from pressure of the edge of a table on the musculospiral nerve, from pressure of leg-holders or the edge of a Trendelenberg table on the peroneal nerves, or from the too efficient application of a tourniquet.

In this list of thirty cases there is a considerable uniformity. The patient is anesthetized with the arms abducted or drawn up above the head, and after recovery from the effects of a prolonged operation it is found that one or both arms are paralyzed. There is little or no pain and relatively slight sensory disturbance. The muscles of the shoulder and arm are affected in varying degree — sometimes all are involved, sometimes the paralysis is of the nerves from the upper roots, sometimes the shoulder muscles are spared and the hand and arm muscles mainly affected. Within a few days there is a beginning return of function, more usually in the hand, then a much slower return of power to the extensors, to the deltoid and the rotators of the shoulder. As the function returns many of the cases present a paralysis approximately of the "Erb type" (deltoid, biceps, brachialis anticus and supinator longus).

In a very few cases (Büdingen) there is involvement of the sympathetic root communicating into the first dorsal nerve, signalized by pupillary and other ocular changes.

The sensory disturbance may rarely be considerable. As a rule it is confined to moderate hypoesthesia and various paraesthesiae of mild type.

Later on soreness of nerve trunks and of muscles may appear. Reflexes are usually normal. Electrical tests rarely show a partial reaction of degeneration or slow contractions — as a rule the reactions are normal. All¹ cases recorded have recovered spontaneously or with the use of electricity, save one case of Mally's, where a paresis of both deltoids remained as a residuum from a total paralysis of both arms. There was some doubt even here whether the persistence of the paresis was not due to a chronic arthritis of both shoulders which appeared in this case.

As a rule the recovery of a fair amount of muscle power occurs within a few weeks, but full recovery may be long in coming.

The type of injury is that associated with peripheral nerve injury from pressure or traction, and in so far as these brachial plexus cases are concerned we need not trouble about the theory of the toxic effects of chloroform or ether, anemia, etc., except in so far as they may represent a favoring condition.

As to the pathological anatomy of these cases there are no data save those furnished by Büdingen's examinations. In one of these no lesions of the plexus were found at autopsy, in the other it is definitely stated that even microscopical examination failed to show any lesions whatever.

¹This statement applies, of course, only to the special class under consideration. Paralysis with central lesions, tourniquet paralysis, etc., associated with anesthesia do not necessarily share this good prognosis.

We are at liberty to assume, as we like, severer lesions in severer cases, but Büdinger's cases were typical clinically, and the latter case at least as severe as any described. It seems fair to infer from his data that we have to do rather with interrupted function than with any definite structural change.

There is no question, from the data, that the position of the arms is the cause of the trouble. There is no case recorded in which the trouble occurred where the arms lay on the chest or at the sides of the body; in all cases where there is a record of the position they were either above the head or at least well abducted. That long-continued stretching upward of the arms may affect the plexus is shown by the rare occurrence of fleeting numbness or paresis, where the arms are so placed in sleep, and, still better, by the cases reported as "*Klimmzug-lähmung*," where repeated passive hanging from gymnastic apparatus sometimes produces a partial paralysis of the Erb type (but including the serratus magnus, and sometimes the levator anguli scapulae and rhomboids), sometimes of rather obstinate character.²

It is easy to see how positions which under ordinary circumstances may give no trouble may readily become exaggerated from the muscle relaxation of ether. With such relaxation and a continuance of the vicious position for one or more hours, it is easy to conceive that harmful pressure or tension may result. Just *how* this happens is not fully determined. There are three possible mechanisms to be considered:

(I) Pressure on the plexus: (a) exerted between the clavicle and the transverse processes of the vertebrae, especially the fifth and sixth; (b) between the clavicle and the first rib.

(II) Tension on the roots or plexus from position of the arm.

(III) Tension from position of the head and neck, the arm being abducted.

The relation of position to the involvement of single roots clinically proves to be of no use in helping determine the manner of damage. Where we find it noted that the arms were, during narcosis, stretched above the head, we find paralysis of all, or practically all, the brachial plexus, in five cases; of upper roots alone, in three cases; of circumflex (deltoid alone), in one case; of lower roots and part of upper roots, in one case.

Where the arms were abducted and not stretched upward, we find paralysis of the whole plexus, one case; of lower roots especially, one case; of upper roots, partly of lower, one case. These results are too inconstant to be conclusive as to detailed lesions.

It would seem that it should be easy to determine these effects by experiment on the cadaver; in fact, it is not so simple: as each investigator has in turn advanced his theory he has always "proved" it by cadaver experiment.

The writers, in their turn, carried out patient observations on a number of partly dissected cadavers, trying to verify the alleged effects of position, especially with regard to the special nerve roots pressed on in special positions.

To our surprise we found it very hard to produce

any considerable tension or pressure on the brachial plexus by any position akin to those occurring clinically. The following results, such as they are, were constant with different cadavers:

With the upper arm abducted to a right angle and supinated and the elbow dropped back, the median, the musculospiral, and especially the ulnar nerve are under some tension, and there is some stretching of the plexus, as a whole, over the first rib and over the head of the humerus.

With the arm above the head, no nerve save the circumflex could be put on the stretch. As for the pressure exerted by the clavicle on the plexus, either against the first rib or against the transverse processes of the vertebrae, it could not definitely be demonstrated in any position that could be compared with those occurring in narcosis. As Guillaume and Duval pointed out, the plexus, when the arm is extended upward, moves into the hollow of the clavicle and is protected. Such pressure as is exerted is between the clavicle and the masses of muscle in the neck over the transverse processes. The plexus is slack, and there is not even a chance of stretching it.

These observations make it clear enough how damage may result with the arm abducted and supinated. As to the damage occurring (as it most often does) from stretching of the arms above the head, they suggest rather than demonstrate an explanation.

It is obvious from the clinical point of view that only in *exceptional* instances does the plexus suffer *any* trauma. It is obvious from the experiments that this trauma is from pressure if the arms are extended upward,³ from tension if the arm is abducted and supinated. Probably the latter cause is less common. This we may assume not only because this is clinically the less commonly noted position in these cases, but because tension must especially affect the ulnar nerve (see experiments), while, in fact, it is in most cases the muscles supplied by the upper roots that suffer.

We would emphasize the following points:

Paralysis of part or all the muscles supplied by the brachial plexus with some sensory involvement is not very uncommon after narcosis, though rarely mentioned.

Its cause is not toxic but mechanical. It occurs only when the arms are long held above the head or lie in abduction—never if they lie flexed on the chest.

The mechanism is a pressure on the nerve roots, probably between the clavicle and the muscles over the transverse processes of the cervical vertebrae, or from stretching over the head of the humerus in abduction.

The trouble is essentially functional without known lesions.

The lost function returns *in part* very early. Total recovery is often long delayed, but apparently is to be counted on.

The possibility of the accident should be impressed on students, on house officers and on all of us.

In view of this risk the arms of a patient under ether should always, where possible, be flexed with the hands on the chest. If other positions are un-

³ Probably ischemia may play a part. Every anesthetist knows how this position checks the radial pulse.

² Schrmann: Deutsche Med. Woch., 1900, xxvi, p. 6.

voidable they should not be continued long without change.

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PYRONIN - METHYL GREEN: A BRILLIANT DOUBLE STAIN FOR CELLS AND BACTERIA.

BY WILLIAM F. WHITNEY, M.D., BOSTON.

The staining properties of a combination of pyronin (a basic red aniline) and methyl green were first brought forward by Pappenheim in his work on plasma cells; but he did not emphasize its great general utility, and it is to this especially that I desire to call attention. For the brilliant contrasts which are obtained in specimens stained by it in the simplest way make it of the greatest value for the examination of fresh isolated cells and of smears of sputa, pus and other fluids.

The method of preparation and use is as follows: A 1% solution of pyronin and methyl green¹ in distilled water are made separately, and mixed in the proportion of four parts of the former (red) to one part of the latter (green). The resulting rather opaque, deep purplish fluid will keep for several weeks without precipitating. If, however, only occasional use is required, as in office practice, the solutions are best kept in separate bottles, and a little of the mixture can be quickly made with a dropper.

Cover-glass preparations.—A drop of the fluid to be examined (gonorrheal pus, for example, gives a very brilliant picture) is spread thinly in the usual way and dried; on this a few drops of the color are placed; it is heated for a few seconds and washed off thoroughly with water. The cover glass can then be mounted directly on a slide in a drop of water, or, preferably, after drying, in xylol balsam.

On examination with a high dry, or better with an oil immersion lens, it will be seen that the nuclei of the cells are bluish green, the bodies of the neutrophilic leucocytes are unstained, while those of the lymphocytes, mast cells, endothelial and epithelial cells have varying shades of purple by which they can be readily distinguished from each other. Against all of these any bacteria stand out in sharp contrast by their brilliant red color. The effect of the whole picture is heightened by the transparent background, which is perfectly colorless if the preparation has been properly washed.

This stain does not touch the red corpuscles, and if it is desired to bring them out or use it for the examination of blood, the smear must be treated first either by the Ehrlich heating, ether-alcohol, methyl-alcohol or Zenker-nitric method for fixing the hemoglobin. Then it is to be colored with a 1% aqueous solution of orange G, well washed, and lastly covered with the pyronin-green mixture. In this way the red corpuscles are of a light yellow

color, and reddish granules appear in the orange-colored cytoplasm of the polynuclear leucocytes.

The 1% solution of pyronin can be used alone as a good counter stain after Gram's method by simply allowing it to remain on the decolorized preparation for a minute or two. The bacteria, which have been decolorized, take up the red, and thus come into vivid contrast to those which have retained the original violet.

Fresh preparations.—For the examination of fresh cells (scrapings from tumors, etc.) it is only necessary to add a drop of the mixture to the fluid or to the scrapings suspended in water. After thoroughly stirring about with the point of a needle, a cover glass is placed over the drop. The excess of fluid can be drawn off by placing a bit of filter paper carefully against one edge of the cover glass. After this the cells can be washed by bringing a drop of clear water against the edge opposite to the paper and allowing it to run through in the same way. Nucleus and cell body are stained differently, and the various kinds of cells can be readily distinguished from each other. All the nucleoli are prominent by their deep pyronin staining. The corpora amylacea of the prostate are colored a light brown.

Frozen sections.—A good double staining is given to frozen sections of tissues hardened in formalin, by placing them for a short time in a little of the fluid, and then washing in water. They can be mounted in glycerin, or syrupy levulose, but should be examined at once, as the color diffuses in a short time. Since alcohol extracts the color completely, permanent preparations are very difficult to be obtained. Pappenheim has given a complicated method with resorcin as a mordant, but it has not been a successful one in the hands of others.

In conclusion it should be remembered that if the slides and covers are scrupulously clean, the smears spread thin and evenly, turbid solutions filtered, and the diffused color thoroughly washed out, then the chances of a successful preparation are always greatly increased.

X-LIGHT IN ANTHROPOMETRICAL SIGNALMENT.

BY WILLIAM ROLLINS, BOSTON.

THE time will come when the law will require every person on reaching adult age to be signalized. Meanwhile we know from the researches of Bertillon and others that the anthropometrical department of signalment is the foundation of every valuable method of identifying criminals. Any procedure which will make these measures more exact must be valuable, for already the number of signalments is several hundred thousand in France alone. Every day the chances of making a mistake in identification become greater. The difficulty is not in the first separation, but in the last group, in which the measures are most alike. The ordinary measures taken are—height, length of trunk, reach, length of head, width of head, bizygomatic diameter, length of right ear, length of left foot, length of middle finger, length of left middle finger, length of left forearm. Of these measures it may be said

¹ Grubler's colors, obtained from Ernst Leitz, 411 West Fifty-ninth Street, New York, were used.

that they are of value only when they are accurate. It is evident that if we could take any of these measures with twice the accuracy now possible, we could identify twice as many persons. This we are able to do by the method I have devised—that of making x-light photographs of the bones. I estimate that this method at least doubles the accuracy with which measures of the hand can be taken, and by enabling other measures of the feet, beside the length, to be taken it allows at least four times as many persons to be identified as at present, though the real number will be found to be much greater; for when we consider that x-light not only gives us photographs of the dimensions of the bones but also shows their structure, it is evident for purposes of fine distinction in the final stage of the identification the method is an advance. In cases of bodies burned or decomposed before they are discovered, the method would have some advantages over any that has been proposed. In other cases where only some of the parts of the body are found, as for example a hand or a foot, the method alone might lead to identification. I have designed and constructed apparatus for conducting these x-light photographic anthropometric signalments, and have described them in other papers, as they appeared too technical to interest the readers of a medical journal. I hope, however, the method may interest physicians, as it is a more exact appeal to anatomy as an aid to identification than any yet proposed. Indispensable requisites for making such measures of value are to have the source of x-light at a uniform distance from the photographic plate; to have the plate bear on its face evidence of the direction and distance of the source of x-light and the angle at which the central ray struck. Apparatus for accomplishing these results, to which I have given the name orienter, was illustrated in this journal for 1901 and much more fully in my notes on x-light in the *Electrical Review*. I mention the matter here because the apparatus is important to physicians from a medico-legal point of view when x-light negatives are used in court for evidence.

Clinical Department.

A CASE OF ACUTE OSTEOMYELITIS OF THE CERVICAL SPINE.

BY HENRY S. WARREN, M.D., BOSTON.

From the Orthopedic Clinic of the Carney Hospital.

J. G., a male twenty-three years of age, came to the Orthopedic Out-Patient Department of the Carney Hospital on Jan. 20, 1902, with the following history: Family history negative; personal history that of a perfectly well man up to the present illness.

Five months before entrance, while riding in a street car, he turned his head suddenly to look out of the car window and was seized with a severe pain in the neck. Since that time the motions of the head upon the neck have gradually become less free, and have been attended by a more or less constant but steadily increasing amount of pain. Two weeks later he noticed a swelling on the back of

the neck, which has increased in size, and he complains at times of chills and fever.

Physical examination showed a well-developed and nourished man, somewhat pale, with flushed cheeks and a distinctly septic facies. The head was held rigidly to one side, with the chin depressed and pointing somewhat toward the right shoulder. Over the occipito-axoid region, somewhat to the right of the median line, was a thick, brawny, indurated swelling, non-fluctuant and distinctly tender to pressure.

The patient could not turn his head in either direction, and could open his mouth only with difficulty. The motions of the cervical spine were restricted in all directions, but the restriction seemed more the result of mechanical interference, due to the swelling itself, than upon spasm of the cervical muscles.

Examination of the throat showed no retropharyngeal or peritonsillar abscess. His temperature was 100.4° and pulse 100.

An x-ray showed the shadow of an abscess, and a thickening and fusion of the bodies of the second and third cervical vertebrae. Three days later he was admitted to the wards with a temperature of 103° and a pulse of 100.

On Jan. 24 an incision was made just to the right of the median line, opposite the second and third cervical vertebrae, and several drachms of thick creamy pus were evacuated, which on bacteriological examination showed the presence of the staphylococcus pyogenes aureus in pure culture.

A sharp fall in the temperature was at once noted, and in a few days the motion of the neck became freer, and pain was much relieved.

The temperature remained between 99° and 100° for about ten days, when on removal of the drainage tube the abscess reformed and the temperature again rose to 103°. At this time a second operation was done by the writer. The original opening was enlarged and an incision three inches long was made to the left of the median line with dissection down to the spinal column; considerable pus was evacuated and drainage tubes were placed in each opening. The temperature again fell to normal, and further convalescence was uneventful. Both wounds were allowed to granulate from the bottom, and at the present writing, one year after the operation, they are completely healed, all motions of the cervical spine are quite within normal limits, and there are no subjective symptoms.

Acute osteomyelitis of the spine is clinically a rare condition. In 1875 Delafield¹ showed the Pathological Society of New York a specimen of a vertebra found at autopsy in the case of a man sixty-three years of age, who was admitted to the Roosevelt Hospital complaining of steady pain in the lumbar region; loss of weight, followed within a few weeks by paralysis, pyemia and death.

In 1896 Makins and Abbott² of London reported six cases of their own with postmortem records, one each by Lucas, Ballance, Hahn and Müller, together with eleven from the literature in which they found the following data as regards age and location: Under 2 years, 1 case; 2 to 5 years, 2 cases; 5 to 10 years, 2 cases; 10 to 15 years, 8

¹ New York Med. Journ., 1875. xxi, 53.

² Annals of Surgery, 1896. xxiii, 510-539.

cases; 15 to 20 years, 3 cases; 20 and over, 3 cases; not stated, 2 cases.

The cervical region was affected in 3 cases; the dorsal in 5 cases; the lumbar in 10 cases; sacral in 1 case; not recorded, 2 cases.

As regards frequency of occurrence Hahn,³ employing the statistics of Frohner⁴ and Haaga,⁵ found that in 661 cases of infectious osteomyelitis the long bones were affected in 610 instances, the short and flat bones in 51, or 7.7%. Among the short and flat bones only one vertebra was found affected.

In 41 fatal cases of acute infectious osteomyelitis occurring in seventeen years at St. Thomas' Hospital⁶ only one instance of an affected vertebra is recorded.

Otto Hahn,⁷ in a recent study of a series of 41 recorded cases, gives the following data and general conclusions:—

(1) Sex: Twenty-three males, 12 females and 5 unknown. (2) Age: The great majority occur in the first two decades of life, being distinctly a disease of youth. (3) Location: Cervical, 7 times; dorsal, 12 times; lumbar, 17 times; sacral, 5 times. (4) Etiology: Evidence of undoubted trauma occurred 6 times. In 15 cases there was a history of trauma, in 10 instances the patient was perfectly well up to the onset, 3 cases were secondary to the disease elsewhere, and in one case a purulent paronychia was present; in the remaining cases no definite etiological factor was determined.

Results of treatment.—He reports a mortality of 60%, and gives the following causes of death: Pachymeningitis, 2 cases; extensive pneumonia, 2 cases; retropharyngeal abscess, 1 case; empyema, 2 cases; gravitation abscess, 6 cases; amyloid disease, 1 case; invasion of the cord, 8 cases.

His general conclusions are as follows: That while the etiology and course of acute osteomyelitis of the spine is often the same as that in other bones, yet severe complications are not uncommon, because of the ease of the extension of the suppurative process into the central nervous organs; that the diagnosis is in most cases easily made but the complications dependent upon the early invasion of the spinal cord, brain and other organs, as well as the pyemia of early onset, render it at times very difficult. The prognosis is grave, but depends upon the character of the infection, the situation of the disease, the general condition of the patient and upon early diagnosis.

Treatment to be effective should be begun as soon as the diagnosis is made, and should be radical. It is, however, limited where the process has already involved the central organs or where other serious complications, as, for example, pyemia, are present.

³ Hahn: *Loc. cit.*, p. 264.

⁴ Frohner: *Beitr. z. klin. Chir.*, 1889, p. 79.

⁵ Haaga: *Loc. cit.*, p. 49.

⁶ St. Thomas' Hospital Reports 1889, Vol. xix, p. 193.

⁷ Otto Hahn: *Beitr. z. klin. Chir.*, Tübing., 1899, 25, pp. 176-210.

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Medical Progress.

RECENT PROGRESS IN SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.,
BOSTON.

TETANUS GERMS IN GELATINE.

The work of Levy and Bruns¹ in investigating commercial gelatine with regard to the presence of tetanus micro-organisms shows positive results. The tetanus spores were demonstrated in eight out of fifteen samples. An attempt was also made to determine how they could be destroyed. Text-books were found to state that exposure of tetanus spores to live steam at 100° C. for eight minutes would destroy them. The experimental work of Levy and Bruns is reported to show that in one and the same culture the power of resistance was quite different in different individuals. Some perished in four to six minutes; the most resistant in after thirty minutes. It was not definitely known if the gelatine might not lose its power to control hemorrhage if heated above 100° C. So the sterilizing temperature was not carried above that point. P. Krause² also, after an extensive review of the literature of the subject and a large number of personal investigations, reports the following conclusions: (1) That the reported cases of tetanus infection have resulted from an insufficient, faulty sterilization of the gelatine. (2) Certain sterilization results from fractional sterilization; exposure to live steam at 100° C. for one half-hour, on five successive days.

THE "RED-ROOM" TREATMENT OF ERYSIPELAS.

H. Krukenberg³ (Liegnitz) has contributed another method of treatment to the long list already on record, and one which seems to have impressed him by its apparent efficiency. Concisely, it consists of exposing the patient to red light. Konkenberg has based his conclusions on his experience with thirteen patients. The average duration of the fever was reduced to only two days. There were no severe general symptoms. After twelve hours the line of demarcation was no longer to be determined, and often finally a fine desquamation appeared. Recurrence occurred in four cases, when the red light was discontinued. He suspects that the effect of applications used in the treatment of this disease may be due to the shutting out of light; for example, tincture of iodine, ichthyl and similar non-transparent substances. Also he claims

¹ Mitthiel. a. d. Grenzgebiet. der Med. u. Chir., Bd. x, Hft. 1 u. 2.

² Ber. klin. Wochen., 1902, No. 29.

³ Centbl. f. Chir., 1902, Bd. xxix, S. 706.

hat skin exposed to the sun is a frequent site for the disease; also that the colored races show less susceptibility to it.

THE EFFECT OF THE "FINSSEN" TREATMENT OF LUPUS, RODENT ULCER AND NÆVUS VASCULOSUS PLANUS.

The work which has led to the recognition of the histological-pathological process in the healing of affections of the skin, under the influence of the concentrated electric arc-light, has arisen, not from the Institute of Finsen, but from Russian investigators (Glebowsky, Pitnow, Gerschury), after the reaction of the healthy skin to the electric arc-light was first studied by Möller. From the observations of the former observers the following is obtained: The first effect of the action of the light is on the blood vessels, in whose walls the first changes, such as swelling and growth of the endothelium, is recognized. The process of repair has nothing to do with cauterization or burning of the diseased tissues. The action is rather a pure elective one, in so far that only the diseased cells and those having slight power of resistance undergo degeneration, while the other elements within and without the diseased area are aroused into activity. It is, then, a weakening of the pathological and a strengthening of the healthy elements in the area affected by disease and its vicinity, as the biochemical product of the "Finsen" process, in contra-distinction to the purely passive method, when both the healthy and diseased parts are destroyed by the thermo-cautery or caustics, and thereby the possibility for the still-surviving elements to defend themselves by their own productive vitality from the internal enemy.

ANCHYLOSIS OF THE TEMPORO-MAXILLARY ARTICULATION FOLLOWING TRAUMATISM.

M. Gindus⁴ has published an historical review of the treatment of bony ankylosis of lower jaw and discussed the anatomy of its articulation with its bony surroundings, also the etiology of the lesion and its pathology. The subject is an important one. The most frequent causes of irreducible dislocations are stated to be fractures of the neck of the condyloid process, injury or pressure ("Impressionen") of the glenoid fossa, arthritis from different causes. The especial frequency in young people, the anatomical classification and the osteo-osteoplastic peculiarity of the periosteum, explain the noteworthy ossification of the joint. The inflammatory reaction of the periosteum is considered anatomically and pathologically. One has to determine diagnostically the presence of cicatricial bands or contraction of the muscles of mastication. The presence of these justifies the assumption of the presence of a bony ankylosis, which is in most cases unilateral. The prognosis from mechanical reasons is a bad one, on account of which the treatment is definitely indicated. It consists solely of resection of the condyloid process which in all cases gives a good result, namely, a pseudarthrosis in place of the old joint. In operating, especial care is taken not to injure the facial nerve. In conclusion is described a successful operation in a patient of Roux's aged sixteen.

⁴Revue Med. de la Suisse romande, 1902, No. 1.

OPERATIVE TREATMENT OF TUMORS OF SUPERIOR MAXILLA.

Stein⁵ states, in summing up the results of his experience, that operation is to be advised in every case in which the tumor is progressing. As Estlander noted in 1879, the patient who has a sarcoma of the superior maxilla has only about one year and a half from the onset of his disease to live, and, as a rule, these cases do not present themselves for treatment until a year of this time has passed. Without operation there is no hope, while with it the average mortality is 17% (in the author's hands it has only been 12½%); there is an equal chance of being permanently cured, another just as great that life will be prolonged for a year or so, and there will usually be complete relief from pain.

CARCINOMA OF THE LIPS.

Janowsky,⁶ as a result of an extensive review of the literature, states in conclusion: (1) The operation for carcinoma of the lips should not be considered as dangerous, and in the greater majority of cases union by first intention takes place in from nine to fifteen days. (2) All the lymphatic glands of the submental and submaxillary region must be removed, or recurrence will occur. (3) When necessary the inferior maxilla may be resected without danger. (4) The lymphatic glands are affected soon after the onset of the disease, — in two or three months, — but this should not prevent a radical operation from being successful. In many cases the glands are involved when not palpable, and recurrence will follow if they are not removed. (5) In 49% of the operated cases the end results were good. (6) In the cases which had recurrence the disease reappeared in the greater majority of the cases within six months and nearly all the rest within the first year; in only a very few cases was the recurrence after a lapse of one or two years. (7) When recurrence took place it was generally found at the point where the disease first appeared or else in the submental region. (8) The operative results were influenced by the duration of the disease and the degree of malignancy in each particular case. Cases which were not severe were operated on successfully as late as several years after the onset of the disease. (9) Old age is not a contraindication to operation; the best operative results were obtained in patients between sixty and seventy years of age. (10) In cases of recurrence a second operation is only palliative, and possibly may prolong life for several years. (11) Carcinoma of the upper lip is nineteen times less frequent than that of the lower lip, and carcinoma of the lip is ten times more frequent in males than females. In women carcinoma of the upper lip is five times more frequent than it is in men. (12) After a careful study of one hundred and seventy-eight cases, it is impossible to state that carcinoma of the lips is more frequent in any occupation or station in life than in any other. (13) The disease is most common in persons between the ages of sixty and seventy years. (14) Twenty-five per

⁵Archiv f. klin. Chir., 1902, Band lxx, Heft 2; Journ. Amer. Med. Sci., July, 1902, p. 159.

⁶Archiv f. klin. Chir., 1902, Band lxx, Heft 2; Amer. Journ. of the Med. Sci., June 2, 1902.

cent of all cases are rapid in growth and markedly malignant, 15% are less severe, while the remaining 60% are a compromise between these two.

THE CAUSE OF SECONDARY HEMORRHAGE.

Secondary hemorrhage, post-operative, frequent as it was formerly, occurs today essentially only with purulent inflammation of cellular tissue, according to the conclusions of A. Frommer,⁷ who reports his investigations in eight cases. The histological conditions show that the suppuration process invades the vessel walls from the surrounding tissues, producing in the same purulent inflammation with resulting degeneration and necrosis. The tendency to hemorrhage by erosion of the vessel wall depends on the intensity of the infection and the virulence of the bacteria. As regards the control of hemorrhage in such cases, packing the wound and compression bandages always are unsuccessful, according to Frommer, for the bleeding, although temporarily checked, in most cases recurs in a manner to threaten the life of the patient. He regards the proper treatment to be the ligation of the artery in healthy tissue. The article is practically a confirmation of the ideas held by surgeons before the bacteriological era, except that the histological and bacteriological data was not then at hand.

THE ANASTOMOSIS OF THE PORTAL VEIN WITH THE VENA CAVA. — A NEW OPERATIVE PROCEDURE.⁸

Tansini states that the advantage of the diversion of the blood from the portal vein is unquestioned for the relief of certain conditions, and the objection to the method of Talina is that this is accomplished indirectly and not always completely. The author's method has been tried with success on dogs, and consists in an end-to-side anastomosis of the portal vein with the vena cava. Clamps covered with rubber are placed over the veins in order to control hemorrhage, and the portal vein is cut. Then a small spindle-shaped piece of the vena cava is cut out between the clamps, the end of the portal vein is inserted in the opening and the edges closed with silk stitches and the clamps removed. Each one of the dogs experimented upon became fat, and was perfectly healthy when killed two months later. Examination at this time showed the union between the veins to be perfect.

(To be continued.)

Recent Literature.

Surgical Diseases of the Kidney and Ureter, Including Injuries, Malformations and Misplacements. By HENRY MORRIS, M.A., M.B. (Lond.), F.R.C.S., Fellow and Chairman of the Court of Examiners of the Royal College of Surgeons; Senior Surgeon to the Middlesex Hospital; Honorable Member of the Medical Society of the State of New York. Author of the Hunterian Lectures (1898) on "The Origin and Progress of Renal Surgery," of "Injuries and Diseases of the Genital and Urinary Organs," and of "The Anatomy

of the Joints," etc. Editor of a "Treatise on Human Anatomy by Various Authors." With two colored plates, and upwards of two hundred engravings. In two volumes. London, Paris, New York and Melbourne: Cassell & Co., Limited. 1901. W. T. Keener & Co., 90 Wabash Ave., American Publishers. (American edition announced for 1903.)

This work bears the stamp of authority derived from the personal experience of an eminent surgeon, and fulfils the expectation of excellence that is warranted by Mr. Morris' previous contributions to medical literature. It is conspicuous for the well-balanced judgment and convincing quality of the conclusions with which the author treats the various problems included in his subjects. The large number of personal observations and the concise manner in which they are presented lends a strong flavor of originality to the work and adds much to its value; at the same time there are included in it the more important results of other men's work. It is not too much to say that this is the best practical treatise upon the subject extant in the English language.

The position taken with reference to several questions is advanced, and so well sustained as to carry conviction. As an example of this may be cited the author's advocacy of nephrotomy as a life-saving measure in cases of calculous anuria, a matter to which the attention of the profession needs to be directed.

In a publication of such uniform excellence as this is, it is unnecessary to comment in detail upon its good qualities, and we have only to say that we unreservedly commend it and its teachings to the profession.

American Edition of Nothnagel's Practice. Diseases of the Stomach. By DR. F. RIEGEL, Professor of Clinical Medicine at Giessen. Edited, with additions, by CHARLES G. STOCKTON, M.D., Professor of Medicine in the University of Buffalo. Authorized Translation from the German under the Editorial Supervision of ALFRED STENGEL, M.D., Professor of Clinical Medicine, University of Pennsylvania. Philadelphia, New York, London: W. B. Saunders & Company. 1903.

This is an octavo volume of 835 pages illustrated by six full-page plates in addition to minor drawings. It is the fifth volume of the American edition of Nothnagel's Practice. The whole volume is devoted to diseases of the stomach. The subject is treated in an exhaustive manner, and the bracketed revisional notes of the American editor, Dr. Stockton of Buffalo, thoroughly represent the latest contributions to the subjects under consideration.

Part I deals with the general diagnosis and treatment of diseases of the stomach; Part II with special diagnosis and treatment of diseases of the stomach. The chapters on the nervous affections of the stomach, and the different forms of gastric neuroses, seem to us of especial interest. The pages on gas fermentation and the abnormal products of fermentation and putrefaction, on the disturbances of mobility and of secretion, are good examples of the excellence of this volume, which can be strongly recommended to those who are occupied with the diseases of the organ to which it is devoted

⁷ Langenbeck's Arch., Bd. lxxvii, Hft. 3.

⁸ Amer. Journ. Med. Sc., March, 1903, p. 535; Centralbl. f. Chir., 1902, No. 36.

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MEDICINE IN RELATION TO LAW.

WE have from time to time alluded to the series of lectures which have this year been given on various topics on the physician's relation to the community, under the auspices of the students of the Harvard Medical School. A recent address in this course was given by Hon. Moorfield Storey, on the relation of the physician to the law. In introducing Mr. Storey the chairman said that it is a matter of common report that one of the weakest, if not the weakest, point in the average physician is his inability to appear to advantage in the court room. However true this may be, it is certainly eminently desirable that young medical men, as well as those of riper experience, should present a dignified appearance when offering their testimony in court. That this is by no means always the fact is a matter of commonest observation, arising, no doubt, in great measure from ignorance on the part of the medical witness of his rights and duties when called upon to testify in matters regarding expert knowledge.

Mr. Storey's somewhat informal remarks, published in the *Quarterly of the Harvard Medical Alumni Association*, should have been most helpful, not only to the undergraduates, but also to any others who were fortunate enough to hear him. He insisted at the outset upon the very close relationship between law and medicine in the administration of justice, and the absolute dependence in many cases which the law must place upon medical expert testimony in bringing a criminal to justice or determining the rights of individuals. He drew a distinction, which is not always recognized, between what is expected of medicine and what is expected of law in determining responsibility. "The medical man will tell you exactly how incapable a person is. The law will say whether that

degree unfits him for will or contract." The doctor in his medico-legal relations deals simply with facts as facts. He is not concerned with consequences. It is his business to tell precisely what he finds, what he sees, what his opinion is as to causes or consequences. Beyond this he has absolutely no responsibility for the consequences which the law attaches. This distinction is an important one, and should certainly be clearly recognized in pursuing those investigations in which both law and medicine must co-operate to reach satisfactory conclusions.

The discussion which follows regarding the jury system is of interest, and is naturally what one would expect from the lips of a member of the legal profession. It is maintained that justice on the whole is best subserved by the completest possible expression of the claims of two sides in controversy, ruled over by the decisions of a judge, and finally decided upon by a supposedly unprejudiced jury, aided as the case demands by expert testimony on the two sides. It is understood that the lawyer is necessarily and properly a partisan, but that the doctor should never be; that the doctor goes into court not to help either side, that he is there to express the facts merely, not to make himself, as is sometimes said, "the counsel in disguise." The failure to recognize this limitation accounts, in Mr. Storey's opinion, for the disrepute into which many experts have fallen, and to their partisanship, which is often too apparent in legal proceedings. From the point of view of the doctor, who is often not used to the ways of the law, it must be remembered that he is usually placed at a very decided disadvantage, and that much of his partisanship is rather in appearance than in fact. It cannot be doubted that a clever lawyer can always, in the eyes of the jury, force a witness into an appearance of partisanship, for which the doctor is at least only partially to blame.

What Mr. Storey says of the rights of the doctor should be widely understood. He is not obliged, as popularly thought, to answer questions by Yes or No, if the answer would thereby lead to a false impression; nor is it possible to answer certain questions in such a categorical fashion, as, for example, the question, "Have you given up beating your wife?" The use of technical terms is absolutely condemned. The cultivation of a pleasant manner is urged. The avoidance of temper and of "smartness" is insisted upon. The failure to recognize any of these simple rules places the witness at the mercy of the counsel. In addition to what we have already suggested, Mr. Storey expresses many vigorous opinions on unscrupulous medical witnesses and on unscrupulous legal methods.

It is certainly true that few physicians go through life without being called once or many times to testify in matters which require expert judgment. It is also true that relatively few medical men make really good witnesses. They fail either to recognize their responsibilities or their rights. The one error leads to just criticism, and the other to a misrepresentation of the facts, which places the physician in an entirely false attitude. We should certainly agree with Mr. Storey when he implies that simple honesty in the court room, as elsewhere, will never lead its possessor astray.

CANCER IN IRELAND.¹

In an address before the Congress of Tuberculosis in London, in 1901, King Edward made the following allusion to cancer: "There is still one other terrible disease, which has, until now, baffled the scientific and medical men of the world, and that is cancer. God grant that before long you may be able to find a cure for it, or check its course!"

With a loyal spirit of investigation the registrar-general of Ireland has taken up the subject and published such information as could be gathered from the statistical sources in his possession, supplemented by the results of a special inquiry addressed to the local registrars of Ireland.

The report just published has special value from the fact, as the registrar-general states, that "the notes have been in almost all cases furnished by medical practitioners." It also has further value in the comparative tables, publishing similar figures for other countries, including the New England States and Michigan. Not very much added information, however, appears to have been secured upon the general subject of cancer, beyond what was published in Dr. Whitney's recent report upon "Cancer in Massachusetts."

Cancer appears to have increased in Ireland as shown in the following table:

| | Years and Deaths | | | | |
|------------------------------|------------------|-------|-------|-------|-------|
| | 1897. | 1898. | 1899. | 1900. | 1901. |
| Number deaths from cancer, | 2,635 | 2,657 | 2,654 | 2,717 | 2,893 |
| Rate per 10,000 living . . . | 5.8 | 5.9 | 5.9 | 6.1 | 6.5 |

These figures for Ireland are less than those of England and Scotland for the same period.

In 1864 the death-rate from cancer in England was 3.9 per 10,000, in Scotland 4.5, and in Ireland

¹ Special Report on Cancer in Ireland, with statistical tables and observations as to the prevalence of the disease; also notes on the history of cancer cases (being a supplement to the Thirty-eighth Annual Report of the Registrar-General). Dublin, 1903.

only 2.7; while in 1900 they had risen in England to 8.3, in Scotland to 8.0, and in Ireland to 6.1. In each of the New England States and in most of the large cities of the world the death-rates from this cause were higher than those of Ireland.

The map and table published with the Report show that cancer was more prevalent upon the east coast of Ireland than upon the western; County Armagh, in the province of Ulster, having the highest death-rate (10.5 per 10,000), and County Kerry, in the extreme southwest, having the lowest (2.6).

When the question of age is considered, the statistics of cancer in Ireland, as compared with those of other countries, are quite different from the results which might have been expected, since the relative number of old people, among whom cancer causes the greatest number of deaths, is larger in Ireland than it is in other countries, as a consequence of the rapid depletion of its young and vigorous population by emigration.

The population of Ireland over fifty years of age constitutes about 19% of the whole, while in England the population of the same ages is but 14.4% of the whole, so that a lower death-rate from cancer might have been looked for in England than that of Ireland, but the contrary is the fact, as shown by this report.

There is also a difference in the relative death-rate of the sexes, since the deaths from cancer in England in 1900 were shown to be in the ratio of 1,000 males to 1,551 females, while in Ireland in the same year they were in the ratio of 1,000 males to 1,252 females.

An interesting part of the report consists in the observations sent in by the registrars, most of which are contributed by medical men. From these observations the registrar-general condenses the following summary:—

(1) That in many cases cancer recurs in the same family—grandparents, parents and other relatives of the person affected having suffered from that disease.

(2) That frequently where a member of a family is afflicted with cancer, other members of the family suffer from tuberculosis.

(3) That in a number of instances where members of a family are afflicted with cancer, other members of the family suffer from lunacy, idiocy, or epilepsy.

(4) That in several cases cancer has appeared where there is a history of syphilis.

(5) That in some cases the disease has occurred in persons who have been in direct contact with cancer patients.

(6) That the disease has manifested itself in individuals who have used the tobacco-pipes of persons suffering from cancer of the lip.

(7) That in some instances more than one case of cancer has occurred amongst different families living in the same house, or amongst successive occupants of the same house.

(8) That in a few cases the disease has appeared in different houses in the same locality about the same time.

(9) That cancer not infrequently appears after wounds and injuries.

(10) That in some cases cancer has supervened where there has been irritation of the lip consequent on smoking clay pipes.

(11) That cancer frequently shows itself where unfavorable conditions as to residence, food, etc., exist.

THE PUBLIC MILK SUPPLY.

HERE is a matter in which Massachusetts still lags behind when she should be in the van. She may well point with justifiable pride to her truly pioneer work in the education of the people in the advantages of a pure water supply and the manner of obtaining it, in the evils of faulty sewage disposal and the details of proper methods, for in these matters she has set an example quickly followed by other observant and progressive states; but in the question of a milk supply she has not only failed to establish the criterion, but she even pauses long in accepting the illuminating leadership of others. The reason for this lamentable lack of progress might at first sight be ascribed to those intangible scapegoats "the authorities," supposedly in this instance the legislators, the health boards, the sanitarians, the "faculty;" but a closer consideration seems to implicate instead chiefly that inveterate enemy of progress, the deficient education of a majority of those most interested in reform. Who could have a more essential interest in the purity of milk than the consumer, but who, as a matter of fact, is more in the dark than he in regard to the present extremely unhygienic and dangerous methods of milk production and distribution, as well as to the possibilities of their improvement?

The conditions under which the general supply of our large metropolitan districts is handled must rest as a flagrant disgrace until some movement for reform is made. These conditions have long since been noted and described by expert investigators; attention has been called to the unsanitary condition of stables, and of the storing shed or aging cellar, where the milk waits for part of the twenty-four to seventy-two hours' ripening period, which the prevailing practice of distribution makes obligatory. The luxuriant flora of this stale and partly fermented milk has been demonstrated time and again. But such information has thus far failed to strike home, has not reached the general public, who still imagine that the important contributions to our literature on milk are comprised in the semi-annual discussions current in the daily press between producer and distributor, as to whether the

consumer shall pay so much more or less per quart than he did last season.

Meantime the legislators, apart from prohibiting the adulteration of milk, and the feeding of cows with improper food, content themselves with a statute decreeing that while, during April, May, June and July, market milk will pass muster if it contains 12% solids, it must during the rest of the year conform to a 13% standard—a practical application of the almanac about as sensible as invoking the equinox as a date for changing one's flannels. Obviously, health boards and official inspectors, to accomplish genuine reform, need more comprehensive legislation than can at present be considered possible of enactment.

The sporadic establishment of milk laboratories, so called, and of dairies, exploiting expert justification from their display of attractive legend on wagon and bill-head, has accomplished much good in the way of calling attention to the possibility of producing and marketing a milk which satisfies such a standard as should be required by law; but so far the number of these establishments has been too small to stimulate a general interest in improvement, and purity has been stamped as a luxury rather than as a *sine qua non*.

Twelve years of continued and increasing success of the Strauss depots in New York have failed to call from the lines of our own philanthropists one to emulate this great charity which helps without pauperizing, which instructs in the principles of purity without mystifying with the mechanics of modification, and which has served in the opinion of competent authority to cut down by one half infant mortality in the Borough of Manhattan during the summer months. In thus supplying at moderate cost a pure and under ordinary precautions an incorruptible milk to that portion of the population which most needs it, there surely exists a most efficient way of dispensing a portion of the contributions which never fail in worthy causes.

But given or failing a Strauss, there still remains much to be done for the advantage of those who can afford to buy pure milk at the slight increase in expense which purity entails, and fail to do so simply because they lack information in regard to the dangers of the impure article and the feasibility of ensuring for themselves a standard product. It is to this end that milk commissions have been formed in Washington, Philadelphia, New York and Newark, and in the few years of their existence they have triumphantly justified themselves. The inspiration for their formation has generally originated with one or more physicians or with a medical society, and the members of the commis-

sions are chiefly, if not solely, members of the profession. Their self-imposed function is to issue to such milk producers as apply for them certificates of approval, if, on careful examination by chemist, veterinarian and bacteriologist, all in the employ of the commission, the dairy, its methods, its surroundings and its products are found above suspicion.

Such visits of inspection are made within certain intervals but on unannounced dates, and the certificate is subject to renewal or withdrawal according as the very complete regulations of the commission are followed or not. The advantage accruing to certified dairies in increased patronage has made application for approval prompt and continuous, and the cost of inspection paid by the producer has been readily covered by the moderate advance in price at which the certified product is sold.

Since no one can gainsay the need of such a commission in our own community, the question may well be asked, Why delay longer in forming it?

STATE PRODUCTION OF ANTITOXIN AND VACCINE.

DURING the early part of the present legislative session a bill was introduced on behalf of the Board of Health of the city of Boston, and largely endorsed by the medical profession, all of the large medical societies and local boards of health, as well as by many prominent citizens, providing that the State Board of Health "may for the use of the people of the Commonwealth produce and distribute vaccine lymph."

After many weeks of deliberation, following a free discussion of the subject at hearings before the legislative Committee on Public Health, this committee has submitted, through its Senate chairman, two bills (Senate Nos. 367 and 368), in which the subject is divided in such a manner as would, if enacted, put the State to unnecessary expense, cause inconvenience and delay in distribution, and undoubtedly prove an ultimate failure, so far as an important part of the work is concerned.

Senate Bill No. 367 provides that the State Board of Health "may produce and distribute antitoxin to public charitable institutions and to the worthy poor." This provision limits the distribution of antitoxin to a certain indefinite class of the population, and is defective in that it provides no means of determining what persons shall be included in the meaning of the term "worthy poor." Moreover, the taxpayers of the Commonwealth who pay

largely for the *production* of the antitoxin are entirely shut out from the benefits of its *distribution*. So great has been the success of the method of distribution, as well as the quality of the product furnished by the State Board of Health, that such a limitation would undoubtedly prove a hardship, and result in loss of life in some parts of the State, where delay would necessarily take place in procuring and keeping on hand antitoxin of private manufacturers.

The absurdity of Senate Bill No. 368 is even more patent than that of No. 367. By the terms of this bill it is seriously proposed that the State Board of Health shall cause "vaccine lymph to be produced under its direction at the Massachusetts Agricultural College, for free distribution throughout the Commonwealth."

The State Board of Health has thus far produced its antitoxin at the Bussey Institution at Forest Hills, and within easy reach of the central office of distribution. The work is conducted under the supervision of a competent director, Dr. Theobald Smith, and has secured the absolute confidence of the medical profession using it, as well as that of the people at large, for whose benefit it has been produced. No one has objected to the method of production and distribution, nor to the place where it is produced, except those persons who are commercially interested to defeat any movement which shall extend the same methods to the production of vaccine lymph.

The senseless scheme of dividing this work in such manner that two allied processes of production must be conducted in two establishments one hundred miles apart, which can be far more economically and conveniently carried on in one place, quite near the point of distribution, must be plain to every one who has at heart the interests of public health.

To any one who has watched the progress of state legislation in Massachusetts for twenty years or more, any effort to combine the work of boards or commissions not having closely allied functions appears extremely grotesque. Under the fear of certain characteristic threats of General Butler a board of Health, Lunacy and Charity was organized in 1879, but this unfortunate combination proved a conspicuous failure, and the three separate boards of Health, of Insanity and of Charity are now doing far better work than it was ever possible to accomplish under this short-lived organization.

This bungling attempt to establish a station for the manufacture of vaccine lymph in the Connecticut valley at a distance from the principal part of the population destined to use it, as well as from

the central office of distribution, deserves the commendation of disinterested citizens.

The original bill, House No. 329, is amply sufficient to legalize the contemplated work, and only needs a sufficient appropriation to ensure a successful result. It is an economic, humane and life-saving measure, and merits professional support throughout the State.

MEDICAL NOTES.

A LEGAL RULING AGAINST CHRISTIAN SCIENCE. — It is stated that the Supreme Court of Pennsylvania has affirmed the ruling of the late Judge Arnold, refusing to grant a charter to a Christian Science association. The charter was previously refused on the ground that "it would be injurious to the community to incorporate a group of citizens who could preach the doctrine that there is no such thing as a contagious disease, or any disease, and practice the art of curing of what are called contagious diseases by inaudible prayer whether in the presence of the sick or at a distance." The Supreme Court has found no reason for reversing the previous decision, holding that when persons make business of practising medicine without registration they violate the law intended to prevent medical practice by non-qualified persons.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 6, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: diphtheria 36, scarlatina 33, typhoid fever 12, measles 31, smallpox 0.

SMALLPOX. — It is reported that three cases of smallpox have recently occurred in Leominster, Mass. The patients have been removed to the isolation hospital.

THE INSANE IN ALMSHOUSES. — Before the Committee for Public Charitable Institutions, of the Massachusetts Legislature, a bill amending the act of 1900 relating to State care of the insane was introduced, permitting certain of the harmless and quiet insane to be maintained in almshouses throughout the State. There are now about nine hundred of this type in almshouses, and it was urged that by forthwith transferring them to the State institutions for the insane these institutions would be unduly crowded, and proper provision could not at once be made for them. There was no opposition to this bill.

NEW YORK.

MORTALITY STATISTICS. — The weekly reports of the Health Department show that the mortality in the city during the month of April represented an annual death-rate of 18.47 against 19.67 in March and 19.83 in April of last year. The corrected death-rate, excluding non-residents and infants under one week old, was 17.50. Among the diseases which showed a decline in mortality are the following: The weekly average of deaths from typhoid fever decreased from 10.25 in March to 7.25 in April; of deaths from measles, from 10.25 to 7.75; from influenza, from 33.25 to 10.5; from pneumonia, from 178.5 to 143; from broncho-pneumonia, from 83.25 to 72.5; from acute bronchitis, from 37.5 to 36.5; from pulmonary tuberculosis, from 171 to 162.5; from cancer, from 55 to 51; from nephritis, from 130.5 to 111.25, and from whooping-cough, from 8.25 to 5.25. Among the few diseases which showed an increased fatality are scarlet fever, in which the weekly average of deaths increased from 16.5 to 23.5, and diphtheria and croup, in which the weekly average increased from 46 to 48.75.

SITE FOR TUBERCULOSIS HOSPITAL. — At a meeting of the Medical Society of the County of New York, held April 27, a resolution was adopted requesting the governor to veto the bill passed by the legislature concerning a site for the proposed tuberculosis hospital for New York City. The bill necessitates the consent of the boards of supervisors and aldermen to the selection of the required site, and this, in the opinion of the president of the health department, would practically kill all chances of getting a location for the hospital.

REGISTRY OF TRAINED NURSES. — The governor has signed the Armstrong Bill passed by the legislature, which provides for a system of registry for trained nurses in the State, under the auspices of a board of examiners to be appointed by the regents of the University of the State of New York. The examiners are to be chosen from a list of ten members of the New York State Nurses' Association, nominated by the association. Nurses passed by the board, and certain nurses qualified by long service prior to the passage of this law, are entitled to the designation of Registered Nurse, and to attach the initials "R. N." to their names.

SITE FOR THE ROCKEFELLER INSTITUTE. — Final contracts have been signed for the purchase from the Schermerhorn estate of the site, on the East River, for the proposed laboratory of the Rockefeller Institute. The work of construction will not be begun, however, until after the first of August. The purchase price is stated to be about \$700,000.

GIFTS. — By the will of the late Adolph Openhym, in addition to other charitable bequests, \$5,000 each is left to the Mount Sinai Hospital and the Montefiore Hospital and Home for Chronic Invalids. The latter institution has also just been presented with a gift, by S. R. Guggenheim, of five hundred shares of the preferred stock of the American Smelting and Refining Company, having a par value of \$100 a share. The object of the donation is to establish a permanent fund, the income from which may be used by the trustees for any purpose they see fit.

By the will of the late Samuel D. Babcock, \$20,000 is bequeathed to St. Luke's Hospital.

TREPANI CONVICTED. — Trepani, the Italian undertaker, who was one of the principal agents in the extraordinary scheme to defraud life insurance companies, described in the *JOURNAL* of Feb. 26, was, on May 1, found guilty of grand larceny in the first degree, the maximum penalty for which is imprisonment for ten years. Cirone, the barber, the other leader in the conspiracy, died some time ago in another state, where he had gone to evade arrest.

DAMAGES FOR STREET RAILWAY INJURY. — Dr. Justin Herold has been awarded \$12,000 damages by the verdict of a supreme court jury, in a suit brought by him against the Metropolitan Railway Company for personal injuries received in May, 1900. His foot was crushed, and during the trial radiographs showing the condition of the parts were put in evidence. Dr. Herold, who was formerly a coroner's physician, has paid special attention to the study of medical jurisprudence, and has been called as an expert in a large number of trials of various kinds.

THE CORONER SPARED. — Among the bills which failed to pass at the recent session of the Legislature was the one abolishing the office of coroner in New York.

A CENTENARIAN. — Mrs. Margaret Cope, the last of three sisters, the youngest of whom was ninety at the time of her death, died in Mount Vernon, Westchester County, N. Y., on April 24, aged one hundred and one years.

MUZZLING OF DOGS. — At a meeting of the New York County Branch of the New York State Medical Association, held April 18, resolutions were adopted setting forth that when muzzling of dogs was enforced in Berlin and other European cities, hydrophobia entirely disappeared from them, and urging the passage of an ordinance establishing a similar regulation for the city of New York.

NOTES FROM THE PHILIPPINES.

A GENERAL HOSPITAL FOR MANILA. — The insular government has decided to construct and

maintain a general hospital in Manila, open to all nationalities, provided a site for the institution is furnished gratuitously. A large part of the funds necessary for the construction of the hospital have been secured by popular subscription from the American, European, Filipino and Chinese residents, through the energies of the Hospital Committee, of which Bishop Brent is the chairman. The expense of operating the hospital will be borne by the insular government. The plan of the proposed hospital is understood to be based on that of the Boston City Hospital, modified to suit local and climatic conditions. The committee has several sites for the institution under consideration, but one in the elevated city suburb of Santa Mesa is regarded with most favor. This site is generally excellent, and is on the line of the new trolley system, upon which the work of construction is soon to be begun.

PLAGUE. — Bubonic plague is still on the increase in Manila, despite the efforts of the health authorities. During the month of February there were eighteen cases, of which thirteen proved fatal. During the month of March forty-three cases developed. The disease attacked Filipinos for the most part, though a number of Chinese were among those stricken. So far, scarcely any cases have occurred among whites during the two years in which the disease has maintained a foothold in Manila. Where it has attacked Americans, these have always been of the lowest class who have been living with native women in the slums of the city. While bubonic plague does not yet exist in an epidemic form in the city, no district appears to be free from the infection, and a case lately occurred in the Ermita district, the best residential section of Manila. The disease is purely of the bubonic type, and manifests little tendency to spread. So far, no cases have been reported as occurring in the islands outside of Manila. The mortality of those attacked, both in this city and in Hong Kong, is high, probably 90% for Chinese and Filipinos. In Hong Kong the mortality among the whites actually attacked has been 65%; though, as in Manila, few Caucasians have suffered.

CHOLERA. — During the past few days there has been a decided tendency toward an increase of cholera in the provinces, and its reappearance in places in which it had for months been regarded as extinct. The southern portion of Luzon and the southern islands still have many infected points, from which the disease will certainly spread with the beginning of the rains. The Board of Health expects widely spread outbreaks during the rainy season, but not of the severity of those of the past

year. In the epidemic of 1883-84 the outbreak was much like that of the present, and the epidemic ceased abruptly toward the end of the second rainy season, after a severe typhoon, lasting three or four days.

PROHIBITION OF SALE OF OYSTERS.—For some time the sale of oysters taken from the Malabon River has been prohibited in Manila, but the law has been largely a dead letter. An American resident lately originated a plan to place these oysters on the market, and sent numerous samples to the Board of Health for examination, with a view of having the prohibition of sale removed. The examination requested was made at the government laboratories, and as a result the bacilli of cholera and of typhoid fever were found to be present on some of the specimens examined. The prohibition of the sale of the Malabon oysters has therefore not been withdrawn, and more vigorous efforts will be made to secure its enforcement.

SMALLPOX.—At present, smallpox is still on the increase, and wholesale vaccinations are going on in the provinces. Manila has now been thoroughly vaccinated, and the corps of vaccinators is being reduced. The work of vaccination was lately carried on at the rate of about eleven thousand per week. While more or less smallpox is present in Manila all the time, it is occurring in the unprotected transients constantly drifting in from the provinces. As an illustration of the kinds of diseases met with in Manila, one sanitary sub-station reported the existence in its district, on a single day, of one case of cholera, two of bubonic plague, two of smallpox and three of leprosy. Concealed cases of the latter disease are constantly being discovered in the city. They are at once segregated when found.

MALARIA.—Much malarial fever exists among the troops at certain military stations, and a general order has been issued directing the precautions to be taken against its further spread, through protection against the mosquito and the destruction of the latter wherever practicable. It is reported that an army surgeon, at a post where both American and native troops were stationed, made systematic blood examinations of all the men of the Filipino organizations, and found the malarial parasite present in the peripheral circulation in 19% of apparently healthy men, who presented no clinical symptoms whatever of the disease. He concludes from this that the native possesses a certain resistance to the malarial toxin, and that the existence of such latent infections is a strong factor in the spread of malarial fevers of a severe type among the American soldiers stationed with native troops.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, APRIL 25, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,332 | 371 | 23.78 | 13.41 | 3.41 | .61 | 1.81 |
| Chicago . . . | 1,885,000 | 639 | 191 | 25.20 | 25.48 | 2.19 | 1.09 | 1.72 |
| Philadelphia . . | 1,378,527 | 526 | 132 | 24.62 | 13.30 | 2.85 | 1.90 | .76 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 170 | 44 | 24.10 | 17.64 | 2.94 | .59 | — |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 145 | 46 | 24.82 | 19.31 | 2.06 | 1.38 | .69 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 84 | 26 | 25.00 | 16.67 | 2.38 | 4.76 | — |
| Boston . . . | 603,163 | 242 | 72 | 18.59 | 16.11 | 1.24 | 2.48 | 1.24 |
| Worcester . . . | 132,044 | 38 | 18 | 10.52 | 7.89 | — | — | — |
| Fall River . . . | 115,549 | 51 | — | 28.23 | 16.34 | — | — | — |
| Lowell . . . | 101,959 | 37 | 12 | 10.81 | 13.51 | — | — | — |
| Cambridge . . . | 98,639 | 28 | 13 | 11.71 | 13.42 | 3.57 | 3.57 | — |
| Lynn . . . | 72,497 | 16 | 3 | — | — | — | — | — |
| Lawrence . . . | 69,766 | 27 | 12 | 22.21 | 3.70 | — | — | — |
| Springfield . . . | 69,389 | 39 | 7 | 17.95 | 10.25 | — | 2.56 | 5.13 |
| Somerville . . . | 68,110 | 19 | 5 | — | 26.31 | — | — | — |
| New Bedford . . | 67,198 | 35 | 15 | 17.14 | 11.43 | — | 2.85 | — |
| Holyoke . . . | 49,286 | 22 | 10 | 22.72 | 13.63 | — | — | — |
| Brockton . . . | 44,873 | 5 | 0 | 20.00 | — | — | — | — |
| Haverhill . . . | 42,104 | 10 | 2 | 20.00 | 30.00 | — | 10.00 | — |
| Newton . . . | 37,794 | 7 | 1 | 14.30 | — | — | — | — |
| Salem . . . | 36,876 | 21 | 5 | 4.76 | — | — | — | — |
| Malden . . . | 36,286 | 6 | — | — | 33.33 | — | — | — |
| Chelsea . . . | 35,576 | 21 | 3 | 9.52 | 14.28 | — | — | — |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 11 | 3 | 18.18 | 9.09 | — | — | — |
| Everett . . . | 25,620 | 5 | 1 | 40.00 | — | — | — | — |
| North Adams . . | 25,862 | 8 | 2 | 37.50 | 12.50 | — | — | — |
| Gloucester . . . | 26,121 | 5 | 1 | 20.00 | — | — | — | — |
| Quincy . . . | 26,042 | 11 | 2 | 27.27 | 18.18 | 9.09 | — | — |
| Waltham . . . | 25,198 | 8 | 2 | — | 25.00 | — | — | — |
| Brookline . . . | 25,608 | 5 | 1 | — | — | — | — | — |
| Pittsfield . . . | 25,589 | 6 | 1 | — | — | — | — | — |
| Chicopee . . . | 21,031 | 11 | 6 | 63.63 | 9.09 | 9.09 | — | 45.45 |
| Medford . . . | 20,962 | 7 | 1 | 14.30 | 57.20 | — | — | — |
| Northampton . . | 19,883 | 6 | 1 | 16.67 | 16.67 | 16.67 | — | — |
| Beverly . . . | 15,302 | 4 | — | — | — | — | — | — |
| Clinton . . . | 15,161 | 4 | 2 | — | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 6 | 0 | 33.33 | 16.67 | — | — | — |
| Woburn . . . | 14,300 | 4 | — | 25.00 | 50.00 | — | — | — |
| Hyde Park . . . | 14,175 | 6 | 0 | 16.67 | 16.67 | — | — | — |
| Adams . . . | 13,745 | 3 | 2 | 33.33 | 33.33 | 33.33 | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 4 | 2 | 25.00 | 25.00 | — | — | — |
| Melrose . . . | 13,610 | 1 | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 2 | 0 | — | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 4 | 2 | 25.00 | 50.00 | — | — | — |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 6 | — | 16.67 | — | — | — | — |
| Weymouth . . . | 11,344 | 4 | 1 | 25.00 | — | — | — | — |
| Southbridge . . . | 11,268 | 5 | 2 | 20.00 | 20.00 | — | — | — |
| Watertown . . . | 11,077 | 3 | 1 | 33.33 | 33.33 | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,659; under five years of age, 1,021; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 836, acute lung diseases 596, consumption 429, scarlet fever 50, whooping cough 43, cerebrospinal meningitis 5, smallpox 5, erysipelas 4, measles 40, typhoid fever 60, puerperal fever 13, diarrheal diseases 84, diphtheria and croup 92.


From whooping cough, New York 8, Chicago 7, Philadelphia 10, Baltimore 1, Pittsburg 2, Providence 4, Boston 6, and Cambridge, Lawrence, New Bedford, Springfield and Haverhill 1 each. From erysipelas, Chicago 3, Baltimore 1. From smallpox, Chicago 2, Philadelphia 1, Pittsburg 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending April 11 the death-rate was 15.6. Deaths reported, 4,510; acute diseases of the respiratory organs (London) 234, whooping cough 125, diphtheria 53, measles 139, smallpox 8, scarlet fever 43.

The death-rate ranged from 8.0 in Hornsey to 24.3 in Wigan; London 15.2, West Ham 13.7, Brighton 12.9, Portsmouth 13.9, Southampton 9.5, Plymouth 14.0, Bristol 12.2, Birmingham 16.2, Leicester 14.0, Nottingham 16.3, Bolton 16.8, Manchester 18.5, Salford 16.8, Bradford 15.3, Leeds 16.9, Hull 18.2, Newcastle-on-Tyne 17.8, Cardiff 14.5, Rhondda 20.9, Liverpool 18.8, Sunderland 18.8.

METEOROLOGICAL RECORD.

For the week ending April 25, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Ba-rom-eter. | Ther-mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | | |
|---|--------------|---------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|----|----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. . 19 | 29.70 | 46 | 56 | 36 | 47 | 39 | 43 | W | W | 14 | 10 | C. | C. | O. |
| M . 20 | 29.68 | 52 | 64 | 39 | 39 | 28 | 34 | W | W | 12 | 12 | C. | C. | O. |
| T . 21 | 29.70 | 46 | 55 | 38 | 44 | 45 | 44 | N | N | 12 | 7 | C. | C. | O. |
| T . 22 | 29.80 | 44 | 51 | 36 | 60 | 45 | 52 | N | E | 11 | 6 | C. | C. | O. |
| T . 23 | 29.91 | 52 | 59 | 45 | 48 | 45 | 46 | W | S | 11 | 4 | C. | C. | O. |
| F . 24 | 29.92 | 50 | 55 | 45 | 57 | 63 | 60 | N | E | 11 | 1 | C. | C. | O. |
| S. . 25 | 30.00 | 54 | 62 | 45 | 46 | 73 | 60 | N | E | 10 | 5 | C. | C. | O. |
|  | 29.82 | | 57 | 41 | | 48 | | | | | | | | T. |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING MAY 2, 1903.

T. C. WALTON, medical director, retired. Ordered to duty as senior member of a board of officers at the Naval Academy.

G. T. SMITH, surgeon. Ordered to duty as a member of a board of officers at the Naval Academy.

M. V. STONE, assistant surgeon. Granted sick leave for three months.

M. W. BAKER, assistant surgeon. Ordered to duty as member and recorder of a board of officers and the Naval Academy.

R. B. WILLIAMS, assistant surgeon. Detached from the "Decatur" and ordered to the "Chauncey."

J. H. HOLLOWAY, assistant surgeon. Detached from the "Franklin" and ordered home to wait orders.

E. J. GROW, passed assistant surgeon. When discharged from treatment at the Naval Hospital, Mare Island, Cal., ordered to duty at that Hospital.

C. G. SMITH, assistant surgeon. Detached from the "Marlatta" and ordered to the "Newport."

SOCIETY NOTICES.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS. — The Congress of American Physicians and Surgeons will hold its triennial meeting at Washington, D. C., May 12, 13 and 14. The constituent societies of which the congress is composed will also have their sessions at the same time.

APPOINTMENTS.

HARVARD MEDICAL SCHOOL. — The following appointments have been made at the Harvard Medical School: EDWARD HICKLING BRADFORD, M.D., Professor of Orthopedic Surgery; MAURICE HOWE RICHARDSON, M.D., Professor of Clinical Surgery, to serve from Sept. 1, 1903; HERBERT LESLIE BURRELL, M.D., Professor of Clinical Surgery.

BOSTON CITY HOSPITAL. — At a meeting of the Trustees of the Boston City Hospital, held April 15, the following appointments were made:

DR. JOHN N. COOLIDGE was appointed Medical Registrar.

The resignation of DR. GEORGE A. LELAND as Assistant to the Surgeons for Diseases of the Throat was accepted, and he was appointed to the position of Visiting Aural Surgeon.

BOOKS AND PAMPHLETS RECEIVED.

Twenty-sixth Annual Report of the Board of Health of the State of New Jersey, 1902. Trenton, N. J.: J. L. Murphy, Publishing Co.

The Medical and Surgical Uses of Electricity, including the X-ray, Finsen Light, Vibratory Therapeutics, and High-frequency Currents. By A. D. Rockwell, A.M., M.D. New Edition. Illustrated. New York: E. B. Treat & Co. 1903.

Indications générales du traitement dans le pied-bot varus-quin congénital. By A. Broca, M.D., Chirurgien de l'hôpital Tenon. 1903.

An Inquiry into the Causes of the Recent Epidemic of Typhoid Fever in Chicago, made by residents of Hull House. Published by City Homes Association of Chicago. 1903.

Tuberculosis. By Norman Bridge, A.M., M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Medico-Chirurgical Transactions published by the Royal Medical and Chirurgical Society of London. Vol. LXXXV (Second Series, Vol. LXVII). Illustrated. London: Longmans, Green & Co. 1902.

The Care of the Baby, a Manual for Mothers and Nurses, containing Practical Directions for the Management of Infancy and Childhood in Health and in Disease. By J. P. Crozer Griffith, M.D. Third edition. Thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Congress of American Physicians and Surgeons. A Review of 720 Laparotomies for Gall-Stones with Special Consideration of 90 Cases of Drainage of the Hepatic Duct. By Prof. Hans Kehr. Translated at the request of the author by Max Z. Stern, M.D. Reprint.

Legislation Requirements for Registration of Vital Statistics. The Necessity for Uniform Laws, Methods and Forms. Washington: United States Census Office. 1903.

Practical Registration Methods. The Standard Certificate of Death. Suggestions as to its Use and Treatment. Forms of Permanent Records. Information for Local Registrars. Washington: United States Census Office. 1903.

Relation of Physicians to Mortality Statistics. The International Classification of Causes of Death as Adopted by the United States Census Office and Approved by the American Public Health Association. Washington: United States Census Office. 1903.

Medical Education in Vital Statistics. Instruction of Medical Students in Registration Methods, etc. Washington: United States Census Office. 1903.

Manual of International Classification of Causes of Death. Washington: United States Census Office. 1902.

Pneumonia. The New "Captain of the Men of Death"; Its Increasing Prevalence and the Necessity of Methods for its Restriction. By Arthur R. Reynolds, M.D. Chicago. Reprint. 1903.

A Manual of Medical Jurisprudence, Insanity and Toxicology. By Henry C. Chapman, M.D. Third edition. Thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book of Legal Medicine and Toxicology. Edited by Frederick Peterson, M.D., and Walter S. Haines, M.D. In two volumes, Vol. I. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Practical Points in Nursing for Nurses in Private Practice, with an Appendix containing rules for feeding the sick; recipes for invalid foods and beverages; weights for measures; dose list; and a full glossary of medical terms and nursing treatment. By Emily A. M. Stoney. Third edition. Thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Handbook of Climatology. By Dr. Julius Hann. Part 1. General Climatology. Translated with the author's permission from the second revised and enlarged German Edition, with additional references and notes, by Robert de Courcy Ward. New York: The Macmillan Company. 1903.

Observations upon Leprosy Occurring in Japan, Iceland and Norway. By Judson Daland, M.D., of Philadelphia. Reprint. 1903.

Meniere's Disease, with Report of a Case. By James M. Brown, M.D., and Judson Daland, M.D., of Philadelphia. Reprint. 1898.

Report of the Commissioner of Education for the Year 1900-1901. Vol. II.

The Office Treatment of Rectal Diseases Explained and Simplified, being an Exposition of the Treatment of all those Diseases, both Medical and Surgical, of the Rectum, Anus, and Sigmoid Flexure, the Cure of which may be accomplished without Surgical Anesthesia. By Rufus D. Mason, M.D. Illustrated. Second edition. Lincoln, Nebraska: The Review Press. 1902.

Muco-membranous Enterocolitis Symptoms, Complications, Etiology and Treatment. By Maurice de Langenhagen, M.D. London: J. and A. Churchill. 1903.

Anatomy of the Brain and Spinal Cord, with Special Reference to the Grouping and Chaining of Neurones into Conduction Paths. For Students and Practitioners. By Harris E. Santee, M.D., Ph.D. With a preface by William T. Eckley, M.D. Third Edition, revised and enlarged. Illustrated. Chicago: E. H. Colegrove. 1903.

Addresses.

THE DUTIES AND RESPONSIBILITIES OF TRUSTEES OF PUBLIC MEDICAL INSTITUTIONS.¹

THE PRESIDENTIAL ADDRESS AT THE SIXTH CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS, WASHINGTON, MAY 12, 1903.

W. W. KEEN, M.D., LL.D., F.R.C.S. (HON.), OF PHILADELPHIA,
Professor of the Principles of Surgery and of Clinical Surgery,
Jefferson Medical College, Philadelphia.

THE value of occasional and stated gatherings of the principal leaders of medical thought in the various special departments is acknowledged by all. Certainly those who have attended this Congress, now held for the sixth time, have felt its broadening influence. We are all apt to become narrow when we are devoted heart and soul to one specialty, be it medicine, surgery, physiology, ophthalmology or any other. When we meet nearly all of the more prominent men in cognate interrelated branches of medicine in Washington every third year, we are sure to find that there are as interesting and as important questions in other specialties as there are in our own; and, moreover, we are sure to find that there are men of as acute intelligence, wide reading and original thought in other than our own departments whom it is our pleasure to meet, and whose acquaintance becomes not only valuable for what we find them to be, but because of the stimulus that they give to our own thoughts.

Ordinarily the presidential address has been devoted to some special professional topic. My first idea was to select such a subject for tonight, but as I was absent from the country when I received the very highly appreciated notice of my selection, I asked the members of the executive committee for suggestions, being sure that their united judgment would be better than my own. I was very glad when they proposed the topic upon which I shall address you, partly because it is different from the usual type of such addresses, and partly because it seems to me appropriate to the present time. I shall, therefore, give the time at my disposal to presenting to you some thoughts on "The Duties and Responsibilities of Trustees of Public Medical Institutions."

Before entering upon my topic I beg to state explicitly that what I may say is offered in no spirit of unfriendly criticism, but only by way of friendly suggestion. I have been too long and too intimately associated with scores of such trustees not to know that they are almost without exception generous, self-sacrificing, giving of their time and money and thoughtful care without stint, and often sacrificing personal convenience and comfort for the good of the college or hospital which they so faithfully serve. Anxious to discharge their trust to the best of their ability, I am sure they will accept these suggestions, the fruit of forty years of personal service as teacher and a hospital surgeon, in the same friendly spirit in which they are offered.

There are two such classes of institutions to be considered: (1) Medical colleges, and (2) hospitals, whether they be connected with medical schools or not.

¹ From advance sheets of the Sixth Volume Transactions of the Congress of American Physicians and Surgeons, 1903.

There is, it is true, a third class of trustees for a wholly new kind of medical institution which has arisen as a modern Minerva Medica, born full-armed for the fray. Of this class we have as yet but a single example — the Rockefeller Institute for Medical Research. Akin to it are laboratories for special investigations, such as the two cancer laboratories in Buffalo and Boston. But the Rockefeller Institute is so recent, and its scope at present necessarily so undetermined, that I would not venture to consider the duties of these trustees, and I am sure their responsibilities are adequately felt by them. Moreover, their admirable selection of a director for the institution is the best pledge of a future wise administration. I heartily congratulate the profession and America upon the establishment of so peculiarly useful an institute. Its founder has wisely left its work unhampered saving as to its general purpose, and the whole world, and especially the United States, will soon be his debtor for researches and discoveries that will abridge or even abolish some diseases, shorten sickness, prolong life and add enormously to the sum of human happiness. Could any man of wealth by any possible gift win for himself a higher reward or a happier recollection when he faces the future world?

Though not a medical institution, I cannot refrain also at this point from expressing not only for myself, but for you, our hearty appreciation of what the Carnegie Institution has done for medicine in the re-establishment of the *Index Medicus*. This publication is essentially and peculiarly American in origin, but its usefulness is world-wide. It aids alike an author in Japan or in India, in Europe or America. It is one of the best and wisest undertakings of this lusty educational giant. But to ensure the permanent publication of the *Index Medicus* the profession must show that it really values this generous gift. Unless the *Index* finds a hearty support in the profession abroad and especially at home, we can hardly expect the continuance of this unique and invaluable publication. May I earnestly ask, therefore, of this audience of the chief medical authors of the United States that each one will demonstrate his appreciation by an immediate subscription to the *Index Medicus*?

There are some matters common both to the medical college and the hospital which may be considered together. The most important of all these is the cordial and hearty co-operation of the medical men connected with the college or hospital and the boards of trustees. In order to ensure this the members of each body must be acquainted with each other. I have known of instances in which if a professor in the medical school ventured to suggest any changes as to its management, or even to state his opinion as to the qualifications of a candidate for a vacant professorship, his suggestions were resented as an interference instead of being welcomed as a means of valuable information. I take it for granted that we should not offer such suggestions after the fashion of a partisan either of a man or a measure, for the advancement of a friend or to the disadvantage of an enemy, but solely for the good of the institution with which we are connected. He who would endeavor to foist a friend upon an institution *because* he is his

friend, and in spite of the fact that a rival is the abler man and better fitted for the position, is just as false to his duty, to his college or to his hospital, as the trustee who would vote for the less desirable man on the ground of personal friendship, or of association in some society, church or similar other body. Of all these influences, that arising from membership in the same religious body is, I fear, the most frequent and yet most absolutely indefensible. What one's theological opinions are has no more to do with his qualifications for a professional or hospital appointment than his opinions on protection as against free trade, or whether Bacon or Shakespeare wrote "Hamlet."

I have always honored one of a board of trustees, who was an old personal friend of my father's and who had known me from boyhood, yet who in my early professional career, when I asked for his vote for an important hospital appointment, had the manly courage to tell me that he thought a rival, who was older and more experienced, was the better man for the place and that he should, accordingly, vote for him and not for me. I confess it was at the time a bitter disappointment to me, but I never had so high an opinion of my father's friend as after he denied me his vote.

There should be, in my opinion, but two questions asked in considering the election of either a professor or a hospital physician or surgeon. First, which one of the candidates for the place has the best qualifications from the medical point of view? This should include not only his scientific knowledge, but his ability practically to impart or to apply that knowledge. Secondly, are his personal qualifications and character such as to make him a desirable incumbent of the position? It must be remembered that a man may be scientifically and practically an extremely able man, but of such a quarrelsome disposition, or the unfortunate possessor of some other similar personal disqualification, as to make him a most undesirable member of a staff. The personal equation may be quite as important as the scientific qualification. Of course his personal moral character should be above reproach. To place a drunkard or a libertine in a position of so much responsibility and influence is to abuse a trust. No patient should be confided to the care of such a man and still more no such man should be made an instructor of young men, upon whom his influence would be most disastrous.

It is often extremely difficult for a layman to reach a correct conclusion as to the qualifications of medical men for college or hospital appointments, because of the confident, yet conflicting, statements of their friends. But there is apt to be a certain clear partisanship in such statements which betrays the purpose of the speaker. Especially will this be so if he advocates the election of A or B on the lower grounds of friendship, social position, or for other similar motives. The man who is advocating the best man because he is the best man has the stamp of sincerity upon every word.

Perhaps the most striking example I can adduce of such an unfortunate misjudgment is Dr. S. Weir Mitchell, who was denied a professorship in both the medical institutions of his native city, thus depriving them of the most brilliant medical genius

that America has produced within my personal recollection. For him it is now a matter of indifference, and for American literature it has been a gain. But for medicine, and especially for physiology, it was an immense loss. Both of his rivals were estimable, worthy gentlemen, who held an honorable position in the profession, it is true, but Mitchell is a genius. "Eclipse was first; the rest were nowhere."

One of the best methods of bringing the medical board and the board of trustees into more intimate contact would be to have the dean or a committee of the faculty, or, in a hospital, if the staff is not too large, the whole staff invited to the meetings of the board. Here I can speak from personal experience. At the Orthopedic Hospital and Infirmary for Nervous Diseases in Philadelphia, there are three surgeons and three physicians. These members of the medical staff are invited to meet with the board of managers at each monthly meeting, excepting the annual meeting, when the medical staff is elected. They are free to express their opinions on any topic relating to the management of the hospital to which their judgment may contribute something of value, but when a decision is taken they have no vote. It is purely in an advisory capacity and for the purpose of giving and receiving information that they are present. The plan works exceedingly well. When economy is necessary in the hospital, the staff is fully acquainted with the fact and can co-operate with the trustees; when expenses have run up from carelessness in the wasteful use of dressings or appliances, a halt is called; when, alas, very rarely, the treasurer is all smiles, and plans for the extension of the hospital or the installation of some new addition to the plant are contemplated, their knowledge as to the necessity, for instance, of a hydrotherapeutic or an x-ray plant, or a new operating room, is the greatest possible value. Nothing but good, in my opinion, can come from such personal co-operation.

One of the difficult questions which boards of trustees have to face is whether there shall be a fixed age at which a college professor or a hospital physician or surgeon shall retire from the active duties of his post. I firmly believe that they should fix such a retiring age in the interest of the students and the patients. As age advances, a man's opinions and his practice become "as petrified as his arteries." He is incapable of constant study, of adding to his knowledge or of keeping up with the feverish strides of medicine. He ought then to be relieved of his cares and his duties. If no rule exists, he is allowed to continue his inefficient or even disastrous work, or by some harsh suggestion is compelled to give place to another more competent man. A rule is a condition accepted when he is appointed; and just as in the army and navy, when an officer reaches sixty-four or sixty-two years of age he is retired on reduced pay, and because it is a rule he does not feel hurt or humiliated, so in a college or a hospital, when time and the rule bring us to the period when we must gracefully retire, no one's reputation is injured or his feelings lacerated.

I have ascertained that the following rules are in force in some of the larger institutions:

At Harvard the age when a professor may request

to be retired is sixty, provided he has been in the service of the university for twenty years, with a reduced pay ranging from one-third to two-thirds of his salary. At sixty-six he may be retired by the president and fellows partly or wholly. The details of the plan are admirably arranged.

At Chicago, while no plan is yet in force, largely, presume, because of its recent establishment on the present basis, such a plan will soon be made operative.

At Columbia the retiring age, after fifteen years of service, is sixty-five, either at the request of the professor or upon motion of the trustees, and on half pay.

At Yale the retiring age is sixty-five, after twenty-five years of service, and on half pay, but the retirement is not compulsory. It will probably be made compulsory before long.

At Cornell the retiring age is seventy, but the Pension Fund will not be available until 1914. The retiring pension will then be \$1,500.

At the University of Pennsylvania and at Johns Hopkins no retiring age is fixed.

The only hospitals I know of in which a retiring age is fixed are the Massachusetts General Hospital and the Boston City Hospital. At the former the compulsory retiring age of the surgeons is sixty-five, and of the physicians sixty-five. At the Boston City Hospital the visiting surgeons are retired at sixty-five, but the physicians, gynecologists and the other medical officers continue in service definitely—a very curious anomaly.

These varying but in the main identical provisions, when any exist, show the trend of thought and practice. They generally apply to the medical department, except that in case a professor is engaged in the practice of his profession and so has a private income, the provision for continuing a portion of his salary does not apply. This is right and fair. Of course, in all hospitals where there are no salaries, no provision as to reduced salary would obtain.

The point I wish to emphasize is, however, that the age limit (which in my opinion should be sixty-five) should be *compulsory*, and so not be invidious in any even case. It will be objected that not a few men are in full intellectual and physical vigor at sixty-five, and it will be a detriment to the institution to lose their services when their ripe experience and admirable teaching are most desirable. I admit it. But for every one such case of harm done by compelling a man to stop, there are a score of instances of men who are doing vast injury by their inefficiency. Moreover, in the very few cases in which it might be allowable, as boards of trustees make it, they can unmake them, and in special cases they could pay a graceful compliment and preserve the institution their exceptional men by extending the limit to seventy. In no case can I think it wise to go beyond this limit.

In some of the universities I have quoted a sabbatical year of rest or study is allowed a professor. He is put upon half pay, and his place is filled by a temporary substitute, who receives the other half of his salary. I believe that in present conditions this should not be applied to medical faculties, for nearly all of the professors are in active practice and take sufficiently long summer holidays. These

latter are often spent in observation and study abroad,—a most useful and remunerative employment of a holiday,—and serve the purpose of the sabbatical year for men whose entire time is given to their teaching. In hospitals it certainly should not apply.

One of the recurring questions in hospital and college management is whether there should be a certain number of doctors on the board. I know that there is a wide diversity of opinion upon this point. My own belief is that a small proportion of well-chosen medical men is a distinct advantage in such boards of trustees. I have said a "small proportion," for it should not be, I think, larger than probably 20%; and I also said "well chosen;" that is, they should be men of large mental caliber and executive ability. It should be distinctly understood, if not indeed absolutely expressed, in institutions in large cities at least, that any physician or surgeon placed upon such a board should never be eligible, even by resignation from the board, for a position on the faculty or the medical staff. In small towns the lack of suitable persons for hospital trustees and members of the hospital staff might make it desirable not to institute such a rule.

Moreover, such medical men should be selected for trustees as by their mental training, social relations and personal character would be, so far as it is possible for human nature to realize such a position, absolutely free from influences arising from personal jealousy or professional bias. If it were a social club, it would be perfectly proper to vote against a man because he is personally distasteful; but where it is a scientific body, responsible for the education of large numbers of young men and for the care of still larger numbers of hospital patients among the poor, even if a candidate were personally unfriendly I should vote for his election if he were the man best fitted for the place.

Turning now to the duties and responsibilities peculiar to trustees of hospitals, let me point out the objects of a hospital.

First, the care and the cure of the sick and injured; secondly, the education of medical men and medical students; and thirdly, the promotion of knowledge, which, in turn, will inure all over the world to the more speedy and certain cure of the sick and injured, and so be of the greatest benefit to humanity.

In order to accomplish these three purposes it is necessary that the hospital shall have sufficient funds to purchase ground, erect buildings and provide a thorough material equipment. It is a great pleasure to me, as to you also, to note that throughout the length and breadth of the land the medical and surgical staff never tax the always inadequate resources of hospitals for any remuneration. They serve without pay, they give ungrudgingly and freely day and night to the poor, often for many years, their time and skill, without ever a thought of any money reward. Their reward comes from increased knowledge and skill, and the daily blessing invoked of heaven, often lisped in children's prayers or breathed in mothers' benisons, which pass not unheeded by the recording angel.

But, as I have pointed out elsewhere, instead of receiving any pay, they give to hospitals. The mere money value of this daily gift of the profes-

sion to the poor amounts to an enormous sum. The value of the professional services of the staff of the Jefferson Medical College Hospital, a single hospital in a single city, on a moderate basis of fees, I found was more than half a million dollars annually. The millions upon millions of money given in that most self-sacrificing form—personal service—by the entire profession all over the United States, and I might add with still further pride, all over the world, is simply incalculable. The Gideon Grays and Weellum MacLures are not found only in Scotland or at the countryside. They are even more plentiful in the slums of our great cities, giving of their time, their skill, and what is more, their hearts, their lives, themselves, to the service of humanity.

Trustees sometimes seem to take it for granted that their duties are ended when they have done two things: begged or given and safely invested the necessary funds, and then elected the staff. To my mind, their duties do not by any means end at this point. They should see to it that the resources of the hospital are utilized to the utmost in doing the largest good.

Let us see now how the objects of a hospital, as I have stated them, can be realized. The first object is the care and cure of the patients. But the cure of any individual patient is not the "be all and the end all" of a hospital. His cure must be a means of larger vision to the doctor, who will thus be better fitted to care for future similar cases. Even his death, if he cannot be cured, should minister to the increasing knowledge and skill of the doctor, so that he may be able to snatch future victory from present defeat.

The second—the training of doctors and students—is frequently carried out, but sometimes even objected to. There are three classes of doctors who are trained by a hospital: first, the staff of the hospital itself. I have lived through the period of the establishment of hospitals in many of the smaller cities and towns, and in some cases even villages in this country, for it was a rare thing in my early professional life for any except the larger cities to have hospitals. The moment that a hospital is established with its medical and surgical staff, that moment a new era has dawned on the *community* in which the hospital is established. More careful methods are introduced, greater cleanliness is observed, hygienic conditions are bettered, laboratory methods are inevitably introduced in time. Even if the old-timers who graduated years before our modern laboratory methods were adopted do not care for them or cannot use them, the young fellows who come fresh from our medical schools and serve as residents, and even the nurses graduated from our training schools, finally shame the older ones into better ways and greater exactness, not only in the hospital, but in their private work as well.

As a consequence of the establishment of these hospitals and the added skill and training of the local physicians and surgeons, the character of the consultations of the physicians and surgeons of our great medical centers has been greatly modified. The really simple cases, such as hydrocele and small tumors (and even large ones), clubfoot, harelip, etc., which used to be sent to city consul-

tants, are now successfully operated on by the local surgeons, and only the more difficult, serious or complicated cases are sent to the cities. This is a great advantage to the patient, whose good is the first consideration, and to the local medical men; and though seemingly a serious loss to the city consultant, it is in the end an advantage, as he must prove his better metal in the higher scientific fields and be, as well as seem to be, the better man.

Moreover, the trustees of every hospital should see to it that a good library and laboratory are provided. Insensibly the staff will read more and more. A single restless progressive spirit, even though it be a young interne calling attention to this case and to that, in one journal or another, will compel the rest of the staff to read in spite of themselves. It is absolutely clear that a laboratory with modern equipment for bacteriological, pathological and chemical research in its examination of tumors, of the urine, the sputum, the feces, the blood, the pus and other fluids from wounds, etc., is a necessity in every hospital. Even many of our smaller hospitals are equipped with microscope and reagents if not with a complete bacteriological outfit, which nowadays is inexpensive and imperative. All of this raises the intellectual and professional standard of the staff. I venture to say that no town of 20,000 people can afford to be without its hospital for the sake of its *own citizens*, utterly irrespective of the good it does to the poor who are treated in its wards. It must be established in the interest of the *well-to-do citizens* and their families, so that they may secure better-equipped doctors for themselves as well as for the patients in their hospital. Self-interest, therefore, will compel every community to establish its hospital, even if charitable motives had no influence.

Again, the trustees of all hospitals of any size should establish a training school for nurses. Only those who, like myself, have lived in the period before such training schools were established, can appreciate the vast improvement effected in a hospital by this change. To replace the former ignorant, untrained attendants by "trained nurses whose jaunty caps and pretty uniforms and often winsome faces, almost make one half wish to be sick, and when one is sick, half loath to be well," is not only a boon to the patients but to the doctors as well. The intelligent, well-trained nurse, who is on the alert to observe every important change of symptoms and who will keep accurate bedside notes, is the doctor's right hand. Not a few patients who would otherwise lose heart and hope are, one may say, lured back to health and happiness by the tactful attentions and restful but efficient care of such a nurse. The community of the well-to-do also are benefited, because the hospital provides them with skilled nurses in their homes when they are so unfortunate as to be compelled to remain there instead of going to the hospital.

The old repugnance to entering a hospital when sick or when an operation is demanded is rapidly fading away. The immense advantages of a good hospital over the most luxurious home are now acknowledged on all hands. The poorest patient in a hospital is better cared for, his case more carefully investigated by bacteriological, chemical and clinical methods in a hospital, than are the well-to-do in

their own homes. Indeed, wise surgeons, except in cases of emergency, now very properly refuse to do operations in homes instead of in hospitals. In many instances lives that would be lost in homes are saved in hospitals, where the many and complex modern appliances for every surgical emergency are provided.

The hospitals in direct or indirect connection with medical schools, however, do a far larger work than merely the training of their own staffs of doctors. They train three other classes of doctors: First, the undergraduates who are aspiring to the degree; secondly, graduate physicians who spend a certain amount of time in the hospitals either as internes or temporary students refurbishing their professional knowledge; and thirdly, experts in certain branches of medicine and surgery.

The undergraduates are taught first in the general clinics, where to some extent they learn both by didactic instruction and by seeing the patients, hearing their histories and witnessing the institution of proper treatment by prescriptions, by regimen, if necessary, by surgical operation. This is of great value, particularly in the more important cases, and especially, for I speak now as a surgeon, important operations. It is often objected that students see nothing in large clinics. To some extent this holds good; but no student can look on an operation when the jugular vein or the lateral sinus is torn, the pleural cavity opened, the bowel perforated, or other of the great emergencies of surgery occur, and fail to be impressed by the coolness of the operator, the carefully explained methods adopted for remedying the mischief, and the various devices used to save life, all of which hereafter will be used by him when similar emergencies may occur. Yet far more important than the public clinics are the smaller clinics held with classes of ten to twenty men each, when under an experienced teacher the absolute work of the clinic is divided among the various students in turn, watching the pulse and the respiration, giving an anesthetic, assisting actively in operations, percussing the chest, palpating the abdomen, determining inequalities of the surface or the varying density of underlying organs. Here is the real forum in which our modern medical student acquires his skill. In many cases visits in the ward itself are made, and to a small group around the bedside the physician or surgeon will point out the phenomena to be recorded, the need for the examination of the blood, the results of bacteriological cultures, the facts discovered by the microscope or the chemical reagent. By the Socratic method also, he will reveal to the student the imperfection of his knowledge, call out — educate — his powers of observation, of reasoning; stimulate his thought, and give him an impetus which will last throughout life. Who that has "walked the hospitals" with a Skoda, a Trousseau, a Nélaton, a Costa or a Mitchell can ever forget their teacher?

It is sometimes objected by those who are not familiar with the actual facts, and especially by trustees, that this method of actual bedside instruction does harm to the sick. I speak after an experience of nearly forty years as a surgeon to a half-dozen hospitals, and can confidently say that I have never known a *single patient* injured or his

chances of recovery lessened by such teaching. Of course, the physician or surgeon uses common sense. He would not allow a number of men to palpate the abdomen of a patient with peritonitis, or move an acutely inflamed joint, nor would the physician allow a patient with pneumonia to have the chest unduly exposed, or a typhoid fever patient disturbed if his condition was such that it would be inadvisable. But such cases are the exception. In fact, many of you are familiar with patients who have responded to repeated percussion by members of such a class by prompt recovery, attributed by the patient to the supposed medication of percussion. Moreover, it is by this actual practice only that the student acquires the necessary skill in the use of modern instruments of precision, such as the stethoscope, the laryngoscope, the esthesiometer, the sphygmomanometer, the various specula. Here he learns when to make blood counts, how to make histories, arrive at the actual facts by skillful cross-questioning, note the varying symptoms and physical signs of a case, determine the need for laboratory investigations, all under the guidance of skilled observers, who will point out his errors, encourage his queries and stimulate his thought.

Moreover, trustees may overlook one important advantage of a teaching hospital. Who will be least slovenly and careless in his duties, he who prescribes in the solitude of the sick chamber, and operates with two or three assistants only, or he whose every movement is eagerly watched by hundreds of eyes, alert to detect every false step, the omission of an important clinical laboratory investigation, the neglect of the careful examination of the back as well as of the front of the chest, the failure to detect any important physical sign or symptom? Who will be most certain to keep up with the progress of medical science, he who works alone with no one to discover his ignorance; or he who is surrounded by a lot of bright young fellows who have read the last *Lancet* or the newest *Annals of Surgery*, and can trip him up if he is not abreast of the times? I always feel at the Jefferson Hospital as if I were on the run with a pack of lively dogs at my heels. I cannot afford to have the youngsters familiar with operations, means of investigations or newer methods of treatment of which I am ignorant. I must perforce study, read, catalogue and remember; or give place to others who will. Students are the best whip and spur I know.

Of the value of training graduates in postgraduate work I need scarcely speak, to this audience at least. The doctor who graduated five, ten or fifteen years ago comes to our great centers of medical education and renews his youth at the fountain of knowledge. He learns the use of all the new instruments, sees new methods of operation, new methods of treatment, new means of diagnosis, and goes home an enormously better equipped man.

The trustees should see that the staff does not become fossilized by following the same ancient local methods from year to year, but should encourage them to visit other hospitals, see other men operate, hear other men discourse on the latest methods of investigation, and then import into their own hospitals all the good found elsewhere.

I learn a deal by such frequent visits to the clinics of my brother surgeons, and if one who has grown gray in the service can thus learn, surely the younger men can do so. When we are too old to learn we are too old to remain on a hospital staff.

I do not know anything which has more impressed upon me the enormously rapid progress which surgery is making than a recent experience. I was absent from this country for almost a year and a half. In that time circumstances were such that I saw almost no medical journals and but few doctors. I have been home now eight months, and even with incessant work I have not yet caught up, so rapid has been the progress of surgery in this short time. Had I been absent for five years, verily I should have been a "back number," and never could have caught up at all.

In his very excellent presidential address before the Association of American Physicians in 1901, Professor Welch made a plea for hospitals to afford "the requisite opportunities to young men who aim at the higher careers in clinical medicine and surgery." He called attention to the fact that in our bacteriological, pathological and anatomical laboratories the opportunities, though still too few, were reasonably good, and in a few places exceptionally good, for the training of young men for positions as teachers of anatomy, pathology and bacteriology. Any young man in these departments who by good hard work makes for himself a name is fairly sure, before long, of being called to some important post as a professor, director of a laboratory or some similar position. But the facilities for work in clinical medicine and clinical surgery are far more restricted, since opportunities for both the exercise of their clinical skill are less frequently open to them and the possibility of combined physiological, pathological, bacteriological and anatomical research along with their clinical work is but scantily provided for. This plea is reinforced by the recent paper of Sir Michael Foster (*Nineteenth Century*, January, 1901, p. 57). These special graduates, bright young men, determined to devote themselves to one or another department of medicine or surgery, are the men who bring honor to the school at which they obtain their training, and are invaluable to the community. They are the future Jenners, Pasteurs, Virchows, Listers, DaCostas and Grosses, and our hospitals should provide for these exceptional men exceptional facilities.

The third object of a hospital is the promotion of knowledge, and so, fourthly, the good of humanity. Physicians and surgeons engaged only in private practice do not generally keep notes of their cases, and rarely publish important contributions to knowledge. I find in 100 books taken consecutively in my library that 85 were written by hospital men and only 15 by authors not connected with any hospital so far as was indicated on the title page.

In order that proper investigations may go on, trustees should enforce a permanent record of all the cases treated in the hospital, properly indexed, from which the staff may derive their data for papers and books. Each large hospital should have its pathological resident as well as the clinical residents in that various wards, so the postmortem

records shall be well kept, pathological, bacteriological, and chemical investigations of various secretions, or blood counts, etc., shall be properly made and permanently recorded in such a manner as to be accessible.

It is too often the case that trustees, as I have said, regard their duties and responsibilities at an end when they have taken care of the funds and elected the staff. They may say that after all this is their real duty, and that all that I have advocated is medical and surgical, and the responsibility for it should devolve on the staff and not on the trustees. I do not take so narrow a view of the duties of trustees. When they have elected a physician or surgeon, if he neglects his duty, it is their business to displace him and fill his place with another man who will attend to his duty, and the duties that I have indicated pertaining to the increase of knowledge as well as of its diffusion are quite as much within their province as it is to see that the funds are invested to the best advantage. The intellectual funds as well as the invested funds must bring in good dividends.

If trustees and staff work together for such a purpose and in such a manner they will create an ideal hospital, which will do more good to the patients than any other type of hospital. It will attract the best physicians and surgeons in every community, will acquire the best reputation, not only local, but it well may be national, and do the most for the good of science and the benefit of humanity.

It may be said that this is an unduly strenuous view of the duties of trustees, that in our fathers' day and in our own earlier lives no such conditions existed or were contemplated. "I need hardly ask a body like this," said President Roosevelt in addressing the Methodists assembled in council, "to remember that the greatness of the fathers becomes to the children a shameful thing if they use it only as an excuse for inaction instead of as a spur to effort for noble aims. . . . The instruments with which and the surroundings in which we work have changed immeasurably from what they were in the days when the rough backwoods preachers ministered to the moral and spiritual needs of their rough backwoods congregations. But if we are to succeed, the spirit in which we do our work must be the same as the spirit in which they did theirs."

Moreover, we must remember that "the world-field into which all nations are coming in free competition by the historical movement to which all narrower policies must sooner or later yield, will be commanded by those races which, in addition to native energy and sagacity, bring the resources of scientific investigation and of thorough education." The international race for the leadership of the world is just as strenuous and intense in medicine as it is in commerce. If we are going to join the race and win the prize there must be the highest development of American education at the top. The best men must be pushed to the front, and ample opportunities for growth, for investigation and for original research must be provided. Never has there been so large an opportunity for the man of large ideas, complete education and indomitable energy and purpose as there is to-day. The world is waiting, looking, longing for him, and will cry "Make room!" for him when he is found.

In the hands of the trustees of our colleges and hospitals are the money and the opportunity for developing such men. If the right spirit pervades both trustees and medical faculties and hospital staffs, then it will be but a short time before America will lead the world in medicine as she now does in commerce.

Will the profession rise to the level of their great opportunity? Yea, verily they will! Never yet have they been wanting when the emergency arose; not only the emergency of labor, but also the emergency of danger.

In Russia the common soldier counts for little. Yet in Vladikavkaz (where the Dariel Pass, — the old Portæ Caspiæ of Herodotus, — leading from the Caucasus, joins the railroad from Baku on the Caspian to Moscow) is a monument to a common soldier. At the last battle in which the Russians won the victory over Schamyl, which gave them undisputed sway over the Caucasus, this soldier blew up a mine and won the day at the cost of his own life. It was ordered that his name should never be erased from the list of his company. At every roll-call when his name is reached, the solemn answer is given, "Died in the service of his country."

In our hospitals lurk the deadly breath of diphtheria, the fatal virus of bubonic plague, of cholera, of yellow fever, of typhus fever, and the ever-present danger of blood poisoning. I have known of brother physicians who have died victims to each one of these scourges. Yet who has ever known one of our guild to shrink when danger smote him in the right hand and the left and death barred the way? As brave as the Russian soldier, ready to risk life, and, if need be, to lose it, these martyrs to duty shall never have their names stricken off the honor list, and at the last roll-call the solemn reply shall be, "Died in the service of humanity."

SOCIAL CONDITIONS IN AMERICA IN THEIR RELATION TO MEDICAL PROGRESS AND DISEASE.*

BY J. M. ANDERS, M.D., LL.D., PHILADELPHIA.

ANOTHER spacious year with its varied channels of energy and activity in medicine has closed. Whilst a faithful chronicle of the facts, data and achievements showing the progress of internal medicine for that brief period would have proved an appropriate topic, I have availed myself of the choice privilege granted by this association of selecting my theme, and purpose to consider the subject of the relation of American social conditions to the progress of medicine and disease, and the import of modern economic and professional tendencies in forecasting the immediate future.

The state of American society, founded on democratic ideals, is one in which the true function of the physician has ever been both intellectually and morally beneficent. It has ever been the fate of the medical profession, however, to have its past outgrown and stifled by the enthralling energy and life of its present, and to forget to fix its gaze on what is grand and significant in inherited associa-

tions and opportunities. Conversely, the fundamental principle of human development, to wit, that the present is quickly passing under the control of the future, which transcends an enlightened self-interest in the present, is yet to be fully realized and appreciated. In the life of our civilization the physician has constantly found himself in the presence of golden opportunities to render a service to the community, to add his private thought to the public opinion. His high calling and the stage of social development from which he has proceeded have ever invited to the development of an expanding and humane spirit. He has been, however, in many cases too closely chained to his special work. *Per contra*, the individual member of commanding worth and formidable individuality, like the Spartan and the Greek, has fortunately lent his own spirit to the genius of the great organism — the medical profession — and its higher destiny. That genius is no sluggard, and the motive of action is not the pursuit of gain or of personal aggrandizement, but an incessant advancement of our art and science and an application of the faculties to the higher interests of civilization. What is needed in medicine, from the standpoint of sociology, at the present day in America, is the true "scientific spirit clothed with human interest," to give force and direction to the means available, not only with a view to the application of science to the healing art, but also to enable our profession to find its true place in the body politic and its intrinsic importance as a factor in modern civilization.

While there are certain things and events common to all in our psychic and social development, enlightened society will grant that the larger events in American history, assuming that "the first duty of society is the preservation of life and the comfort of its units," have not been so much dominated by legislative authority and social customs as by the march of science, more particularly medical and hygienic. In a country as vast as ours, however, there could be no uniform law covering the details of results in matters medical. These have in the past, and will in the future, vary somewhat with the climate, physical conditions, degree of culture and opportunities presented by the widely separated regions. As a consequence, in displaying proportions and the practical results of scattered sections, the final adjustment of their claims only becomes perceptible and appreciable in their broader and higher generalization. The whole range of American historic data and events indicates an imperishable foundation of scientific achievement, and furthermore establishes firmly a relationship between medicine and the scientific principles underlying social conditions and phenomena that is both positive and vital. As touching the American medical history of the long past, we can see the major advances and their influence on social laws and the progress of civilization only by grouping data and established facts and applying the process of generalization to these composite phenomena. In this connection it is to be regretted that our possession of unclassified facts is increasing with uncomfortable rapidity. A comparative and historic study of the medical literature of America, taking any of the older countries as a standard of comparison, in respect to this method of generalization, can

*The Address in Medicine before the Medical Section of the American Medical Association, New Orleans, May, 1903. By the courtesy of the Journal of the Association.

scarcely prove even measurably satisfactory. Much of the history of native medicine is crude, and it were impossible to give it either crystallized or concrete form. Epoch-making discoveries and important, far-reaching scientific effort is justly the boast of the American profession. Systematic effort at a rigid classification of facts by the modern statistical method, however, has not been made, and only a partial scientific use of the ever-advancing events for the different historical periods has been attempted.

The concrete, comparative and historic method of study, which alone furnishes a proper basis for generalization and serves to point out the relations of medicine to other human activities, would ensure a wholly fresh treatment of the earlier medical annals of America. The physician in his economic or professional dealings has not followed his self-interest in comparison with his measure of enlightenment to an equal extent with men in other lines of human activity; but the fruits of his unselfish labors are, when taken collectively, presented in the form of a heterogeneous mass of details. It should be recollected that it is only the larger events, the accurately grouped facts after the method of generalization to which I have referred, that go to make up the bulk of medical history and medical law. The practical results of the method of simple generalization would show clearly the final utility of medical and sanitary knowledge in the social universe, and manifest its relation to everyday life. Obviously in a young republic like ours something must be allowed to propinquity—to nearness to a confusing and disordered mass of facts and phenomena.

It has been well said, "A landscape is beautiful because distance has reduced its chaos of details into order."

Those endeavoring to make a personal study of the medical and sanitary requirements of our insular possessions, more especially under new and changed conditions, cannot hope to gain more than a fragmentary knowledge. Much important and accurate information touching the social, climatic and medical conditions and necessities, however, is available through the Division of Insular Affairs, in the War Department at Washington. It is clearly incumbent on the organized profession of the United States to undertake studies on a larger scale than that of individual effort. Moreover, the interrelations between tropical medicine and the sciences before alluded to, that is, social and sanitary, is a question for the immediate future; thus step by step may we hope to erect a stairway that will lead to a new temple of knowledge.

The foundation for social order, education and a fair measure of self-government under military rule having been laid both in Porto Rico and the Philippines, there is presented to the profession of the United States an opportunity amounting to an obligation to carry into those new possessions the light of modern sanitary and medical science. The peoples of those islands are as clearly entitled to the benefits offered by our science and art as they are to those pertaining to their fundamental civil and personal rights, as guaranteed by the Constitution of the United States.

From the America that Cortez invaded until the

present the most treasured resource of our nation to the physician has, in a peculiar sense, been human life, and in respect to this economic principle we are, at present writing, merely following in spirit our thoughtful forebears. The medical profession never has valued life in terms employed in denomination nor by its productive power, but rather measured it from a divine and humanitarian standpoint. Certain it is that with advancing civilization there has come a higher and higher appreciation of the value of agencies intended to promote longevity and minimize disease and suffering. And this tendency to preserve human existence, apart from sentimental considerations, is born of a principle long adhered to by the medical profession, and continuously unfolding itself in the individual and in organized medical bodies. It is clear, without seeming extravagance of statement, that greater justice is done by the medical profession of America to the condition of society just pointed out than in foreign lands, since it is more thoughtful for the youth and hope of our profession. It is to the flower of that youth, with its new and hidden virtues, that we must look for disclosures in the province assigned to the higher and more complex professional bodies of the future. Modern democratic institutions, including medical schools, are in the ascending scale of civilization, infusing into our profession men who are armed with potent resources from the pedagogic world.

The present-day educational facilities and developments show an ever-increasing beneficent tendency, and the standard of qualification has passed, or is passing, beyond the stage in which there is a mere desire to acquire an elemental knowledge of disease and its treatment in this country; a new character and a new vital and moral force is happily presuming to show itself in public action for the benefit of mankind. This genius stands ready to kindle its fires and materially aid in offering the means of human welfare and the revelation of new truths.

An appreciation of this fact by professional bodies is necessary in respect of the future; for medical societies organized to obtain the highest potency must compete successfully with other societies, or they will vanish from view in the stress of social and scientific evolution.

But though the obscure rival of the Goddess of Minerva, who had broken the loom of Arachne in her jealousy, executed wonderful tasks by her unaided strength, in the process of progress towards higher efficiency the individual ceases to be a factor of first importance. The process of development, whether considered in its economic, political or purely professional relations, demands the subordination of the interests of the individual to the larger interest of the organic whole. The dominant and controlling feature underlying an infinite variety and complexity of details of that upward movement of professional and social evolution is compatible with a remarkable simplicity of governing principle. Our plain duty is accordingly to endeavor to understand the nature of that governing principle, which is distinctive and characteristic, in that it does not regard the interest of existing members as supreme, but is seeking to establish conditions which are favorable to the interests of a larger future.

As regards the question of the relation of medical work and progress to our social system, the time is probably ripe for a revision of certain elemental and fundamental principles and customs, although it is obvious that neither social agencies nor the general public manifest a proper comprehension of its necessity. Whilst science is telling us about the pathologic intricacies of disease processes, their bacteriologic causation and cure, with unparalleled rapidity, important social and economic questions that affect especially the comfort and health of our teeming town-bred populations are subordinated. Again, in a land of popular civil government the medical profession should be organized in a manner that would render it equal to enlarged duties which naturally should devolve on it. I refer to such matters as the control and regulation of asylums for the insane, municipal health boards and the municipal hospitals for the sick poor, for contagious diseases and the like.

Certain tendencies of modern American life, considered with reference to the welfare both of the medical profession and general public, offer a most promising field for investigation and progress. The temptations of the practical, over-strenuous life of the present and past generations have left their impress on our profession. Something, however, must be ascribed to our nervous climate, reinforced by certain elements of the American spirit-aggressiveness and an unconcealed idealism. Neither should the power of the initiative of the American, his shrewdness and his energy be overlooked. It may be doubted, however, whether there have been accomplished achievements and results commensurate with the impetuosity that characterizes all paths of professional activity. The universal spirit of haste has taken possession of our professional life; it permeates the air of the age, and the principal cause of this state of affairs is to be found in our ardent, everyday ways of living, and its cure must result from a readjustment of the home life and habits of the professional and other classes. It means a return from our present-day restlessness and rush to a quieter period, to a "Mansfield Park," with its charm of quiet village life; a return to a normal life, with natural intellectual tastes, and to calm, patient, original observation that fosters vital force and successful endeavor.

If authors and investigators were to bring forward only definitive and well-weighed pronouncements on all points at issue, it would carry us from the surface to the heart of things, and our labors would be more strongly marked by originality and power.

The spirit of undue haste which characterizes our national life is nowhere better exemplified than in American medical literature, despite its many virtues, its broad, liberal spirit and freshness. Never, in American history, whether deliberately or unconsciously, has so much current literature been placed at the disposal of physicians. Too generally medical thought and opinion, which is not of necessity medical truth, finds literary expression. The obvious weakness of it all is an enforced tendency to waste one's time in reading matter which is unapproved by common opinion. Extending this thought, it may be questioned whether to carry

views and ideas beyond the domain of existing knowledge does not hinder rather than facilitate progress.

There is a list of honor among American writers, and it embraces authors whose literary product shows not only a sharp scrutiny of facts, but also the highest and most characteristic utterances in medicine. Indeed, the worth and power of American medical literature, either in its content or method, scarcely receives an unprejudiced estimate abroad.

In the field of letters we point with inordinate pride to the late Dr. Oliver Wendell Holmes, and our contemporary, Dr. S. Weir Mitchell. Fiction by medical authors lives and will live in America.

It may be questioned whether American nationalism, as evidenced by the creation of a native literature, should be the principal aim, although the consistent use of American material is to be advised and encouraged. We need to retain the conservative European spirit and keep wide ajar the door that leads to the treasures of Continental literary traditions. Foreign peoples are and have been immigrating by the hundreds of thousands yearly; they have penetrated into the remotest points of this country, carrying effective training with them in many instances. Hence, admitting that the pre-science of genius is the possession of many, there are fewer distinctly American medical authors than at first blush would appear.

"The Celt is in his heart and hand.
The Gaul is in his brain and nerve;
Where, cosmopolitanly planned,
He guards the Redskin's dry reserve."

Acknowledgment is due the great value and significance of the unparalleled heritage handed down by the older nations, particularly England, Germany and France. The path of fame for a nation no less than for an individual lies in the direction of constructive effort and sensitive receptiveness of the impressions and tendencies of the age, irrespective of territorial limitations, and of a keen sympathy and close touch with the movements of the times in all lands.

Our literature is not an indigenous growth, yet stern of purpose; it is not, and, let us hope, never will be, sluggish in turning to foreign sources. It has, however, developed certain characteristic features, a distinct national flavor and a perfume "as plainly native as the arbutus."

American industry, with its attendant wealth and power, and the enlarged opportunities it offers to all classes of society for successful business enterprise, has quite generally proven attractive to, and often filled with fervent hope, the American physician, and with increasing means he has found his social position to improve.

In America the achievement of considerable financial success, however, is possible without taking high ground in a professional or ideal sense. The medical profession is integral in the effects of our economic evolution; it obtains stray glimpses of the avenue of glittering gold; but its central effort, if it desires to remain true to human perspective, contemplates a systematic development of its pecuniary, mental, moral and social powers.

The tendency to gregariousness in American cities is in no specific direction more evident than

in the medical profession; hence success is and will continue to be an increasing difficult problem, a circumstance to be reckoned with, no matter what our meaning and ideals as a national profession. This portends in its last analysis the necessity of better training and equipment for everyday duties of the practitioner.

America stands in need of further reform in medical education and the immediate establishment of one authority—one licensing body; and self-created schools must place themselves in a position in which they can worthily assist in the execution of a scheme of higher national medical education. Professional ascendancy in future will demand the creation of a homogenous and adequate standard of qualification for entrance into medical schools.

The relation of social conditions to disease is a topic that is becoming more and more insistent with the reflections that are the natural accompaniment of advancing knowledge.

A backward look reveals an embryo nation steeped in an arduous task—the subjugation of a continent, at the expense of unceasing physical toil. This necessitated an open-air existence, which resulted in a vigorous, hardy race. Then followed the integration of frontier villages, of larger and smaller towns, and life meanwhile became brighter and more piquant. For long generations the abandonment of rural life, the changed habits of living, the enforced pursuit of new and less healthful callings, too often from motives of personal comfort and even social expediency, and the universal tendency to overcrowding in town populations, resulted in a modification of the character and incidence of all leading diseases. It goes without saying that respecting the effects of our social conditions and climate on disease, the particular standpoint of our fathers was radically different from that of their children. Floyd M. Crandall has recently directed forcible attention to the fact “that never have such radical changes been witnessed in the habits of life and in human diseases as those in this country during the last half century.”

Fortunately, agencies are at work looking to the socialization of the American agriculturalist and the amelioration of the ills due to overcrowding in large municipalities. This is a movement which in the entirety of its scope embraces numerous potent forces whose federation promises to effect in time rural social regeneration. An organized effort has in several states been already initiated, and in the conferences held and in contemplation, looking to the betterment of rural life, the co-operation of the medical profession is invited. Modern agencies, as improved highways, the introduction of the telephone, trolley lines, rural mail delivery, are socializers no less than economic facilities. In addition to these physical influences, marked improvement also comes from increased educational opportunities, farm organization and the various functions of the church.

These socializing influences and forces tend to counteract the current of bygone days from the farm to the city; they likewise bid fair to become a factor of first importance in minimizing, if not actually counteracting, in due season, the ill effects of over-dense urban populations. It may, however, be remarked that the impoverished classes, espe-

cially the great immigrant contingent, will be far less likely to return to a rural environment than the well-to-do, and yet it will shortly affect the social and economic conditions as well as the vital statistics of the wage-earning classes. We may confidently expect a greater physical efficiency, a higher bodily standard, though municipal sanitation will be always required, and remain the principal factor in strengthening the powers of resistance to hostile environment. One point of common agreement is that as a result of the rapid advances in sanitation and improved methods of treatment, there has been a notable decrease in prevalence and fatality of most infective diseases, particularly those more or less fostered by overcrowding (for example, phthisis, diphtheria, diarrheal diseases, etc.). Three well-defined classes, however, have, according to the census for the decade ending May 30, 1900, distinctly increased; they are cancer, affections of the kidneys and the degenerations, fatty and fibroid. Thus during an increase in the population of 50% in the United States, myocardial degenerations have increased 150%, and certain types of chronic nephritis have also risen in frequency to nearly 200%. The determination of the causes of this rapidly increasing frequency of these morbid states is clearly the task of the medical profession.

Respecting the degenerations—myocarditis, arteriosclerotic changes and kidney diseases—Crandall says: “The power of alcohol in the form of malt liquors to produce degenerate changes is so well known to pathologists that the conclusion is irresistible that the radical increase in these diseases comes largely from changed drinking habits.”

The notable increase in these morbid conditions, however, is not due to a single cause, and substantial progress cannot result from too much emphasis on any one agency whose undoubted potency remains undemonstrated.

It is probable that a more universal application of refined methods of diagnosis accounts in a measure at least for the apparent disparity in the number of cases of nephritis and myocardial degeneration in recent times as compared with the showing of older statistics.

The census between 1890 and 1900 indicates an increasing prevalence of two additional diseases, in respect to both of which progress in our knowledge has been slow and never encouraging. I refer to diabetes mellitus and lobar pneumonia. The census previously referred to indicates that chronic diabetes mellitus has nearly doubled in point of frequency in a single decade.

Whilst we shall continue to look to the bacteriologic laboratory for the discovery of the definitive cause of this metabolic ailment, and to the pathologist for a mind's-eye picture of the morbid state of the tissues, the data obtainable from an investigation of the manner and habits of life, which exert more or less etiologic influence, are of intrinsic medical importance and would serve as accessory factors in diagnosis as well as straws for the application of measures for treatment.

Although impossible to recognize a boundary line between the “variables of health” and disease in chronic diabetes mellitus, it cannot be doubted that abnormalities of the glycolytic functions of the liver and pancreas, associated with inappreciable

structural changes (more especially in the cells forming the islands of Langerhans) which interfere with proteid metabolism and the metabolic disturbances, are dependent in large measure on the over-use of the mind, intemperance and irregular habits of body; in a word, on improper modes of living.

Physiology has contributed much to the intricate processes involved in the nutritional diseases. Morbid physiology (general pathology) is most intimately bound up with the modes and predilections of American life, particularly of the so-called privileged classes.

Diseases and conditions that are successfully treated by a correction of the mode of life are apt to be regarded as functional in nature, when, in reality, definite although undiscoverable structural lesions already exist, the foundation of an insidious and progressive disease already laid.

Now it is conceivable that a broader application of data as yielded by vital statistics would render more clearly recognizable the terrible significance of an enlightened public, living in idle equiescence to positively injurious prevailing customs. A federation of forces, however, in connection with the investigation of special diseases even, is necessary to make this branch of inquiry productive of really important information; for example, the co-operation of committees on vital statistics with the creation of centers under the auspices of a national organization, such as the American Medical Association, would prove effective. I would instance lobar pneumonia, which, as before stated, is increasing in prevalence, as a disease in which the light of future investigation after this method of research would prove preliminary to important discoveries and decisions. Indeed, the local diversity in social conditions and climate in different sections which are far separated by geographical distances in this country renders such a procedure an absolute necessity. The statistical data gathered by individuals, notably those of E. C. Wells, are of real value, and one point approximately settled is that the death-rate by decades during eighty years is practically unaltered — "certainly not decreasing." The census for the decade between 1890 and 1900 shows an increased prevalence of this disease from 186 to 191 per 100,000.

A marked numerical increase in the number of cases of pneumonia has taken place since the advent of epidemic influenza,¹ but this does not account for the slowly rising incidence of the disease during previous non-epidemic seasons. Other reasons have been given for the augmenting prevalence of pneumonia: increased facilities for travel and the tendency for people to congregate (Wells), the highly infectious character of the disease and the neglect of prophylactic measures in crowded centers (Walsh). Among accessory causes of the increased prevalence of pneumonia may be mentioned change in the prevailing meteorologic conditions. As shown elsewhere, the wanton destruction of the native forests has been attended with an exaggeration of the range of variability of such meteorologic conditions as temperature and humidity. It has been long known and universally recognized that this disease bears a vital relation to the seasons, and that at the greatest morbidity coincides with the most

pronounced climatic changes. It is probable that the increased incidence of the disease will be shown to be dependent in part on augmenting prevalence of visceral degenerations, particularly of the cardio-vascular system and the kidneys. Be it remembered that in a large measure these are the direct or indirect result of an era characterized by undue devotion to business, social excesses and club life, with its attendant unseemly hours and unconcealed conviviality. It must be confessed that the extent to which lobar pneumonia is dependent on these degenerations acting as predisposing factors is imperfectly known, but it cannot be doubted that a conservative attitude toward the question accords to them a prominent position among the agencies unfavorably affecting the prognosis, as shown by a table.

This table † comprises all necropsied cases of lobar pneumonia at the Philadelphia Hospital for a period of six years, from Jan. 1, 1896, to March 1, 1903.² Out of a total of 275 cases, 250, or about 90.9%, showed cardio-vascular lesions, principally chronic endocarditis and general atheroma of the vessels. A small number of the cases, 14, or 5%, showed acute plastic pericarditis, and 11, or 4%, chronic pericarditis. Renal lesions were recognized in 90.5% of the totality of cases. Chronic interstitial nephritis was noted in 145, or 52.7%; chronic parenchymatous nephritis in 50, or 18%; and acute nephritis in 38, or 13.8%. Among the remaining 25 cases was one of renal calculus, another of renal tuberculosis, and in many of the remainder subacute nephritis was noted.

These figures afford strong presumptive evidence that renal and cardio-vascular degeneration rank as potent predisposing conditions, and clear and convincing proof that they bear a close and vital relation to the high mortality rate of lobar pneumonia. It should be stated that the patients admitted into the Philadelphia Hospital belong to the pauper element of society, and the subjects are principally adults.

The reports of the health departments of leading cities, in particular that of New York, furnish valuable data from which important tentative influences may be drawn, but sure ground can result only from research work of a broader character than has yet been undertaken in this country. From the record of vital statistics of Philadelphia and New York I have compiled two tables, § which show that pneumonia is more or less limited to centers, and these correspond in the main to the most densely populated areas, with their allied conditions of squalor and poverty.

Pneumonia, like other acute infections that prevail epidemically, shows a wavelike character, on comparing different years for the same locality. Exclusive of epidemic outbreaks, there is an evident tendency to a preponderating incidence in overcrowded districts and among the impoverished classes. Thus the average mortality rate for four years in New York, taking the eight wards which are most densely populated, from the tabular list is 18%.

The fourth, sixth, seventh, tenth, eleventh, thirteenth, fourteenth and seventeenth wards of New

† Table No. 1, which is omitted.
§ Nos. 2 and 3 omitted.

York City were embraced in this estimation. In contrast with the figures just given, eight wards representing the most sparsely settled portions of the city of New York (for example, first, fifth, eighth, ninth, fifteenth, sixteenth, eighteenth and nineteenth) gave for the same period of four years an average mortality of 14.3%.³ It was observed in the compilation of these mortality statistics that an elimination of the epidemic periods would make the differences in percentage dependent on the population somewhat greater.

In arranging the statistics for Philadelphia I have included only those wards in which the inhabitants were equally distributed throughout the entire ward. *Per contra*, wards having a large area and a low population per acre, but this population located in certain sections of the ward only, have not been included. Thus the following wards became available for the purpose of contrasting those giving the highest with others showing the lowest mortality: First, second, third, fourth, fifth, sixth, seventh, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, sixteenth, seventeenth, eighteenth, nineteenth, twentieth, twenty-eighth, twenty-ninth, thirtieth, thirty-first, thirty-second and thirty-seventh.⁴ The eighth ward was not included on account of being inhabited principally by a better-to-do class, and on account of containing the Pennsylvania Hospital, the former condition lessening the liability of pneumonia, while the latter institution named would tend to increase the mortality from this disease, since many of its patients come from the third, fourth, fifth and sixth wards.

The portion of the city west of the Schuylkill River was excluded from this computation for reasons similar to those just mentioned.

Out of the twenty-five wards included in our figures I have estimated a percentage of deaths from those showing the most dense population per acre, allowing for the location of hospitals, homes, etc. (for example, second, third, fourth, seventh, thirteenth, seventeenth and nineteenth wards), and I find the percentage of deaths from pneumonia to be 12.8%. Those wards showing less dense population, the first, ninth, tenth, sixteenth, twenty-eighth and thirty-second, gave an average of 9.5%.

The second, third and fourth wards were occupied largely by foreigners (Italians, Russians), and showed the highest percentage of deaths from pneumonia, while the seventh ward, which contains a large colored population, also shows a very high death-rate.⁵

As shown by MacDongall's statistics, unfavorable occupational conditions probably have less effect in causing pneumonia than phthisis. In my own investigations it was observed that divisions of Philadelphia having an industrial population, modestly though comfortably housed, furnished a death-rate but little in excess of that of the sections inhabited by the well-to-do. The whole subject of occupational diseases, eminently important to the medical world, is closely united with the social and economic conditions of the wage-earning classes, but its consideration here would lead me too far afield.

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¹ Phila. Hosp. Rep., vol. xiv, p. 57, 1896, by the writer.

² For permission to examine and employ the records of this hos-

pital, the writer is indebted to Dr. J. V. Shoemaker, president of the Board of Charities and Corrections.

³ The writer desires to acknowledge, with thanks, the kind aid of Dr. William H. Guilfoxy, Registrar Department of Health, New York, in furnishing data.

⁴ The following wards have not been included in the estimation of the lowest percentage, for the following reasons: The twelfth ward, while it shows a low population per acre (86), has a number of hospitals and homes which contribute largely towards its high death-rate from pneumonia. The second and third wards show a population of eighteen and nineteen per acre; there are but few children under five years and few aged persons living in these wards, and this lessens the mortality from pneumonia. The twenty-first and twenty-second wards, because they are occupied mostly by the well-to-do classes. The fifteenth, while it has been included in my calculation, contains a large colored, Italian and French population.

⁵ My acknowledgments are here due to Dr. L. Napoleon Boston for assistance rendered in connection with the statistics gathered in Philadelphia.

Original Articles.

DIFFERENTIAL DIAGNOSIS IN DISEASES OF THE GALL BLADDER AND DUCTS.¹

BY GEORGE EMERSON BREWER, M.D., NEW YORK.

DURING the professional experience of the writer, the surgery of the gall bladder and ducts has passed through three distinct phases: the first, in which little or no attention was paid by surgeons to diseases of these organs, as evidenced by the fact that the entire subject was practically ignored by surgical writers; the second, in which surgeons occasionally operated for the late sequelæ of these conditions, as in empyema of the gall bladder, intra-abdominal abscess, ulcerative or gangrenous cholecystitis, an impacted calculus in the common duct, or intestinal obstruction from the presence of large concretions which had ulcerated through the gall bladder into the alimentary canal; and third, the gall-bladder surgery of the present day, in which surgeons not only seek to relieve the dangerous sequelæ of neglected disease, but by early recognition and timely intervention seek to eradicate the disease at a period when it can be accomplished with relative safety, and thereby avoid the serious septic and cholemic terminal conditions in which operative procedures are attended with great risk and a very considerable mortality.

The same sequence of events has been observed in the development of the surgery of the female pelvic organs, the kidney, the vermiform appendix and the alimentary canal, the progress in each instance being due to a better understanding of the pathology and general behavior of the various diseased conditions, a gradual improvement in operative technique, and the ability to arrive at an accurate diagnosis at an early period. It is the last of these factors in the surgery of the gall bladder and ducts, to which attention will be directed in this communication.

In the early part of the first period, referred to above, but little was accurately known regarding the nature of the various affections of the biliary passages, which gave rise to the clinical symptoms of jaundice, colic, vomiting, pain and tenderness in the right upper quadrant of the abdomen, practically all cases being clinically classified as gastro-duodenitis or catarrhal jaundice, gallstones or cancer, and although isolated cases had from time

¹ Read at the sixth meeting of the Congress of American Physicians and Surgeons, Washington, D.C., May 13, 1903.

time been reported as having received surgical treatment, notably those of Bobbs, Marion Sims and Langenbuch, these affections were generally regarded by the profession as belonging exclusively to the domain of the practitioner of internal medicine.

In the latter part of this period the importance of inflammatory conditions of the gall bladder began to be recognized, and, as in the case of the vermiform appendix, the relationship between these and the localized and spreading forms of peritonitis was appreciated.

The second period began with the publication by Courvoisier of his masterly work on the pathology of diseases of the biliary passages, in which he reports not only his own sixteen cases, and the twenty-seven cases of Kocher, Kappeler, Socin, Krönlein, Fritzche, Kauffmann, Kunz and Niehaus, but gives in addition a complete review of all the literature of the subject, and, by a careful analysis of an exceedingly large collection of clinical reports and autopsy findings, is able to establish certain facts bearing upon the pathology and symptomatology of these conditions which have formed the framework of our present knowledge of the subject.

The facts presented by Courvoisier in this work were early demonstrated to the profession that in the great majority of instances these affections could only be relieved by surgical intervention. The result of this publication, therefore, served to awaken a very general interest among surgeons in all parts of the world, and in the decade which followed many new and ingenious operations were devised and successfully carried out; much was added to our knowledge regarding the pathology and general behavior of these diseases, gained chiefly by accurate observation of the conditions found at the time of operation; and by a careful comparison of these findings with the clinical history observed before operation many facts contributing to a more accurate diagnosis have been established.

Encouraged by the success which attended the surgical treatment of these affections, and which contrasted sharply with the frequent failure of the expectant or purely medical method of treatment, surgeons began to advise and carry out early prophylactic operations, especially in those conditions caused or aggravated by the presence of calculous formation. This advance brought the profession to the third period.

The tendency in these early operations, as in those upon the appendix and kidney, is to greatly reduce the sufferings and dangers which accompany the more advanced stages and sequelae. Obviously these advantages cannot be generally secured until the ability to arrive at an early special diagnosis is required by the profession at large, and when likewise the unreasonable prejudice against early and prophylactic operative procedures is overcome. When these two conditions are realized a fourth and real period in the development of gall bladder and duct surgery will have arrived.

As it is only by a comparison of carefully recorded clinical histories with the findings at operation or autopsy that substantial progress has been made in diagnosis, and as data bearing on this subject are constantly being furnished from reliable sources, it seems desirable from time to time to

review the current literature and to present in concise form the important facts bearing upon this subject. This has been creditably done in the past by Robson, Waring, Kehr and others. Perhaps the most important contribution to the subject, since the work of Courvoisier, is the communication of Prof. Hans Kehr, entitled, "Anleitung zur Erlernung der Diagnostik der einzelnen Formen der Gallenstein-Krankheit," published in 1889, in which the writer presented to the profession a report of his 433 operations on the gall bladder and ducts. In these reports the symptomatology of each case is carefully recorded, as are the actual pathological conditions found at operation or by autopsy, and his work undoubtedly furnished the most important collection of reliable data upon the diagnosis of these diseases which had then appeared.

Stimulated by a perusal of this interesting monograph, and actuated by a desire to present in the form of a simple chart, for the use of students, the essential facts in diagnosis of these conditions, the writer in 1900 undertook a review of reports which had appeared up to that time, giving symptomatology and accurate anatomical findings, together with the statements contained in the treatises of the best acknowledged authorities on the subject, to which was subsequently added the facts gleaned from a comparatively limited personal observation.

This chart, with a brief explanatory paper, was presented by invitation to the surgical section of the Buffalo Academy of Medicine, on Nov. 5, 1900, and has since been used by the writer in his section teaching in the College of Physicians and Surgeons.

Since the publication of that chart a number of important communications on the subject have appeared, notably by Kehr, Richardson, Murphy, Oschner, Mayo, Ferguson, Riedel, Allen, Stockton and others; and although the writer finds no reason to alter the chart in any material respect, for he believes that it still represents an accurate, though perhaps incomplete, statement of the typical symptoms and signs of the various pathological processes,—yet a number of exceptions to the typical clinical types of disease must be described, and the results of the more recent contributions added. This, and a statement of the facts upon which he based his original conclusions regarding the symptomatology, will furnish the subject matter of the present communication.

A glance at the accompanying chart will show that the diseases ordinarily encountered in the gall bladder and ducts may be divided into three main classes: Calculous disease, inflammatory disease and new growths.

Calculous disease of the biliary passages is of frequent occurrence, according to Riedel and Kehr, being found in 10% of all adult autopsies (the writer found it twelve times in one hundred subjects examined in the dissecting-room of the College of Physicians and Surgeons). In perhaps 95% of all cases it gives rise to no symptoms (Kehr). In the remaining 5% it occasions symptoms which vary in intensity and importance from a slight transitory jaundice or discomfort in the right hypochondriac region to a rapidly fatal septic peritonitis.

One or more stones in a healthy gall bladder with patent ducts, produce, as a rule, no symptoms, and under these conditions the only physical signs pres-

ent are those of a tumor of the gall bladder, caused by the number or size of the calculi.

Tumor of the gall bladder, present under the conditions enumerated above, from the large size or number of gall stones, or from an accumulation of fluid, is usually more easily defined than in inflammatory conditions, on account of the absence of a pericystic exudate and of rigidity of the abdominal wall.

The presence of a number of stones in a gall bladder has occasionally been recognized during palpation by a *bruit* which, according to Petit, resembles the rubbing together of nuts in a bag. This observation has also been confirmed by Courvoisier, Ferguson and others.

Occasionally a stone can be distinctly palpated, as in the case reported by Lessdorf, in which he was able to grasp and appreciate the stone through the separated muscles of an umbilical hernia.

The writer has recently observed a case in which one could grasp a distended gall bladder through an abnormally relaxed but otherwise normal abdominal wall and easily appreciate a large number of stones, one of which appeared to be as large as a walnut.

If a calculus is temporarily impacted in the neck of the gall bladder or cystic duct, pain is produced, often with nausea, vomiting and localized tenderness, the latter best appreciated, according to Murphy, by hooking the flexed fingers beneath the right costal border and instructing the patient to take a deep inspiration. The attack of pain often ceases suddenly with the occurrence of vomiting, which, by relaxing the spasm, allows the calculus to fall backward into the bladder. Muscular rigidity and fever are absent unless inflammation is present. This is an exceedingly common manifestation of calculous disease, often unrecognized, and frequently dignosticated gastralgia, intestinal colic or acute indigestion.

If, however, the stone becomes impacted in the cystic duct, or if the duct becomes permanently obstructed in any other manner, as by a new growth or cicatricial contraction, there occurs a gradual increase in the size of the gall bladder by an accumulation of fluid within the cavity. In the absence of infection this fluid is sterile, and consists of a thin mucus secreted by the mucous membrane, which gradually distends the gall bladder, often to an enormous size, giving rise to no discomfort excepting that produced by pressure from the size of the tumor. In this condition of hydrops of the gall bladder, the walls of the viscus become extremely thin, the fluid is at first bile stained, and later becomes cloudy and often opalescent.

A tumor of this character develops slowly, is situated immediately behind the abdominal wall below the free border of the ribs on the right side, and appears continuous with the liver at a point opposite the junction of the ninth rib with its cartilage. It develops downward and somewhat toward the median line; it moves with respiration, and may permit a lateral pendulumlike motion on palpation. It is generally smooth, of even oval contour, and its consistence may be soft, hard, fluctuating or elastic. The shape of the tumor is variable; it may be round, elongated, pearshaped or reniform (Riedel). A change in the size and shape of a gall-bladder tumor is occasionally ob-

served, and is probably due to dislodgment of a previously impacted stone, or to valvelike obstruction in the cystic or common duct. Petit reported a case in which it could be emptied by external pressure. Goldwitz and Von Lucke have reported cases in which the tumor was apparently due to paralysis from over-distention, similar to that so often observed in the urinary bladder. It may be of interest in this connection to note that the gall bladder has occasionally been found near the median line (Kehr) or under the free border of the ribs of the left side, as reported by Raymond and Carl Beck. Congenital absence of the gall bladder has been once observed by the writer, and Courvoisier has referred to a case in which it was apparently absent, but in reality was deeply embedded in the substance of the liver.

The passage of a stone through the cystic duct may give rise to no painful sensation. Lawson Tait, however, expressed the belief that it causes far more pain than when passing through the large common duct, and Kehr has made a similar statement.

Considerable controversy has arisen regarding the pain caused by the passage of a stone through the healthy cystic and common ducts. It was formerly held that the transit of such a stone was practically the sole cause of biliary colic, and Murphy still believes that true colic, as distinguished from steady pain, discomfort and tenderness, is invariably due to a moving foreign body. Kehr and a number of other authorities, however, hold that pain in gall-bladder or duct disease is practically always the expression of an inflammatory process. The fact that 95% of all cases of calculus present no symptoms, and the fact also that the majority of calculus cases that come to operation present, in addition, signs of inflammation, would strengthen this view.

Ferguson reports a series of experiments on this point made with probes, bougies and water pressure on a case of cholecystostomy with biliary fistula, and concludes that pain may be caused by pressure and spasm, as well as by inflammation.

As the condition of the biliary passages under these circumstances can hardly be assumed to be free from infection, his conclusions cannot be accepted as proving absolutely the non-inflammatory origin of biliary colic. It is probable that the presence of a stone or other foreign body in an infected duct produces colic more frequently than either condition alone. Without attempting to settle the exact etiologic factor in the production of pain, practically all observers agree that acute paroxysmal pain in the upper abdomen is the most constant and characteristic symptom of cholelithiasis. Riedel,² in a recent publication, states that of one hundred cases of epigastric colic (*Magenkrampfen*), ninety-seven have gallstones or adhesions of the gall bladder, two may have ulcer or cicatrices of the stomach and one spasm of the pylorus.

The diagnosis of stone in the hepatic duct is often very difficult. Courvoisier reports fifty-two cases with fairly accurate histories: In four there were no symptoms, in twenty-two pain was present, without any regular type, and occasionally accompan-

² Riedel: Pathogenese, Diagnose und Behandlung des Gallensteinleidens, 1903, Jena.

digestive disturbances and vomiting; in sixteen there were enlargement of the liver and tenderness; thirty-five had more or less jaundice (in six it was distinctly absent); in nineteen there was fever of an intermittent type; in fifteen there was in addition a suppurative cholangitis.

The diagnosis of stone in the common duct is less obscure; the three most important symptoms are jaundice, pain and fever. Practically all observers regard jaundice as the most constant and reliable symptom of obstruction of the common duct. When this symptom is due to calculus, the diagnosis is comparatively easy; when due to other forms of obstruction it is often extremely obscure. Acute temporary common-duct obstruction from stone produces a rapidly developing jaundice, which rapidly subsides when the stone passes into the duodenum. When the stone becomes impacted in the region of the papilla, the jaundice is progressive and often becomes extreme. If, however, the dilatation of the duct above the obstruction, from an accumulation of bile, causes the stone to become dislodged, and it floats upward in the dilated common, cystic or hepatic ducts, the obstruction is temporarily removed, the bile again flows into the intestine, and the jaundice disappears, only to recur when the ducts contract around the stone or it is again impacted at the papilla.

In one of his later publications Kehr³ states that jaundice is absent in 33% of his cases of stone in the hepatic and common ducts, due largely to the absence of infection. He believes that here, as in other portions of the biliary tract, stones may remain latent for long periods of time, giving rise to symptoms only when an inflammatory complication is added. Murphy,⁴ on the other hand, states that, while jaundice may be remittent, it is never completely absent in stone in the hepatic and common ducts. It is difficult to reconcile these divergent statements, emanating as they do from equally accurate observers.

Pain in common-duct obstruction strongly points to stone. In eighty cases of calculus in the common duct reported by Courvoisier, pain was a prominent symptom in fifty-one, absent in ten, and unrecorded in nineteen.

In seventy-nine obstructions from other causes it was present in only nine instances.

In intermittent obstruction from a floating stone, it is generally more acute during the period of obstruction. It is then often paroxysmal in character, radiates to the back and shoulder; rarely is it constant and fixed in one locality. Tenderness is generally more marked nearer the median line, and slightly lower than when the gall bladder is the seat of trouble.

Fever is less constantly present, but when present is generally of a characteristic type. It was noted in nineteen of Courvoisier's cases, while in seventy-four obstructions from other causes it was present but seven times. It is often intermittent in character, and is accompanied by chills and profuse sweats. This type of fever was described by Charcot as *fièvre intermittente hépatique*, and its similarity to malaria pointed out by many other observers. When present with jaundice and colic, it is almost

pathognomonic of stone in the common duct. Although believed by many to be reflex or due to the absorption of bile, most modern observers agree with Schuppel in regarding it as of septic origin, as the presence in these cases of a certain degree of cholangitis is practically constant.

When the flow of bile into the intestine is hindered, the urine will be dark from the presence of pigment; when completely obstructed, the stools will be clay colored.

Tumor of the gall bladder is generally absent. It has, however, been occasionally observed. Enlargement of the liver is frequent and due to the dilated intra-hepatic ducts or to an extension upward of the cholangitis, in which case there will be tenderness over the liver and enlargement of the spleen. Ascites is present only when the obstructing stone is large and presses on the portal vein.

Inflammation of the gall bladder or ducts is present in the vast majority of patients who apply to the surgeon for relief.

Infection of these organs arises generally from an upward extension from the intestine, from an abnormal patency of the duodenal orifice; occasionally from some general septic disease; very rarely from trauma. Thus Courvoisier in fifty-five cases of empyema of the gall bladder found cholelithiasis in forty-one; in two it was thought to be due to trauma, in two to general sepsis, in one to typhoid fever. Inflammation of these organs may be conveniently divided into two general classes—the mild and the severe infections; the former due to the colon or typhoid bacillus, the latter to the streptococcus or some other equally virulent organism. In the great majority of instances cholelithiasis has preceded the inflammation and prepared the way for it.

The symptoms of cholecystitis are pain, localized tenderness, fever and occasionally the presence of a tumor of the gall bladder.

In a mild infection of the organ with the ducts open, insuring free drainage into the bowel, these symptoms may be wanting. If the cystic duct becomes obstructed from stone or swelling of the mucous membrane or pressure from an inflamed lymph node, colicky pains occur, which may radiate to the back and shoulder; vomiting is generally present during the period of obstruction; there are usually also slight fever and general malaise, which disappear with the pain when the obstruction is relieved. Unless the gall bladder be small or deeply seated under the right lobe of the liver, a sensitive tumor may be felt during the continuance of the obstruction. These symptoms frequently subside spontaneously, but the tendency to recurrence is marked.

If chronic obstruction of the cystic duct occurs, empyema of the gall bladder results, giving rise to symptoms of varying severity, according to the virulence of the infecting agent and the resistance of the individual. This condition may also exist with open ducts, as evidenced by Courvoisier's statistics, in which he reports the ducts free in eleven of forty-one recorded cases of empyema. The pain and fever may be wanting, the only symptoms being the presence of a tender tumor in the region of the gall bladder, or, in cases of a small or contracted gall bladder, only a local tenderness or

³ Ein Rückblick auf 720 Gallenstein Laparotomien unter besonderer Berücksichtigung von 90 Hepaticusdrainagen.
⁴ The Diagnosis of Gall Stones, Med. News, May 2, 1903.

muscular rigidity. In the severer cases the pain is acute, paroxysmal and radiating, the fever is high and accompanied by chills and vomiting. A local peritonitis may be present and give rise to intra-abdominal abscess, a condition often resembling appendicitis. Murphy has recently called attention to a rare form of infective cholecystitis, with or without the presence of calculus, in which the symptoms are only those of a severe intermittent fever with chills and great prostration. There is no pain and no jaundice, only a slight tenderness over the gall bladder region. These cases on operation may present only a mild edema of the gall-bladder wall; the bile presents no gross changes. The cases are completely relieved by drainage of the gall bladder.

In the more virulent infections the symptoms often develop with great rapidity, and are accompanied by marked prostration and a rapidly developing sepsis. Perforation of the gall bladder with a fulminating, rapidly fatal, septic, general peritonitis may occur. In a number of such cases reported by Richardson, diagnosis was impossible, the symptoms suggesting only a rapidly spreading peritonitis or an intestinal obstruction without localizing symptoms.

Jaundice is absent in cholecystitis, unless the tumor of the gall bladder or cystic duct or an enlarged lymph node presses upon the common duct.

In inflammation of the common or hepatic ducts, however, jaundice is often present in addition to the pain and fever, but unless accompanied by stone or complete obstruction from other causes is seldom of a severe type. In the more virulent infections of the common and hepatic ducts the process extends rapidly to the intra-hepatic branches and gives rise to general sepsis, often without other symptoms, leading, unless speedily relieved by surgical means, to multiple hepatic abscesses and death. This condition is practically always accompanied by the presence of foreign bodies in the ducts or gall bladder. In seventy-four cases analyzed by Courvoisier, fifty-seven had calculi, seven ascariides, and three echinococci.

While new growths of neighboring organs not infrequently produce symptoms referable to the gall bladder or ducts by external pressure or direct extension, primary new growths in these organs are comparatively rare.

The gall bladder is most frequently affected, and in the great majority of instances the tumor is carcinoma. Sarcoma and adenoma have been reported; the latter, according to Zenker, may undergo carcinomatous degeneration.

Carcinoma was observed, according to Courvoisier, in seven of two thousand five hundred and twenty autopsies. A study of Musser's report, however, published in 1889, gives one the impression that the disease is somewhat more frequent. Three fourths of the cases were in women, the decade furnishing the greatest number being between fifty and sixty. In one hundred cases analyzed by the author, pain was present in sixty-two. It was usually observed in the right upper quadrant of the abdomen, but was often referred to the shoulder, back or epigastric region. In a number of instances it was paroxysmal, and presented the ordinary characters of biliary colic. Vomiting was present in

thirty-nine cases, a palpable tumor in sixty-eight. Jaundice was recorded in sixty-nine patients, ascites in eighteen. Kehr states that the last two symptoms are always due to involvement of the neighboring lymph nodes, causing pressure on the duct or portal vein. The temperature was generally normal or subnormal, fever being reported in but eighteen cases.

As sixty-nine of these cases had calculi, and as absence of calculi was noted only in three instances, it is probable that many of these symptoms were due to the calculi or to an associated cholecystitis or cholangitis.

The only reliable sign which can be detected early is the presence of a hard, irregular tumor of the gall bladder. The diagnosis is exceedingly difficult; in only four of Courvoisier's one hundred cases was the nature of the disease determined during life. The disease is rapidly fatal; in fifty-three cases followed to the end, death occurred in all within nine months from the first characteristic symptom.

Both benign and malignant tumors occur in the bile ducts. Of the benign growths adenomata and papillomata have been reported by Robson; the latter, he states, occasionally undergo carcinomatous changes. Carcinoma of the bile ducts is generally of the columnar cell variety. It occurs with equal frequency in males and females. It is less often associated with calculi than malignant disease of the gall bladder. Of thirty-four cases collected by Musser and Rolleston, gallstones were present in one half the cases only. Of Musser's eighteen cases, fourteen occurred in the common duct, three at the duodenal orifice, three in the hepatic and one in the cystic. The gall bladder was distended in eight, atrophied in one. Stones were present in seven, and suppuration in two. Pain was a prominent symptom in twelve cases; it was frequently paroxysmal, and was often referred to the epigastrium. Vomiting occurred in nine instances, or one half the cases. A palpable but small tumor was observed in eight cases.

Growths occurring in the cystic duct give rise at first to a distention of the gall bladder; those in the hepatic and common ducts to jaundice, and at a later period to distention of the gall bladder and enlargement of the liver. The jaundice is progressive, and in five cases reported by Delafield was the first symptom. Septic cholangitis may develop especially in growths at or near the ampulla of Vater, and give rise to *fièvre intermittente hépatique*. Intermittent jaundice has rarely been observed in such cases, probably due, as suggested by Harri-mann, to sloughing of a part of the obstructing mass, allowing a temporary flow of bile into the intestine; or, as reported by Courvoisier, a pedunculated tumor near the papilla may act as a valve and occasionally permit the passage of bile.

Chronic obstruction of the bile ducts from outside pressure is of frequent occurrence, the causes of this condition in the order of their frequency being carcinoma of the head of the pancreas; chronic interstitial pancreatitis (a condition of sclerosis of the pancreatic tissue frequently limited to the head of the gland—generally due to an infection carried to the gland by the canal of Wirsung, and often associated with inflammatory conditions of the biliary passages); tumors of the pylorus or duodenum;

cysts of the pancreas; enlarged lymph nodes and cicatricial contractions. As would be expected, such pressure, when limited to the cystic duct, gives rise to a gall-bladder tumor (hydrops); when it involves the hepatic and common ducts it gives rise to a progressively increasing jaundice, without pain or fever, distention of the gall bladder, enlargement of the liver and, later, ascites.

In conclusion the writer feels that he cannot do better than to quote with some slight modifications the last few paragraphs from his previous paper regarding the significance of the three chief symptoms occurring in diseases of the gall bladder and ducts.

Pain.—The occurrence of repeated attacks of acute paroxysmal pain, in the upper right quadrant of the abdomen, strongly suggests a lesion of the biliary passages. This suggestion is accentuated if the attacks occur at night, or during fasting, and are accompanied by vomiting and fever. If the pain radiates upward to the back and shoulder, and if an area of tenderness exists under the free border of the ribs, the diagnosis is still more probable.

If in addition to the pain we have a palpable tender tumor under the lower border of the ninth rib, or if there exists a point of tenderness in the same location, with moderate spasm of the upper half of the rectus muscle, in all probability the case is one of cholecystitis. If, on the other hand, there is jaundice but no gall-bladder tumor, we probably have to do with stone in the common duct.

Other conditions giving rise to acute pain in the upper abdomen, to be excluded, are, first, gastric ulcer, in which the pain and tenderness are more generally located in the epigastric or left hypochondriac region, and in which fever, as a rule, is not present; appendicitis, in which vomiting and fever may also be present, but the pain and tenderness are usually located in the right lower quadrant of the abdomen; renal colic, in which the pain originates in the flank and extends downward along the ureter to the testicle, which may be retracted, and which is often accompanied by vesical irritation and hematuria; Dietel's crises in cases of movable kidney, which are generally promptly relieved by assuming the recumbent posture or replacing the dislocated organ; the gastric crises of tabes, in which fever is absent, and although the vomiting is present, there is no characteristic point of tenderness. These cases also show an absence of the patella reflex, the presence of pupillary symptoms, sensory disturbance and ataxia in the extremities. Occasionally, pain in this region, strongly simulating biliary colic, will be caused by the presence of inflammatory adhesions in the region of the pylorus and duodenum, causing a narrowing of the canal with dilatation of the stomach. Aneurism of the hepatic artery (Riedel), interparietal hernia, pancreatitis, intestinal obstruction, or the early pain of a local peritonitis from other causes, has given rise to difficulties in diagnosis; and, lastly, syphilitic hepatitis may present pain and other symptoms almost identical with those generally found in calculous disease of the biliary passages.

Tumor.—A tumor in the right hypochondriac region, which develops slowly and is preceded by a history of cholelithiasis; which is round, oblong

or pear-shaped, with a smooth, convex surface, elastic or fluctuating; which lies immediately under the abdominal wall below the ribs and near the outer margin of the right rectus muscle; which moves with respiration; which allows a certain amount of lateral, pendulumlike motion on account of its attachment above; which cannot be made to disappear like a movable kidney under the ribs, and which is not accompanied by pain and fever, is in all probability a gall bladder distended with mucus (hydrops). If with such a tumor there is a progressive jaundice, it is probably a gall bladder distended with bile from a non-calculous common-duct obstruction. If such a tumor is sensitive to the touch and is accompanied by fever, it is doubtless a gall bladder distended with pus (empyema). If the tumor is ill defined, on account of muscular rigidity, if there are acute radiating pain and marked tenderness in the right hypochondriac region, with fever and leucocytosis, we have generally to do with a cholecystitis with local peritonitis. The presence of a tumor corresponding to the above description, without pain, fever or jaundice at first, but presenting a hard, irregular surface, is in all probability cancer.

Jaundice.—The occurrence of a mild, transitory jaundice, unaccompanied by other symptoms, suggests a catarrhal obstruction of the common duct (a mild duodenitis from indigestion). The occurrence of a temporary jaundice with colic suggests the passage of a stone through the common duct into the intestine. The occurrence of intermittent jaundice, intermittent colic and intermittent fever suggests a floating stone in the common duct. The occurrence of continued jaundice, with chills, fever, hepatic enlargement and tenderness, hypertrophy of the spleen and general sepsis, suggests an infective cholangitis. The occurrence of a progressively increasing jaundice and enlargement of the liver, with a previous history of colic, but without distention of the gall bladder, suggests an impacted stone near the papilla. The occurrence of a progressively increasing jaundice, without pain or fever, but with a tumor of the gall bladder, suggests common-duct obstruction from new growth.

It is also well in this connection to remember the following facts, gleaned from the writings of those most experienced in the surgery of the biliary passages: Gallstones are rarely found in young subjects; according to Sehroeder, only 2.4% occur in individuals under twenty years of age. The same author states that 20% of all female, 4.4% of all male autopsies show the presence of calculi in the gall bladder. Ninety per cent of the women have borne children. Gallstones have been known to escape from the biliary passages into the alimentary canal by ulcerative processes, and to produce intestinal obstruction without giving rise to pain or any other symptom until the evidences of bowel obstruction appear.

In common duct stone the calculus is found in 67% of the cases in the duodenal extremity, in 15% in the hepatic extremity, and in 18% in the middle portion of the duct (Robson).

One half of all cases of common duct obstruction only are due to stone (Robson).

In 70% of the cases of obstruction located in the neck of the gall bladder the pain is referred to

DIAGNOSIS CHART IN DISEASES OF THE GALL BLADDER AND DUCTS.

| Pathological condition. | Pain. | Fever. | Vomiting. | Jaundice. | Tumor of gall bladder. | Urine. | Stools. | Liver. | Spleen. | Ascites. | Remarks. |
|--|---|--|-----------------------------------|--|--|--|--|--------------------------------|-------------------------------------|----------------------|--|
| (a) Stone in healthy gall bladder, ducts free. | No | No | No | No | May be present from large number or size of stones. | Negative | Normal | Not enlarged. | Not enlarged. | No | Generally discovered by accident; often recognized. |
| (b) Stone in healthy gall bladder, cystic duct temporarily obstructed. | May be absent; generally present during obstruction; paroxysmal. | No | May be present when colic occurs. | No | May be present from distention. | Negative | Normal | Not enlarged. | Not enlarged. | No | All symptoms promptly relieved as soon as obstruction is removed. |
| (c) Stone impacted in cystic duct. | No | No | No | No | Present; may attain large size. | Negative | Normal | Not enlarged. | Not enlarged. | No | Hydrops of gall bladder; often unrecognized. |
| (d) Stone in hepatic duct. | Frequently present; irregular type. | Occasionally present. | May be present during pain. | Frequent | No | Contains bile pigment at colored times. | May be clay colored if obstruction occurs. | Frequently enlarged. | Not enlarged. | No | Diagnosis extremely difficult; symptoms ally due to coexisting cholangitis. |
| (e) Stone in common duct; acute obstruction. | Present; acute paroxysmal radiating to back. | Generally present. | Present | Present | No | Contains bile pigment. | Clay colored. | Not enlarged. | Not enlarged. | No | Symptoms rapidly disappear when stone papilla. |
| (f) Stone in common duct; movable; chronic. | Periodic attacks of acute radiating pain. | Present with chills and sweats. | Present | Present; intermittent. | Rarely present. | Contains bile pigment. | Clay colored. | May be enlarged during attack. | May be enlarged. | No | " <i>Fièvre intermittente hépatique</i> " of Charcote; resembles malaria; all symptoms disappearing interval. |
| (g) Stone in common duct; impacted; chronic. | May be absent; frequently present early; may be intermittent; variable. | May be present; variable. | Often present. | Present; progressively; may vary in intensity. | Rarely present. | Contains bile pigment. | Clay colored. | Enlarged. | May be enlarged. | No | Condition may remain for many years only be jaundice with digestive disturbance and loss of weight; history of previous attacks (?). Ascites may be present from pressure of large stone or possibly from hydrops. |
| (h) Cholecystitis sub-acute. | Present; paroxysmal during periods of cystic duct closure from stone or swollen mucous membrane. | Present during attacks of colic. | May be present. | No | Present during attacks of cystic duct obstruction. | Negative | Normal | Not enlarged. | Not enlarged. | No | Tenderness over gall bladder; tendency to curence; generally associated with stone in gall bladder. |
| (i) Cholecystitis acute. | Acute paroxysmal radiating pain; extending to back and shoulder; may be very severe. | Present with chills and sweats. | Present; often severe. | No | Present; tenderness; often muscular rigidity. | May contain albumin and casts. | Normal | Not enlarged. | May be enlarged (sepsis). | No | May follow typhoid or other septic disease; set often sudden; rapid development of symptoms resembling appendicitis; necrosis of walls of gall bladder with perforation, local or general peritonitis. Frequently follows acute cholecystitis; occasionally becomes quiescent, presenting practically no symptoms. |
| (j) Cholecystitis chronic (empyema of gall bladder). | Severe radiating pain at first; may disappear later; tendency to recur. | Present; severe at first; may diminish later. | Present at first. | No | Present; with tenderness; may attain large size. | Negative | Normal | Not enlarged. | Not enlarged. | No | Generally tenderness over gall-bladder and no tumor; local peritonitis; diagnosis extremely difficult. |
| (k) Cholecystitis previously diseased and contracted gall bladder. | Present; often severe; paroxysmal. | Present; often with chills and sweats. | Present | No | No (occasionally present, due to perityphlitic exudate). | Negative | Normal | Not enlarged. | May be enlarged (sepsis). | No | Often follows severe infections of gall bladder generally associated with stones in common hepatic ducts; severe sepsis; generally in virulent infections (streptococcus). |
| (l) Cholangitis of hepatic and common ducts. | May be absent; generally present when obstruction exists; severe induration; tenderness and pain over liver in intra-hepatic cholangitis. | Present; chills; sweats; severe prostration; general sepsis. | Present | Present; variable. | No | May contain bile pigment, albumin and casts. | May be clay colored. | Enlarged. | May be enlarged (sepsis). | No | Digestive disturbances, progressive loss of weight and asthenia; cachexia; rapidly fatal. |
| (m) Carcinoma of gall bladder. | No; may occur late in disease. | No | No | Present late (portal glands). | Hard, irregular, movable tumor at first, later diffuse induration. | Negative (at first). | May be clay colored, later. | Enlarged late in disease. | May be enlarged (pressure on vein). | Present late. | Very rare; both benign and malignant growths have been reported; diagnosis difficult. |
| (n) Tumor of cystic duct. | No; may occur late | No | No | No | Present when obstruction exists. | Negative | Normal | Not enlarged. | Not enlarged. | No (?) | Very rare; diagnosis difficult. |
| (o) Tumor of hepatic or common duct. | No; may occur late | No | No | Present; progressive. | May be present from distention with bile. | Contains bile pigment. | Clay colored. | May be enlarged. | Not enlarged. | May be present late. | Malignant tumors most common; chronic atypical pancreatitis from previous infection; biliary passages may remain after caustic disappearance; enlarged portal glands; fatal. |
| (p) Tumor of neighboring viscera obstructing chronic obstruction of common duct. | No; may occur late | No | No | Present; progressively; may be extreme. | Present; generally from distention with bile. | Contains bile pigment. | Clay colored. | Enlarged. | May be enlarged late. | Present late. | |

New Growths.

II.

I.

Calculus Disease.

the right sub-scapular region, in 10% to the left sub-scapular region; and in 20% to the precordia, sternum, right sub-clavicular region or neck (Murphy).

The temperature chart in biliary infection is characterized by angularity rather than by *curves*, and by more or less prolonged periods of complete intermission (Murphy).

Jaundice is absent in from 80 to 90% of all operative cases of gall bladder or duct disease.

Jaundice preceded by colic is practically always due to stone; jaundice without pain is practically always due to inflammation or new growths of the ducts, or to outside pressure.

The bile in all cases of cholelithiasis should be regarded and treated as an infected secretion.

During the presence of a calculous jaundice, the sudden occurrence of acute epigastric pain, muscular rigidity, nausea, vomiting and collapse, without leucocytosis, strongly suggests acute pancreatitis occasioned by the presence of a stone in the diverticulum of Vater (Murphy).

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.

SECTION ON PRACTICE OF MEDICINE.

W. S. THAYER, M.D., OF BALTIMORE, CHAIRMAN.

FIRST DAY, TUESDAY, MAY 5, 1903.

ADDRESS of Chairman. DR. W. S. THAYER of Baltimore delivered the opening address on

OBSERVATIONS ON THE TEACHING OF CLINICAL MEDICINE.

He compared the curriculum in most of our schools with that which was required in England and France. In Great Britain, for instance, the schools require at least six months' service as a clinical clerk in the medical wards and a similar time as a dresser in the surgical wards of a hospital. In Paris the student was required to give the entire morning to ward work for two years, one year in the medical and one year in the surgical department. He believed that an equal amount of experience should be required in this country, but it seemed to be impossible for the following reasons: (1) The absence of state or national laws requiring such work; (2) the multiplicity of medical schools and the existence of many such institutions unconnected with hospitals of sufficient size to furnish material for the instruction of the students; (3) a widespread prejudice existing in many hospitals against the admission of students to the wards and against the use of patients in general for purposes of instruction. He stated that the problems involved in the study and teaching of clinical medicine differed in no essential from those connected with the teaching and study of physiology, and until we recognized this fact, and met it squarely, our clinics would remain unproductive and our teaching inadequate.

THE BOY'S VENEREAL PERIL.

DR. FERD. C. VALENTINE of New York summed up his advice in the following words: If you want

to be a healthy, strong, successful man, if you want to live a happy life, do not smoke, do not drink alcoholic beverages, do not associate with corrupt people and do not indulge in any vices. If you have been so unfortunate as to lose your health for any of the above reasons, do not take the advice of an advertiser, do not take advertised drugs, but consult your physician.

CONTINUED FEVER, NEITHER MALARIAL NOR TYPHOID: A CLINICAL STUDY.

DR. T. J. HAPPEL of Trenton, Tenn., read this paper. He said that the physicians in the North, as a rule, contended that every continued fever was either typhoid or malarial, whilst in the South many physicians were sure that they had to deal with a third fever, the mortality of which was so slight that opportunities for postmortem study had been so far *nil*. The blood and secretions had been examined microscopically and chemically with negative results. The blood did not respond to the Widal test, and it did not show the presence of the plasmodium malariae. In a former paper he had referred to a number of such cases treated by him in the last ten years, all offering favorable opportunities for careful study at the bedside. He then detailed six additional cases that he had treated since July last, making a total of about one hundred cases. He emphasized the points of difference from a clinical standpoint, and added that the bedside study taught plainly one thing and the work in the laboratory another. These cases were not ushered in abruptly by a chill, but they had usually for a few days prodromes of malaise, then rigors, sometimes by a slight chill, followed by a slight rise in temperature, which did not attain its maximum for from three days to a week. Whilst this fever presented marked remissions, for the first week they were not so decided as in the second week, but were more so in the third week, amounting to intermissions with profuse sweatings. The chills, or cold rigors, were accompanied by aching of sometimes one set of muscles, and sometimes of all, resembling in that respect grippe. After a day or two all pain ceased, and the patient complained of nothing. The intermissions varied from one to four in twenty-four hours, and could be made more marked by sponging with tepid water in all cases, by aconite and gelsemium in a few, and by the coal-tar derivatives in almost all of them. One of the most marked peculiarities of this fever was the disproportion between the pulse rate and the temperature. The ratio was frequently reversed, the pulse beating at the normal to 90, with a temperature of 103 to 105 degrees or even higher. The hand applied to the pulse and then to the forehead would lead one to say that the patient was free from fever, when the thermometer in the axilla or mouth would reveal a high temperature.

SOUTHERN FEVERS.

DR. WILLIAM KRAUSS of Memphis, Tenn., read this paper, and summed up his remarks as follows: (1) A very sudden hyperpyrexia in midsummer was more apt to be sunstroke than "congestion." Don't give quinine without cause. (2) The malarial leucocyte count was only collateral evidence of

malarial infection, and the count must include all the cells in the spread. (3) The Widal test might lead us into error in a small percentage of cases; the blood culture test was more difficult, and had no negative value. (4) A chill or fulminant onset of a typhoid fever was not sufficient evidence of a complicating malaria. (5) A chill or sudden disturbance of a temperature curve during convalescence in typhoid fever was not necessarily malarial. (6) In a malarial infection, the persistence of an irregular sub-continuous fever after thorough cinchonization was not evidence of a typhoid complication or of remaining plasmodia. (7) A positive diagnosis of summer-fall fevers was not always possible. (8) In the hygienic management of summer-fall fevers we should presuppose a double infection, irrespective of symptoms. (9) Some of the summer-fall fevers were typhoid, some were malarial and a few of them were neither one, but the writer was opposed to the belief in an x-fever.

A CLINICAL OBSERVATION OF NINETY CASES OF TYPHOID FEVER WITH FOUR DEATHS, WITH SPECIAL REFERENCE TO THERAPEUTIC FASTING.

DR. R. M. HARBIN of Rome, Ga., read this paper. The conclusions that he adduced were as follows: (1) Fasting and a restricted diet were indicated because of pathologic conditions. (2) A clinical fact maintained that emaciation occurred independently of the amount of food taken. (3) All severe cases should be subjected to fasting for twenty-four to forty-eight hours, to relieve the active symptoms, which exhaust the patient more rapidly than the lack of food. (4) After a fast should be prescribed a restricted diet of broths, diluted milk, etc., in definite quantities. (5) Gelatin prevented too rapid emaciation in certain cases and rendered hemorrhage less liable. (6) The cold bath or the modified cold bath was more effective during a fast. (7) Peristalsis favored the absorption of toxins, and cathartics should be used only to remove undigested food. (8) The presence of intestinal ulcers should be assumed to exist in every case, and the proper treatment was rest, which was better attained by fasting and a restricted diet, thus preventing hemorrhage and perforation. (9) The presence of diarrhea and vomiting indicated the adoption of the fasting treatment. (10) Fasting and a restricted diet shortened the course of the disease, and many cases ran an abortive course after the amphibolic period. (11) Many of the vaunted cures from specific drugs were dietetic in fact. (12) Recrudescences were nearly always due to dietetic errors. (13) In the report presented there were forty-eight cases without a death. Of eighty-seven whites, two, or 2.2% died; of the colored, two died. The low mortality of 4.4% of all cases he ascribed to the therapeutic fasting.

A REPORT OF FIVE HUNDRED AND TWENTY-NINE CASES OF TYPHOID FEVER IN COLORADO.

DR. J. N. HALL and DR. C. E. COOPER of Denver, Colo., presented this paper. From an analysis of a considerable number of cases covering twenty years in different parts of Colorado they concluded that typhoid fever was practically the same disease there as elsewhere. Many of the

cases called mountain fever by some had been included in the series presented; they knew of no such disease as "mountain fever." Typical examples have had hemorrhages, rose spots, Widal reaction and many of the complications of typhoid, and were certainly typhoid. The false name was gradually passing out of use. In 1889 Dr. Hall concluded that, from an analysis of his first one hundred and eight cases, typhoid fever was milder there than in the East; but a wider experience had convinced him that it did not differ materially in this nor any other respect from the disease as reported from this or most other countries. He believed that diarrhea was less frequent in Colorado than elsewhere.

DR. T. B. FUTCHER of Baltimore advocated the frequent examination of the blood serum for the Widal test. This was the routine at the Johns Hopkins Hospital, and every case was submitted to such an examination when he was discharged from the hospital. The possibility of a paratyphoid infection should be borne in mind. With reference to the administration of the coal-tar derivatives, he said we should remember the fact that they frequently gave rise to chills and sweating of a rather severe grade. Chills and sweating in typhoid might occur at the onset, with the advent of complications, and at the time of convalescence and with the giving of the coal-tar derivatives.

DR. JAMES TYSON of Philadelphia said that, during an experience of thirty years, the tendency had been to limit the number of continued fevers. Each winter he ran across several of these anomalous fevers which at first eluded diagnosis, but invariably turned out to be either typhoid fever, malaria or some of the more unusual modifications of typhoid fever, such as paratyphoid or colon bacillus infection. On the other hand, there was no doubt but that a number of these continued fevers were due to irritative causes, such as intestinal indigestion or the so-called ptomaine poisoning, where the irritation would be kept up for a certain length of time.

DR. J. A. WITHERSPOON of Nashville, Tenn., had seen several cases such as described by Dr. Happel, but the disease started suddenly and not gradually; it did not occur at the same season as typhoid; it might occur at any time from the cradle to the grave; one attack made another more liable to occur, and he had seen five attacks occurring in the same individual; the pulse was rather rapid, prostration was early and the sweating marked; there was an irregular type of fever, and this was the most noticeable feature; the fever often resembled the septic type; the abdomen was not tympanitic, but rather flat or scaphoid; constipation was more often present with the passage of hard scybalous masses; there was not a condition of hebitude but rather that of irritability; epistaxis was rare; herpes labialis was common.

SECOND DAY, WEDNESDAY, MAY 6.

WEAKNESS AND DILATATION OF THE HEART DUE TO CHRONIC NUTRITIONAL DISEASES.

DR. G. W. McCASKEY of Fort Wayne, Ind., said that the various causes which acted upon the heart did so in the following ways: (1) A failure

supply sufficient nutritive pabulum to the heart muscles, because of a weakening of the complicated mechanism concerned in this accomplishment; (2) through the chemical influence of retention products which were toxic in excess, and the absorption of foreign substances for the most part in the gastro-intestinal tract; (3) through the partial failure or perversion of the important phenomenon of innervation of the heart muscle; (4) the purely mechanical factor, which was operative from the moment when the cardiac muscle was unable to make an effective ventricular contraction against the resistance offered in the arteries. Slighter grades of dilatation were frequent in chronic gastro-intestinal diseases and in all the severer forms of anemia. The treatment consisted in the removal of the primary disease, improved nutrition, rest, diet, graduated exercise and, in the severer forms, cardiac tonics and saline carbonated baths. In conclusion he emphasized the favorable prognosis of dilatation of the heart in most cases.

MITIGATION OF NONSURGICAL TREATMENT IN INTESTINAL OBSTRUCTION.

DR. JOSEPH RILUS EASTMAN of Indianapolis, Ind., after a brief consideration of the mechanical obstructions, functional closures and the cases that were amenable to treatment by nonsurgical methods, took up briefly the consideration of the difficulties in distinguishing the mechanical from the reflex ileus. He cautioned strongly against the use of morphine, which so masked the symptoms. He claimed that physicians did not promptly diagnose and advise operations in intestinal obstructions, and, as a rule, the surgeon was called in too late. The earlier and better operating lowered very much the mortality. As a rule, the urgency of operation was not so great in obstructions of the large intestines as in closure of the small gut. In the former, sedatives, hot stupes, taxis and enemata might be justly employed for a longer time.

THE OCCURRENCE OF STRONGYLOIDES INTESTINALIS IN THE UNITED STATES.

DR. M. L. PRICE of Baltimore read this paper. He presented an account of one of the rarer nematodes, at least rare in this climate and latitude, though occurring frequently in tropical and sub-tropical countries, the strongyloides intestinalis, a parasite endemic in Cochin China, where it occurred in association with the diarrheas peculiar to that country, and hence called by European physicians Cochin diarrhea."

CLINICAL DIAGNOSIS OF INTESTINAL PARASITES.

DR. CHARLES W. STILES of Washington, D. C., discussed the various methods of distinguishing infection with intestinal parasites, and particular stress was laid upon the diagnosis of hookworm disease.

UNCINARIASIS IN THE UNITED STATES, WITH ESPECIAL REFERENCE TO ITS OCCURRENCE IN TEXAS.

DR. ALLEN J. SMITH, of Galveston, Texas, made a brief statement of known distribution of

the uncinaria in the United States. He detailed eight cases met in the examinations of eighty-eight persons supposedly healthy. He gave the gross and minute features of the parasite, with especial reference to the propriety of Stiles' new species, *Uncinarias Americana*. He also made a comparison with the *Uncinariasis duodenalis* and the *Uncinariasis stenocephala* (dog), and the frequent occurrence of the latter in very similar localities.

TREATMENT OF UNCINARIASIS.

DR. THOMAS A. CLAYTON of Washington, D. C., considered the means which should be adopted to prevent infection with the hookworm, and the destruction of the parasites in those affected. The conclusions he drew from some experimental work done to determine whether or not the alcoholic solution of thymol could be safely used were as follows: (1) The alcoholic solution of thymol was dangerous to dogs even in small doses, chiefly because of its tendency to produce inflammation of the lungs by aspiration. (2) The alcoholic solution even when rendered bland by the addition of oil was dangerous in doses of more than 4 gm. to dogs of 16 or 17 lbs., because of its irritative effect on the gastro-intestinal mucous membrane. (3) In dry powder the drug may be given to dogs in large doses without serious results, no depression, no fall of temperature. (4) Gram doses given hypodermatically cause only local inflammation. (5) There was probably no danger in giving 2 to 4 gm. followed by one to two tablespoonfuls of brandy to a human adult if followed in a few hours by a purgative, such as castor oil or magnesium sulphate. (6) It was probable that the alcoholic solution obtained in this way would be more effective against the parasites, as seemed proven by their much earlier appearance in the stools after the use of the alcoholic solution.

TROPICAL DYSENTERY.

DR. CHARLES F. MASON'S (U. S. A.) plan of treatment, as the result of experience gained in the Southern States, was to give 10 gr. of Epsom salts in half a glassful of water every hour, until a movement was obtained free from blood and mucus. This was combined with irrigation of the lower bowel with warm normal salt solution two or three times a day. So soon as the movements assumed an ordinary diarrheal character, he gave astringents in large doses, such as bismuth subgallate, combined perhaps with a little Dover's powder, every three or four hours. The lower down in the bowel the lesions were seated, the more important became the local treatment by irrigation. In convalescence great care was required in the management of the diet. In the subacute and chronic cases the treatment was somewhat different, but even here salines could be used with advantage in the beginning. The patient should be given an anesthetic, the sphincter well dilated, and the rectum carefully examined with the speculum to detect ulcers, which should be scraped with a curette or touched with pure carbolic acid or lunar caustic. After this the use of saline injections two or three times a day with proper diet often sufficed to effect a cure. Internally large doses of dermatol were useful in such cases.

A CONTRIBUTION TO THE STUDY OF THE SUMMER DIARRHEAS OF INFANCY.

DR. J. H. MASON KNOX of Baltimore, Md., summarized his conclusions as follows: (1) The diarrheal disorders of a large series of children treated in the Thomas Wilson Sanitarium during the summer of 1902 was produced by a bacillus thought to be identical with the bacillus dysenteriae Shiga. (2) The cases in this series presented the clinical and pathological features of the several forms of the summer diarrheas of infancy. (3) There was good reason for the confidence that a proportion, and probably a large one, of the so-called summer diarrheas of infancy were caused by the bacillus dysenteriae Shiga. (4) A confirmation of the work of Duval and Bassett, by establishing the etiology of this yearly epidemic among infants, would make possible the use of more intelligent measures to control and suppress it. (5) More success could be expected from prophylactic measures and from medicinal and serum therapy than ever before.

MALARIAL DYSENTERY.

DR. WILLIAM BRITT BURNS of Memphis, Tenn., discussed the possibility or even probability of there occurring a dysentery with the malarial parasite as a causative factor. He called attention to finding malarial parasites and pigment in the vessels of the intestinal mucosa and to the almost invariable amenability of these dysenteries to quinin therapy.

THE CLINICAL HISTORY AND PATHOLOGY OF AMEBIC DYSENTERY.

DR. H. F. HARRIS of Atlanta, Ga., after considering the macroscopical appearance of the lesions, related the sequence of events that occurred in the puppy after receiving an injection of material containing living amebæ.

A STUDY OF THE CASES OF AMEBIC DYSENTERY OCCURRING AT THE JOHNS HOPKINS HOSPITAL.

DR. T. B. FUTCHER of Baltimore, Md., gave the following summary: (1) In nearly fourteen years 119 cases of amebic infection had been admitted to the Johns Hopkins Hospital. Of these, 118 were cases of amebic dysentery or its complications, the remaining case being one of amebic abscess on the floor of the mouth. (2) Of the 119 cases, 117 were admitted to the medical wards. During this time there were 15,817 medical admissions, the cases of amebic dysentery consisting of 0.73% of the total. (3) Of the 118 cases of amebic dysentery the infection in 82 was apparently contracted in Baltimore and in 13, in the state of Maryland outside Baltimore, or a total of 95 cases contracted within the borders of Maryland. (4) The largest number of cases occurred in the third decade, 35 having developed between twenty-one and thirty years of age. The youngest was a child of two years and eight months and the oldest a man of seventy-one. (5) A point of practical interest was the comparatively large number of infections in children under ten years. Eleven cases, or 9.4%, occurred in the first decade, 6 of these developing in the first hemidecade. (6) The disease was much more prevalent

in males; the series was composed of 107 males and only 11 females. (7) There were 107 whites and 12 blacks, or a proportion of 9 to 1, the ratio of all admissions for all diseases in the two races being 7 to 1. (8) A secondary anemia of moderate grade occurred. A striking feature was the polycythemia in many cases. A moderate leucocytosis existed, that in cases with hepatic abscess being only a trifle higher than that in uncomplicated cases. (9) Hepatic abscess occurred in 24, or 20.3% of the cases. Eight of these ruptured into the lung, producing an hepato-pulmonary abscess. In 15 of these cases that came to autopsy 9 showed a single large abscess in the right lobe and 6 presented multiple abscesses. (10) Perforation of the colon with peritonitis occurred in 3 cases. (11) Intestinal hemorrhage occurred in 3 cases. (12) Five of the cases were complicated by malaria and one by a strongyloides intestinalis infection and two by typhoid fever. (13) The agglutination blood tests indicated that the disease was not associated with dysentery due to bacillus dysenteriae Shiga. (14) A marked feature of the disease was its tendency to relapse, 19 patients being readmitted one or more times. (15) The mortality was high, 29, or 24.5%, terminating fatally. (16) Quinin irrigations afforded the most satisfactory means of treatment.

THE TREATMENT OF ACUTE DYSENTERY.

DR. JOHN M. ANDERS of Philadelphia said that a proper regimen tended to render the course of the disease milder. The patient should have rest in bed, proper ventilation, proper diet, and attention should be paid to the manner of feeding, the aim being to minimize the intestinal contents and thus the amount of decomposable material that reaches the seat of the morbid changes. Properly carried out milk diet made the least intestinal putrefaction. Albumin water was highly serviceable. Ipecacuanha stood pre-eminent among special drugs, but it had no specific action. He advised the use of saline laxatives, particularly magnesium sulphate, which produced an eliminative effect, and depleted the intestinal mucosa and inhibited undue peristalsis. This might be followed with aromatic sulphuric acid or sulphur with benefit. To render the intestinal contents acid, sulphur or sulphuric acid was rational. To meet the pain, irritability and undue peristalsis, opium was indicated. Preparations of bismuth were valuable, particularly in advanced stages, and might be advantageously combined with Dover's powder and antiseptics. He advised intestinal irrigations, but believed they were more suitable and more efficacious in amebic dysentery than in the acute bacillary form. In amebic dysentery warm solutions of quinin were more or less efficacious.

ABDOMINAL PAIN IN PLEURISY AND PNEUMONIA.

DR. JAMES B. HERRICK of Chicago read this paper, and made reference to the pain occasionally seen in the abdomen in pleurisy and pneumonia, which he attempted to explain by the involvement of the lower intercostal nerves and the possible influence of the phrenic nerve. In cases of this abdominal reference to pain, certain abdominal dis-

ases such as appendicitis, cholecystitis, etc., might be simulated. Diagnosis was largely a matter of careful physical examination.

TRAUMATIC PNEUMONIA.

DR. W. T. ENGLISH of Pittsburg, Pa., limited his discussion to concussion and contusion without penetrating wounds or fractures, speaking of the normal and abnormal peculiarities favoring or resisting extrinsic or intrinsic stress, with the citation of cases.

(To be continued.)

Recent Literature.

Diagnosis and Modern Treatment of Pulmonary Consumption. By ARTHUR LATHAM, M.A., M.D. (Oxon.), M.A. (Cantab.). New York: Wm. Wood & Co. 1903.

With the multiplicity of works upon pulmonary consumption one naturally feels a sense almost of satiety in taking up new books treating of this subject, but in the present case one can cordially commend the work not only because it comes from one who holds a distinguished position in this special branch of medicine, but because of its value as a reference book for modern views upon consumption.

In Chapter II he speaks of the importance of hemoptysis as an early symptom of tubercular disease, and devotes several pages to the discussion of methods of diagnosis, special weight being given to tuberculin as a diagnostic agent. The author, evidently, holds this method in high estimation. It is a little difficult, however, to understand the logic of his position when he states that there is no danger from the careful use of tuberculin as a means of diagnosis, and yet condemns as dangerous the use of iodide of potassium to bring out a possible crepitation in an affected area of the lung.

In Chapter V the author concisely speaks of the sources of infection and reinfection, mentioning the differing views upon the transmission of bovine tuberculosis to man, and giving useful suggestions for the destruction of the sources of infection. He believes that foul air as found in ill-ventilated buildings is the most fruitful source of tuberculosis. He fails to allude, however, to soil moisture as a potent factor.

The following chapters are chiefly given up to descriptions of sanatorium and home treatment, the author evidently believing the former to be the most efficacious method of combating consumption in the majority of cases which are not too advanced.

In suggesting methods of treatment he takes a broad ground, and emphasizes the necessity of taking the individual into consideration in every case and of not blindly treating patients by classes, as were. For the treatment of the fever of consumption he recommends rest, but recognizes the fact that in exceptional cases oftentimes a certain amount of exercise will tend to lower the temperature.

The author has evidently slight regard for medi-

cines in comparison with open-air treatment, and believes that pure air is more important than mere change of climate.

The appendix to the book contains the most approved methods of staining in examination for bacilli.

The book shows clearly the breadth of vision of the author, and abounds in practical useful suggestions both for general practitioners and for those who make a special study of the disease. It should be in the library of every sanatorium and of all who make a special study of consumption.

A Manual of Practical Hygiene for Students, Physicians and Medical Officers. By CHARLES HARRINGTON, M.D., Assistant Professor of Hygiene in the Medical School of Harvard University. Illustrated with 12 plates and 105 engravings. Philadelphia and New York: Lea Brothers & Co. 1902.

The demand for a second edition of this serviceable work in a very short time after its first appearance is in a great measure a proof of its excellence.

The volume will be found very useful to students in hygiene, to physicians, and especially to all persons who are interested in questions relating to the chemistry of food, with which the author's wide experience has made him very familiar.

The chapters on air, soil, water, disinfection and the hygiene of occupations are also very fully and clearly presented, and a chapter on the relation of insects to human diseases has been added, presenting a summary of the results of this recent addition to the literature of sanitary investigation.

The manual contains many useful plates and illustrations, together with valuable tables showing the composition of every kind of food used by man, the specific gravity of milk, the determination of alcohol in liquors, the relation of typhoid fever to the purity of water-supplies, etc., all of which add to the value of the book for the purposes of reference and as an aid to the study of hygiene.

Human Anatomy. A complete Systematic Treatise by various authors, including A Special Section on Surgical and Topographical Anatomy. Edited by HENRY MORRIS, M.A. and M.B. (Lond.), F.R.C.S. (Eng.). Illustrated by 846 woodcuts. Third edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Co. 1902.

In this third edition of one of the recognized authoritative textbooks of anatomy, the editor has had the text revised when necessary, and alterations in the old or entirely new drawings substituted in many instances. The volume, as it now appears, comprises 1328 pages, including the index. The text is complete, the illustrations are eminently satisfactory, and the arrangement of the subject matter well adapted for ready reference. As a textbook of descriptive anatomy, this book stands with the best, and it contains certain useful facts which are not to be found in others of its general scope. There is no doubt that it will continue to deserve the appreciation with which it has been received, especially in England, and to a somewhat less extent in this country.

American Edition of Nothnagel's Practice. Diseases of the Pancreas, Diseases of the Suprarenal Capsules, and Diseases of the Liver. By L. OSER, M.D., Professor of Internal Medicine, Vienna; E. NEUSSER, M.D., Professor of Internal Medicine, Vienna, and H. QUINCKE, M.D., Professor of Practice of Medicine, Kiel, and G. HOPPE-SEYLER, Professor of Internal Medicine, Kiel. Edited, with additions, by REGINALD H. FITZ, M.D., Hersey Professor of the Theory and Practice of Physic, Harvard University Medical School, and FREDERICK A. PACKARD, M.D., late Physician to the Pennsylvania and to the Children's Hospitals, Philadelphia. Authorized Translation from the German, under the editorial supervision of ALFRED STENGEL, M.D., Professor of Clinical Medicine, University of Pennsylvania. Philadelphia, New York, London: W. B. Saunders & Company. 1903.

This volume of the American edition of Nothnagel's Practice is an illustrated octavo of 918 pages. The division devoted to the diseases of the pancreas takes about one third of the volume, 302 pages, thirty-two pages of which are occupied by a very thorough bibliography embracing not only references to authors mentioned in the text but also the references to the subject in general bibliographies. This in itself is a most useful offering to the investigator. Dr. Oser of Vienna had charge of the original article on the subject, to which Dr. Zuckerkandl added an introductory chapter on the descriptive and topographic anatomy of the pancreas, with especial reference to the clinical point of view. Dr. Oser's article exhibits all the thoroughness characteristic of so much German work, to which is added an acquaintance with and generous appreciation of the work of others, and especially of that of American and English writers. Since the publication of Dr. Oser's article some notable contributions have been made to the study of diseases of the pancreas, and particularly those from the surgeon's standpoint in regard to chronic pancreatitis and the influence of gallstones in the etiology of acute pancreatitis, in comparison with morbid conditions experimentally induced. Although the first word concerning the affections of the pancreas, as concerning those of the appendix and the gall bladder, came from medical men, the investigation of pathological conditions *in vivo*, which is the privilege of a well-guarded laparotomy, has permitted the surgeon to add materially both in theory and practice to the earlier suggestions of the physician.

For editor of the American edition no better choice than that of Dr. Fitz could have been made, whose name has already for some time been associated with the elucidation of this still somewhat obscure subject. His editorial contributions bracketed through the text exhibit the genuineness of his editorial supervision, and give the assurance that we have in this volume the latest words in regard to the affections of this important but long-neglected organ,—the pancreas. Some beautiful colored plates, reproducing specimens of pancreatic disease from the Warren Anatomical Museum at the Harvard Medical School, add much to the value of the article.

The second article, also edited by Fitz, is on the diseases of the suprarenal capsules, and was written by Neusser of Vienna; to it is appended a section on Addison's disease and a bibliography brought down apparently to 1896. Under the physiology of the suprarenal capsules the therapeutic properties of the materials yielded by the suprarenals receives due attention, and references to the literature on epinephrin, suprarenin and adrenalin down to 1902, as well as a discussion of the therapeutic properties of suprarenal extract, are given by the American editor.

The last 520 pages, or somewhat more than half of the volume, are taken up by an exhaustive monograph on diseases of the liver, of which the original German authors were Quincke and Hoppe-Seyler of Kiel, and the American editor was Dr. F. A. Packard of Philadelphia, whose untimely death some months since was much deplored by all who knew him. The most important and interesting recent additions to our knowledge of diseases of the liver have to do with cholelithiasis, and the surgical contributions to these must be acknowledged. As to questions of diagnosis and treatment in all conditions dependent upon or suspected of being dependent upon gallstones, it is most desirable that the physician and surgeon should co-operate with harmony and mutual appreciation. The American editor in his notes exhibits a thorough acquaintance with the work of the last few years in the subjects covered by the title of this monograph; the original text is worthy of the reputation of its authors.

Diseases of Women. A Clinical Guide to Their Diagnosis and Treatment. By GEORGE ERNEST HERMAN, M.B. (Lond.), F.R.C.P., Obstetric Physician to the Lecturer on Midwifery at the London Hospital, consulting Physician-accoucheur to the Tower Hamlets Dispensary, Examiner in Midwifery to the University of Cambridge and the Royal College of Physicians, Late President of the Obstetrical Society of London and of the Hunterian Society. Revised Edition. New York: William Wood and Company. 1903.

This volume of 884 pages is written in a most readable style by an Englishman with, as he says in the preface, clinical experience.

The subject is treated from the standpoint of the general practitioner and not from that of the operating specialist.

The contents consists of the following headings: General Chronic Pelvic Pain, Pelvic Inflammation, Internal Hemorrhage, Hemorrhage, Leucorrhea, Disorders of the Vulva, Disorders of Menstruation, Disorders of the Sexual Functions, Disorders of Parts Adjacent to the Sexual Organs, and Abdominal Tumors. From which it will be seen that the author arranges the maladies according to their leading symptom rather than anatomically, as in most works on gynecology.

The book is the work of a careful observer and clear, honest thinker, with a ripe clinical experience, and is a fair statement of gynecology as practised in England today.

The advice given to the student and practitioner is conservative and sound, and the work should prove a valuable addition to his library.

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AMERICAN MEDICAL ASSOCIATION.

THIS is the season of medical meetings. By common consent the early spring seems to have been chosen for these general medical gatherings. There is the more reason for such meetings being held early, if, as is the case this year, two of the largest in America are held in Southern cities.

The American Medical Association has just completed one of the most successful meetings in its history at New Orleans. The prophecy of the appeal sent out by the local Committee of Arrangements in December of the charm of May in New Orleans has been amply verified. From the general character of the addresses, and from the character of the papers read at the meetings of sections, it is apparent that this organization is coming to be one of the great scientific and practical forces in medicine in this country. It is growing in numbers year by year; it is attracting the best men in all special branches; it sets no other standard of admission than a recognized, honorable position in the profession, and thereby brings together the rank and file of the profession as no other organization in America is at present doing. The association is coming more and more to stand for the best in medicine, not only on its scientific side, but also in its vastly important relations to the community and to governmental interests. It is clear that no other association now in existence can accomplish this latter purpose with the same degree of success as the American Medical Association. To the end that it may still further and more completely represent the best medical opinion, it should be urged upon physicians everywhere to join the association.

In his presidential address this year, published in the last issue of the JOURNAL, Dr. Frank Billings discussed at length the present somewhat deplorable state of medical education, and urged most forcibly

that our medical schools should be reduced in numbers and that their standards should be correspondingly raised. The plea he made does not lay claim to originality, but it is a matter which should yearly be brought in some form before medical men, to the end that a standard in medicine may be attained which will place us on an equality in this respect with foreign countries.

This meeting of the association in general will, no doubt, be remembered as a conspicuous example of what such meetings should be, in having brought to the front, not only strictly professional matters, but also other questions which intimately concern the medical profession in its relation to the general public.

THE CONGRESS OF AMERICAN PHYSICIANS
 AND SURGEONS.

THIS week sees another medical meeting in Washington, the membership of which is somewhat more limited than that of the American Medical Association, and which represents, to a certain degree, a different phase of medical progress. In looking over the program of these meetings, one is above all impressed with the vast diversity of subjects which are included in the proceedings of the Congress of American Physicians and Surgeons. Year by year new sections are added to this association, so that now sixteen more or less specialized fields in medicine are represented by individual organizations.

The latest addition to these special societies is the Association of Pathologists and Bacteriologists. Many of the leaders in this new society were already members of the Association of American Physicians, but the technicalities of pathological and bacteriological research have reached such a pass that there is a practical demand for separate consideration of the results attained. It is always interesting to speculate as to whither the future tendencies, represented by this congress, are to lead. It is, perhaps, melancholy to contemplate, but the fact is forced upon us already that in another ten years many of the subjects discussed in one section of the congress will be absolutely unintelligible to the others. We surmise that this state of affairs has already come to pass in a measure, as we look over the extraordinarily technical character of many papers presented at the sectional meetings. It all means progress, however, and we should never allow our fears for the narrowing tendencies of specialism to cloud our vision as to the ultimate advantages to which such specialized work leads.

Dr. W. W. Keen's presidential address, is worthy of more than passing mention. He discusses questions which are always of vital impor-

tance, and will remain so whatever the future trend of medicine may prove to be. This congress, like the meeting of the American Medical Association, must be regarded as one of the most successful in its rather brief history. The subjects discussed, the quality of the special papers presented, and the general conduct of the congress, permit a pardonable feeling of pride at the positive accomplishment which American medicine is making in the most varied fields of research.

THE DUTIES AND RESPONSIBILITIES OF TRUSTEES OF PUBLIC MEDICAL INSTITUTIONS.

INSTEAD of devoting his address as president before the recent Congress of American Physicians and Surgeons at Washington, as is usual, to some special professional topic, Dr. Keen, following the suggestion of members of the executive committee, gave the time at his disposal to the presentation of some thoughts on the above subject. Our readers will find the address in full in this issue of the JOURNAL, and we desire to direct attention to it, for the well-matured opinions of a man of Dr. Keen's experience and judgment on such matters merit due consideration.

The public medical institutions dealt with are, (1) medical schools and (2) hospitals, whether connected with medical schools or not. The class of medical institution of which the Rockefeller Institute for Medical Research is our single example is not included, for obvious reasons.

Dr. Keen thinks much is to be gained by inviting the medical board or staff, or if too large, a committee representing it, to the meetings of boards of trustees or managers, and thus bringing these bodies into more intimate contact.

He favors a fixed age of compulsory retirement, whether for professors in medical schools or for hospital physicians and surgeons. In his opinion sixty-five would be a suitable age limit. To obviate the premature loss of services of very exceptional men, boards of trustees might in special cases preserve to their institutions such men by extending the limit to seventy years, but in no case ought they to go beyond this limit.

A sabbatical year Dr. Keen regards as unnecessary for professors in medical schools. He thinks that a small proportion, about one fifth, of well-chosen medical men on boards of trustees of hospitals or medical schools is a distinct advantage. But it should be positively understood, if not indeed absolutely expressed, in institutions in large cities, at least, that any physician or surgeon placed upon such a board should never be eligible, even by

resignation from the board, for a position on the faculty or the medical staff.

As for trustees, their duties and responsibilities are not at an end when they have taken care of the funds and elected a staff, although that is a common opinion. It is their duty to see, by proper supervision of the staff, that the intellectual funds as well as the invested funds of the institution bring in good dividends.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 13, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 43, scarlatina 40, typhoid fever 19, measles 51, smallpox 0.

RECEPTION TO THE ASSOCIATION OF MILITARY SURGEONS. — Brig.-Gen. Robert A. Blood, surgeon-general of Massachusetts, has issued invitations for a reception to be given to the Association of Military Surgeons of the United States, on Tuesday evening, May 19.

REPORT OF THE STATE BOARD OF INSANITY. — According to the fourth annual report of the Massachusetts State Board of Insanity, it appears that the insane in public institutions, October 1, 1902, numbered 8,271, with a slight preponderance of women. These figures indicate a small increase over the preceding year, for which one of the reasons given is that the almshouses have cared for fewer patients. The overcrowding of the institutions for the insane still continues to be very great. Corridors and day rooms are in use for sleeping purposes, and the conditions cannot be improved without very material additions to the hospital facilities, necessitating generous appropriations.

RESEARCH AT THE BOSTON FLOATING HOSPITAL. — It is reported that special bacteriological work will this summer be done on the floating hospital in relation particularly to the etiology of dysentery. This work is undertaken under the auspices of the Rockefeller Institute for Medical Research, with the immediate advice of Dr. Theobald Smith. Arthur I. Kendall, Ph.D., a bacteriologist of experience, is said to be the choice for the position.

NEW YORK.

PROFESSOR OF PHARMACOLOGY AND THERAPEUTICS, COLUMBIA UNIVERSITY. — At a meeting of the trustees of Columbia University held May 4, Dr. Christian A. Herter, who is well known for his

work in original research, was appointed to the new chair, in the medical department, of pharmacology and therapeutics. He will be director of the laboratory of experimental pharmacology, soon to be established. Dr. L. Emmett Holt, professor of diseases of children, was assigned to a seat in the medical faculty. The students of the medical department have raised a fund of over \$450 to be devoted to the purchase of loving cups for the retiring professors, Drs. Weir, Peabody and Tuttle.

TUBERCULOSIS CAMP.—At a meeting of the board of health held May 6, President Lederle announced that he had decided to establish a tuberculosis camp on North Brother Island, in the East River.

BEQUESTS.—Among the bequests made by the late Charles S. Baylis of Brooklyn are \$10,000 to the Long Island College Hospital and \$2,000 to the Brooklyn Eye and Ear Hospital.

TYPHOID AT ITHACA.—On May 6 a senior in the engineering course of Cornell University died of typhoid fever at Ithaca. On that date two typhoid patients were discharged from the Cornell Infirmary, and it was stated that but two then remained under treatment.

EPIDEMIC INFLUENZA.—The bulletin of the State Department of Health for the month of March gives some account of the prevalence of epidemic influenza in the State during the past season. A few deaths from the disease were reported as early as October, but during that and the two months following the estimated mortality was not above 500. During January 1,200 deaths were attributed to it and during February 1,500, while the mortality was placed at about 2,000 for the month of March. The returns received for April up to the time the bulletin was issued indicated a decrease in the deaths from influenza.

POLLUTION OF PUBLIC WATERS.—The governor has signed a bill passed at the recent session of the legislature forbidding the pollution of public waters by commercial establishments or others in a manner detrimental to the public health. The jurisdiction on the matter is placed with the State Department of Health, by which permits for the discharge of materials from factories must be granted.

NEW YORK EYE AND EAR INFIRMARY.—The Schermerhorn Pavilion of the New York Eye and Ear Infirmary was opened Monday, May 11, with appropriate exercises. Bishop Potter, vice-president of the Infirmary, made an address, as did Rev. Mrs. Huntington and Green, Miss Keller, Dr. Gorham Bacon and others.

NOTES FROM THE PHILIPPINES.

ASSISTANT COMMISSIONER OF HEALTH.—The position of Assistant Commissioner of Health has lately been filled by the Philippines Commission by the appointment of Dr. Edward L. Munson, captain and assistant surgeon in the army. Dr. Munson has been stationed in Manila as assistant to the chief surgeon, and also as sanitary inspector of the buildings and watercraft controlled by division headquarters. He was assistant professor of hygiene and sanitary chemistry at the Army Medical School in Washington at its last session, and is the author of a large work on military hygiene, adopted as the standard textbook in the military services of the United States and other nations. He is thus exceptionally well qualified to fill the duties of the new position to which he has been appointed. It is understood that he will perform the duties of health officer for Manila.

PROHIBITION OF SALE OF INTOXICATING LIQUORS.—A matter of much importance to the health of the army here is the passage of a law by the insular government, in response to a request from the military authorities, prohibiting the sale of intoxicating liquors in the vicinity of seventeen large military posts and reservations. In most of the cases the sale of such liquors is prohibited within a distance of two miles from the limits of the military reservations. In some few cases this distance is reduced to one and one-half miles. In a few instances, where posts are in or on the outskirts of large towns, the liquor interests have been able to have these limits reduced to four or five hundred yards. With the abolition of the canteen, the soldiers have been driven to questionable resorts, which sprang up like mushrooms within a few yards of the military reservations, and a considerable increase in drunkenness, disorder and venereal disease has resulted. The new legislation is intended to offset the loss of the canteen, as far as possible, by driving away the saloons from the vicinity of posts and making it more difficult for the soldiers to patronize such resorts. Penalties for infractions of this law may be imposed to the extent of \$100 fine and six months' imprisonment for each instance, and for the proper enforcement of the law the commanding officers of the posts mentioned are given the powers of justices of the peace for the trial of civilians in such cases. The law will be a severe blow to the saloon men, many of whom have invested heavily near the new posts for the purpose of securing future trade. At one large post, about forty miles from Manila,—Camp Stotsenberg,—the saloon men had united to secure a large tract of land near the garrison, and just across the reservation lines, where they had built a small town, with

all kinds of vicious attractions for the soldiers. Much money was expended by the liquor interests in this town, as the post now under construction is to be a large, permanent garrison, and a strong fight has been made by the saloon men against the passage of the law. In this climate, and particularly in the rainy season, there is no question but that a walk of two miles out and two miles back, in addition to the day's work, will deter all but the steady drinkers. Of course plenty of people will be found who will smuggle liquor into the reservation, but a few severe sentences by post commanding officers will largely break up any such business. One great trouble in preventing liquor smuggling on army reservations in the United States was that commanding officers had no power to inflict punishment, and the sympathy of the surrounding civil population stood in the way of securing proper punishment of the offenders in the civil courts. The results of the new system will be watched with much interest by the military surgeons and the army officers generally.

A MODEL TENEMENT. — Following the removal of the unsanitary habitations of the squatters on government land near the water front, the city government has constructed a large tenement for their accommodation, rooms in which will be rented at about cost. As a sanitary experiment, the outcome will be watched with much interest. The number of occupants for each apartment is laid down, cleanliness must be maintained, game cocks and pet animals will not be allowed on the premises, nor can there be any sale of goods or food on the premises. A janitor will enforce these regulations. It remains to be seen whether the Filipinos are willing to give up their usual filthy habits and surroundings, and their cherished fighting cocks, for the sake of excellent accommodations and low rents.

RECONCENTRATION. — The political conditions in the provinces of Albay and Sorsogon are so disturbed that the civil authorities contemplate the establishment of the reconcentration policy there, to combat existing lawlessness and brigandage. Anticipating the occurrence of cholera and other disease among the natives under reconcentration, the Board of Health has prepared plans for the establishment and equipment of hospitals near the proposed points of concentration. These hospitals have an abundance of supplies and a sufficient medical and nursing personnel, who are already on the ground in case their service should be required.

ASSISTANT SANITARY ENGINEER. — To facilitate the projected sanitary improvements of Manila, the commission has recently created the position of assistant sanitary engineer, having a salary of \$3,000

per annum attached. Heretofore the sanitary engineer for the island has also been in direct charge of the sanitary improvements in Manila.

Miscellany.

BACTERIOLOGICAL IMPURITIES OF VACCINE VIRUS.

AN investigation on bacteriological impurities of vaccine virus, conducted by M. J. Rosenau, from the Hygienic Laboratory of the Public Health and Marine Hospital Service, reaches the following important conclusions:

All the samples examined were purchased on the open market, care being taken to buy unbroken original packages from reliable pharmacists who keep the product under proper conditions of light and temperature. With a few exceptions, the vaccine was examined before the time limit expired, if the time was given by the manufacturer.

Of 190 dry points examined we found an average of 4,354 bacteria per point. A number of these points contained over 15,000 and one as high as 44,000 organisms. Of 244 tubes of glycerinated virus examined we found an average of 1,742 bacteria per tube. A number of these capillary tubes contained over 10,000 bacteria and one as high as 30,000. This is, of course, much more than a carefully prepared glycerinated virus should contain.

We found the pus cocci and other bacteria, pathogenic for laboratory animals, in both the dry points and the glycerinated virus.

We have demonstrated that some of the glycerinated virus marketed during the winter of 1901-02 contained an excessive number of bacteria, which decreased notably after a few weeks, indicating the sale of a "green" or unripe product; that is to say, the virus was not glycerinated a sufficient length of time before it was sold.

It was also plain from our studies that too much confidence was placed by the producers in the germicidal power of glycerin.

The excessive impurities found in some of the glycerinated virus upon the market we believe was largely due to this overconfidence in the germicidal value of glycerin; operators become careless, trusting to the glycerin to purify their product. We know that glycerin is too feeble in its properties to purify vaccine matter which has initial contamination such as our work indicates.

After we called attention to this point we found a marked improvement in the glycerinated virus on the market. For instance:

During the winter of 1901-02 the glycerinated virus contained an average of 4,698 bacteria per tube.

In the spring (April and May) of 1902 the average fell to 1,058 bacteria per tube.

This winter (November and December), 1902, the average of 89 tubes examined was only 29 bacteria—maximum 239.

Glycerinated virus, when properly prepared and kept a sufficient length of time, is freer from impurities than dry points made with fresh "lymph."

There is practically no difference between the glycerinated virus dried upon ivory points and that hermetically sealed in capillary tubes, so far as bacteriological impurities are concerned.

It will be seen that there is practically no vaccine on the market free from bacterial contamination, although the product of some manufacturers is remarkably pure.

The unevenness of the purity of vaccine as marketed by some manufacturers is very marked. The greater contamination of the vaccine during the winter of 1901-02 may be accounted for, in part, by the undue haste and accompanying carelessness incidental to supplying the increased demand for vaccine virus at that period.

We have examined a great number of dry points and the contents of glycerinated tubes for tetanus, but have been unable to find the organism of this disease.

Tetanus spores may live a long time in vaccine virus. We have found them alive and virulent on dry points after 295 days, and in glycerinated virus sealed in capillary tubes 355 days.

Tetanus may become a contaminating element of vaccine before it leaves the heifer. During the period of three to five days which elapses between the vaccination of the heifer and the removal of the virus there is opportunity for tetanus to find a lodgment in the eruption on the heifer's body surface, provided tetanus is present in the stall or stable surroundings of the animal.

If tetanus reaches the heifer's vaccinated area it may contaminate both the "dry points," which are made directly from the "lymph," and also the vaccine pulp, which the manufacturer subjects, for a longer or shorter time, to the germicidal action of glycerin before he markets it as "glycerinated virus."

Tetanus added to glycerinated vaccine virus does not terminate when kept hermetically sealed and under anaerobic conditions in small capillary tubes. It gradually loses its virulence both in the tubes and on the ivory points. Although the virulence is lost, the tetanus spores are not necessarily dead; for, while they will not produce symptoms when inoculated directly into mice, they may be revived into active virulent cultures by growing in a fresh bouillon under favorable conditions; that is to say, the vegetability of the spore remains active long after it has lost its power to produce the disease when inoculated directly into mice.

Therefore, in looking for tetanus in vaccine virus it is best to make cultures first and study the growth for endospore bearing rods, and then test the effects of the culture on animals.

The spores of tetanus lose their virulence and die much more quickly in the vaccine lymph on dry points than in the glycerinated tubes.

The vitality of tetanus in glycerinated virus depends largely upon the number of spores contaminating the virus. Large quantities, namely, forty times the minimal lethal dose ($40 \times \text{MLD}$), remain alive and active over a year. Smaller amounts may disappear in four to seven months. Very small amounts ($1 \times \text{MLD}$) have in one of our experiments lost virulence in one month and failed to grow in bouillon in two months.

On the other hand, these very small amounts of tetanus may remain active for months in glycerinated virus in capillary tubes. In one instance as small a quantity as 0.00055 cc., which was about two and a half times the minimal fatal dose, remained active seven months.

In vaccinal "lymph" on dry points the spores may begin to lose their virulence in two weeks and be dead in four months. Usually they live longer. We found them alive and virulent in points that had been contaminated with $50 \times \text{MLD}$ about ten months (295 days).

Correspondence.

TUBERCULOSIS.

156 WEST CHIPPEWA STREET,
BUFFALO, May 11, 1903.

MR. EDITOR: Will you kindly allow me to present the following proposition through your columns? Without expressing a personal opinion, I would like to collate a series of clinicians, sanitarians and pathologists, and could suggest that, to insure their receipt, they be sent to me in the form of private correspondence or references to literature.

"Of all diseases due to parasites, of whatever kind, tuberculosis alone clearly illustrates predisposition by general states of the organism of the host, independently of opportunities for infection and of plainly local lesions of cellular states (as in regard to the malignant neoplasms, if these be considered parasitic) which favor colonization of the parasite. Even in the case of tuberculosis, these latter factors outweigh purely general conditions of diminution of resistance."

Very truly yours,

A. L. BENEDICT, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 2, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|-----------------------------|--------------------------|--------------------------|---------------------------|----------------------|-----------------------|-----------------|----------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,394 | 388 | 23.86 | 18.75 | 3.19 | .64 | 2.13 | |
| Chicago . . . | 1,885,000 | 637 | 190 | 23.70 | 26.22 | .94 | .78 | .63 | |
| Philadelphia . | 1,378,527 | 505 | 136 | 23.56 | 13.46 | 2.57 | 1.38 | .79 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 194 | 49 | 23.71 | 11.33 | 1.03 | — | 1.03 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 161 | 54 | 27.95 | 14.90 | 2.48 | 3.10 | .62 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 82 | 28 | 26.82 | 17.05 | 2.44 | 4.87 | — | |
| Boston . . . | 603,163 | 211 | 48 | 24.64 | 14.69 | 1.42 | 1.89 | .47 | |
| Worcester . . | 132,044 | 32 | 10 | 15.62 | 12.50 | — | — | — | |
| Fall River . . | 115,549 | 43 | 17 | 11.65 | 27.20 | — | — | — | |
| Lowell . . . | 101,959 | 36 | 16 | 13.88 | 13.88 | 2.78 | — | — | |
| Cambridge . . | 98,639 | 23 | 3 | 26.09 | 13.04 | — | — | — | |
| Lynn . . . | 72,497 | 16 | 1 | 18.75 | — | — | — | — | |
| Lawrence . . | 69,766 | 23 | 11 | 17.39 | 8.68 | — | — | — | |
| Springfield . | 69,389 | 18 | 5 | 16.67 | 5.55 | — | — | — | |
| Somerville . . | 68,110 | 20 | 4 | 25.00 | 20.00 | — | — | — | |
| New Bedford . | 67,198 | 37 | 16 | 48.63 | 8.10 | — | — | 29.72 | |
| Holyoke . . . | 49,286 | 16 | 7 | 12.50 | 6.25 | — | — | — | |
| Brookton . . . | 44,873 | 9 | 1 | 22.22 | — | — | 11.11 | — | |
| Haverhill . . | 42,104 | 10 | 1 | — | 20.00 | — | — | — | |
| Newton . . . | 37,794 | 14 | 3 | — | 7.14 | — | — | — | |
| Salem . . . | 36,876 | 16 | 3 | 12.50 | 12.50 | — | — | — | |
| Malden . . . | 36,286 | 8 | 3 | 25.00 | 12.50 | 12.50 | — | — | |
| Chelsea . . . | 35,876 | 12 | 2 | — | 8.33 | — | — | — | |
| Fitchburg . . | 35,069 | 14 | 5 | — | 21.42 | — | — | — | |
| Taunton . . . | 33,656 | 15 | 5 | 13.33 | 20.00 | — | 6.66 | — | |
| Everett . . . | 28,620 | 5 | 2 | 20.00 | — | — | — | — | |
| North Adams . | 27,862 | 6 | 1 | — | 50.00 | — | — | — | |
| Gloucester . . | 26,121 | 9 | 2 | 11.11 | — | — | — | — | |
| Quincy . . . | 26,042 | — | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 9 | 3 | 33.33 | 11.11 | — | — | — | |
| Brookline . . | 22,608 | 9 | 2 | 22.22 | — | — | 11.11 | — | |
| Pittsfield . . | 22,589 | 6 | — | 33.33 | 16.67 | — | — | — | |
| Chicopee . . . | 21,681 | 9 | 4 | 33.33 | 44.44 | — | — | 33.33 | |
| Medford . . . | 20,962 | 9 | 0 | — | 83.33 | — | — | — | |
| Northampton | 19,883 | 5 | 0 | 20.00 | — | — | — | — | |
| Beverly . . . | 15,302 | 4 | 1 | — | 50.00 | — | — | — | |
| Clinton . . . | 15,161 | 6 | 3 | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 4 | 0 | 25.00 | — | — | — | — | |
| Woburn . . . | 14,300 | 9 | 1 | — | 11.11 | — | — | — | |
| Hyde Park . . | 14,175 | 8 | 3 | — | — | — | — | — | |
| Adams . . . | 13,745 | 1 | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | 3 | 2 | 33.33 | — | — | — | — | |
| Marlboro . . | 13,609 | 2 | 1 | — | — | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 5 | 2 | 40.00 | — | — | 20.00 | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 3 | — | — | — | — | — | — | |
| Framingham . | 12,534 | 3 | — | — | 33.33 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 3 | — | — | 33.33 | — | — | — | |
| Southbridge . | 11,268 | 4 | 1 | 25.00 | — | — | — | — | |
| Watertown . . | 11,077 | 4 | — | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,672; under five years of age, 1,033; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 852. acute lung diseases 659, consumption 428, scarlet fever 56, whooping cough 38, cerebrospinal meningitis 10, smallpox 11, erysipelas 7, measles 65, typhoid fever 65, diarrheal diseases 78, diphtheria and croup 77.

From whooping cough, New York 9, Chicago 5, Philadelphia 7, Pittsburg 5, Providence 4, Boston 4, and Brockton, Taunton, Brookline and Westfield 1 each. From erysipelas, Chicago 1, Philadelphia 2, Boston 2, Salem 1, Pittsfield 1. From smallpox, Chicago 2, Philadelphia 4, Pittsburg 5.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending April 18 the death-rate was 15.9. Deaths reported, 4,698: acute diseases of the respiratory organs (London) 262, whooping cough 91, diphtheria 64, measles 165, smallpox 18, scarlet fever 27.

The death-rate ranged from 7.8 in Croydon to 24.4 in Sunderland; London 16.1, West Ham 12.6, Brighton 19.5, Portsmouth 15.0, Southampton 14.2, Plymouth 19.1, Bristol 17.4, Birmingham 18.3, Leicester 12.1, Nottingham 16.1, Bolton 17.1, Manchester 17.9, Salford 17.7, Bradford 15.8, Leeds 14.1, Hull 15.7, Newcastle-on-Tyne 17.1, Cardiff 12.1, Rhondda 20.0, Liverpool 18.3, Wigan 23.5.

METEOROLOGICAL RECORD.

For the week ending May 2, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---------------|---------------------------|--------------|----------|--------------------|------------------------|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------|
| | | Daily mean. | Maximum. | Minimum. | 8.00 A.M. 8.00 P.M. | Daily mean. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | |
| S. . 26 30.11 | 45 | 49 | 41 | 50 | 89 | 70 | E | E | 12 | 6 | C. O. | 0 |
| M. . 27 30.17 | 46 | 52 | 39 | 87 | 82 | 84 | N | E | 6 | 12 | C. C. | 0 |
| T. . 28 30.16 | 54 | 66 | 43 | 49 | 47 | 48 | N W | S W | 5 | 12 | C. C. | 0 |
| W. . 29 30.01 | 69 | 83 | 55 | 34 | 45 | 40 | W | N | 9 | 3 | C. C. | 0 |
| T. . 30 29.89 | 72 | 83 | 60 | 56 | 50 | 53 | S | S W | 6 | 15 | C. C. | 0 |
| F. . 1 30.12 | 51 | 63 | 39 | 46 | 40 | 43 | W | N | 24 | 12 | O. C. | 0 |
| S. . 2 30.53 | 39 | 44 | 34 | 45 | 75 | 60 | E | S E | 15 | 11 | C. C. | 0 |
| ☞ | 30.14 | 63 | 44 | | 57 | | | | | | | 0 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MAY 7, 1903.

NYDEGGER, J. A., passed assistant surgeon. Bureau order of April 21, 1903, directing Passed Assistant Surgeon Nydegger to proceed to Gulf Quarantine and assume command of the service of that port, revoked. May 2, 1903.

FOSTER, M. H., passed assistant surgeon. Granted leave of absence for two days. May 4, 1903.

KERR, J. W., assistant surgeon. Granted leave of absence for two days from May 7. May 6, 1903.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for twenty days from April 23. May 2, 1903.

FRARY, T. C., acting assistant surgeon. Granted leave of absence for one day. May 5, 1903.

GRACE, J. G., acting assistant surgeon. Granted leave of absence for nine weeks. May 2, 1903.

MARR, H., acting assistant surgeon. Granted leave of absence for thirty days from May 10. May 2, 1903.

WOODS, C. H., pharmacist. Department letter granting Pharmacist Woods leave of absence for twenty days amended so as to be for nineteen days. May 2, 1903.

HOLT, E. M., pharmacist. Granted leave of absence for thirty days from May 5. May 2, 1903.

PROMOTION.

C. W. STEPHENSON, pharmacist of the third class, promoted to be pharmacist of the second class, effective April 1, 1903.

BOARD CONVENED.

Board convened to meet at the Marine Hospital, San Francisco, Cal., May 2, 1903, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Assistant Surgeon Carl Rannus, Chairman; Assistant Surgeon C. W. Vogel, Recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING MAY 9, 1903.

D. O. LEWIS, surgeon. Detached from the "Pensacola," and granted sick leave for three months.

H. SHAW, assistant surgeon. Ordered to the "Yankee."

P. L. COCKE, acting assistant surgeon. Detached from the Naval Academy and ordered to the "Chesapeake."

R. H. MICHELS, assistant surgeon. Ordered to the "Wisconsin."

H. F. STRINE, P. J. TRAYNOR, J. L. NEILSON, F. M. MUNSON, R. A. BACHMAN, assistant surgeons. Ordered to the Asiatic Station, via Solace.

T. A. BERRYHILL, surgeon. Detached from the Navy Yard, Pensacola, Fla., and ordered to the "Baltimore."

W. F. ARNOLD, surgeon. Detached from Port Isabela, P. I., and ordered to Naval Hospital, Yokohama, Japan.

R. K. McCLANAHAN, assistant surgeon. Detached from the Naval Station, Polloc, P. I., and ordered to the "Oregon."

J. W. BACKUS, assistant surgeon. Detached from the "Princeton" and ordered to the "Helena."

H. A. DUNN, assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered to the Naval Station, Olongapo.

R. E. HOYT, assistant surgeon. Ordered to the "Texas."
B. T. JENNESS, assistant surgeon. Ordered to the "Indiana."

PUBLIC HEALTH AND MARINE HOSPITAL SERVICE EXAMINATION.

WASHINGTON, D. C., April 30, 1903.

A board of officers will be convened to meet at the Bureau of Public Health and Marine Hospital Service, 3 B Street, S. E., Washington, D. C., Monday, June 15, 1903, for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine Hospital Service of the United States.

Candidates must be between twenty-two and thirty years of age, graduates of a reputable medical college, and must furnish at least two testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: 1, Physical; 2, Oral; 3, Written; 4, Clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene.

The oral examination includes subjects of preliminary education, history, literature and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

For further information, or for invitation to appear before the Board of Examiners, address,

WALTER WYMAN,
Surgeon-General.

SOCIETY NOTICE.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — A regular meeting of the society will be held at 3 Park Street, Boston, Mass., on Thursday, May 21, 1903, at 7.30 P.M. The meeting will be in charge of the Section on Medicine, Dr. Elizabeth T. Gray, chairman. Paper, Dr. Mary S. Holmes, Worcester Isolation Hospital: "The Present Status of Diphtheria." Discussion, Dr. Harriet E. Lathrop: "The Care of the Healthy Throat in Which the K-L Bacillus is Found; and What the School-Boards are Doing to Prevent the Spread of Diphtheria." Dr. Mary S. Packard: "Present Methods of Disinfection."

DR. AGNES C. VIETOR, Secretary,
Trinity Court, Boston.

RECENT DEATH.

JAMES A. ROACHE, M.D., of Brooklyn, N. Y., died on May 3. He was born in New York City in 1869, and was graduated from the Long Island College Hospital in 1891. At the time of his death he was an attending physician at St. Mary's Hospital, Brooklyn.

BOOKS AND PAMPHLETS RECEIVED.

The Diagnosis of Diseases of Women. A Treatise for Students and Practitioners. By Palmer Findley, B.S., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

A Manual of Diseases of the Eye for Students and General Practitioners. By Clarence A. Veasey, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

A Pocket Book of Infant and Childhood Dietetics, with Directions for the Home Modification of Milk. By A. B. Späth, A.M., M.D. Chicago: E. H. Colegrove. 1903.

Hygiene and Public Health. By Louis Parkes, M.D., D.P.H. (Lond. Univ.), and Henry Kenwood, M.B., D.P.H., F.C.S. Illustrated. Philadelphia. P. Blakiston's Son & Co. 1903.

The Elements of Pathological Anatomy and Histology for Students. By Walter Sydney Lazarus-Barlow, B.A., B.C., M.D. (Camb.), F.R.C.P. (Lond.) Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

The Prevention of Disease. Translated from the German, with an Introduction by H. Timbrell Bulstrode, M.A., M.D. (Cantab.), D.P.H. In two volumes. New York: Funk & Wagnalls Co. 1903.

On the Pathology of Acute Rheumatoid Arthritis. By W. Hale White, M.D. Reprinted from Guy's Hospital Reports, Vol. LVII.

Transactions of the American Climatological Association. For the Year 1902. Vol. XVIII.

Original Articles.

A STUDY OF FIVE HUNDRED AND THIRTY-FOUR OPERATIONS UPON THE GALL BLADDER AND BILE PASSAGES, WITH TABULATED REPORT OF FIVE HUNDRED AND FORTY-SEVEN OPERATED CASES.¹

BY WILLIAM J. MAYO, A.M., M.D., ROCHESTER, MINN.,

Surgeon to St. Mary's Hospital of Rochester, Minn.

IN nature's defense against infection within the abdominal cavity there are three weak situations — the Fallopian tube, the appendix and the gall bladder. The first to gain an accepted surgical position was the infective lesions of the tube. The ease of diagnosis and the remarkable results of operative interference contributed largely to this result. The appendix, after much discussion, has also reached an assured place in surgery; but the gall bladder has been slow to receive that attention from the medical public which its importance deserves. The patient is usually along in years and often, by reason of degenerative lesions or adipose tissue, a poor subject for operative interference; and, again, death does not frequently come with that tragic suddenness which oftentimes marks appendicitis.

Like the appendix, the gall bladder is a dependent organ with a limited outlet, connected, although less directly, with the intestinal tract; but fortunately at a point in which the micro-organisms normally present are not so active. Both organs are liable to stone formation; but infections of the gall bladder are usually due to less virulent bacteria, and its better blood supply and distensibility equalizes that tension which is so fatal a characteristic of the inflamed appendix. Perforation and sudden death, therefore, are less frequent in diseases of the gall bladder.

As a cause of chronic distress and disability in adult life, however, diseases of the gall bladder are nearly equal in frequency those of the appendix. While in later years, the gall bladder undoubtedly takes first place. The inflammatory affections of the Fallopian tubes which gave such an impetus to pelvic and abdominal surgery have dropped to third place, with lesions of the stomach a close competitor. In St. Mary's Hospital in 1902 the relative proportion of these operations was: appendix 345, gall bladder 143, ovaries and tubes 98, stomach 77.

The 534 operations upon the gall bladder and bile passages which form the basis of the report were performed upon 518 patients with 19 deaths, a mortality of 3.5%. Of the total number, 510 were for gallstone disease, with a mortality of 3%. Considering stones in the gall bladder as uncomplicated, there were 208 cases with 2 deaths, a mortality of less than 1%. On the other hand, grouping as complicated, stones in the cystic duct, stones in the common duct, infections with and without stones and malignant disease, there were 326 cases with 16 deaths, a mortality of 5%. This is a most significant fact and offers a strong argument in favor of early operation. It has been said that of the 5 to 10% of adults who have gallstones, the large majority do not have symptoms. I am convinced

that many times we physicians do not recognize and attribute symptoms really present to their proper source in the gall bladder; we too often make an indefinite diagnosis of dyspepsia or indigestion.

The standard of measure in the diagnosis of gallstones is the "colic," yet this is but a small part of the clinical picture, and is readily diagnosed. Not so the chronic distress and stomach disturbance which the evolution of the pathological process so often develops. In the latter case, the victim goes the round of the reputable practitioners of medicine, and then, unrelieved, falls into the hands of the charlatan or patent medicine vender, until complications develop or a condition of encapsulation is established, subject to occasional attacks of regional inflammation.

That the large majority of adults with gallstones never suffer is true, yet these stones but "slumber," with the possibility of a painful awakening. Once "active" the chances of permanently regaining a condition of "rest" is not good, although the interval may last for years. Under normal conditions the bile has been supposed to be sterile; but it has been demonstrated that if collected in sufficiently large quantities, a few bacteria can be detected, and, as shown by Lartigau, it is possible that the necessary attenuation of the infective agents is produced by passage through the liver, and that stagnation of the infected bile in the gall bladder is the usual cause of the "stone building catarrh," rather than an ascending inflammation from the intestines through the ducts. A gall bladder containing stones is always infected, and when this organ once becomes restless from the irritation of its host, the chance of a complete reconciliation is improbable. In 19 cases we have found and removed unsuspected gallstones during an abdominal operation performed for another purpose, and in the light of the findings, an inquiry properly directed demonstrated that the majority of these patients had suffered at times, but that the trouble was attributed to another cause. In some of these cases marked contraction of the gall bladder or dense adhesions indicated that there had been at one time an active disease present. The truth is that there are varying degrees of gallstone activity, of which the form characterized by "colics" is the most noticeable for obvious reasons. Not only is the mortality in the uncomplicated cases low, but the operation as a rule is of the simplest character, — opening the gall bladder, removal of the stones and attachment of the fundus of the organ to the abdominal wall, with temporary drainage of the bile to the surface. Cholecystostomy not only effectually cures the condition, but by permanently elevating the fundus, the cystic duct is brought to the bottom of the cavity, and gravity drainage ensues in the future. It is probable that even in these cases cholecystectomy will be the indicated operation in the near future, as this operation can be performed with almost equal safety. The "ideal" operation, that is, complete closure of the gall-bladder incision, has been successful in many cases of slumbering gallstones accidentally found during an abdominal operation performed for other purpose.

This is a dangerous practice in active gallstone disease, as activity means an increased infection.

¹ Presented May 13, 1903, at the Sixth Triennial Congress of American Physicians and Surgeons.

As long as the stones do not become lodged either in the pelvis of the gall bladder (Hartman's pouch) or the cystic duct, the usual short colic is the chief symptom, and cholecystostomy is sufficient. If the stones are impacted in either situation the colic is replaced by a constant distress less acute but more continuous. The gall bladder becomes distended and its walls infiltrated with inflammatory products. In such cases, as a rule, the stones can be dislodged and brought up and out through the gall bladder, and an ordinary cholecystostomy performed; but occasionally an incision through the wall of the duct is necessary for relief of the impaction, followed by suture of the duct and cholecystostomy or ablation of the organ itself. Operation in 183 cases of stones impacted in the pelvis or in the cystic duct resulted in 6 deaths, a mortality of $3\frac{1}{4}\%$. This included, however, a number of cases of severe infections. Should the walls of the gall bladder have undergone marked changes, or angulation and stricture of the cystic duct, resulting in mucous fistula, seem a possible outcome, cholecystectomy is more certain to afford permanent relief. If the cystic duct is completely obstructed so that the gall bladder contains no bile, it is a simple operation to detach the organ from the liver and ligate with catgut at the base; but if the gall bladder participates in the biliary circulation in spite of the obstruction, it is not always wise to ligate the cystic duct, especially if there is a cholangitis present. Under such circumstances, if it is decided to remove the organ, the cystic duct should be left open for drainage of the bile to the surface. It is in this class of cases that we have, where possible, removed the fundus and the entire mucous membrane, the peritoneum and outer layers of the base of the gall bladder being retained to form a pouch, into which the end of a drainage tube can be securely fastened for the purpose of safely conducting the bile to the surface. In 75 cholecystectomies, either complete or with the modifications outlined, there were but 2 deaths. This does not include 23 cholecystectomies made in the course of other operations.

Kehr, Robson and all of large experience in gallstone surgery, unite in declaring that they have not known gallstones to re-form after operation, and this has been our experience. In our early work, it sometimes happened that stones would be discharged from the fistula subsequent to the operation or occasionally the outer opening would cicatrize before all of the calculi were discharged, and those retained gave rise to future colics, requiring secondary operations, not because the stones had re-formed, but because the primary operation had been incomplete.

It is the fond hope of the patient that the stones will pass down and out through the common duct, and not infrequently this is the case, but there are usually more behind. We have never operated upon a patient who has passed calculi that we have not found more in the gall bladder. The passing of a calculus, instead of being a reason for delay, is an indication for operation, as the next labor may miscarry and lodge the stone in the common duct, in which situation the results of operative interference are no longer certain on account of the attendant jaundice and infection of the common and hepatic ducts.

Surgery of the common duct has become a fairly safe operation, the mortality depending more upon the condition of the patient than any difficulties in the technique. This, of course, has some marked exceptions. To the late Dr. Davis of Alabama we owe the most important contribution to this subject. He both experimentally and clinically called attention to the necessity of freely draining the bile to the surface after common duct operation, and demonstrated that suture of the duct was usually unnecessary and occasionally harmful. This saved much time in a class of cases with general debility from jaundice and infections of the ducts, in which time is an element of great value. If the cystic duct is open, enabling the bile to readily flow outward through the gall bladder to the surface by means of cholecystostomy, suture of the common duct may be harmless, but not otherwise.

To Robson we owe great improvement in the technique of this operation, especially the sand bag under the back at the level of the liver, to tilt the costal margin outward and upward on the principle of a reverse Trendelenberg position. The incision of Bevan through the abdominal wall, as modified by Robson, in dispensing with the lower angle and carrying the upper limb close to the costal margin, enables one to draw the liver downward and outward, and straightens the angle of the cystic duct at the common duct. In this way, removal of common duct stones is rendered easy. In many cases the common duct is so dilated by stones impacted in the terminal portion that the finger can be easily introduced, and by aiding the extraction with counter-pressure with the other hand over the duodenum, the stone may be coaxied backward and out of the duct incision. The finger can be used in the same way in the hepatic ducts. In no other way in some cases can one be certain the ducts are free. In a few cases, incision of the duodenum and direct extraction as advised by McBurnery may be necessary.

We had two such cases in our earlier experience. The "ball-valve" stone, so graphically described by the late Christian Fenger, was met with nine times. Kehr has extended the usefulness of hepatic drainage by direct tubage of the hepatic duct, and has shown us how to cure some cases heretofore considered hopeless. Out of the 534 cases we had 58 of stones in the common duct, with 3 deaths, $5\frac{1}{2}\%$. The relative proportion of common duct cases was 11% of the whole, considerably less than in either the Kehr or Robson series, who report a percentage of nearly 20%. Even 11% is too high. Gallstones should, in the large majority of instances, be diagnosed and sent to the surgeon before common duct symptoms clinch the diagnosis and force operation upon the patient.

Chronic pancreatitis, shown by enlargement of the head of the pancreas, was met with in connection with gallstone disease eighteen times. In six of these patients, cholecystoduodenostomy was performed, and all of these cases recovered. In the remaining twelve cases no special treatment beyond the removal of the gallstones and establishment of drainage was adopted. One case of acute pancreatitis and fat necrosis, due to a cholecystitis from one large gallstone in the gall bladder, recovered

operation, as did one subacute hemorrhagic st of the pancreas from the same cause.

It has been noted experimentally that high grades infection seldom cause stones, although these fections are most liable to occur in patients who ready suffer from calculi. In the acutely infected cases gangrene or perforation of the gall bladder may happen. In the more chronic infections of this type the symptoms are almost identical with gallstones. In 534 cases we had 27 of this chronic character with 3 deaths. The mortality at once demonstrates that the infection was more virulent than in gallstone disease. The deaths were usually from that condition called by Eisendrath "hepatary," or cessation of liver function, which the experimental work of Adami helps us to appreciate. These cases of chronic cholecystitis are very interesting because of the liability to overlook the condition at operation, on account of the absence of gallstones, although the gall bladder shows evidences of trouble.

In the benign series it is to be noted that 16 cases came to secondary operation, 14 were cured by the second operation, 2 required several operations before cure resulted. The average stay in the hospital was slightly less than three weeks, the attempt being to remove all of the stones at the primary operation and make the drainage more efficient by accurate placing and retention with tight sutures, which are absorbed before it is necessary to remove the drains. This reduces the quantity of packing to a minimum and enables primary closure of the wound without marked hernia liability. The sutures closing the abdominal incision are left in place two weeks, which makes it quite safe to allow the patient to get about early, an important factor in the recovery of old people. If the patient is cholemic, we give chloride of sodium as a prophylactic against hemorrhage. Otherwise we have not found a special preparatory treatment to be of value beyond the ordinary preparation for laparotomy. The after-care is very simple. If possible the bile is conducted into a bottle, and the drainage packing is not disturbed until the end of the first week, and after removal of the drains, repacking is rarely necessary. In severe cases, bile drainage to the surface is essential, and for this purpose the cystic duct, if unobstructed, offers an easy and safe avenue of escape from the hepatic ducts. In but few cases have we used direct incision and tubage of the common duct, as recommended by Kehr, advantageous.

Malignant disease of the gall bladder and bile ducts was met with twenty-four times, or 4% of the total number of cases. The proportion was about four times in the gall bladder to once in the ducts. In some cases the exact origin could not be determined by a reasonable exploration. Five times the gall bladder was removed for cancer. In two of these cases a considerable portion of the liver was also removed. Three patients are alive, one nearly two years, but unfortunately with recent recurrence of obstructive jaundice. In one case a carcinoma involving the terminal end of the common duct was removed by the duodenal route; recurrence after one and one-half years necessitated cholecystectomy.

As the presence of gallstones occurs in only 15%

of secondary cancers of the gall bladder and in over 90% of primary cancers, we must conclude that they are the chief etiological factor in the production of malignant disease of this organ. In nearly all of our cases gallstones were present and a clear history of active trouble could be elicited, although there may have been years of quiet between the colics and the development of the cancer. While the possibility of cancer could not be of itself considered an indication for the removal of gallstones, it is worth considering, as about one case in twenty-five coming to the operating table in this series had malignant disease. The usual precancerous condition would seem to be a gall bladder with thickened walls, due to chronic infection and calculi. It is just this class of gall bladders which are now being subjected to excision rather than drainage, and it is probable that in the future many cases of cancer will be removed in an early stage with permanent cure.

Palliative operations for malignant disease of the gall bladder and bile ducts are not of great service. In a few cases of common-duct obstructions, cholecystenterostomy gives relief for a time, and if the duodenum cannot be easily reached, the transverse colon serves as well for the purpose of anastomosis.

In five cholecystenterostomies for malignant disease, four were attached to the transverse colon, with one death, and in one to the duodenum. In non-malignant disease we attach to the duodenum, if possible, the Murphy button being used in all.

As an appendix to this paper is attached a statistical table which can be studied by those interested in the subject.

A TABLE OF FIVE HUNDRED AND FORTY-SEVEN OPERATIONS UPON THE GALL BLADDER AND BILE PASSAGES (MORE THAN ONE OPERATION PERFORMED AT ONE TIME, ONLY THE MAJOR IS TABULATED) OCCURRING IN ST. MARY'S HOSPITAL OF ROCHESTER, MINN., FROM JUNE 24, 1891, TO MAY 13, 1903.

St. Mary's Hospital reports, 527; Minnesota State Hospital and Private Practice, 20.

OPERATIONS FOR BENIGN DISEASE.

| | Total. | Recov'd. | Died. |
|---|--------|----------|-------|
| Cholecystostomy: stones in gall bladder, cystic duct or both | 299 | 296 | 3 |
| Cholecystostomy: polypus in gall bladder | 1 | 1 | |
| Cholecystostomy: gall bladder stone with acute pancreatitis and fat necrosis | 1 | 1 | |
| Cholecystostomy: cholecystitis with and without stones | 51 | 46 | 5 |
| Choledochotomy: stones in common duct | 59 | 56 | 3 |
| Cholecystectomy: gallstone disease | 56 | 55 | 1 |
| Cholecystectomy: cholecystitis | 9 | 8 | 1 |
| Cholecystectomy: cyst of gall bladder containing 10 quarts, supposed to be ovarian | 1 | 1 | |
| Cholecystenterostomy: chronic pancreatitis and jaundice, 4 with gallstones, 1 without | 5 | 5 | |
| Perforation of calculus, abscess and general peritonitis | 2 | | 2 |
| Division of adhesions | 16 | 16 | |
| Duodeno-choledochotomy: stone ampulla of Vater | 1 | 1 | |
| Exploratory: negative | 21 | 21 | |
| | 522 | 507 | 15 |

OPERATIONS FOR MALIGNANT DISEASE.

| | Total. | Recor'd. | Died. |
|---|--------|----------|-------|
| Cholecystectomy | 4 | 3 | 1 |
| Cholecystostomy: obstruction common duct | 5 | 3 | 2 |
| Cholecystectomy and partial hepatectomy: cancer of the gall bladder | 1 | 1 | |
| Duodeno-choledochotomy: cancer ampulla of Vater | 1 | 1 | |
| Cholecyst-enterostomy: malignant obstruction of common duct | 1 | 3 | 1 |
| Exploratory: inoperable cancer | 10 | | |
| Malignant, total | 25 | 11 | 4 |
| May 13, 1903 | 547 | 518 | 19 |

THE GERMICIDAL ACTION OF ALCOHOL.

BY CHARLES HARRINGTON, M.D., BOSTON.

Assistant Professor of Hygiene, Harvard Medical School,

AND HAROLD WALKER, M.D., BOSTON.

Assistant in Hygiene, Harvard Medical School.

THE discrepant results which different investigators have obtained in studying the disinfectant properties of alcohol, and the fact that ordinary commercial alcohol (94% by volume) and absolute alcohol (99% by volume) are used very extensively as skin disinfectants, particularly in the practice of vaccination and in several of the processes followed in attempting to ensure sterility of the hands in the practice of surgery, suggested to us the advisability of determining the germicidal properties of different concentrations against some of the more common pathogenic bacteria, with different periods of direct contact.

Before reporting our own results, a brief *résumé* of the more important investigations already published and an outline of the history of alcohol as a disinfectant are in order.

Alcohol has long been known as an efficient preservative of organic matter, and has been employed as a local application in surgery from time immemorial. Its disinfectant properties were studied first by Koch and his associates, who used as test objects anthrax spores, which were exposed to the action of different concentrations for weeks at a time, with no result. In his elaborate report on disinfectants, Koch¹ speaks incidentally of absolute alcohol and sterilized water as indifferent liquids ("... indifferente Flüssigkeit, z. B. durch sterilisiertes Wasser, absoluten Alkohol, u. s. w."). Not until 1888 was alcohol brought forward as an agent in producing sterility of the hands, and then it was recommended by Fürbringer² for the removal of fatty matters from the skin and consequent promotion of penetration of aqueous solutions of carbolic acid or of corrosive sublimate to the deeper parts.

In 1894 Reinicke³ announced that not only does alcohol remove fatty matters and thus promote penetration of disinfectants to the deeper parts, but acts also as a germicide; and Petruschky,⁴ in the report of his investigations of infection by pyogenic cocci, asserted that disinfection of the skin by means of ether and alcohol was not only possible, but easy of attainment. Krönig,⁵ however, failed in his attempt to kill dried *Staphylococcus pyogenes aureus* with 96% alcohol in five minutes, although he was successful in less time with the moist organisms, and stated his belief that alcohol, through its astringent action and by the withdrawal of moisture, causes bacteria to be held in the shrunken particles of skin.

The first important investigation of the subject was made by Epstein,⁶ who experimented with *B. pyocyaneus*, *B. prodigiosus* and *Staph. pyogenes aureus*, dried on silk threads for from one to four weeks, and then exposed to the action of six different concentrations of alcohol for periods

of three, five and ten minutes. He found that a preliminary wetting of the threads with water was essential to favorable results; but success was by no means constant. Epstein was followed by Minervini,⁷ who employed *Staph. pyogenes aureus*, *B. pyocyaneus*, *B. coli communis*, *B. subtilis* and anthrax spores, all dried on silk threads and on needles, which were exposed to five concentrations of alcohol at ordinary and boiling temperatures and, under pressure, at higher temperatures. His results led him to conclude that alcohol has, in general, a very slight bacterial influence, and that the best effects are attained by the use of concentrations of 50 and 70%.

In this he was in accord with Stremberg, who found that alcohol was effective against some species and powerless against others, no matter what strength was used, and that against the species which were affected, different concentrations acted with varying power.

Minervini's findings were corroborated by those of Bertarelli,⁸ who employed 25, 50, 70, 80 and 99% alcohol against *B. prodigiosus*, *B. pyocyaneus*, *Staph. pyogenes aureus*, *Sp. cholerae*, *B. pestis*, *B. typhosus* and anthrax spores, all dried on silk threads. His conclusion was that the most effective strength is 50%, which, however, must be considered as hardly entitled to a position above mediocrity. Salzwedel and Elsner⁹ experimenting with dried *Staph. pyogenes aureus*, found 55% alcohol to be the most efficient of the several concentrations used and inferior to 1:1000 corrosive sublimate. Absolute alcohol was found to be inert against dried bacteria, even after an exposure of days, although very efficient against those acted upon in a moist state.

The experiments of W. von Brunn¹⁰ with the vapors of varying strengths of alcohol against very richly sporing agar cultures of anthrax demonstrated that, whereas those of 51% and 74% alcohol at 79° C. were very effective within a few minutes, that of 95% alcohol produced no result at the end of an hour, and hence that the water present must be credited with playing a very essential rôle. Frank¹¹ obtained the most satisfactory results with vapor from 40% alcohol (boiling point 90° C.), with which he destroyed anthrax spores in five minutes. The vapors of 50 and 80% alcohol were also effective, but those of 90 to 99% and of weaker strengths than 40% were ineffective.

In the experiments of Weigl,¹² who found that 80 and 90% alcohols show greater bactericidal power than lower concentrations, bouillon cultures of *Sp. cholerae* and *Staph. pyogenes aureus* were mixed directly with different amounts of absolute alcohol, and then the influence of constant shaking in the thermostat was determined. In the tubes which were incubated at rest, coarse coagula were observed, while in those which were shaken the coagula formed were very fine. Naturally, the best results were yielded by the latter; but in problems of disinfection it is of no great importance to ascertain whether under special conditions a substance may act as a germicide, but rather whether

¹ Mitthell. a. d. kaiserlichen Gesundheits-, 1881.² Untersuchungen und Vorschriften über die Desinfection der Hände des Arzts, Wiesbaden, 1888.³ Centrallbl. für Gynäk., 1894, No. 47.⁴ Zeitschr. für Hyg. u. Infectiouskrankh., xvii, p. 59.⁵ Centrallbl. für Gynäk., 1894, No.⁶ Zeitschr. für Hyg. u. Infectiouskrankh., xxiv, p. 1.⁷ Zeitsch. für Hyg. u. Infectiouskrankh., xxix, p. 117.⁸ Il Policlinico, Oct. 1, 1900, p. 488.⁹ Berl. klin. Woch., 1900, No. 23, p. 496.¹⁰ Centrallbl. für Bakteriologie, xxviii, 1900, p. 309.¹¹ Munch. med. Woch., 1901, No. 4, p. 134.¹² Archiv für Hyg. xlv, 1902, p. 273.

der ordinary conditions of practice it may so act. experiments with threads impregnated with uillon cultures of *Staph. aureus* or with pus elded conflicting results, which cannot be regarded favorable to the practical application of alcohol surgical technique.

In planning our own experiments we determined employ a wider variety of pathogenic organisms, ich include those generally recognized as weakly, oderately and strongly resistant to chemical dis- ectants, and, in both the moist and dried condit- ons, to test their resistance to 15, 20, 25, 30, 40, , 60, 70, 75, 80, 85, 90, 94 and 99% alcohols, osing them for periods of varying duration. In e first series of experiments these were of 5, 10, , 30 and 45 minutes, 1, 2, 7, and 24 hours; in e second series, the species which had been found e destroyed within 5 minutes by certain of the eparations were exposed again for periods of 1, 3, 4 and 5 minutes, and three different cultures each organism were so tested.

The cultures employed were grown for 24 hours bouillon from 48-hour-old agar cultures kindly rurnished by Prof. H. C. Ernst. The bacteria re exposed to the alcohols on silk threads, which re introduced into the bouillon at the time of e inoculation. The threads were used partly in the moist state on withdrawal from the bouillon, and rtly after being dried at incubator temperature 48 hours. The experiments were conducted at mm-temperature. After being immersed for the quired time the threads were withdrawn from e alcohol, then planted in tubes of sterile bouillon, d incubated for 24 hours or longer at 37° C.

The results of the various experiments are pre- tated below in tabular form. Growth is indicated + and sterility by —.

| BACILLUS COLI COMMUNIS (MOIST). | | | | | | | | | | |
|---------------------------------|------------------|-------|-------|-------|-------|------|------|------|-------|---|
| COHOL. | TIME OF EXPOSURE | | | | | | | | | |
| % | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. | |
| 15 | + | + | + | + | + | + | + | + | + | + |
| 20 | + | + | + | + | + | + | + | + | + | — |
| 25 | + | + | + | + | + | + | + | + | + | — |
| 30 | + | + | + | + | + | + | + | + | + | — |
| 40 | + | + | + | + | + | + | + | + | + | — |
| 50 | + | + | + | + | + | + | + | + | + | — |
| 60 | — | — | — | — | — | — | — | — | — | — |
| 70 | — | — | — | — | — | — | — | — | — | — |
| 75 | — | — | — | — | — | — | — | — | — | — |
| 80 | — | — | — | — | — | — | — | — | — | — |
| 85 | — | — | — | — | — | — | — | — | — | — |
| 90 | — | — | — | — | — | — | — | — | — | — |
| 94 | — | — | — | — | — | — | — | — | — | — |
| 99 | — | — | — | — | — | — | — | — | — | — |

| BACILLUS COLI COMMUNIS (Dried). | | | | | | | | | |
|---------------------------------|------------------|-------|-------|-------|-------|------|------|------|-------|
| ALCOHOL. % | TIME OF EXPOSURE | | | | | | | | |
| | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. |
| 15 | + | + | + | + | + | + | + | + | + |
| 20 | + | + | + | + | + | + | + | + | + |
| 25 | + | + | + | + | + | + | + | + | + |
| 30 | + | + | + | + | + | + | + | + | + |
| 40 | + | + | + | + | + | + | + | + | + |
| 50 | + | + | + | + | + | + | + | + | + |
| 60 | + | + | + | + | + | + | + | + | + |
| 70 | + | + | + | + | + | + | + | + | + |
| 75 | + | + | + | + | + | + | + | + | + |
| 80 | + | + | + | + | + | + | + | + | + |
| 85 | + | + | + | + | + | + | + | + | + |
| 90 | + | + | + | + | + | + | + | + | + |
| 94 | + | + | + | + | + | + | + | + | + |
| 99 | + | + | + | + | + | + | + | + | + |

From the above we observe that dryness has a st important influence, for while the moist organ- isms are destroyed within five minutes by every length above 50 %, the dried are affected within same time by only 50 and 60 %, and show a

progressive resistance to the action of the stronger preparations, the two highest of which are abso- lutely inert even with 24 hours' contact.

In the second series of experiments three cultures were exposed in the moist state to 50 and 60 % alcohols for periods of one, two, three, four and five minutes, and in not one instance did growth occur; but the dried bacteria, exposed to 50, 60 and 70 %, yielded results which indicate that the strongest of the three concentrations was the slow- est in action, and also that the several cultures dif- fered slightly in resistance.

| Culture A. | | | | | |
|---------------|---|---|---|---|---|
| ALCOHOL. | 1 | 2 | 3 | 4 | 5 |
| 60% | + | — | — | — | — |
| 70% | + | — | — | — | — |

| Culture B. | | | | | |
|---------------|---|---|---|---|---|
| 50% | + | — | — | — | — |
| 60% | + | — | — | — | — |
| 70% | + | + | + | + | — |

| Culture C. | | | | | |
|---------------|---|---|---|---|---|
| 50% | + | + | — | — | — |
| 60% | + | + | — | — | — |
| 70% | + | + | + | + | — |

| BACILLUS PYOCYANEUS (Moist). | | | | | | | | | | |
|------------------------------|------------------|-------|-------|-------|-------|------|------|------|-------|--|
| ALCOHOL. | TIME OF EXPOSURE | | | | | | | | | |
| | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. | |
| 15 | + | + | + | + | + | + | + | + | + | |
| 20 | + | + | + | + | + | + | + | + | + | |
| 25 | + | + | + | + | — | — | — | — | — | |
| 30 | + | — | — | — | — | — | — | — | — | |
| 40 | — | — | — | — | — | — | — | — | — | |
| 50 | — | — | — | — | — | — | — | — | — | |
| 60 | — | — | — | — | — | — | — | — | — | |
| 70 | — | — | — | — | — | — | — | — | — | |
| 75 | — | — | — | — | — | — | — | — | — | |
| 80 | — | — | — | — | — | — | — | — | — | |
| 85 | — | — | — | — | — | — | — | — | — | |
| 90 | — | — | — | — | — | — | — | — | — | |
| 94 | — | — | — | — | — | — | — | — | — | |
| 99 | — | — | — | — | — | — | — | — | — | |

| BACILLUS PYOCYANEUS (DRIED). | | | | | | | | | | |
|------------------------------|------------------|-------|-------|-------|-------|------|------|------|-------|--|
| ALCOHOL. | TIME OF EXPOSURE | | | | | | | | | |
| | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. | |
| 15 | + | + | + | + | + | + | + | + | — | |
| 20 | + | + | + | + | + | + | + | + | — | |
| 25 | + | + | + | + | + | + | — | — | — | |
| 30 | + | + | — | — | — | — | — | — | — | |
| 40 | — | — | — | — | — | — | — | — | — | |
| 50 | — | — | — | — | — | — | — | — | — | |
| 60 | — | — | — | — | — | — | — | — | — | |
| 70 | — | — | — | — | — | — | — | — | — | |
| 75 | + | — | — | — | — | — | — | — | — | |
| 80 | + | — | — | — | — | — | — | — | — | |
| 85 | + | + | + | + | + | + | + | + | + | |
| 90 | + | + | + | + | + | + | + | + | + | |
| 94 | + | + | + | + | + | + | + | + | + | |
| 99 | + | + | + | + | + | + | + | + | + | |

Here again is shown the power of resistance con- ferred by dryness and the absolute inertness of the higher concentrations.

The second series showed the following results :

| MOIST THREADS. | | | | | |
|----------------|---|---|---|---|---|
| Culture A. | | | | | |
| ALCOHOL. | 1 | 2 | 3 | 4 | 5 |
| 40% | + | + | — | — | — |
| 50% | + | + | — | — | — |

| Culture B. | | | | | |
|---------------|---|---|---|---|---|
| 40% | — | — | — | — | — |
| 50% | — | — | — | — | — |

| Culture C. | | | | | |
|---------------|---|---|---|---|---|
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

| DRIED THREADS. | | | | | |
|----------------|---|---|---|---|---|
| Culture A. | | | | | |
| 40% | + | — | — | — | — |
| 50% | — | — | — | — | — |

BACILLUS TYPHOSUS (DRIED).

| ALCOHOL. | TIME OF EXPOSURE | | | | | | | | | |
|--------------|------------------|-------|-------|-------|-------|------|------|------|-------|--|
| | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. | |
| 15 | + | + | + | + | + | + | + | + | + | |
| 20 | + | + | + | + | + | + | + | + | + | |
| 25 | + | — | — | — | — | — | — | — | — | |
| 30 | — | — | — | — | — | — | — | — | — | |
| 40 | — | — | — | — | — | — | — | — | — | |
| 50 | — | — | — | — | — | — | — | — | — | |
| 60 | — | — | — | — | — | — | — | — | — | |
| 70 | — | — | — | — | — | — | — | — | — | |
| 75 | — | — | — | — | — | — | — | — | — | |
| 80 | — | — | — | — | — | — | — | — | — | |
| 85 | + | + | + | — | — | — | — | — | — | |
| 90 | + | + | + | + | + | + | + | — | — | |
| 94 | + | + | + | + | + | + | + | + | — | |
| 99 | + | + | + | + | + | + | + | + | + | |

B. typhosus, as is well known, is destroyed by chemical disinfectants much more easily than the pyogenic cocci, and the results obtained were not wholly unexpected. But from what has been written concerning the injurious effect of dryness on vitality it was not to be supposed that it would offer so much resistance in the dried state to the other concentrations.

The second series yielded results which indicate that the three cultures employed were, as was the case with the *Staph. aureus*, less easily killed than that used in the first. But it is interesting to note that the dried bacteria yielded more quickly than the moist to the influence of 30% alcohol.

MOIST THREADS.

Culture A.

| ALCOHOL. | MINUTES. | | | | |
|---------------|----------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 30% | + | + | + | + | + |
| 40% | + | + | + | + | + |

Culture B.

| | | | | | |
|---------------|---|---|---|---|---|
| 30% | + | + | + | + | + |
| 40% | + | + | + | + | + |

Culture C.

| | | | | | |
|---------------|---|---|---|---|---|
| 30% | + | + | + | + | + |
| 40% | + | + | + | + | + |

DRIED THREADS.

Culture A.

| | | | | | |
|---------------|---|---|---|---|---|
| 30% | + | + | + | + | + |
| 40% | + | + | + | + | + |

Culture B.

| | | | | | |
|---------------|---|---|---|---|---|
| 30% | + | + | + | + | + |
| 40% | + | + | + | + | + |

Culture C.

| | | | | | |
|---------------|---|---|---|---|---|
| 30% | + | + | + | + | + |
| 40% | + | + | + | + | + |

BACILLUS DIPHTHERIÆ (MOIST).

| ALCOHOL. | TIME OF EXPOSURE | | | | | | | | | |
|--------------|------------------|-------|-------|-------|-------|------|------|------|-------|--|
| % | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. | |
| 15 | + | + | + | + | + | + | + | + | + | |
| 20 | + | + | + | + | + | + | + | + | + | |
| 25 | + | + | + | + | + | + | + | + | + | |
| 30 | + | + | + | + | + | + | + | + | + | |
| 40 | + | + | + | + | + | + | + | + | + | |
| 50 | + | + | + | + | + | + | + | + | + | |
| 60 | + | + | + | + | + | + | + | + | + | |
| 70 | + | + | + | + | + | + | + | + | + | |
| 75 | + | + | + | + | + | + | + | + | + | |
| 80 | + | + | + | + | + | + | + | + | + | |
| 85 | + | + | + | + | + | + | + | + | + | |
| 90 | + | + | + | + | + | + | + | + | + | |
| 94 | + | + | + | + | + | + | + | + | + | |
| 99 | + | + | + | + | + | + | + | + | + | |

BACILLUS DIPHTHERIÆ (DRIED).

| ALCOHOL. | TIME OF EXPOSURE | | | | | | | | | |
|--------------|------------------|-------|-------|-------|-------|------|------|------|-------|--|
| | 5 m. | 10 m. | 15 m. | 30 m. | 45 m. | 1 h. | 2 h. | 7 h. | 24 h. | |
| 15 | + | + | + | + | + | + | + | + | — | |
| 20 | + | + | + | + | + | + | + | + | — | |
| 25 | + | + | + | + | + | + | + | + | — | |
| 30 | + | + | — | — | — | — | — | — | — | |
| 40 | — | — | — | — | — | — | — | — | — | |
| 50 | — | — | — | — | — | — | — | — | — | |
| 60 | — | — | — | — | — | — | — | — | — | |
| 70 | — | — | — | — | — | — | — | — | — | |
| 75 | — | — | — | — | — | — | — | — | — | |
| 80 | — | — | — | — | — | — | — | — | — | |
| 85 | — | — | — | — | — | — | — | — | — | |
| 90 | — | — | — | — | — | — | — | — | — | |
| 94 | + | + | + | + | + | + | + | + | — | |
| 99 | + | + | + | + | + | + | + | + | — | |

B. diphtheriæ appears to be about equally resistant with *B. typhosus* in the moist state and considerably less to the stronger concentrations when dried.

In the second series the results obtained, using 40% alcohol, were practically the same as with *B. typhosus*, but the comparison cannot be carried farther because 50% alcohol was tried in place of 30%. The results follow:

MOIST THREADS.

Culture A.

| ALCOHOL. | MINUTES. | | | | |
|---------------|----------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

Culture B.

| | | | | | |
|---------------|---|---|---|---|---|
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

Culture C.

| | | | | | |
|---------------|---|---|---|---|---|
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

DRIED THREADS.

Culture A.

| | | | | | |
|---------------|---|---|---|---|---|
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

Culture B.

| | | | | | |
|---------------|---|---|---|---|---|
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

Culture C.

| | | | | | |
|---------------|---|---|---|---|---|
| 40% | + | + | + | + | + |
| 50% | + | + | + | + | + |

BACILLUS ANTHRACIS.

The results obtained with this organism need no tabulation, for it is sufficient to say that, as has been demonstrated repeatedly by Koch and others, alcohol of any strength whatever has absolutely no influence against it. Every tube showed luxuriant growth within twelve hours.

CONCLUSIONS.

(1) Against dry bacteria, absolute alcohol and ordinary commercial alcohol are wholly devoid of bactericidal power, even with twenty-four hours' direct contact, and other preparations of alcohol containing more than 70%, by volume, are weak in this regard, according to their content of alcohol,—the stronger in alcohol, the weaker in action.

(2) Against the commoner, non-sporing, pathogenic bacteria in a moist condition, any strength of alcohol above 40%, by volume, is effective within five minutes, and certain preparations within one minute.

(3) Alcohol of less than 40% strength is too slow in action or too uncertain in results against pathogenic bacteria, whether moist or dry.

(4) The most effective dilutions of alcohol against the strongly resistant (non-sporing) bacteria, such as the pus organisms, in the dry state, are those containing from 60 to 70%, by volume, which strengths are equally efficient against the same organisms in a moist condition.

(5) Unless the bacterial envelope contains a certain amount of moisture, it is impervious to strong alcohol; but dried bacteria, when brought into contact with dilute alcohol containing from 30 to 60% of water by volume, will absorb the necessary amount of water therefrom very quickly, and then the alcohol itself can reach the cell protoplasm and destroy it.

(6) The stronger preparations of alcohol possess no advantage over 60 to 70% preparations, even when the bacteria are moist; therefore, and since they are inert against dry bacteria, they should not be employed at all as a means of securing an aseptic condition of the skin.

(7) Provided the skin bacteria in the deeper parts can be brought into contact with disinfectants, alcohol of 60 to 70% strength may be depended upon usually, but not always, to destroy them within five minutes.

REPORT OF FIVE CASES OF FRACTURE OF THE HIP IN CHILDREN.¹

BY H. M. CHASE, JR., M.D., BOSTON.

NOTWITHSTANDING the general impression in regard to the rarity of fractures of the neck of the femur in children, there have been a sufficient number brought to our attention, through reports of cases, to lead us to consider that this form of injury, though relatively infrequent, considering the large number of fractures of all types, is in reality more common than is appreciated; and a fracture which has been regarded as coincident with adult life and old age is found in childhood in a surprising number of cases, which would undoubtedly be increased if cases of apparently slight injuries to the hip were more carefully examined and the results interpreted with the aid of modern appliances for the study of bone surgery.

CASE I.—On Sept. 5, 1902, the patient, a girl of thirteen years of age, gave a history of dull pain in the left thigh below the groin, which commenced in April, 1902. History of previous good health. One month later the pain was so severe that she fell while walking; since that time she has had dull pain on motion, being free from it when quiet. At that time she was being treated for nervousness, and was in bed for four weeks; upon getting up a limp was noticed, she complained of slight pain at times, and she resorted to the use of crutches for ten

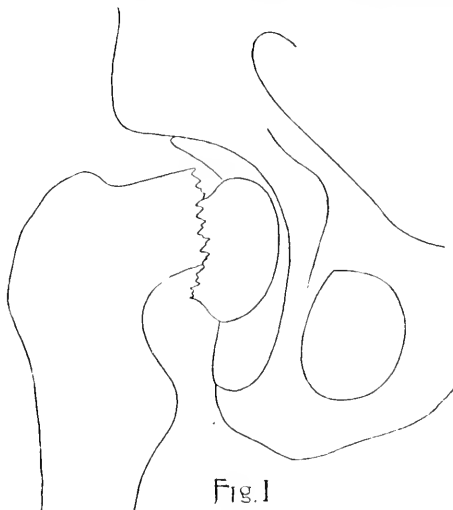


Fig. 1

weeks. General condition good. Left leg shortened 1.5 cm., atrophy of left thigh 3.5 cm., atrophy of calf .5 cm. Patient walks with left leg rotated outward, possibly inward rotation of 10°. Abduction limited, adduction resisted. Skiagram showed fracture of the neck of

the femur with considerable depression of the angle, illustrated in tracing Fig. 1.

CASE II.—On March 23, 1901, a girl of eleven years, perfectly well up to seven months ago, complained of weakness and attacks of pain in her left leg; she stated that the leg would "give out" when standing. No injury recalled at this time. Physically a very stout girl, who had gained rapidly in weight. Examination of spine negative. Left leg rotated outward, motions of knee and ankle normal. Motion of left hip in flexion 45°, in abduction 30°; practically no atrophy of thigh or calf. On April 15, 1901, very little change. On May 18, 1901, motions unchanged; a photograph which was taken three years ago confirms the report that there was no eversion of the left leg at that time. Patient now recalls that she had a fall from her bicycle, and one from a wharf two years ago, which agrees in respect to time with the duration of her symptoms; but she apparently sustained no injuries. In June, 1901, a skiagram suggested an old fracture of the femoral neck. In July, 1901, motion in flexion of the hip is free; no abduction possible; tires easily. Jan. 18, 1902, good general condition; shortening of left leg 1 cm., flexion to extreme possible limit with slight abduction; outward rotation free, inward rotation limited. Sept. 20, 1902, maximum shortening 1 cm., motions very much freer, dips a little in walking; shoe raised 1 cm. The skiagram of this case suggested an impaction of the neck near its junction with the shaft, which, however, was not definite; the history is suggestive and interesting, but one cannot be dogmatic in distinguishing it from coxa vara.

CASE III.—Boy, sixteen years of age, previously well, fell into an elevator pit about Feb. 1, 1900. He had severe pain in his hip, and was unable to walk for several weeks; was in bed with extension. Left leg shortened 2.3 cm., atrophy of thigh 1.3 cm., atrophy of calf 1 cm.; inward rotation of the hip limited, without spasm. Left trochanter 2.5 cm. above Nélaton's line; right tro-

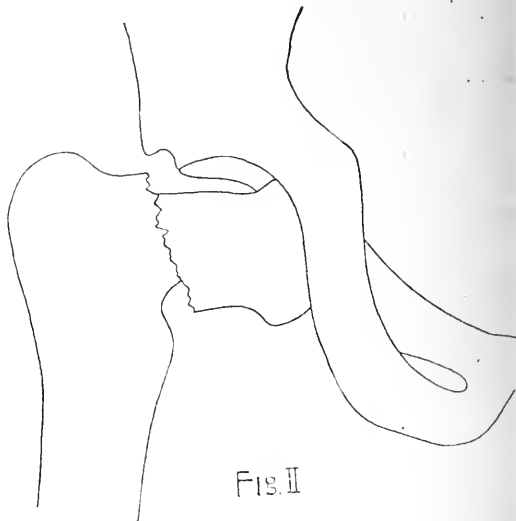


Fig. 2

chanter on Nélaton's line. March 21, 1901, for seven months the patient has been working in a factory. Left leg flexed and abducted 15°; shortening of left leg 5 cm., atrophy of thigh 1.3 cm., atrophy of calf 1.5 cm. Left trochanter 5.5 cm. above Nélaton's line. Skiagram showed a fracture of the femoral neck. Tracing Fig. 2 shows considerable distortion of the pelvis, with line of fracture through the femoral neck near its junction with the shaft.

CASE IV.—Boy, fifteen years old; history of father having died of lung trouble seven years ago. Mother and brothers well. The patient has always been perfectly well; he was stout until the present year, when he began to grow tall. In April, 1902, when playing ball, he noticed a weakness of his left leg, apparently without any preceding injury. He was lame, and was obliged to use a cane, which permitted him to be up and about. Appetite good, sleeps well, no cough nor pain at

¹ From the Orthopedic Department of the Carney Hospital.

light. He complained of occasional soreness in the left groin, but was not confined to his bed. There was no pain till two weeks ago, when pain started in his groin, extending towards the hip joint and occasionally towards his knee. Heart and lung examination negative; abdomen negative; knee jerks exaggerated, no ankle clonus. Hip flexible. Right leg normal. Shortening of left leg 4 cm., apparent shortening 4 cm., atrophy of thigh 1 cm., atrophy of calf 1 cm. Slight thickening about the trochanter, no permanent flexion, permanent adduc-

ing rapid increase in weight, the occurrence of fracture from slight trauma, and the possibility of relatively slight disability following fracture of the femoral neck. They emphasize the fact that the bone may be fractured, giving rise to slight symptoms, the pain developing a number of weeks or months afterwards without known cause; and that depression of the femoral neck from fracture predisposes to further depression and a consequent gradual increase of disability. In contrast to the effects of fracture of the femoral neck in later life, we see in childhood less marked immediate effects while the remote effects are more disabling; and if recent cases of fracture pass unrecognized, danger lies in confounding their late results with hip dis-

he causes and of such great (much as the) orted by Dr.

Surgery for regarding the with impacted to correct the

oral neck are sing, and the be mentioned osteoporosis, , tuberculosis age is predis- dhood is not f the neck of hanter major, ansmitted di- rect cause of tical direction ce applied in hanter major, n force trans- when the limb and rotated

subjective and sh varies very trauma, lacer- impairment of considerable. g, ecchymosis, sition of tro- the hip joint, e erect to the

sitting posture, and loss of tension of the fascia between the crest of the ilium and the trochanter major.

Diagnosis of fracture of the femoral neck cannot be made from any one symptom, and a group of symptoms may so vary in detail as to make the diagnosis extremely difficult. The examination should be made carefully and thoroughly, weighing the clinical history with the result of examination, verifying the possibility of conclusions thus reached by reference to the bony skeleton and to the röntgen skiagraph, differentiating coxa vara, tuberculosis, septic arthritis, osteoarthritis, congenital anterior dislocation, strained ligaments and simple contusions.

The foregoing cases are diagnosed fracture of



HIP FRACTURE.—CHASE.

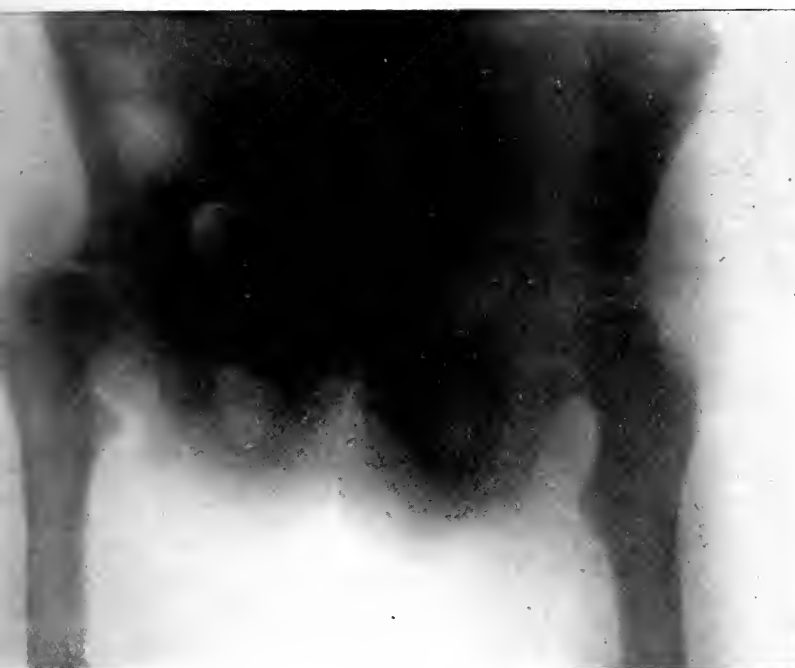


FIG. IV.

left side, also a scar in the left groin. Knee jerks present, no ankle clonus nor Babinsky. Right side of scrotum enlarged to triple the normal size. Right testis enlarged and nodular, not painful. Right leg normal. Left leg held in position of permanent flexion about 15°. No free motion in flexion of 45°; 20° of adduction, no abduction. Outward rotation present to a considerable degree, slight laudosis. Leg not painful on manipulation. Shortening of left leg 3 cm., atrophy of left thigh 1 cm. X-ray shows coxa vara, with a transverse fracture of the femoral neck. On Dec. 19 subtrochanteric osteotomy was performed—the leg being dressed in plaster paraspica, in slight flexion and 15° of abduction. General condition excellent. The accompanying reproduction of the skiagram gives a clear idea of its condition. (Illustration Fig. 4.)

These cases emphasize the early age at which the fracture occurs, the possibility of fracture follow-

(6) The stronger preparations of alcohol possess no advantage over 60 to 70% preparations, even when the bacteria are moist; therefore, and since they are inert against dry bacteria, they should not be employed at all as a means of securing an aseptic condition of the skin.

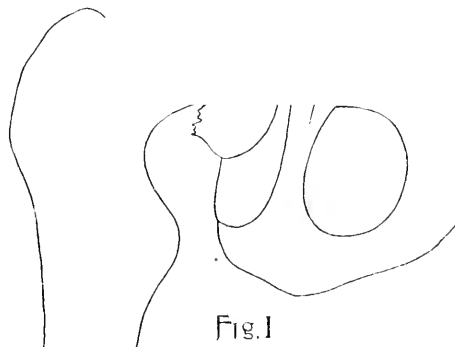
(7) Provided the skin bacteria in the deeper parts can be brought into contact with disinfectants, alcohol of 60 to 70% strength may be depended upon usually, but not always, to destroy them within five minutes.

REPORT OF FIVE CASES OF FRACTURE OF THE THIGH IN CHILDREN

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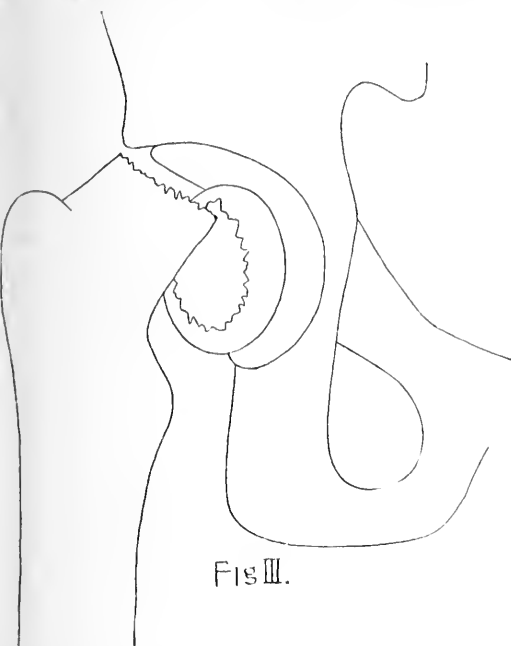
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tion of 15°. Slight motion in flexion, very slight motion in abduction, adduction and rotation; considerable eversion. Left trochanter 5 cm. above Nélaton's line. Tuberculin tests were repeatedly negative. Skiagram shows fracture of the neck of the femur with marked displacement. Tracing Fig. 3.

CASE V. — Boy, age sixteen. Family history unknown. Double from hip dates from child's earliest memory. No history of pain nor discharging sinus. Has always been lame and is easily fatigued, but can do light farm work. In April, 1902, sudden pain in left hip upon waking in the morning, located in region of trochanter; was very severe for two days, and then gradually disappeared. He used a cane during that time. There has not been a recurrence, but he tires easily. *Physical examination.* — Poorly nourished boy, dull, vacant expression. Cerebrated rather slowly. Phlyctenular keratitis over middle of right eye, obscuring vision, but not cutting off sensation of light. Examination of heart, lungs and abdomen negative. Cervical and inguinal glands palpable. Scar of old sinus close to the anus on the left side, also a scar in the left groin. Knee jerks present, no ankle clonus nor Babinsky. Right side of rotum enlarged to triple the normal size. Right testis enlarged and nodular, not painful. Right leg normal. Left leg held in position of permanent flexion about 15°, with free motion in flexion of 45°; 20° of adduction, no abduction. Outward rotation present to a considerable degree, slight laudosis. Leg not painful on manipulation. Shortening of left leg 3 cm., atrophy of left thigh 1 cm. X-ray shows coxa vara, with a transverse fracture of the femoral neck. On Dec. 19 subtrochanteric osteotomy was performed — the leg being dressed in plaster paris spica, in slight flexion and 15° of abduction. General condition excellent. The accompanying reproduction of the skiagram gives a clear idea of its condition. (Illustration Fig. 4.)

These cases emphasize the early age at which the fracture occurs, the possibility of fracture follow-

ing rapid increase in weight, the occurrence of fracture from slight trauma, and the possibility of relatively slight disability following fracture of the femoral neck. They emphasize the fact that the bone may be fractured, giving rise to slight symptoms, the pain developing a number of weeks or months afterwards without known cause; and that depression of the femoral neck from fracture predisposes to further depression and a consequent gradual increase of disability. In contrast to the effects of fracture of the femoral neck in later life, we see in childhood less marked immediate effects while the remote effects are more disabling; and if recent cases of fracture pass unrecognized, danger lies in confounding their late results with hip disease.

It is of interest to mention briefly the causes and symptoms of this condition, which is of such great importance to diagnose, especially inasmuch as the present method of treatment as reported by Dr. Royal Whitman in the *Annals of Surgery* for November, 1902, is in favor of disregarding the established idea of not interfering with impacted fractures of the femoral neck, and to correct the deformity at once.

The causes of fracture of the femoral neck are divided into the indirect, or predisposing, and the direct causes. Of the former may be mentioned relative slenderness of the bone, osteoporosis, osteomalacia, rachitis, osteomyelitis, tuberculosis and great increase in weight. Old age is predisposing toward fracture, though childhood is not exempt; also diminished obliquity of the neck of the femur and prominence of the trochanter major, by which the fracturing force is transmitted directly to the femoral neck. The direct cause of fracture is trauma, applied in the vertical direction through the axis of the femur, or force applied in the horizontal direction over the trochanter major, in the axis of the neck, or by traction force transmitted through the capsular ligament when the limb is forcibly hyperextended, abducted and rotated outward.

The symptoms of fracture are subjective and objective; the former are pain which varies very much, depending on the amount of trauma, laceration, irritation or inflammation, and impairment of function which may be slight or considerable. Objective symptoms may be swelling, ecchymosis, eversion, shortening, change of position of trochanter major, decreased mobility of the hip joint, painful change of position from the erect to the sitting posture, and loss of tension of the fascia between the crest of the ilium and the trochanter major.

Diagnosis of fracture of the femoral neck cannot be made from any one symptom, and a group of symptoms may so vary in detail as to make the diagnosis extremely difficult. The examination should be made carefully and thoroughly, weighing the clinical history with the result of examination, verifying the possibility of conclusions thus reached by reference to the bony skeleton and to the röntgen skiagraph, differentiating coxa vara, tuberculosis, septic arthritis, osteoarthritis, congenital anterior dislocation, strained ligaments and simple contusions.

The foregoing cases are diagnosed fracture of

the femoral neck. In making this diagnosis other possible conditions must be eliminated. That these are not cases of septic arthritis is evidenced by the absence of acute local symptoms and constitutional disturbance, and by the presence of shortening. The presence of shortening and eversion negative the possibility of a diagnosis of strained ligaments or simple contusion. Conditions ruled out with more difficulty are osteoarthritis, congenital anterior dislocation, coxa vara and tuberculosis. Osteoarthritis is eliminated by the absence of history of exacerbations and muscular spasm; it is true that a form of pathological coxa vara or subluxation may appear in osteoarthritis, but this is due to wearing away of the head of the bone and an upward enlargement of the acetabulum, which conditions do not exist in these cases, as evidenced by the skiagrams. Congenital anterior dislocation would be readily distinguished by the history, by manipulation, and confirmed by the skiagraph. Coxa vara may simulate fracture very closely, and possibly be combined with it. An important point of distinction in coxa vara is the diminution in the angle of the neck and shaft of the femur, with a twisting of the head backward and inward, while in simple fracture there is a normal angle with a lowering and displacement of the head of the bone. Tuberculosis remains to be considered, the absence of acute sensitiveness, muscular spasm, night cries and referred pain, together with the positive evidence of fracture from the skiagram, make the exclusion of this diagnosis possible.

In literature there are very few references to fracture of the femoral neck in childhood. In an early paper by Dr. Senn he refers to the frequency of fracture of the neck of the femur as the rarest accident during childhood and adult life, occurring between the ages of twenty-one and thirty years as one ninety-first of all fractures; between the ages of thirty and forty years as one seventy-fourth; from the ages of fifty to sixty years, one tenth, and over seventy years of age, one third of all fractures, making no mention of any cases earlier than the twenty-first year.

In a collection of two hundred and fifty cases of intra-capsular fractures reported by Sir Astley Cooper, the youngest patient was thirty-eight years of age. In the Memoirs of the Academy of Surgery, Sabatier related a case of fracture of the neck of the femur in a boy aged fifteen. Edward Stanley, F.R.S., in 1833, gives the first detailed account of a fracture of a femoral neck in a young subject aged sixteen. The patient contracted smallpox and died; examination of his hip confirmed the diagnosis. The capsule of the hip joint was entire but a little thickened, the ligamentum teres uninjured, a line of fracture extended obliquely through the neck of the femur entirely within the capsule. The neck of the femur was shortened, and there was bony union of the fragments. E. Geddings, in 1846, reported a case of fracture of the neck of the femur within the capsule in a colored boy aged eighteen, who was thrown on the ground by a companion. C. H. Hallett, University of Edinburgh, in 1847, reported the case of fracture of the femoral neck which was discovered at autopsy; woman aged twenty-three, history not known, but from her appearance and the firmness of the bone

the fracture occurred presumably a considerable period before she died. De Morgan in 1859 reported the case of fracture in the hip of a boy aged nineteen. In 1871 E. T. Barber reported a case of fracture of the femoral neck in a child seven years of age, in which a suit for malpractice followed. Testimony was largely against him, because the London *Lancet* had never reported such a case in so young a subject and because Dr. Astley Cooper did not speak of such a case in his work on fracture. The correctness of his diagnosis was upheld, and refracture proved to have occurred. C. C. F. Gay in his clinical lectures in 1878 on the fracture of the neck of the femur presents the case of a girl aged eighteen, who was suddenly disabled while standing at her work. No history of injury. The hip lesion remained unrecognized for three months, after which time manipulation overcame the deformity, and the limb was useful with only half an inch of shortening. H. Wardner, in 1879, reporting 163 cases of fracture of the femoral neck, mentioned only eight patients under twenty years of age, two of which were three years old. Cooper and Leistik report fracture in an attempt to replace dorsal dislocation of the hip in childhood, and a similar condition is reported in an attempt to reduce an anterior dislocation in a boy of six years. B. M. Cromwell in 1885 reported a case of fracture of the femoral neck in a young subject. In 1893 Dr. Royal Whitman reported from the Hospital for Ruptured and Crippled Children in New York ten cases under eight years, the youngest being two and one-half years. These he concludes were caused by falls of fifteen feet or over. Shortening of about three quarters of an inch. Probable diagnosis, fracture caused by violence which might produce fracture and because subsequent symptoms were those of fracture. Of the twenty-one cases of fracture of the neck of the femur in children in Dr. Whitman's private practice, reported in the *Annals of Surgery* for November, 1902, there are ten male and eleven female cases, of which number seventeen were under nine years and four between nine and eighteen years of age.

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New Instruments.

A GLASS URETHRAL IRRIGATOR.

BY DAVID D. SCANNELL, M.D., BOSTON.

For the general practitioner the soft rubber catheter is probably without question the instrument of choice in the irrigation of the urethra in gonorrhea, where that form of treatment is carried

t. And yet its use is not entirely satisfactory, especially in large clinics, where the frequent boilings necessary to maintain the sterility of the catheters renders them in a very short time useless or nearly so as to make their employment unsatisfactory. For the general practitioner with a small genito-urinary patronage, the element of expense in such destruction is probably of little moment, but in a clinic where there is a daily average of twenty to thirty gonorrheal cases (all of which are treated), the question of expense from the consumption of catheters is not a small one.

Believing that glass tubes, if they could be shown to be safe and efficacious, would be a desirable instrument in such urethral irrigations, I experimented with various kinds in the genito-urinary department of the Boston Dispensary, where the courtesy of Drs. Arthur L. Chute and Richard F. O'Neil put sufficient material at my disposal. The tube (figured in the illustration) from which I obtained the



most satisfaction presents practically nothing new, but it is its applicability and, in some respects, its superiority that I wish to advocate.

This tube is of ordinary blown glass, 14 cm. long, 0.5 cm. in diameter (equivalent to 13 French) and slightly curved. The tip is blunt and perforated. The distal end for 5 cm. from the tip presents four perforations, each 2 mm. in diameter. The proximal end of the tube presents a small circular shoulder and a bulbous portion to facilitate attachment to rubber tubing. Experiments made with straight tubes were not satisfactory; corrugated, straight or spiral, were found not to increase the value of the tube except in price; furthermore, the addition tended to make the glass more friable. It is obvious that the material and shape of these tubes make cleanliness and sterilization by boiling simple. Repeated boilings have, of course, no deteriorating effect on the glass. In the use of a tube of this sort it is not necessary, where only irrigation of the anterior urethra is desired, to have the tube supply more than one and one half to two inches above the patient, the multiple perforations allowing a large amount of the antiseptic to escape and cleanse the urethra.

With the aid of the same lubricants that are ordinarily used with catheters, the glass-tube is introduced into the meatus and urethra with no more difficulty or discomfort than occurs with the rubber instrument; its rigidity, of course, makes gentleness in insertion a little more necessary. As a rule, unless the mucous membrane of the urethra is very much swollen, or its caliber naturally very much smaller than normal, no pain is experienced; in such cases, almost as much difficulty is experienced with the catheter. The glass tube may be introduced as far as the hilt or only far enough to cover the perforations. "Ballooning" of the anterior water passage is, of course, easily accomplished by compression of the lips of the meatus with the tube.

It will be said, perhaps, that while all these things may be true for anterior irrigation, the tube cannot be used for irrigation of the posterior urethra. So far as introduction of the tube past the cut-off muscle is concerned, this is true; but I have demonstrated repeatedly that it is only slightly more difficult to overcome this muscle after the method of Janet with this tube than with a blunt glass tube or a conical hard-rubber nozzle, aided by the usual elevation of the reservoir.

In an observation of not less than two hundred trials I have found the glass tube eminently satisfactory. Of course there are certain cases where a catheter must be used, but in the vast majority of cases it has proven of value.

To summarize the points in its favor: (1) Cheapness (a dozen such tubes costing fifty cents); (2) durability; (3) ease of sterilization; (4) cleanliness; (5) facility of use; (6) volume of ejected fluid; (7) adaptability for posterior irrigation by Janet's method.

Medical Progress.

RECENT PROGRESS IN SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.,
BOSTON.

(Continued from No. 19, page 506.)

RADICAL CURE OF ANEURISM.

This surgical condition has no truly successful treatment unless it has involved a total removal of the sac, which itself may fail, should the collateral circulation be intestinal. R. Matas⁹ offers the following conclusions concerning a method of suture within the aneurismal sac and the connection between it and the main channel. He says that the favorable statistics of the last decade may be greatly increased by adoption of this method of suture—an obliteration of the sac, instead of the classical ligation of the arteries, with or without extirpation, the closure of the arterial orifice supplying the sac, whether single or multiple, by sutures, and within the sac simplified technique of the other operation. A favorable case, namely, sacular aneurism, with one orifice into the trunk, is best. It is possible by these sutures to close the lumen without narrowing the main channel. In fusiform, traumatic aneurisms, and in all with a healthy, friable sac, lost continuity of the arteries may be renewed by building a new channel and connecting the main orifices of communication. The fear that atheroma and degeneration will interfere with healing has been exaggerated, especially since it has been shown that amputations in aged patients with sclerosed arteries may well succeed. The failure and danger of the old operation of Antillius lie in the fact that ligation of the main artery, above and below the sac, will not always control the bleeding from collateral vessels opening into the aneurism, or into the main trunk between the arteries of the sac and the seat of ligation. The cutting of the sac away has the danger of interfering with collateral circulation. The operation of Antillius, more-

⁹ Med. News, March 28, 1903, p. 604; Ann. of Surg., Feb., 1903.

over, leaves the sac as an open cavity in the bottom of the wound, which heals by granulation, and induces infection, suppuration and secondary hemorrhage. All these difficulties are increased by the extirpation.

AN EXPERIMENTAL AND CLINICAL RESEARCH ON THE
TEMPORARY CLOSURE OF THE CAROTID ARTERIES,
BY G. CRILE, M.D.

Crile¹⁰ calls attention to the great danger of hemorrhage in operations on the head and neck, and to the enormous amount of time consumed in controlling the bleeding. The danger is not only immediate, but there is always, in certain cases, the fear that inspired blood will cause a late pneumonia. In order to obviate these dangers Crile practices *temporary closures of the carotid arteries*. As the result of experiments on dogs, he found that a properly adjusted clamp could be left in position, closing the artery from twenty-four to forty-eight hours, without serious injury to the arterial walls. Clotting was not observed, the circulation was re-established, and no emboli or thrombi were found in the brain postmortem. The clamp employed is so constructed that the blades are adjusted by means of a set-screw. One blade is longer than the other, and has a turned-up end in order to prevent the escape of the artery. The blades are parallel to each other when approximated, and are covered with pieces of rubber tubing. Twenty minutes previous to operations, in which pneumogastric or its superior laryngeal branch is likely to be involved, 1-100 gr. of atropin is administered hypodermically, in order to prevent inhibitory action of the heart. The carotid artery is closed with the clamp, using only sufficient pressure to approximate but not compress the walls of the artery. The control of the arterial hemorrhage is absolute except in such vessels as receive collateral supply from the vertebrae. Crile has carried out this procedure in eighteen patients during various operations on the head and neck. Both common carotids were closed in ten, one common carotid in five and one external carotid in three cases. In all there were twenty-eight closures of individual vessels. The ages of the patients ranged from seven months to sixty-nine years. There were no deaths attributable to the temporary closure of the arteries. In every instance the circulation was immediately resumed, and there were no late effects on the walls of the artery, upon the circulation in the branches or on the cerebrum. Less anesthetic was necessary with closed arteries, especially where the common carotids were occluded. In the latter case there may be embarrassed respiration. Wholly or partially releasing one or both carotids gave immediate assistance to respiration.

THE CARRYING FUNCTION OF THE ARM.

Hoffman¹¹ points out the abnormalities of the arm affecting its passive carrying function. The forearm should diverge from the upper arm at an angle of about 170 instead of a straight line, and destruction of this carrying angle may be brought about by fractures, rachitis or anything that

changes the articular surface from one facing a little outward to one facing directly downward or slightly inward. He illustrates his views with pictures, and describes his operation, in which he made a dissection of the soft parts to the humerus just above the inferior condyle, cutting three fourths through the bone and reflecting it slightly outward, making a carrying angle above the joint. He operates from the inner side to avoid involving the musculo-spiral nerve, and because it is better to bend the bone away from the cut and toward the position of correction, thus leaving unbroken the covering of the periosteum on the outer side. Simple section of the inner side will give a longer arm than a cuneiform operation on the outer.

THE BLOOD VESSELS OF THE LONG TENDONS OF THE
PALMAR SURFACE OF THE FOREARM AND HAND.

M. Tichonow¹² has published the results of an investigation of this subject, and at the conclusion of an article illustrated by two plates, the anatomical details of which cannot well be here described, formulates the following recommendations: That in case of a tendon suture it is important to note from which side the blood vessels enter the tendon and their manner of distribution in the same. In case of purulent inflammation of the synovial sheath in the carpal canal, one should not drain through openings over and under the canal, since such drainage disturbs the blood supply. Tichonow advises that one should cut through the transverse carpal ligament and preserve the vessels supplying the tendon. These rules hold also for suture of the tendons of the fingers, for the opening of abscesses in the synovial canals and in determining the vitality of the tendons.

THE RADICAL OPERATION FOR SPINA BIFIDA.

After an extensive consideration of the heretofore employed methods of therapeutical treatment of spina bifida, G. B. Schmidt discusses at length the radical operations and their results. From a compilation of the statistics of the clinics of v. Bergmann and König, it is shown that only 18% of the cases remained permanently cured. He then describes the method of operating which he himself, up to the present time, has used only in three cases with good results. The stages of the operation briefly consist of the dissection or exposure of the sac, the involution of the sac and closure of the bony opening, the closure of the skin incision. For the exact details of the operation the original article¹³ must be consulted. The essentials of his method are: (a) the possibility of infection of the meninges, to which children are especially susceptible, is reduced to a minimum; (b) the formation of a fistula is excluded; (c) the provision for the nerves, (the freeing and reposition, or even resection of which, if the point of origin is below the sacral plexus, is not without danger) is towards their preservation; (d) the definite closure with the involutioned sac, which is fixed in the bony defect as an organic tampon, up to the present time has shown good results, and after an extended period has permitted no recurrence.

¹⁰ Phil. Med. Journ., July 12, 1902; Annals of Surgery, April, 1902.

¹¹ N. Y. Med. Journ., Aug. 30, 1902; Journ. Am. Med. Ass'n, Sept. 13, 1902.

¹² Russ. chir. Arch., 1902, Heft 4.

¹³ Beitr. f. klin. Chir., Bd. xxxiv.

THE UNRELIABILITY OF MICROSCOPIC DIAGNOSIS OF MALIGNANT DISEASE.

C. H. Whitford¹⁴ has observed in numerous instances that the histological diagnosis of cancer sarcoma, or inflammatory tumors, has failed to correspond to the subsequent course of the disease. He claims that the experiences of other writers show that the microscope fails to distinguish the earlier stages of malignant tumors from inflammatory nerve growths. He places more weight, in cases where the macroscopic and microscopic conditions contradict one another, on the clinical condition of the patient, and the macroscopic appearance of a fresh section, than on the microscopic diagnosis.

PERITONEAL ABSORPTION.

Some interesting experimentation relating to the power of absorption of fluids by the peritoneum has been made by Klapp¹⁵. Solutions of milk sugar were used in dogs, and the amount of absorption was determined by the analysis of the urine for sugar.

First the power of absorption of the peritoneum was compared with that of the subcutaneous tissues. The conclusions were that the excess of power of absorption of the peritoneum depended wholly on its large area of surface. It was found when the sugar solution was injected, not in one but a large number of different places, so that a large area of subcutaneous tissue was called upon to absorb it, that the capacity for absorption nearly equaled that of the peritoneum. Next the principal lymph trunks of the peritoneum—the ductus thoracicus and the ductus lymphaticus dextra—were ligated without diminishing the peritoneal power of absorption, which fact Klapp concludes shows that the absorption is through the blood vessels and not dependent on the lymphatic system. He also claims to have observed that heat increases to a slight degree the power of absorption of the peritoneum, but that cold diminishes it to a much greater degree. Finally, that evisceration through a long abdominal incision, for different periods of time, shows that if the exposure does not exceed one quarter of an hour, absorption is increased apparently from the resulting arterial hyperemia. With exposure exceeding this period, the power of absorption diminishes.

HEMORRHAGE INTO THE OMENTAL BURSA.

K. Grassman¹⁶ observed a peculiar case of hemorrhage into the omental bursa, feigning symptoms of acute intestinal obstruction. The patient, a perfectly healthy man, was seized suddenly with collapse after a meal, and the bowels could not be made to move after a number of enemata. Laparotomy was performed, with cocaine anesthesia, and the entire peritoneum was found filled with blood, which seemed to come from the lesser omental pouch. On autopsy it was discovered that an adenomatous growth in the Spigelian lobe had ruptured the liver, and thus given rise to the bleeding. The case illustrates well the difficulty, and even the

impossibility sometimes, of making a correct diagnosis in abdominal conditions.

RADICAL OPERATION OF CONGENITAL HERNIA IN INFANTS.

Karewski¹⁷ has recently claimed that he has obtained satisfactory permanent results by operating as follows: After the usual division of the superjacent layers he isolates the hernial sac without opening it if possible. When free he closes it at its peritoneal attachment with a "purse-string" suture. This is a sufficient closure even when the patient coughs violently or with large inguinal rings. Suture of the "pillars,"—transplantation of the cord,—the Bassini method and other radical methods in children up to four years of age are shown to be superfluous.

He reports some cases without recurrence at the end of six, ten and twelve years. The operation by this method is much more rapidly done than by the usual ones. The wounds heal well even when the patients have had little post-operation cleanliness, a condition difficult in such young patients as Karewski reports, namely, in infants in the first months of life.

ETIOLOGY OF POST-OPERATIVE VENTRAL HERNIE.

Dr. Oscar Wolff¹⁸ after a careful investigation of the different methods of uniting operative abdominal wounds, the different suture materials, the after treatments in the form of various kinds of bandages or supports, concludes that one must accept that it is immaterial how the abdominal wound is united or what suture material is used; that the reason for the production of a hernia (post-operative) must be sought elsewhere. He noted that the only apparent common factor in these cases was that when a hernia was found a careful record usually showed that during the first few days following operation distention due to tympanitis had been present. This caused tension on the sutures—the fascial being more unyielding gave way before those in the more elastic skin. The skin remains united; the deeper layers yield. This occurs when, for any reason, the abdomen is distended. He therefore considers it of great importance to create conditions by which meteorismus will be avoided, claiming that meteorismus and hernia stand in relation to each other of cause and effect.

With this idea in view, Wolff, for a period of two years, has only completely sutured those wounds in which he was reasonably sure of an uneventful convalescence. In all cases when more or less abundant secretion was expected, as from the wounded surface of an inflamed peritoneum, the wound was drained by a small iodoform gauze wick through an interval between the sutures. In this way he claims the distention of the abdomen from inflation of the intestines is less. Since using this method more extensively, that is, since he has prevented meteorismus he has become convinced that the abdominal suture holds firmer, is more permanent, and hernia are of less frequent occurrence. The duration of wound repair is only slightly more prolonged, a disadvantage more than counterbalanced

¹⁴ Bristol Med. Chir. Journ., 1902, September.

¹⁵ Mittheil. aus d. Grenzgebiet. d. Med. u. Chir., Bd. x, Hft. 1 u. 2.

¹⁶ Munch. Med. Woch., Aug. 12, 1902; Medical News, Sept. 27, 1902, p. 603.

¹⁷ Cent. f. Chir., 1902, Vol. 29, p. 1313.

¹⁸ Centralbl. f. Clin., 1902, Bd. xxix, s. 1289.

by the non-occurrence of a ventral hernia. The view of Wolff in regard to tension from meteorismus, or in fact intraabdominal tension from any cause, as a reason for subcutaneous separation of an abdominal wound, seems plausible; but one fails to see how wound drainage would control the distention of an intestine by gas formation.

RADICAL CURE OF INGUINAL HERNIA.

S. Goldener¹⁹ reports the results of his study of eight hundred patients treated during the five years preceding 1899 by the Bassini operation for inguinal hernia at the Albert Klinik in Vienna for the purpose of learning the end results. No case was considered in which the post-operative period was less than two years or the patient had not resumed his active life. He counted as a recurrence a case when the patient showed a protrusion at the external inguinal ring; when a distinct defect existed in the muscle scar, and also if a femoral hernia had developed on the operated side. The result showed 7.5 % of recurrences. It occurred most frequently in the so-called "lower angle" of the wound where there was the greatest tension from the sutures, next in the abdominal wall in the scar, finally, when the suture of the muscles to Poupart's ligament failed. The technique of a second operation in these recurrent cases should be limited to the closure of these defects without again extensively exposing the cord and splitting the posterior wall of the inguinal canal. In children only one recurrence was noted in fifty-eight cases. An operation is not recommended earlier than the fifth year of age, unless the hernia is marked, since cure without operation has been obtained. Contraindication to operation are old age, organic disease of the heart, lungs or kidneys, diabetes, infants. With ventral hernia in patients over forty years it is recommended to avoid operation.

There were three deaths—one from narcosis, two from pulmonary emboli. Suppuration during wound healing often occurred, but it is considered that the condition of the muscles and the age of the patient are more important factors as regards a radical cure than failure of the operation wound to heal by primary union.

This report is interesting in that it furnishes the more recent results from the method of the Bassini.

THE LOCALIZATION OF GASTRIC TUMORS.

The following point in establishing the diagnosis of gastric tumors is noted by Glaessner²⁰. It is based on the presumption, which the writer claims to have established as a fact, that the fundus of the stomach is an area in which pepsin and "labferment" is produced while only pepsin is secreted in the pyloric portion. He was able by investigation with the "test breakfast" of the stomach contents to determine the site of the tumor in many cases when the diagnosis was subsequently confirmed by operation or autopsy. When the "labferment" and pepsin were equally diminished, the tumor was in the fundus, but when the "labferment" in contradistinction to the pepsin is retained a pyloric growth existed. Hence, not only for diagnosis but also for operative

treatment, the possibility of determining the site of a neoplasm from chemical investigation of the gastric contents assumes greater significance, especially when other diagnostic characteristics of gastric tumors are wanting.

(To be continued.)

Reports of Societies.

AMERICAN MEDICAL ASSOCIATION.

SECTION ON PRACTICE OF MEDICINE.

W. S. THAYER, M.D., OF BALTIMORE, CHAIRMAN.

(Concluded from No. 20, page 537.)

THIRD DAY. THURSDAY, MAY 7.

COMBINED MEETING WITH THE SECTION ON HYGIENE AND SANITARY SCIENCE.

SYMPOSIUM ON TYPHOID FEVER.

ON THE SOURCES AND MANNER OF INFECTION OF TYPHOID FEVER.

DR. WILLIAM H. WELCH of Baltimore said that there was no missing link in the chain of proof that the typhoid bacillus was the cause of typhoid fever. At present there was no positive or experimental proof that the origin of the disease could be through the respiratory tract; it could only arise from the injection of the typhoid bacillus into the alimentary canal. The bacillus was eliminated from the body through feces and the urine, and in very rare instances it might be found in the sputum, but this was so rare as not to deserve consideration. He emphasized the importance of the knowledge of the bacillus being found in the urine of typhoid patients, even for a long time after convalescence had become established. This fact was a very important one from a prophylactic consideration. Another important factor in the causation of typhoid fever was the dosage. The source of the infection was *the typhoid patient*. If one could prevent the typhoid bacillus from gaining an exit from the typhoid patient he believed that typhoid could be made to disappear from the world. He referred to the experimental work of Reed, Vaughan, Shakespeare and others, in which it was shown that the majority of the cases were not attributable to drinking water but to a direct transmission from one typhoid fever patient to another; in the cases of the soldiers the disease was transmitted by things about the tents,—articles of bedding, etc.,—and they brought out the agency of flies and other insects in the transportation of the disease. The bacillus could be transmitted in various ways, but he believed that in many communities the solution of the prevention was likely to be found in the powdered filtration or sand filtration. He thought we were far behind the Continental countries in this respect. Typhoid fever was occasionally traced through the ingestion of vegetables or raw foods; also through the dust in the air. He also took up the consideration of the contamination of milk occurring chiefly through the air or through the water used in washing out the cans. Milk he said was an excellent medium for the growth of the bacillus. Milk had been the cause of many epidemics.

¹⁹ V. Langenbeck's Arch., Bd. Lxviii, Hft. 1.

²⁰ Berlin. Klin. Woch., 1902, No. 23.

SOME UNCONSIDERED HINDRANCES IN THE PROPHYLAXIS OF TYPHOID FEVER.

DR. JOHN S. FULTON of Baltimore read this paper, and said that our knowledge of typhoid fever includes all the facts essential to successful prophylaxis. Notwithstanding the fullness of our information and the efficiency of our means, the prophylaxis of the disease is a somewhat conspicuous failure; for typhoid fever is the commonest of the continued fevers of the United States. This failure may be in great part explained by three considerations.

First. The great majority of cases of typhoid are not recognized either *intra vitam* or *postmortem*. The cases which escape diagnosis are (a) of ambulant and very mild cases, a great majority; (b) of cases at the extremes of life, a majority; (c) of anomalous cases, a majority; (d) of plain, uncomplicated bed-ridden cases, about 40 %. This defect of diagnosis, shared by physicians in all parts of the country, and amounting to nearly 50 % of observed cases, is chargeable, primarily, to (e) a serious default of American medical education; and after that to (f) a delusion, from which no part of the country is exempt, that malaria is a considerable cause of mortality in the United States.

Second. The view that typhoid fever is a distinctly urban disease is erroneous. If the cities of this country be classified upon a descending scale of population, it will be found that the typhoid mortality rises as populations diminish, and that the incidence of typhoid upon rural populations yields the highest mortality observed in the country. Typhoid fever is distinctly a rural disease.

Third. The general prophylaxis of typhoid in cities, though measurably successful so far as cities are concerned, cannot by its widest conceivable extension materially affect the typhoid mortality of the whole country, nor can it yield perfectly satisfactory results in cities; for this general prophylaxis is concerned with but the least part, and has not immediate relation with this least part of the total morbidity from typhoid fever.

The greatest prime factor in the dissemination of typhoid fever is its occurrence in small communities and rural districts where the customary disposal of human excrement admits its distribution by wind, water, animals and insects. The prophylaxis of typhoid is essentially a defense against excremental contamination. Its special hygiene must include, besides the care of food and water supplies, the screening of privies against flies, exclusion of flies and other insects from, and their destruction in, dwellings and places where food and drink are stored.

The isolation of typhoid fever cases will separate the remainder of the household from unnecessary contact with the sick or his belongings, and will prevent the access of flies and other insects to the patient or his excreta.

Disinfection in typhoid fever will include the person and clothing of the patient, the hands of the attendant, and the immediate disinfection of excreta as soon as passed. For the immediate disinfection of excreta the addition of an equal bulk of quicklime is recommended. We have not at present a method of disinfecting excreta which meets all the practical requirements of speed, certainty and cheapness.

Success in the prevention of typhoid depends, first, upon prompt diagnosis of the disease, and, next, upon the effectiveness of defenses maintained in the immediate environment of each case.

DR. JOHN H. MUSSER of Philadelphia thought that, with the more modern means for making diagnoses, an earlier diagnosis should be had. He advised the use of urotropin as a means of lessening the number of bacilli contained in the urine of these patients. This drug would also tend to prevent one of the complications of typhoid, that is, cystitis.

DR. DELANCEY ROCHESTER of Buffalo, N. Y., advised the use of large amounts of chloride of lime for disinfecting the stools.

DR. JAMES J. WALSH of New York referred to a large city in this country where, for ten years, the introduction of a filtration plant had been held back because of political reasons. Three thousand deaths occurred, and yet nothing was done toward punishing any one for criminal negligence.

THE MODE OF TRANSMISSION OF YELLOW FEVER.

DR. JAMES CARROLL, U. S. A., opened the discussion of this topic. He discussed some of the older theories and the lessons learned in the past from observation and experience alone. The more modern theory was based on the supposed bacteriologic origin of the disease. Finley's theory of the transmission of the disease by means of the mosquito was considered. He claimed that yellow fever could be produced by the mosquito only. Disinfection and fumigation was a perfectly useless expediency, entailing a useless expense of time and money.

DR. STAMFORD E. CAILLÉ referred to certain notable investigations made by Reed, Carroll, Agramonte and others, which had contributed four sets of precious facts: (1) Fresh blood or its serum taken from a case of yellow fever, during the first days of the attack, would give the disease if hypodermatically injected into a non-immune. Hence the blood contained the poison. (2) The female *stegomyia fasciata* mosquito, serving as an intermediate host, could convey the poison to non-immunes. (3) Excluding all mosquitoes, fomites prepared and kept under all the known conditions universally known to be the very best for supplying the most virulent fomites, failed to infect seven non-immunes extraordinarily exposed to said fomites. (4) Disregarding filth and fomites, because two years' warfare against them had proved ineffectual, and limiting sanitary measures solely to excluding imported cases, to isolating every home case, and preventing in every possible way the access of mosquitoes, these measures were followed in Havana by the total disappearance of all home cases, from Sept. 28, 1901, to May, 1903. He said that the case of fomites *versus* *stegomyia* was of the utmost importance for prevention and commerce, and deserved consideration. The only advocates of fomites known to him who had published their views were two distinguished sanitary officers, Punnett of Mississippi and Sonchon of Louisiana. He then took up the arguments of both to prove that the *stegomyia* was not the sole cause, but that fomites were also a cause. He said that Carter, writing in favor of the *stegomyia*, claimed that every disease having an intermediate host was

propagated solely by its special host and never by fomites. He doubted whether we could be justified at present to accept this as a final conclusion. Dr. Caillé, so soon as he was convinced that mosquitoes followed routes of travel, and that the stegomyia was a conveyer of yellow fever, embraced the stegomyia as a welcome substitute for fomites. In fact he had never secured satisfactory evidence of the proof of a single case either of direct contagion or of infection by fomites. He concluded his paper as follows: The probabilities now are that the stegomyia, the only cause yet proven, was the sole cause for the dissemination of yellow fever; time was required to convert these probabilities into certainty. Boards of health, should they neglect any practical measure of warfare against the stegomyia, would deserve the severest punishment of the worst criminals. Southern boards of health were excusable for over-precaution against yellow fever. States adjacent to Louisiana had power, by sanitary restrictions, to strangle the commerce of New Orleans, and Louisiana should not abandon the disinfection of fomites until approved by said states. Boards of health were representatives of the people, and were justifiable in continuing to disinfect fomites as long as public opinion favored this measure, and until the probability of its inutility was converted into certainty.

DR. EDMUND SOUCHON, president of the Louisiana State Board of Health, continued the discussion. He said the foremost perplexity of the responsible officers was the question of the treatment of fomites; from the known experiments of Reed, Carroll, Guiteras and Ross it was contended that the disinfection of fomites was unnecessary. To these experiments the responsible officers oppose the fact that they were made at a time of the year when yellow fever was not at its worst, except, perhaps, the early experiments of Ross. Again it should be considered that 30% of the non-immunes bitten by infected mosquitoes did not develop yellow fever. He thought, therefore, it was unreasonable to expect that all experiments made with fomites should develop yellow fever. The responsible officers do not contend that fomites transmit yellow fever; they modestly state that they do not know. He said that for the present, and until further progress, the responsible officers were unwilling to make any change in the quarantine regulations against yellow fever.

DR. C. W. STILES of Washington said there were certain biological facts in the consideration of yellow fever. The cause of the disease belonged to one of three different groups: (1) bacterium, (2) flagelia and (3) sporozoa. The entire history of the disease, with its short incubation period, etc., shows that the organism was probably reproduced by nonsexual methods. The bacterium seemed to be excluded by the history of incubation in the mosquito. Regarding the flagelia nothing was known regarding its sexual development. He thought the parasite which was the cause of the disease possibly was a sporozoa.

SOURCES AND MANNER OF INFECTION OF PLAGUE.

DR. W. J. CALVERT of St. Louis, Mo., read this paper, giving a historical sketch with reference to

great pandemics, more especially to the present. He considered the features of the bacillus pestis, its viability and possible modes of dissemination, and portals of entry into the human system. He said that no matter if it was stamped out in this country, it would be likely to reappear so long as such places as Canton and Hong Kong existed.

PROPHYLAXIS OF PLAGUE.

DR. J. J. KINYOUN of Philadelphia said that the *sine qua non* was the accurate diagnosis of the first case, and that the clinical forms were so varied that error in diagnosis of first cases was the rule. Plague might resemble anthrax, tonsillitis, mumps, diphtheria, erysipelas, pneumonia, acute pleurisy, malignant pericarditis, endocarditis, typhoid, typhus, relapsing and malarial fevers, acute dysentery, miliary tubercle, septicemia, pyemia and syphilis. These forms of plague and its insidiousness, and the inexperience of the profession, rendered plague one of the most difficult to recognize. For diagnosis a bacteriological examination was essential. He then considered the measures to be adopted in caring for such patients, dividing up the treatment into the following different heads: (1) Isolation pending a diagnosis; (2) segregation under medical supervision of contacts and suspects; (3) disinfection of premises; (4) sanitary measures in immediate vicinity; (5) destruction of vermin and their examination; (6) general measures against the dissemination of the disease. He then referred briefly to the consideration of maritime commerce, the personnel of vessels, the cargo, the vessel itself. Under the heading of maritime quarantine, he considered the measures to be taken in a port where plague existed, both in its detection and eradication, and the measures to be taken to prevent its spread.

DR. F. G. NOVY of Ann Arbor, Mich., continued the discussion. He said that in plague we had a well-defined disease caused by a well-defined organism. The organism can be readily seen and recognized under the microscope in every case brought to the postmortem table. The experiments can be made to demonstrate the disease in animals to any one, and the organism complies with every requirement. The question came up, Will this organism always produce the disease? He emphasized the fact that plague was essentially a disease of animals and primarily was not a human disease. The disease was transmitted by the bites of animals, such as the rats or rodents of China. How the disease was communicated to man, what was the portal of entry, was a very difficult question to answer, and possibly never would be answered satisfactorily. The virulency of the germ decreased the longer it was kept in artificial culture. The organism he did not consider to be very resistant, and could be easily destroyed. Besides isolation of the sick, disinfection, segregation, etc., he said we have a powerful method of controlling the disease; that is, with the serum.

ARTHRITIS DEFORMANS.

DR. THOMAS MCCRAE of Baltimore read this paper, reporting a study of a series of 110 cases from the Johns Hopkins Hospital. Reference was

made to the obscurity of the pathology and our ignorance regarding the disease. The two great types of the disease were mentioned and the distinction between them. Certain cases of this series apparently showed the co-existence of these two different grades. The whole series showed an equal number in the two sexes, but a striking small number among the colored, only 4 out of 100, a proportion of 26 white to 1 colored. The native born were 96. There was an absence of a history of exposure to cold or wet. There was a family history of arthritis in 44. For clinical study the cases were divided into four groups: (1) Heberden's nodes; (2) the polyarticular form; (3) the mono-articular form; (4) spondylitis. Of the first group no cases are in this series unless the joints were involved. Of these there were 9, but in only 2 of these were the manifestations severe. The poly-articular forms were the largest group, 94, including 2 cases of "Still's disease." In half of these the onset was before the age of thirty. Special stress was laid on the acute character of many of these. In 41 the onset was sudden. Two main classes of cases can be recognized—a slow, progressive type and one in which there were repeated acute attacks. There were 30 cases in this latter group. Such cases were nearly always mistaken for acute articular rheumatism. The distinguishing features of these cases were dwelt upon, and the importance of other infections, such as influenza, in bringing on attacks. The usual high pulse-rate and the temperature curve were noted. Especial stress was laid on the importance of the study of the early cases, if we are to clear up the disease. The diagnosis and treatment were also discussed. Of the mono-articular form there were 3 cases. Their doubtful character was discussed. The fourth group, spondylitis, comprised 22 cases, 13 of spinal involvement only and 9 with other joints in addition. In 15 the whole spine and in 7 only a portion were involved. The work of Dr. Goldthwait of Boston was noted in this group. The importance of knowing the features of the local involvement was emphasized, and the points in the diagnosis and treatment.

ALBUMINURIA IN DIABETES MELLITUS. ITS IMPORTANCE AS A FACTOR IN THE CAUSATION OF COMA.

DR. ARTHUR R. ELLIOTT of Chicago read this paper, and said that the following conclusions seemed to be warrantable: (1) Albuminuria was a frequent occurrence during the progress of diabetes, over one third of all cases manifesting this symptom at some time during their course. (2) Albuminuria in diabetes may for clinical purposes be divided into two varieties, toxic and degenerative. (3) Toxic albuminuria was generally of acute onset, arising during the later stages of the severe form of the disease, as the result of irritation of the tubular epithelium, producing hyaline degeneration thereof, and due to the presence of acid toxins in the blood and urine. (4) Toxic albuminuria was an invariable precedent and accompaniment of coma, and may be regarded as of the greatest prognostic significance. (5) Toxic albuminuria and its associated renal changes were the final determining cause of coma diabeticum, by producing a

heaping up of sugar and toxins in the blood, through diminished permeability of the renal secreting structure. (6) Degenerative albuminuria occurs with great frequency during the progress of the mild type of the disease, and was of renal origin and produced by a gradually developing nephritis, which arose from prolonged hyper-function and impairment of renal nutrition. (7) The appearance of albumin under the circumstances, while of little immediate significance, was of the greatest eventual importance, as indicating the intrusion of chronic nephritis into the already manifold clinical difficulties. (8) A few cases of albuminuria in diabetes may be produced by venous stasis due to cardiac asthenia, and under such circumstances will be associated with other evidence of heart failure. (9) Albuminuria in diabetes was never devoid of importance. It may be of the greatest significance, and was always of sufficient import to receive the earnest attention of the clinician.

FOURTH DAY: FRIDAY, MAY 8.

THE PASSING OF CHRONIC RHEUMATISM.

DR. JAMES J. WALSH of New York read this paper. He said there were four different conditions, which were often called chronic rheumatism, but without any good reason. The most common form of pseudo-rheumatism was the relaxation of joints which occur in the ankle and which was known as flat-foot, or which followed the dislocation of joints producing tissue changes which made the patients very susceptible for all their after life to changes in the weather. Just as there were relaxations of the ankle joint, so could there be relaxations of other joints. A second form occurred in the so-called occupation neuroses. A third form of vague pains often attributed to rheumatism was neuritis. Persons who were exposed to the weather, and who used one set of muscles more than another, especially if there was an absorption into the system of such toxic substances as lead and alcohol, were especially prone to a neuritis in the nerves supplying the overworked muscles. Again, a certain number of cases of so-called chronic rheumatism in this country presenting evidences of joint degeneration following acute attacks of arthritis were undoubtedly not genuinely rheumatic in character, but were of gouty nature. He said that according to recent statistics gout was only three fourths as frequent in this country as in England. Acute gout was very difficult to differentiate from acute rheumatism. After considering briefly three forms of rheumatoid arthritis, he stated that it was easy to understand that but little space was left for the so-called chronic rheumatism. Certainly, cases of true chronic rheumatism with progressive pathological changes in joint tissues, for which no other cause except rheumatism could be found, were very rare, and he confessed that he had never seen such a case.

HEMOGLOBINURIC FEVER: ITS CAUSES AND TREATMENT.

* DR. WALTER SHROPSHIRE of Yoakum, Texas: A report of 202 cases collected showed 61 treated without methylene blue, or with less quinine than 15

gr. per diem, of which 26.2% died and 73.8% recovered; while 112 cases treated with 20 gr. or over of quinine, 16.9% died and 83.1% recovered. Four were treated with methylene blue, with one death and three recoveries. It was shown that quinine not only lowered the death-rate, but also lowered the percentage of recurring paroxysms. The following facts were presented: (1) That this disease always occurred in persons suffering repeated attacks of malaria; (2) that it nearly always followed one or more paroxysms of malaria at the proper time for its next exacerbation; (3) it had all the characteristics of malaria, chill, fever and sweat; (4) that where adequate examination of the blood was made the hematozoa of malaria were found; (5) its habitat, that of the most violently malarious districts. After a review of the effects of quinine it was indeed difficult, if not impossible, to conclude logically that it could produce hemoglobinuria. Summing up the evidence for and against quinine as a cause of this disease, he said that 29.4% physicians affirmed and 70.59% denied it. When quinine was suspended, 73.8% recovered; when quinine was administered 83.1% recovered. Distinct recurrences of attacks after the first appearance of blackwater in non-cinchonized patients, 9.8%; distinct recurrences of attacks after the first appearance of blackwater in cinchonized patients, 4.4%; per cent of cases occurring from quinine alone, 0%; per cent of cases occurring from malaria without quinine, 15%; per cent of cases where quinine was supposed to aggravate, 5.9%; per cent of cases where quinine was thought not to aggravate, 55.41%. This gave a preponderating evidence against quinine as a causative factor in the production of this disease. In the treatment of this condition he advised giving 40 gr. of quinine per diem, either intravenously or hypodermatically, until the next period of an exacerbation was safely passed; then it should be discontinued for three or four days, and then repeated in 20 to 30 gr. doses every four to six days, until five or six weeks have passed without a paroxysm. Attention to liver and bowels was emphasized, with the ingestion of large doses of very hot water.

SOME CLINICAL ASPECTS OF TUBERCULAR PERITONITIS.

DR. JOSEPH EICHBERG of Cincinnati read this paper, and said that among the many startling results that have followed the introduction of laparotomy, exploratory and curative, none showed a more decided departure from beliefs of a former generation than the present attitude of the profession with regard to tubercular peritonitis. On the basis of postmortem findings various classifications had been made, but the simplest was the dry and the exudative, included under the latter head the caseous and purulent varieties. From a clinical standpoint Hawkins divided them into four varieties, as follows: (1) Latent; (2) severe, with ascites and a spontaneous tendency to remissions or encapsulations; (3) cheesy-purulent form, with frequent formation of large caseous masses and adhesions; (4) fibro-adhesive form. He said there was much difficulty in establishing any basis of classification, either pathological or clinical.

Laparotomy did not always establish a diagnosis. Good results have followed simple incision, irrigation of the cavity, drying of the peritoneum, resection of diseased parts and other modifications. The essential feature seemed to be incision. He stated that the percentage of recoveries without operation, for all ages, with or without complications, was greater than with operation. In five and a half years Herringham observed 25 cases diagnosed as tubercular peritonitis, of which 19 recovered without operation and 3 were improved. He found the only justification for operation was a return and increase of the ascites, after puncture. Hawkins reported 59 cases which recovered, all but 3 being treated by internal medication. Czerny cautioned against expecting too much from the operation. He believed that the opinion that a diagnosis of tubercular peritonitis called for an immediate laparotomy was erroneous, not to say vicious.

TUBERCULOSIS IN THE NEGRO.

DR. SEALE HARRIS of Union Springs, Ala., said that tuberculosis was unknown among the native Africans until the infection was carried to them by slave traders and colonists. It was a rare disease among the slaves in the Southern States, because the hygienic methods of living enforced among slaves prevented their becoming infected. Statistics showed an increase of tuberculosis among the negroes during the past forty years. Then followed statistics for Southern States and for his home in Alabama. Among the causes he gave for increase of tuberculosis among the negroes, comparing them with the white population, were the small lungs, less lung capacity and less chest expansion. The filthy habit of spitting was one of the great causes of the dissemination of the disease. Syphilis was a very great predisposing factor in tuberculosis, and the increase in syphilis in the past thirty years had been *pari passu* with that of tuberculosis. He then considered the methods to pursue in limiting an infectious disease like tuberculosis, such as increasing the strength and vitality of the individuals of the race, thereby rendering their tissues an unsuitable soil for the invasion and propagation of the specific germs of the disease, and in preventing his exposure to the infecting agent, as by the isolation of those already infected and by destroying the organisms causing the disease.

SHOULD THE TUBERCULOUS PATIENT KNOW THE TRUTH REGARDING HIS CONDITION.

DR. C. P. AMBLER, of Asheville, N. C., read this paper. He believed it to be the duty of the physician to explain to the patient the dangers to himself and to others; to point out where he was most apt to make mistakes; to give explicit directions regarding his hygienic life, including diet, exercise, work, physical or mental application, secretion and excretion, sexual relations, and in fact to go fully into the whole question of the hygiene of life. Such instructions should apply to the incipient as well as the advanced cases. To get the co-operation of the incipient cases they must know the truth. The laws of health demand that the patient fully realizes the danger to himself and others. The patient should be appealed to that it was un-

kind to his friends not to make every effort to protect them. The education of the public, and the careful education of the patient as regards infection of others, would accomplish more than legislation. In the fight against the spread of tuberculosis the patient should, first of all, know the truth regarding his condition.

Officers elected: For chairman, Dr. Alexander Lambert of New York; for secretary, Dr. J. S. Miller of Chicago; for member of House of Delegates, Dr. Frank A. Jones of Tennessee.

AMERICAN MEDICAL ASSOCIATION.

PROCEEDINGS OF THE FIFTY-FOURTH ANNUAL MEETING, HELD IN NEW ORLEANS, LA., MAY 5, 6, 7, AND 8, 1903.

HOUSE OF DELEGATES, MAY 5.

THE House of Delegates met in the Council Chamber of the City Hall, under the Presidency of Dr. FRANK BILLINGS of Chicago, Ill.

Dr. HENRY D. HOLTON of Vermont presented the report of the

COMMITTEE ON PROPHYLAXIS OF VENEREAL DISEASES.

The committee recommended holding a National Congress for the Prophylaxis of Venereal Diseases under the auspices of the association. The committee believes that this will mark an epoch in the history of this great national body of medical men.

The committee submitted the following points to serve as a basis for such a congress:

(1) As the states cannot with impunity ignore the existence of venereal diseases, and as it is the duty of the state to protect the people from the ravages of contagious diseases, there should be instituted through the state and district societies a propaganda of action in each state or district society looking towards a proper recognition of venereal diseases by the different legislatures.

(2) That the American Medical Association authorizes accredited delegates from each state, or by appointing special committees for this purpose, to organize such a movement in their respective state and district societies, and to send delegates to such a congress.

(3) That such delegates may then, fortified by the authority of the American Medical Association, in such a congress convened, bring to bear on their home legislatures the necessity of legislation against the spread of venereal diseases.

(4) To appoint a central committee of organization to be in touch with the various state committees. The congress would discuss and act on the following questions:

Prostitution.—Its causes and how to diminish its extent: (a) Safe-guarding minors; (b) by raising the age of consent; (c) socio-economic measures; (d) educational measures; (e) creation of a provident education law.

Prophylaxis by treatment.—(a) Making venereal diseases reportable, without giving names and addresses, solely for statistics of morbidity; (b)

liberal and enlarged hospital and dispensary facilities, with gratuitous treatment.

Legislation.—(a) State laws against diffusing syphilis and venereal diseases in an extra-genital way; (b) certifying the health of wet nurses; (c) regulating the profession of ritual circumcision by barbers, by dentists; (d) trade sanitary laws against transmission of syphilis.

Individual prophylaxis.—(a) By teaching the avoidance of dangerous contact; (b) by instructing the diseased how to avoid infecting others.

The committee recommended that the name of the congress be the NATIONAL CONGRESS FOR THE PROPHYLAXIS OF VENEREAL DISEASES, under the auspices of the AMERICAN MEDICAL ASSOCIATION.

On motion the report of this committee was referred to the Business Committee, with instructions to make a report before the house, with recommendations.

SECRETARY SIMMONS read the report of the

COMMITTEE ON SCIENTIFIC RESEARCH.

Early in the fall this committee advertised in the pages of the JOURNAL, and through other medical journals, that five grants of one hundred dollars each would be made to persons applying for the same who could show sufficient training and opportunity to warrant the making of a grant. Applications were received from a number of physicians. From these the committee have selected as most deserving the following:

Dr. Newton Evans and Dr. F. J. Otis, Battle Creek, Mich., for work on systematic infection with blastomycetes; Mr. G. F. Ruediger, Rush Medical College, Chicago, for work on virulent streptococcus; Dr. J. T. Moore, Galveston, Tex., for a study on the latency and relapses of malarial fever; Dr. H. E. Wetherell, Philadelphia, for an experimental and clinical study of sweat secretion.

On motion this report was referred to the Board of Trustees. The board subsequently reported in favor of appropriating the money when a report has been made and accepted by the association, said report to be the property of the association. This report was adopted by the House of Delegates.

Dr. T. J. Happel, Tennessee, president of the Board of Trustees, presented the annual report of the board for the year 1902. The report showed the great growth made financially by the association in the short period of five years. At the Denver meeting the treasurer reported total cash received from members for the year, \$32,200; receipts for 1902, from the same sources, \$59,180, showing a gain of \$26,980, indicating but little short of twice as many members. The total amount of cash in the treasurer's hands was \$17,092.85, which included that reserved for building purposes, \$3,000. The tables show cash on hand \$21,590.67, being a gain in cash of \$1,497.82; and a building on which the association has spent \$74,516.96, a gain of \$71,546.96 over the reserve funds. The total Journal business, including cash in hand, as shown by the report of the trustees for 1898, was \$17,140.97. This year (1903) the books of the Journal office show in cash \$130,021.30, which amount includes \$9,000 less in depositions, but not considering that the face of the books show a gain of \$82,891.23 in business over 1898, the gain

being almost double the total business reported that year. The business for this year shows a net profit of \$40,140.56.

The board discussed the matter of national incorporation, and a summary of the conclusions reached, with reasons as to each proposition, is as follows:

(1) The amendments to the articles of incorporation and the by-laws, adopted at the Saratoga meeting, and ratified at the meeting in Chicago in 1902, are legal. The requirements above referred to—that they should have been proposed in open meeting one year previous to being acted on and published—had no binding validity, because the American Medical Association is a corporation of the state of Illinois.

(2) As to the propriety of so small a number constituting a quorum at an adjourned session, that is a matter which the association must decide for itself. There is nothing in the by-laws to prevent any number, even to the full membership of the association, attending the adjourned session, if they so desire.

(3) The board decided that it was not its duty to take steps towards securing the proposed national incorporation.

The report of the board was referred to the Business Committee. The Business Committee recommended the adoption of the report of the Board of Trustees, and, in common with the board, the committee regretted the difficulty connected with national incorporation. The committee felt that no further action on this subject, namely, national incorporation, should be taken at this meeting.

It was moved that the report of the Business Committee on the report of the Board of Trustees be adopted, with the exception of that part pertaining to national incorporation, and that a committee of five (5) be appointed to secure the advice of the best legal talent in the United States, as to whether the association could be incorporated or not under a national charter, said committee to report at the next annual meeting to the House of Delegates. [Carried.]

DR. E. ELIOT HARRIS, New York, presented the report of the Committee on the Establishment of a National Bureau of Medicines and Foods.

The report was received, and the committee continued.

Dr. Harris also presented the report of the Committee on Revision of Code of Ethics, and at the conclusion of the report, he offered a resolution that the Special Committee on Revision of the Code of Medical Ethics unanimously recommend that its report be referred to an enlarged committee, consisting of this Special Committee, and one delegate from each state not already represented on the Special Committee, to be appointed by the president. He moved, further, that the report of the committee and its resolutions, and any amendments pertaining to this subject, be referred to the Business Committee for action.

DR. CHARLES A. L. REED of Ohio offered a substitute for the report of the committee, also a new Code of Ethics.

The substitute report, together with the resolutions offered, and the report of the Special Committee, were referred to the Business Committee.

DR. L. S. McMURTRY, Kentucky, presented a

report of the Committee on Association Medal. He asked that the committee be empowered to go forward and arrange specifications and details, so as to be able at the next meeting to present material that would be worthy of the award of the medal. This power was granted the committee.

The Committee on Senn Medal reported that it had carefully considered all of the papers presented, but that no paper had met the requirements, therefore the medal was not awarded to any one. The report was accepted.

DR. HENRY D. HOLTON of Vermont presented the report of the Committee on Rush Monument Fund.

The committee asked that a sum not exceeding \$500.00 be placed to its credit, to defray expenses incidental to the unveiling of the monument, any portion of this sum not being expended to be returned to the treasury of the association.

The report showed that the committee had already collected \$15,036.35.

On motion the report was accepted and referred to the Board of Trustees, with the recommendation that money be appropriated as asked for.

MAY 5, FIRST GENERAL MEETING.

The association met in the Tulane Theatre, at 11 A.M., and was called to order by the president, DR. FRANK BILLINGS of Chicago.

Addresses of welcome were delivered by Hon. Paul Capdevielle, Mayor of New Orleans; Hon. Leon Jastremski of Baton Rouge, representing the Governor; and Henry P. Dart of the New Orleans Bar.

The responses to these addresses of welcome were delivered by DR. J. A. WITHERSPOON of Nashville, First Vice-President of the association.

PRESIDENT BILLINGS then delivered his annual address. He selected for his subject

MEDICAL EDUCATION IN THE UNITED STATES.¹

SECOND GENERAL MEETING.

DR. A. F. JONAS of Omaha, Neb., delivered the Oration on

SURGERY.²

HOUSE OF DELEGATES. — MAY 6.

DR. ARTHUR D. BEVAN, Illinois, presented the

REPORT OF THE COMMITTEE ON EDUCATION.

Among other things, the committee stated that the first step in advancing medical education should be the adoption of an educational requirement of membership, namely, the fixing of a minimum requirement, both as to preliminary education and as to medical education. This, in the opinion of the committee, should be:

(1) As a preliminary requirement, a high school education, sufficient to enable the student to pass the examinations for entrance to standard universities.

(2) A four-year medical course of at least seven months in each year. This requirement should become effective within five years, and apply to graduates of 1908 and after that date, sufficient notice

¹ See JOURNAL, May 7, p. 487.

² See JOURNAL, May 7, p. 493.

being thus given to all medical schools of the country, to enable them to change their curricula to meet these requirements.

The committee further suggested that it be the duty of the Committee on Education to secure (1) the adoption of the educational requirements determined upon by the American Medical Association, by each state medical society, and assist the state medical societies in securing the adoption of these educational requirements by each county medical society. (2) To see to it that all medical schools are thoroughly informed of the educational requirements of the American Medical Association, and to urge upon such schools as do not demand such requirements the necessity of doing so. (3) To inform themselves as to the requirements and character of work done by each medical school. (4) To inform themselves as to the laws governing the practice of medicine in each state, and as to the manner in which these laws are being enforced. (5) To inform the state examining boards and licensing bodies of the educational requirements of the American Medical Association, and urge those whose requirements are below those of the American Medical Association to adopt the higher requirements. (6) To inform themselves upon all matters pertaining to medical education. (7) To carry out the instructions of the House of Delegates in matters of medical education. (8) To make a full report on their work to the House of Delegates at each annual meeting.

This report was referred to the Business Committee. This committee recommended the adoption of the report; that it be referred to the Board of Trustees with the endorsement of the House of Delegates. It was so referred.

The report of the Provisional Committee, on the establishment of a National Bureau of Medicines and Foods, was recommitted to the original committee for further consideration.

The Manila Medical Society was accorded representation on the same basis as a state or territorial society, provided that its organization be extended to include the Island of Luzon and such other portions of the Philippines as may organize local medical societies.

The Business Committee recommended the appointment of a committee of three from the House of Delegates to co-operate with other bodies, looking towards placing a suitable memorial in Washington, commemorating the scientific achievements of Major Walter Reed.

Several amendments to the Constitution and By-Laws which were offered last year were adopted.

Dr. W. H. WELCH, Baltimore, offered resolutions in which he pointed out the importance of the President of the United States appointing as a member of the Isthmian Canal Commission a medical man possessed of the qualifications for this work. He said the association was convinced that the mere employment of a sanitary expert by the commission would not be likely to secure the desired results. The resolutions were referred to the Business Committee, and subsequently adopted by the House of Delegates. The secretary was instructed to transmit a copy of the resolutions to the President of the United States.

Dr. W. H. SANDARS, Alabama, offered the fol-

lowing, which were referred to the Committee on Public Health:

Whereas, The protection of the people from disease is the greatest aim of all true physicians; therefore, be it

Resolved, by the American Medical Association:

(1) That to formulate a complete, coherent and constitutional public health system for this country be declared one of the most important achievements to which this body can devote itself.

(2) That immediate steps be taken to construct such a system, and to submit it for adoption by the people of the states and of the nation.

The Committee on National Legislation in its report dealt with the Antivivisection Bill. The report was referred to the Business Committee, was reported back to the House of Delegates, with the recommendation that it be adopted. It was adopted.

Dr. H. N. MOYER, Illinois, offered the following resolution on behalf of the Business Committee:

Resolved, That the American Medical Association approve the action of its committee in defeating the Antivivisection Bill, recently pending before Congress, and that Congress be strongly urged to give no further consideration to legislation of that character in the future. [Unanimously adopted.]

Dr. J. N. MACCORMACK, Kentucky, presented his report as chairman of the Committee on Organization. At the conclusion of the report the representatives of forty-four states and territories made brief but very optimistic reports of the admirable work that was being done in organizing the profession throughout the country.

The Board of Trustees appropriated \$500 to defray the necessary expenses of the Committee on Organization.

HOUSE OF DELEGATES. — MAY 7.

The Board of Trustees appropriated \$500 for the scientific exhibit.

The Business Committee had considered carefully the report of the Committee on Prophylaxis of Venereal Diseases and the proposal to hold a congress during the Louisiana Purchase Exposition, and reported favorably upon the report of that committee, and on motion the report was adopted by the House of Delegates.

The Board of Trustees appropriated \$500 for the use of the Committee on Scientific Research.

The Board further reported that Dr. J. N. MacCormack of Kentucky had been continued as organizer of the association for the next twelve months on terms satisfactory to himself and the Board of Trustees.

In regard to the Rush Monument, the Board granted an allowance of \$500 to be used in defraying the expenses of unveiling.

Dr. E. ELIOT HARRIS, New York, presented the report of the enlarged committee on the revised Code of Ethics.

This enlarged committee consisted of the Special Committee and of one delegate from each state. The committee unanimously adopted the report entitled

THE PRINCIPLES OF MEDICAL ETHICS OF THE AMERICAN MEDICAL ASSOCIATION,

and recommended the same to the House of Delegates for adoption. The report of the committee was reached unanimously, without dissension or distrust on the part of its members, each aiming to formulate a result based on principle alone, and without regard to any past or present disagreements or misunderstandings whatsoever.

The report of the Committee on Code was unanimously adopted amid loud and prolonged applause.

The Committee on Transportation recommended that the next place of meeting be Atlantic City, N. J., and on motion this recommendation was concurred in by the House of Delegates.

DR. EDWIN WALKER, Indiana, President of the Mississippi Valley Medical Association, said that at the last meeting of this Association a resolution was unanimously passed declaring that it was desirable that it should become a distinct branch of the American Medical Association. He asked, therefore, that the matter be referred to the Committee on Organization.

DR. MACCORMACK, Kentucky, moved that the matter be referred to the Committee on Organization, and that authority be given the committee to consider the question of the division of this country into branch associations, in accordance with the plan laid down in the By-Laws, and that the committee be instructed to report on such a plan at the next annual meeting of the association. [Carried.]

MAY 6. — THIRD GENERAL MEETING.

DR. J. M. ANDERS, Philadelphia, delivered the

ORATION ON "MEDICINE."³

After its delivery DR. W. L. RODMAN, Philadelphia, spoke on the life work of the late Dr. Hunter McGuire of Richmond, Va., whose portrait had been presented to the association.

The following officers were elected for the ensuing year: *President*, DR. JOHN H. MUSSER, Philadelphia; *First Vice-President*, DR. G. C. SAVAGE, Nashville, Tenn.; *Second Vice-President*, DR. ISADORE DYER, New Orleans, La.; *Third Vice-President*, DR. C. LESTER HALL, Kansas City, Mo.; *Fourth Vice-President*, DR. GEO. F. JENKINS, Keokuk, Iowa; *Treasurer*, DR. HENRY P. NEWMAN, Chicago, Ill.; *Secretary*, DR. GEORGE H. SIMMONS, Chicago, Ill.

Trustees.—DR. WILLIAM H. WELCH, Baltimore, Md.; DR. MILES F. PORTER, Fort Wayne, Ind.; DR. M. L. HARRIS, Chicago, Ill.

Judicial Council.—DR. F. H. WIGGIN, New York City, N. Y.; DR. G. B. GILLESPIE, Tennessee; DR. D. C. PEYTON, Indiana.

Oration on Surgery.—DR. WILLIAM J. MAYO, Rochester, Minn.

Oration on Medicine.—DR. GEORGE DOCK, Ann Arbor, Mich.

Oration on State Medicine.—DR. H. M. BIGGS, New York City, N. Y.

Recent Literature.

DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School, Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and WILLIAM HEALY, A.B., M.D., Instructor in Gynecology, Northwestern University Medical School. Chicago: The Year Book Publishers. 1903.

As stated in the introduction this small book of 242 pages is a careful *résumé* of the best practical literature of gynecology for year ending Feb. 1, 1903.

According to the publishers, the "Practical Medicine Series of Year Books" is published primarily for the general practitioner. This volume on gynecology should prove of value not only to the general practitioner but also to the specialist in diseases of women.

Coming from the author of one of the best recent textbooks on the subject, it is, as would be expected, abreast with the times. The typography is good and the illustrations are well executed. The book is to be strongly recommended to those who are interested in recent progress in this branch of medicine.

Obstinate Hiccough. By L. F. B. KNUTHSEN, M.D. 8vo. pp. x, 169. London: J. and A. Churchill. 1902.

The writer reports a case of obstinate hiccough under his own observation, in which the patient hiccoughed, as estimated, about half a million times. He then rehearses, in considerable detail, over a hundred and fifty cases laboriously collected from various sources, without any attempt to digest them or to make a critical study of the disorder. The case might have been condensed into such form as to be a suitable communication for a medical journal, but the necessity of a large volume on the subject is not apparent.

A Manual of Surgery. For Students and Practitioners. By WILLIAM ROSE, M.B., B.S. (Lond.), F.R.C.S., Professor of Clinical Surgery in King's College, London, and Senior Surgeon to King's College Hospital, etc., and ALBERT CARLESS, M.S. (Lond.), F.R.C.S., Surgeon to King's College Hospital, and Teacher of Operative Surgery in King's College, London, Examiner in Surgery to Glasgow University, etc. Fifth edition. New York: William Wood & Company. 1902.

This is the fifth edition of this work, and it is in England accepted as the best textbook of surgery. We have kept it some time on our desk as a reference book, and have found it to be of real value. In it the practitioner may find the essential points in diagnosis and treatment of practically all surgical lesions. The illustrations are not up to our American standard. In fact, they are poor. There are only a few of them that are original, and they do not compare with the best American textbooks of surgery. The text, however, is, as a rule, excellent. The etiology, pathology, symptoms, prognosis and treatment of injuries and diseases are thoroughly clear and practical. A judicious use of fine print has served two purposes: first, to place subjects of minor importance by themselves in fine print, and, second, to enable the authors to add a great deal of supplementary information. The book is one that we can heartily commend, as it is a safe guide to surgery.

The Practical Medicine Series of Year Books. Volume IV. Gynecology. Edited by EMILIUS C.

³ See JOURNAL, May 14, p. 521.

THE BOSTON

Medical and Surgical Journal

THURSDAY, MAY 21, 1903.

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

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THE SIXTH CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

LACK of space in our last issue did not permit allusion to a number of matters of general interest at the Washington Congress held last week, to which we now desire to call attention. The weather during the three days' session was all that could be desired; the meetings were, in general, well attended, and many of the papers presented brought out vigorous discussion.

A communication which had been looked forward to with very particular interest was the final announcement by Dr. W. T. Councilman of the present state of the question relative to the etiology of smallpox, being the results of the work recently done at the Harvard Medical School by Drs. Councilman, Magrath, Brinckerhoff, Tyzzer and Thompson. The papers relating to smallpox were read before the Association of Pathologists and Bacteriologists in a room wholly inadequate to the demands made upon it. When the final paper on the subject by Dr. Councilman was announced, a large number of persons from other sections of the congress were obliged to stand in the small space available, and many of these left the room during the lantern demonstration, on account of the excessive heat. In spite of these drawbacks, the demonstration was enthusiastically received. Essentially the same points were emphasized in the life cycle of the organism as already described in these columns in our issue of April 30. The gap between the extra-nuclear and intra-nuclear forms was frankly admitted, but the belief definitely expressed that the organism described and pictured in many of its phases was the etiological factor of importance in the production of smallpox.

The discussion which followed this paper was most unfortunately cut short by the lateness of the

hour and the discomfort of the room; many left before it had begun, and only four men finally spoke out of many who presumably might have added something of commendation or criticism. Dr. Welch's remarks were naturally listened to with great attention, so firmly fixed has he become as an arbiter in matters relating to medical science. There could be no mistaking his statement that he fully accepted Dr. Councilman's results, and was willing to recognize the organism described by him as the cause of smallpox. He admitted, as Dr. Councilman had done, that there were gaps in our knowledge still to be filled before the complete life cycle of the organism could be established, but that the evidence remaining was so conclusive that no reasonable doubt could be entertained that the causative agent of the disease had been found.

Dr. James Ewing of Cornell University Medical School took a somewhat different point of view, and was inclined to lay stress upon the gaps in our knowledge, which, he maintained, must be satisfactorily filled before he could admit the proved relationship of the organism to the disease. He had been working on the subject for two years, had studied various cell-inclusions described by Dr. Councilman, and had finally concluded that they could not be regarded as standing in causal relation to the disease. He expressed himself as almost, though not quite, convinced that he was in the wrong by the work which had been presented, but still maintained that the intra-nuclear structures described as phases of a living organism might be otherwise interpreted. The arguments he used were reinforced by references to previous work, both of his own and of other men, and certainly gave the impression of soundness. These remarks of Dr. Ewing's, recognizing, as they did, the very high degree of suggestiveness of Dr. Councilman's work, still left a doubt as to its final complete conclusiveness, an attitude which should be welcomed as most conducive to a vigorous prosecution of the study, which all admit is necessary.

Heat and time and three hours' attention to abstruse topics closed the discussion after Dr. Ewing had spoken. However valueless informal remarks may at times be, it is certainly a matter of regret that this most important subject should not have been more thoroughly discussed at the public meeting. A fair statement of the present situation seems to be that there is a high degree of probability that the organism causing smallpox has been found; that further work is necessary before this probability can become an absolute certainty; that the work of Dr. Councilman and his associates has added materially to our knowledge of the protozoa as pathogenic organisms; and that we may look

forward with confidence to the early completed solution of the etiology of smallpox.

At the meeting of the Association of American Physicians, alcohol came in for its share of discussion, with the usual result that opinions remained divided, and probably more divided than at the beginning. There was agreement that alcohol predisposes to infection, but beyond this nothing definite was reached regarding its therapeutic value. This perennial controversy will no doubt go on for many years to come, but it is well to have the air cleared from time to time by vigorous expressions of opinion on the two sides. Dr. Theobald Smith made a significant addition to our knowledge of tuberculosis in man and animals by his paper on "Studies in Mammalian Tuberculosis." The discussion widely heralded by the daily papers on the subject of the Lorenz method of treatment for dislocation of the hip was treated judiciously by the orthopedic section, and was, on the whole, favorable to the method.

The general meetings of the Congress on pancreatic and biliary disease, combining as they did both medical and surgical interests, were well attended. Many excellent papers were read, several by foreigners of wide experience. Taken all in all, the social and scientific sides of the occasion were happily balanced.

THE SURGERY OF GALLSTONES.

It was not amiss that the surgery of the biliary passages received so prominent a place at the recent Congress of American Physicians and Surgeons at Washington. No surgical procedure has, in this community at least, been so gratifying as that of the removal of offending gallstones. So much had already been said and done that the propriety of early operations in the treatment of gallstones seemed as well-established a principle as the early treatment of appendicitis. Indeed, we had supposed that in offending gallstones, as in offending appendices, the question was not *whether* but *when* to remove them.

The accumulated experience of the surgeons at the Washington meeting was enormous. Kehr, with eight hundred cases of gallstone operations; Mayo, with five hundred and forty-seven, and others with hundreds, presented a basis for deductions the soundness of which it would be perhaps useless to question. It was the common experience, already expressed by English and American surgeons, that the fatalities in the surgery of the biliary passages are almost invariably owing to delay; that through delay not only do local changes take place, which make surgery un-

usually hazardous, but constitutional changes also, which make the prognosis still more unfavorable; that fatalities, therefore, are almost invariably caused by deep, difficult and bloody dissections, made imperative by acute emergencies, or by gradually increasing disabilities.

We are especially gratified by the reviving interest in this most attractive field of surgery, for we have long been convinced of the serious possibilities of gallstone disease; and, except for palliation, of the futility of medical measures. What was said with reference to early operations has been said in these columns time and again. Indeed, some of us have felt that the pleas for early operation in gallstones, like those for early operation in appendicitis, had become, by frequent repetition, somewhat tiresome.

We have long been convinced of the wisdom of the rule that offending gallstones should be removed at the earliest practicable moment, lest graver complications should demand graver measures; that gallstones should be sought when they are easily accessible in patients whose strength and condition insure immediate success, rather than when gallstones are with difficulty accessible in patients whose waning powers and unfavorable condition render recovery the exception. Such a rule—with certain exceptions, the necessity for which all will admit—we are glad to say has now met with general approval.

That gallstones may become latent, or spontaneously escape, we must allow; but the latent stone may become again active, and the undrained gall bladder, spontaneously evacuated, may become the nidus of other stones.

The hope of latency affords justification for medical treatment when local or constitutional evidence forbids operation. Less can, however, be said in favor of medicinal treatment to promote spontaneous evacuation when general conditions contraindicate surgical measures; for nothing can be more hazardous than the escape by natural means of a large stone, and nothing more unlikely than the effectual and total delivery of many smaller ones. Moreover, in the majority of cases stones vary extremely in size and number. The discovery of a hundred in the stools does not prove that many hundreds do not remain, or that a single large one may not, by retention and impaction, do more harm than many small ones.

Questions of recurrence of gallstones in the gall bladder or in the liver; of disabilities from adhesions; of local and general biliary infections; of pressure ulcerations of the impacted ducts, followed by strictures after freeing them; of the relations of gallstones to pancreatic disease; of appro-

prate surgical treatment and of prognosis, — all of these interesting questions are suggested in connection with the surgery of gallstones. Their solution will depend chiefly upon evidence found not only in operations upon the biliary passages themselves, but upon information gained in the course of other abdominal explorations. The general experience and the prevailing opinions expressed in Washington indicate in no uncertain fashion the brilliant possibilities of this interesting field of surgery.

OPPORTUNITIES FOR WORK IN PSYCHIATRY.

In the general reorganization which has recently taken place on the medical side of the New York State hospitals for the insane, it is well again to call attention to the fact that certain very desirable positions are open for young men who desire either a permanent or a temporary training in psychiatry and allied branches. The position which is available in a large number of these institutions bears the title of "clinical assistant." It requires no civil service examination, and leads at the end of a year to the possibility of more advanced positions to which salaries are attached. Applicants for these positions need not be citizens of New York State, nor, in fact, of this country; nor does a man in any way bind himself to continuance in the service, although naturally such a decision on his part, should he prove competent, is eminently desirable in the further development of psychiatry. In offering these positions it is the intention of those in authority to make them desirable for young medical men, who should be able thereby to increase their professional experience very widely.

It must always be remembered that large institutions of whatsoever character, wherein are housed a great number of individuals, must offer experience, not only in one particular disease or particular variety of diseases, but in everything to which flesh is heir. It is not for a moment to be supposed that a man entering for a year or more one of these institutions could fail to broaden his general medical knowledge on many other subjects than those immediately relating to psychiatry. Physical diagnosis, chemistry, pathological anatomy, research in various fields, as well as morbid psychology, would certainly be offered him in generous amount. It is rather remarkable that when such opportunities as these are offered, few suitable men are to be found to take them. The instinct of doing what others have done, rather than branching out in relatively new lines, is strong in the young medical man. He should, however, not fail to recognize the positive advantage to himself of one or more years spent in this sort of work.

The director of the Pathological Institute of the State of New York is desirous of obtaining such clinical assistants, for whom promotion, in the event of competency, is practically assured. The study of psychiatry has had many and peculiar difficulties to face, but we have no doubt that the time is not far distant when young men will enter this field with the same enthusiasm with which they now turn to surgical or other less difficult branches of medicine. We beg leave, therefore, to call the attention of men about to graduate from medical schools to these positions which are now open, and which offer a somewhat unique opportunity for research and general medical cultivation.

MASSAGE OF THE HEART AS A MEANS OF RESUSCITATION.

At a meeting of the Medical Association of the Greater City of New York held May 11, a paper of remarkable interest by Drs. Robert Coleman Kemp and A. W. Gardner, on "Experimental Researches on Resuscitation after Death from Chloroform," was read by Dr. Kemp. The experiments were made upon dogs, and for the first time manometric and kymographic tracings were presented in massage of the heart. At the same time, what is claimed as the first practical method for performing cardiac massage was described in the paper. This method is as follows: The animal is placed in the Nélaton (inverted) position, which throws the heart forward against the chest, and somewhat upward. An incision is made over, or slightly below, the apex. If necessary to secure more space, a small piece of the fifth and sixth ribs may be resected. The index and middle fingers are passed over the margin of the heart and behind it, near the apex, and pressure is made on the heart against the chest. Or, the opening being enlarged, the fingers may be placed behind, and the thumb between the apex and chest-wall, when the heart is rapidly squeezed between them. It was found that a rapid intermittent (double action) pressure resuscitated more cases, and, in effect, imitated the diastole of the pulse, as is shown in the tracings. A rapid single action pressure was not as successful. This method, the authors believe, is the most rational and by far the safest that has as yet been devised. An important part of the procedure is the maintenance of artificial respiration, and this was accomplished by means of the Kemp-Gardner modified intubation tube and a new pump devised for the authors by Mr. Hoyt, of the physiological laboratory of the College of Physicians and Surgeons. Prolonged infusion of hot normal saline solution was also employed. Resuscitation was accomplished in eleven out of

twenty-three animals, after absolute cessation of heart-action to sight, touch and compression, and this after the heart had remained in this condition for variable periods (3 to 16 minutes). The dogs lived from two to twenty-four hours, and in most of them the body functions returned to normal, and the animals became active and hard to control. The conviction was expressed that with a more perfect technique there was no reason whatever why death should occur at all.

Dr. Kemp also reported the first employment in this country of cardiac massage in a human subject. The case, however, was not one of chloroform syncope, and was unsuccessful. It was in every respect a most unfavorable one, as the patient was pyemic and, in addition, weakened by several previous operations. At the time the fatal collapse occurred Dr. Kemp had just done a simple operation not lasting over five minutes, for the opening of a large accumulation of pus in the left side of the abdomen, and nitrous oxide gas was the anesthetic employed. In conclusion, it was stated by the authors that they believed the procedure of massage of the heart to be both sound therapeutics and perfectly justifiable in all cases of death from chloroform or any other anesthetic, as well as from drowning and allied conditions, when all other means of resuscitation have failed.

MEDICAL NOTES.

THE WEATHER IN CHICAGO.—According to the *Bulletin* of the Chicago Health Department the mean March temperature was six degrees higher than the average of the previous thirty-one years, and that of April was one degree higher than the average, but the range in both months was excessive,—the lowest in March being thirteen degrees and the highest seventy-four degrees, with a difference of thirty-two degrees in twelve hours on the 18th. The maximum in April was seventy-eight degrees, the minimum twenty-eight degrees, with a sudden fall of fifty degrees in twenty-four hours on the 2d and 3d of the month. There were but twelve clear days in March and only ten in April, and while in both months the precipitation was more than the normal, it was so unevenly distributed that there has been no air-washing rainfall since April 11. The atmosphere is laden with "aerial sewage"; street sprinkling is inadequate, and the raw northerly and northwesterly winds that have prevailed for six weeks or more have continued if not aggravated the preventable respiratory diseases that have been endemic since the first of the year.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, May 20, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 31, scarlatina 31, typhoid fever 16, measles 42, smallpox 0.

BOSTON MORTALITY STATISTICS.—The number of deaths reported to the Board of Health for the week ending May 16 was 229 as against 204 the corresponding week last year, showing an increase of 25 deaths, and making the death rate for the week 20.37. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 38 cases, 6 deaths; scarlatina, 45 cases, 1 death; typhoid fever, 18 cases, 1 death; measles, 53 cases, no deaths; tuberculosis, 24 cases, 26 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 39, whooping cough 2, heart disease 26, bronchitis 5, and marasmus 3. There were 7 deaths from violent causes. The number of children who died under one year was 49, under five years 63, persons over sixty years 47, deaths in public institutions 79.

A CENTENARIAN.—Thomas Grimes of South Boston, reputed to be one hundred and one years old, died May 16. He claimed to remember the Battle of Waterloo and Napoleon's exile to St. Helena, with many other historical events of ancient date.

CAMPAIGN AGAINST MOSQUITOS IN BROOKLINE.—The Brookline Board of Health has begun the work of exterminating mosquitos in that township. This work has met with gratifying success during the preceding two summers, and a systematic attempt will this year be made to treat catch basins and stagnant pools with crude oil. The appropriation for this work is estimated at about \$1,000. This attempt against the mosquito should certainly meet with every encouragement from municipal authorities, since there is no reasonable doubt that a very decided, if not complete, amelioration of the conditions might be attained with a relatively small outlay.

MEETING OF ASSOCIATION OF MILITARY SURGEONS.—The twelfth annual meeting of the Association of Military Surgeons of the United States began its sessions May 19, in Boston. Opening exercises were held in Faneuil Hall, presided over by Dr. Myles Standish, and addresses were made by Governor Bates, Dr. George E. Francis and others. Gen. Robert A. Blood of Boston delivered the annual address. The literary sessions were held at the Boston Medical Library, and a reception was

tendered the visiting physicians and invited guests Tuesday evening at the Cadet Armory. The committee on the Enno Sander prize medal announced that Major Frederick Smith of the Royal Army Medical Corps, Lancastershire, England, had received the first prize, and that Dr. William E. Rucker of the U. S. Marine Hospital Service had been awarded the second prize. Dr. Rucker was present and read his essay, which was well received. The general discussions of the meeting were of more than usual interest.

NEW YORK.

ADMINISTRATION OF DRUGS TO HORSES.—Although the administration of drugs to horses for the purpose of increasing their speed in races was officially prohibited some time ago, the practice appears to some extent, at least, to be still resorted to surreptitiously, and a flagrant instance of it, in which the perpetrator of the abuse quite overreached himself, has just been brought to light at the Morris Park race course, in the Bronx. A horse which, curiously enough, was named “Dr. Riddle,” was noticed to be acting in a very peculiar manner before the race for which he was entered, and although he started, the jockey riding him at once found it impossible for him to go on. Two hours later the animal died, and on the report of the veterinary sent to examine him, the license of the trainer who was responsible for his condition was promptly suspended, pending action by the stewards of the Jockey Club, and the case was reported to the Society for the Prevention of Cruelty to Animals.

NOTES FROM THE PHILIPPINES.

SANITARY DISTRICTS.—The commissioner of health, Major Carter, has lately divided the archipelago into seven sanitary districts, over each of which an American medical inspector has been placed. These districts are large, and include a number of provinces, or islands, each. The medical inspectors are directed to make full reports covering local sanitary conditions, both for the routine use of the board of health and also in relation to the combating of epidemics. All insular officials have been directed to show these inspectors every courtesy, and render them all possible assistance. The subjects to which special attention is to be paid, in addition to the general sanitary conditions, are the diseases common in each locality, the local death-rate and the chief causes contributing thereto. The history of the late cholera epidemic is to be studied, the customs and habits of the natives in relation to health, the diseases of cattle and live stock. Much attention will also be given to per-


fecting the organization of boards of health for the provinces and municipalities, and the instruction of their officials in the proper performance of their duties. The work to be done is of the utmost importance to the future efficiency of the health department for the islands. Heretofore the sanitary organization has been so loose in the provinces as not to permit of the best results, and the health officers in Manila found it difficult to direct sanitary work through the islands.


A CASE OF CONSPICUOUS GALLANTRY.—Conspicuous gallantry in action was lately displayed by Private Otto Herter, Hospital Corps, United States Army, in a fight between entrenched ladrones and a number of native scouts near Manila, in which there were over sixty killed on both sides. The strong entrenchments of the ladrones were charged by the scouts, and a desperate hand-to-hand combat took place with the well-armed ladrones. As it was impossible to succor the wounded during the *mêlée*, Private Herter seized a carbine from a scout and took a hand in the fight. His officers report that his shooting was remarkable, they personally seeing him kill six ladrones before a Remington bullet smashed his right humerus, when he drew his revolver with his left hand and continued in the action. After the fight he directed the treatment of the wounded, and then walked six miles to the nearest hospital for his own treatment. His arm was so badly injured that high amputation will be necessary. He has been recommended for a medal of honor, by his commanding officers, for his gallantry.

Miscellany.

METEOROLOGICAL RECORD.

For the week ending May 9, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Ba- rom- eter. | Ther- mometer. | | | Relative humldity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|----------------------|-------------------|----------|----------|-----------------------|-----------|-------------|-----------------------|-----------|----------------------|-----------|--------------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| | | | | | | | | | | | | | | |
| S. . | 3 36.34 | 42 | 47 | 38 | 73 | 89 | 81 | E | S E | 8 | 6 | O. | O. | O. |
| M. . | 4 30.18 | 47 | 51 | 43 | 96 | 96 | 96 | N. E | N. E | 5 | 5 | R. | O. | O. |
| T. . | 5 30.20 | 52 | 57 | 46 | 79 | 100 | 90 | N. E | N. E | 14 | 15 | O. | R. | O. |
| W. . | 6 30.13 | 50 | 52 | 47 | 90 | 87 | 88 | N | N | 10 | 12 | O. | C. | .03 |
| T. . | 7 30.05 | 50 | 55 | 45 | 78 | 88 | 83 | N. E | N. E | 7 | 7 | C. | O. | .05 |
| F. . | 8 30.12 | 56 | 63 | 49 | 69 | 68 | 67 | N. W | S E | 6 | 7 | C. | C. | .06 |
| S. . | 9 30.26 | 54 | 62 | 47 | 52 | 86 | 69 | N. E | E | 10 | 10 | C. | C. | O. |
|  | 30.18 | | 55 | 45 | | | 82 | | | | | | | .14 |

* O., cloudy; C., clear; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 9, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|-----------------------------|--------------------------|--------------------------|---------------------------|----------------------|-----------------------|-----------------|----------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . . | 3,785,156 | 1,387 | 413 | 23.28 | 20.04 | 3.68 | .58 | 1.30 | |
| Chicago . . . | 1,885,000 | 672 | 138 | 22.91 | 26.48 | 1.04 | 1.19 | 1.73 | |
| Philadelphia . . | 1,378,527 | 498 | 127 | 26.30 | 13.45 | 2.20 | 2.40 | 1.00 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 163 | 44 | 24.54 | 9.82 | 1.84 | .61 | 2.45 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 131 | 36 | 32.06 | 12.21 | .76 | 6.08 | 2.29 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,163 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 66 | 24 | 19.70 | 27.27 | — | 3.00 | 1.51 | |
| Boston . . . | 603,163 | 210 | 54 | 24.76 | 17.14 | 1.30 | 2.38 | .95 | |
| Worcester . . . | 132,044 | 53 | 9 | 7.55 | 25.64 | — | — | 1.88 | |
| Fall River . . . | 115,549 | 36 | 13 | 19.44 | 25.00 | — | — | — | |
| Lowell . . . | 101,959 | 32 | 10 | 9.37 | 31.25 | — | — | — | |
| Cambridge . . . | 98,639 | 18 | 8 | 11.11 | 11.11 | — | — | — | |
| Lynn . . . | 72,497 | 10 | 2 | — | — | — | — | — | |
| Lawrence . . . | 69,766 | 22 | 8 | 45.45 | 13.63 | 4.55 | — | — | |
| Springfield . . . | 69,389 | 17 | 7 | 23.52 | 17.64 | 5.88 | 5.88 | — | |
| Somerville . . . | 68,110 | 27 | 7 | 14.81 | 37.03 | 3.70 | — | — | |
| New Bedford . . | 67,198 | 35 | 11 | 37.14 | 11.43 | — | — | 20.00 | |
| Holyoke . . . | 49,286 | 18 | 9 | 16.67 | 22.22 | 5.55 | — | — | |
| Brockton . . . | 44,873 | 9 | 0 | 33.33 | — | — | — | — | |
| Haverhill . . . | 42,104 | 9 | 2 | — | 22.22 | — | — | — | |
| Newton . . . | 37,794 | 6 | — | — | 16.67 | — | — | — | |
| Salem . . . | 36,876 | 15 | 3 | 13.33 | 13.33 | — | — | — | |
| Malden . . . | 36,286 | 6 | — | 16.67 | — | — | — | — | |
| Chelsea . . . | 35,876 | 11 | 3 | 18.18 | 9.09 | — | — | — | |
| Fitchburg . . . | 35,069 | 6 | 2 | 16.67 | 83.33 | — | — | — | |
| Taunton . . . | 33,656 | 10 | 1 | 30.00 | 30.00 | — | — | — | |
| Everett . . . | 28,620 | 6 | 2 | 16.67 | — | 16.67 | — | — | |
| North Adams . . | 27,862 | 7 | 1 | 28.60 | — | — | — | — | |
| Gloucester . . . | 26,121 | 8 | 3 | 12.50 | — | — | — | — | |
| Quincy . . . | 26,042 | 7 | 1 | — | 14.30 | — | — | — | |
| Waltham . . . | 25,198 | 2 | — | — | — | — | — | — | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . . | 22,589 | 4 | 1 | — | 25.00 | — | — | — | |
| Chicopee . . . | 21,031 | 19 | 12 | 36.84 | 15.79 | 5.26 | — | 26.31 | |
| Medford . . . | 20,962 | 4 | 1 | — | 25.00 | — | — | — | |
| Northampton . . | 19,883 | 4 | 2 | 50.00 | — | — | 25.00 | 25.00 | |
| Beverly . . . | 15,302 | 2 | 1 | — | — | — | — | — | |
| Clinton . . . | 15,161 | 4 | 2 | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 4 | 1 | — | 20.00 | — | — | — | |
| Woburn . . . | 14,300 | 8 | 2 | 12.50 | 12.50 | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | 5 | 3 | 40.00 | — | — | — | — | |
| Attleboro . . . | 13,677 | 1 | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 6 | 2 | 33.33 | — | — | 16.67 | — | |
| Melrose . . . | 13,600 | 0 | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 6 | 4 | 33.33 | 16.67 | — | 16.67 | 16.67 | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 3 | 1 | — | — | — | — | — | |
| Framingham . . . | 12,534 | 6 | 1 | 16.67 | 33.33 | — | 16.67 | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 5 | — | 40.00 | — | — | — | — | |
| Weymouth . . . | 11,344 | 4 | 0 | 25.00 | — | 25.00 | — | — | |
| Southbridge . . . | 11,268 | 5 | 1 | 20.00 | — | — | — | — | |
| Watertown . . . | 11,077 | 5 | 1 | — | — | — | — | — | |
| Plymouth . . . | 10,730 | 1 | — | — | — | — | — | — | |

Deaths reported, 3,593; under five years of age, 963; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 845, acute lung diseases 691, consumption 425, scarlet fever 60, whooping cough 49, cerebrospinal meningitis 10, smallpox 11, erysipelas 4, measles 52, typhoid fever 51, puerperal fever 15, diarrheal diseases 75, diphtheria and croup 84.

From whooping cough, New York 8, Chicago 8, Philadelphia 12, Baltimore 12, Pittsburg 8, Providence 2, Boston 5, and Springfield, Northampton, Marlborough, Westfield and Framingham 1 each. From erysipelas, Chicago 2, Philadelphia 1, Worcester 1. From smallpox, Chicago 4, Philadelphia 2, Pittsburg 4, Lawrence 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending April 25 the death-rate was 17.4. Deaths reported, 5,051; acute diseases of the respiratory organs (London) 280, whooping cough 124, diphtheria 66, scarlet fever 55, measles 168, smallpox 17.

The death-rate ranged from 4.9 in Kings-Norton to 30.7 in Middlesbrough; London 16.8, West Ham 15.0, Brighton 20.8, Portsmouth 13.4, Southampton 11.8, Plymouth 20.9, Bristol 13.8, Birmingham 19.4, Leicester 12.3, Nottingham 20.3, Bolton 22.0, Manchester 25.2, Salford 25.3, Bradford 15.5, Leeds 16.1, Hull 15.0, Newcastle-on-Tyne 18.1, Cardiff 12.1, Rhondda 19.2, Liverpool 21.2, Wigan 16.8, Croydon 14.4.

CHANGES IN THE MEDICAL CORPS OF THE NAVY
FOR THE WEEK ENDING MAY 16, 1903.

R. K. SMITH, passed assistant surgeon. Resignation accepted, to take effect May 19, 1903.

J. R. DYKES, U. S. N., acting assistant surgeon. Appointed assistant surgeon, April 18, 1903.

RECENT DEATHS.

RUFUS OSGOOD MASON, M.D., of New York, died suddenly on May 11, in his seventy-third year. He was born in Sullivan, N. H., and was graduated from Dartmouth College in 1854, and from the College of Physicians and Surgeons, New York, in 1859. During the Civil War he was an acting assistant surgeon. On hypnotism and subliminal consciousness, so-called, Dr. Mason was an authority, and some of his earlier experiments with hypnotism antedated those of Charcot. Although a busy general practitioner to the day of his death, he was much interested in literature and music, and was himself the author of several books. Among them were "Telepathy and the Subliminal Self," 1897, and "Hypnotism and Suggestion in Therapeutics," 1901. Quite recently there were published in the New York Times' Saturday Review of Books and Art two important articles by him on the late F. W. H. Myers' posthumous work, "Human Personality and Its Survival of Bodily Death."

DWIGHT S. CHAMBERLAIN, M.D., of Lyons, Wayne County, New York, died on May 11, aged sixty-five years, of typhoid pneumonia. During the Civil War he served as surgeon of the Ninth Heavy Artillery, and later was in charge of the Soldiers' Hospital at Syracuse, N. Y. At the time of his death he was president of the Lyons National Bank.

BOOKS AND PAMPHLETS RECEIVED.

How to Keep Well, an Explanation of Modern Methods of Preventing Disease. By Floyd M. Crandall, M.D. New York: Doubleday, Page & Co. 1903.

Transactions of the American Dermatological Association at its Twenty-sixth Annual Meeting, held in Boston, Mass., Sept. 18, 19 and 20, 1902.

Thirty-third Annual Report of the State Board of Health. 1902.

Transactions of the Twenty-fourth Annual Meeting of the American Laryngological Association, held at Boston, Mass., May 26, 27 and 28, 1902. New York: Rooney & Otten Printing Co. 1902.

The Duties of the Individual and the Government in the Combat of Tuberculosis. By S. A. Knopf, M.D., of New York. 1903.

Gonorrhea. By F. J. B. Cordeiro, A.B., M.D. 1903.

Quarantine Laws and Regulations of the United States. Revised edition. Washington, D. C.: Treasury Department. 1903.

Perineal Prostatectomy. A Special Method. By Parker Syme, M.D. New York. Reprint. 1902.

Albany Hospital. First Report of Pavilion F, Department for Mental Diseases, for the year ending Feb. 28, 1903. Reprint. 1903.

Operative Surgery. By Herbert William Allingham, F.R.C.S. Illustrated. New York: William Wood & Co. 1903.

Twenty-fifth Annual Report of the State Board of Health of the State of Connecticut, for the year 1902, with the Registration Report for 1901, relating to Births, Marriages, Deaths and Divorces. 1903.

Thirty-fourth Annual Report of the Secretary of State on the Registration of Births and Deaths, Marriages and Divorces in Michigan, for the year 1900.

The Practical Detail of Cataract Extraction. By H. Herbert, F.R.C.S. (Eng.). Major I. M. S. Illustrated. New York: William Wood & Co. 1903.

The Errors of Accommodation and Refraction of the Eye and their Treatment; a Handbook for Students. By Ernest Clarke, F.R.C.S. (Eng.), M.D., B.S. (Lond.). Illustrated. New York: William Wood & Co. 1903.

The Refraction of the Eye and the Anomalies of the Ocular Muscles. By Kenneth Campbell, M.B. (Edin.), F.R.C.S. (Eng.). Illustrated. New York: William Wood & Co. 1903.

Bacteria in Milk and its Products. Designed for the Use of Students in Dairying and for all Others Concerned in the Handling of Milk, Butter or Cheese. By H. W. Conn, Ph.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Mechanical Vibratory Stimulation, its Theory and Application in the Treatment of Disease. By Maurice F. Pilgrim, M.D. Illustrated. New York: The Lawrence Press. 1903.

Original Articles.

THE RELATION OF CHRONIC ENLARGEMENT OF THE SPLEEN TO ANEMIA IN INFANCY.*

BY JOHN LOVETT MORSE, A.M., M.D., BOSTON,

Instructor in Diseases of Children, Harvard Medical School; Assistant Visiting Physician at the City Hospital and at The Infants' Hospital, Boston.

The objects of this paper are to consider the relation of chronic enlargement of the spleen and anemia in infancy to each other, and whether or no there is any justification for the recognition of the special forms of anemia known as the "splenic anemia of infancy" and "anemia infantum pseudo-leukemika." Before taking up these subjects it may be well to consider briefly the peculiarities of the blood in infancy, both in health and disease, and the conditions under which chronic enlargement of the spleen occurs at this age.

The blood of infants under two years normally differs in certain of its characteristics from that of adults. The hemoglobin, although relatively high for a short time after birth, is, during the rest of childhood, relatively low. The number of red corpuscles is about the same or a little larger than in adults, averaging a little over five millions per cubic millimeter. During the first weeks of life there is more or less variation in the size and shape of the red cells, and nucleated forms are not very unusual. The number of white corpuscles per cubic millimeter is somewhat larger than in adults, averaging from ten thousand to fourteen thousand. The relative proportions of the various forms of leucocytes are also considerably different. The limits are roughly as follows: Small mononuclear, 50% to 70%; large mononuclear, 5% to 15%; polynuclear neutrophils, 30% to 40%; eosinophiles, 1% to 10%; that is, the proportion of mononuclear forms is about three times as great as in adult life, while that of the polynuclear neutrophils is only one half as large. The mononuclear cells, moreover, are not merely lymphocytes, but vary much, not only in the size of the cell as a whole, but also in the size of the nucleus and in the amount of protoplasm.

Blood changes develop more easily and more frequently as the result of various morbid conditions and diseases in infants than in adults. All the changes seen in the blood of adults as the results of disease are exaggerated in infancy. The tendency is always to revert to a younger or to the fetal type of blood. All forms of blood disease in infancy are apt to be associated with splenic enlargement. As the result of this tendency to exaggeration of changes and to reversion to a younger type of blood, the red corpuscles show much greater variety in size and shape and many more nucleated forms than under similar pathological conditions in the adult. Leucocytosis also develops more rapidly and to a greater degree. Its type, moreover, is not constant, as in adults, in whom the increase of white cells is largely in the polynuclear neutrophils. In infants the increase is sometimes in the lymphocytes, sometimes in the large mononuclear forms, sometimes in the polynuclear neutrophils, and sometimes, even, in the eosinophiles. Leucocytosis is more apt to occur in blood conditions associated with splenic enlargement than in

those without it. Myelocytes occur in less severe conditions and in greater numbers than in adults. An increase in the number of eosinophilic cells, even if considerable, seems to be of little significance. The percentage of hemoglobin is almost always relatively low.

Chronic splenic tumor is much more common in infancy than in later years, occurring not only under the same conditions as in adults, but in many others not associated in them with splenic enlargement. It is, as in adults, an almost constant accompaniment of leukemia, pseudo-leukemia, cirrhosis of the liver and malaria. These conditions, with the exception of malaria, are extremely rare in infancy. Malaria, however, is not at all uncommon. In it the splenic tumor develops early, attains considerable size and persists a long time. Enlargement of the spleen from amyloid change occurs in association with amyloid changes in other organs as in adults and from the same causes. Malignant disease of the spleen is almost unknown in infancy, but does occur. If so, it is usually congenital or secondary to malignant disease elsewhere. Primary endothelial hyperplasia of the spleen (Bovaird) has not yet been seen under two years.

In adults chronic diseases are not, as a rule, associated with enlargement of the spleen. Many of the chronic affections of infancy, however, especially those in which cachexia is marked, are accompanied by enlargement of the spleen. It is in this class that the enlargements of the spleen in syphilis and rachitis probably belong. It is almost invariably enlarged in the hereditary syphilis of infancy. This enlargement is usually due to an increase in the stroma and to thickening of the blood vessels, but may in rare instances be due to gummatous changes. Enlargement of the spleen occurs very commonly in rickets. Its direct dependence on the disease *per se* is, however, doubtful. In tuberculosis the enlargement, unless due to amyloid changes, is usually slight. It is especially common in conditions associated with anemia, all forms of which, whether primary or secondary, may be associated in infancy with enlargement of the spleen.

Before going further it may be well to attempt to define what is meant by the terms "splenic anemia of infancy" and "anemia infantum pseudo-leukemika." Certain authors, usually English, have apparently considered chronic enlargement of the spleen *per se* as sufficient to justify the use of the term "splenic anemia." Most of the others have, however, evidently used the term to describe the clinical complex more commonly known as "anemia infantum pseudo-leukemika." There can be but little doubt that the terms "splenic anemia of infants," "anemia splenica infantile," "anemia splenica infettiva dei bambini" and "anemia infantum pseudo-leukemika" have been applied to practically identical conditions and may be considered as synonymous. No two authors are agreed as to just what are the pathognomic symptoms, physical signs and blood condition of anemia infantum pseudo-leukemika. A combination of the descriptions of Von Jaksch, Luzet and Alt and Weiss describes it as well, perhaps, as anything. (Dr. A. H. Wentworth¹ has

* Read before the Association of American Physicians at Washington, May 13, 1903.

¹ Boston Med. and Surg. Journ., 1901, cxlv, 374, 402, 435, 451, 452.

| No. | Spleen. | Liver. | Glands. | Red Corpuscles. | | Hb. | White Corpuscles. | | Small Mononuclear. | Large Mononuclear. | Polynuclear Neutrophils. | Eosinophiles. | Myelocytes. | Morphological Changes. | ETIOLOGY. | | | | | Results. |
|-----|----------|--------|---------|-----------------|-----|--------|-------------------|------|--------------------|--------------------|--------------------------|---------------|-------------|--|-----------|-----------|----------------|---------------------------|----------------|---|
| | | | | | | | | | | | | | | | Rickets. | Syphills. | Improper Food. | Gastro-enteric Disorders. | Miscellaneous. | |
| 1. | 1 | 4 | ? | 1,250,000 | 15% | 10,300 | 67.0 | 2.0 | 29.0 | 2.0 | | | | Marked. | + | | Yes. | Yes. | | Died in one month. |
| 2. | 2 | N. | + | 3,288,000 | 42% | 4,800 | 49.0 | 5.0 | 45.0 | 1.0 | | | | { One normoblast to } { one macroblast. } | + | | Breast. | Yes. | | { Lost in one month. |
| 3. | 2 | N. | + | 4,519,000 | 57% | 15,900 | 44.0 | 3.5 | 47.0 | 5.5 | | | | Slight. Normoblasts. | + | | Breast. | Yes. | | { Probably died. |
| 4. | 2 x 5 | N. | ++ | 2,296,000 | 25% | 16,850 | 34.4 | 19.6 | 44.4 | 0.4 | 1.2 | | | { Moderate. Six nor- } { moblasts to one } { megaloblast and } { one microblast. } | ++ | | Yes. | Yes. | | { Died in seven months. |
| 5. | 2 x 4 | 3 | ? | 5,072,000 | 65% | 16,600 | 40.0 | 18.0 | 41.0 | 1.0 | | | | Slight. | + | | Yes. | Yes. | | { Well in two and on } { half years. Spleen } { not palpable. Live } { normal. } |
| 6. | 3 x 4 | N. | + | 1,736,000 | 25% | 4,200 | 69.0 | 5.0 | 25.0 | 1.0 | | | | Marked. | 0 | | Yes. | Yes. | | { Lost. Prob'ly did well } { Died in one month. } |
| 7. | 3 x 6 | N. | + | 3,708,000 | 30% | 18,520 | 31.0 | 4.0 | 64.0 | 1.0 | | | | { Marked. Normo- } { blasts. } | + | | Yes. | Yes. | Premature. | { Lost in one month. } |
| 8. | 3 x 4 | 3 | + | 5,380,000 | 65% | 15,825 | 43.0 | 2.0 | 54.0 | 0.5 | 0.5 | | | Slight. | ++ | | ? | ? | | { Probably did well. } |
| 9. | 3 1/2 | N. | + | 950,000 | 19% | 27,000 | 52.0 | 13.0 | 32.0 | 0.5 | 2.5 | | | { Marked. Twenty- } { four normoblasts } { to twenty-one me- } { galoblasts and } { eight microblasts. } | 0 | | ? | ? | Pertussis. | { Lost in two weeks. } |
| 10. | 4 x 8 | N. | + | 5,158,000 | 68% | 15,200 | 51.0 | 5.0 | 40.0 | 4.0 | | | | { Moderate. Occa- } { sional normoblast. } | +++ | | Yes. | Yes. | | { Died in five days. } |
| 11. | 4 | 6 | + | 5,650,000 | 75% | 11,800 | 32.0 | 8.0 | 51.0 | 9.0 | | | | Slight. | ++ | | ? | ? | | { Well in six years. } |
| 12. | Umb. | 2 | + | 3,564,000 | 60% | 16,250 | 31.0 | 8.0 | 60.0 | 1.0 | | | | { Marked. Megalo- } { blasts. } | + | | ? | Yes. | | { Spleen just palpable } |
| 13. | Umb. | 3 | + | 5,800,000 | ? | 15,000 | 43.0 | 2.0 | 55.0 | | | | | | ++ | | Breast. | Yes. | | { Liver normal. } |
| 14. | Umb. | 3 | +++ | 2,553,000 | 55% | 8,200 | 44.0 | 4.0 | 50.0 | 1.0 | 1.0 | | | Moderate. | + | | Breast. | Yes. | | { Well in seven months } |
| 15. | Umb. | 5 | +++ | 4,340,000 | 60% | 31,500 | 29.5 | 9.9 | 56.5 | 0.3 | 3.8 | | | { Very mark'd. Eleven } { normoblasts to } { eighty-nine macro- } { blasts. Nuclear } { figures. } | + | | Yes. | Yes. | | { Spleen not palpable } |
| 16. | Umb. | 5 | + | 4,408,000 | 58% | 47,220 | 36.5 | 9.5 | 50.5 | 1.0 | 2.5 | | | { Moderate. Thirteen } { normoblasts to } { eighteen macro- } { blasts and one } { microblast. } | +++ | | Yes. | Yes. | | { Liver—4 1/2 cm. below } |
| 17. | Umb. | 6 | ++ | 4,200,000 | 65% | 13,400 | 42.0 | 11.0 | 45.0 | 2.0 | | | | Moderate. | + | Yes. | Yes. | Yes. | | { ribs. } |
| 18. | A. S. S. | N. | ? | 3,556,000 | 60% | 12,400 | 28.0 | 10.0 | 55.0 | 7.0 | | | | { Moderate. Megalo- } { blasts most nu- } { merous. } | ++ | | Yes. | Yes. | | { Alive in eight months } |
| 19. | A. S. S. | 3 | + | 4,000,000 | 40% | 18,750 | 34.4 | 12.6 | 51.0 | 0.2 | 1.8 | | | { Marked. Sixteen } { normoblasts to } { nine megaloblasts. } | +++ | | Yes. | Yes. | | { Doing well. Spleen } |
| 20. | A. S. S. | 5 | ++ | 3,750,000 | 55% | 16,200 | 50.0 | 6.0 | 39.0 | 5.0 | | | | Slight. | + | Yes. | Yes. | ? | | { Spleen not palpable. } |
| 21. | A. S. S. | +++ | + | 3,720,000 | 65% | 10,760 | 30.0 | 4.0 | 65.0 | 1.0 | | | | Slight. | + | | Yes. | Yes. | | { Liver—3 cm. below } |
| 22. | A. S. S. | 3 | + | 3,750,000 | 50% | 29,600 | 30.0 | 18.0 | 48.0 | 2.0 | 2.0 | | | { Marked. Eight nor- } { moblasts to twelve } { macroblasts and } { seven microblasts. } | ++ | | Yes. | ? | | { ribs. } |

+ = slight; ++ = moderate; +++ = marked.

recently reviewed the literature of this condition very thoroughly.)

It is a form of severe progressive anemia of infants whose symptoms and clinical course correspond to the picture of leukemia. There is marked enlargement of the spleen and more or less enlargement of the liver. The superficial lymph nodes are usually enlarged. The course is less rapid and the prognosis better than in leukemia. The blood condition is as follows: Constant diminution in the number of red corpuscles with a more or less marked diminution in the amount of hemoglobin; poikilocytosis; very many nucleated red cells, chiefly normoblasts, many of these of abnormal form and showing karyokinetic figures; more or less polychromatophilia of the nucleated red cells and many of the non-nucleated; pretty marked leucocytosis, always polymorphons.

Pathological examinations have been few in these cases, and, as a rule, very incomplete. The lesions which have been described in the spleen are almost entirely those of chronic hyperplasia, affecting various parts of the organ in different degrees in individual cases. The livers showed congestion and slight increase in the connective tissue. In some cases there was a slight infiltration of lymphoid cells and in others slight degenerative lesions.

I have notes, with complete examinations of the blood, on twenty-two cases of chronic enlargement of the spleen in infancy, as well as notes without examinations of the blood on a number of others. For lack of a better basis I have arranged them "primarily" according to the size of the spleen, and secondarily according to the size of the liver.

CASE I.—Joseph C., eleven months old, was admitted to the Infants' Hospital Jan. 3, 1901. He had had the breast alone for six months, after that a varied diet. He had always vomited a great deal. The history was otherwise imperfect.

He was well developed, fairly nourished and flabby. The skin was in good condition. There was marked pallor of the skin and mucous membranes. The fontanelle was level. There were two lower incisors. There was a moderate rosary. The cardiac impulse was in the fifth space $1\frac{1}{2}$ cm. outside the nipple line. The upper border of cardiac dullness was at the lower border of the second rib, the right border 3 cm. to the right of the median line, the left $7\frac{1}{2}$ cm. to the left of the median line. The first sound over the whole precordia was continued into a soft, blowing murmur. The second pulmonic sound was the louder. The lungs were negative. The spine showed a marked curve of weakness. The upper border of liver flatness was in the fifth space. The lower border was palpable 4 cm. below the costal border in the nipple line. The spleen was palpable 1 cm. below the costal border. There was a slight umbilical hernia. There was a slight enlargement of the epiphyses at the wrists. The extremities were otherwise normal except for slight edema of the feet and legs. There was no edema of the hands, but a little of the eyelids.

Urine: Pale, clear, acid, 1017, no albumin. Blood: extremely watery and streaky, coagulation very slow; hemoglobin, 15%; red corpuscles, 1,250,000; white corpuscles, 10,300; small mononuclear, 67%; large mononuclear, 2%; polynuclear neutrophiles, 29%; eosinophiles, 2%. There was marked variation in the size and shape of the red corpuscles. There was a tendency to small forms rather than to large. No nucleated forms were seen in two slides.

In spite of careful feeding, iron and arsenic, he failed steadily in weight, strength and color. The temperature was slightly elevated. There was almost no vomiting. The movements were clay-colored. The edema of the face increased.

He died Feb. 3, 1901.

CASE II.—William F., aged ten months, came to the Out-Patient Department of the Infants' Hospital May 17, 1898. There was no history of tuberculosis in the family or of exposure to it. He had nothing but breast milk, but was fed irregularly. A rough analysis of the breast milk showed a specific gravity of 1031 and 2.6% fat. The proteids must, therefore, have been about normal or a little low. He began to lose weight, strength and color at seven months, and had failed steadily since then. He had had no fever. The bowels moved once daily. He vomited a little almost every day.

He was poorly developed and nourished. Pallor was marked. The head was negative. There were two teeth. He held up his head, but was unable to sit alone. There was a moderate rosary. The heart and lungs were normal. By auscultatory percussion the stomach was distended. The liver was normal. The spleen was palpable 2 cm. below the costal border. The extremities were normal. There was a slight general enlargement of the lymph nodes.

Blood: Hemoglobin, 42%; red corpuscles, 3,288,000; white corpuscles, 4,800; small mononuclear, 49%; large mononuclear, 5%; polynuclear neutrophiles, 45%; eosinophiles, 1%. There was moderate variation in the size and shape of the red corpuscles. One macroblast and one normoblast were seen in counting 100 white cells.

When last seen, June 22, 1898, the symptoms had continued, and he had failed steadily in every way. He presumably died shortly after.

CASE III.—Joseph E., five months old, came to the Out-Patient Department of the Infant's Hospital May 9, 1898. He had never had any food but breast milk. He vomited after almost every nursing. The bowels were constipated. He had never gained.

He was small but not much emaciated. The pallor was marked. The head was negative. He was unable to hold it up. There was a marked rosary. The heart was normal except for a systolic murmur over the whole precordia. A few râles were heard here and there in both chests. The abdomen was lax. The liver was normal. The spleen was palpable about 2 cm. below the costal border. The epiphyses at the wrists were slightly enlarged. The extremities were otherwise normal. There was a slight general enlargement of the lymph nodes.

Blood: Hemoglobin, 57%; red corpuscles, 4,519,000; white corpuscles, 15,000; small mononuclear, 44%; large mononuclear, 3.5%; polynuclear neutrophiles, 47%; eosinophiles, 5.5%. There was but little variation in the size of the red corpuscles and very little in their shape. One normoblast was seen in counting 400 whites.

He died Nov. 25, 1896 "of the same trouble."

CASE IV.—Joseph M., was admitted to the Infants' Hospital in May, 1900, when sixteen months old. He had been fed on condensed milk and malted milk, and had never done well. He had always had vomiting and diarrhea off and on, and had never gained.

He was small, thin and markedly pale. The fontanelle was small and much sunken. There were eleven teeth. The costal cartilages were much depressed, making the front of the chest flat. There was a moderate rosary. The heart and lungs were normal. There was a loud systolic blow in the neck. The abdomen was lax. The liver was normal. The spleen was palpable about 2 cm. below the costal border over a distance of 5 cm. The edge was sharp and the notch distinctly felt. The extremities were normal. There was a moderate general enlargement of the lymph nodes, especially of those in the right side of the neck.

Blood: Hemoglobin, 25%; red corpuscles, 2,296,000; white corpuscles, 16,850; small mononuclear, 34.4%; large mononuclear, 19.6%; polynuclear neutrophiles, 44.4%; eosinophiles, 0.4%; myelocytes, 1.2%. The red corpuscles were somewhat irregular in size, shape and color, but poikilocytosis was not marked. In counting 250 white corpuscles, 6 normoblasts, 1 microblast and 1 normoblast were seen. After a few weeks of observation he was discharged to die.

He was seen Sept. 8, 1902, two and one half years later. He was then well and strong and of good color. The liver was normal. The spleen was not palpable.

CASE V.—Francis K., aged sixteen months, was admitted to the Infants' Hospital Jan. 12, 1901. He was well until

he was weaned at fourteen months and put on general diet. After that he was constipated, vomited occasionally and lost weight pretty steadily. When weaned he could stand and walk with the aid of a chair. At entrance he was unable to stand.

He was well developed and nourished, but slightly flabby and rather pale. The fontanelle was 3 cm. in diameter. The head was not otherwise abnormal. There were twelve teeth. The spine showed a slight curve of weakness. There was a slight rosary and slight flaring of the lower chest. The heart showed nothing abnormal excepting a faint systolic murmur in the pulmonic area. There was a venous hum in the neck. The lungs were normal. The upper border of the liver flatness was at the fifth rib. The lower border was palpable 3 cm. below the costal border. The spleen was palpable 2 cm. below the costal border and was 4 cm. in width. The abdomen was negative. There was slight enlargement of the epiphysis at the wrists.

Urine: Normal color, alkaline, no albumin. Blood: Hemoglobin, 65%; red corpuscles, 5,072,000; white corpuscles, 16,600; small mononuclear, 40%; large mononuclear, 18%; polynuclear neutrophiles, 41%; eosinophiles, 1%. There was moderate variation in the size of the red corpuscles, but little in their shape. No nucleated forms were seen. No abnormal forms of white cells were seen, but there was great variation in the size of the mononuclear cells, very few of them being small.

He was discharged Jan. 19, 1901, improving in every way. He did not vomit, his movements were normal, and he was gaining in weight. Nothing further is known as to the progress of the case.

CASE VI. Alice F., aged five months, came to the Out-Patient Department of the Infants' Hospital June 22, 1897. She had always been fed on sterilized milk or condensed milk. She had always vomited and had undigested movements. She had gained fairly steadily in weight.

She was fairly developed and nourished and very pale. The heart was normal except for a systolic murmur over the whole precordia. The lungs were normal. The liver was normal. The spleen was palpable 3 cm. below the costal border and was 4 cm. wide. There was a slight umbilical hernia. There was a general enlargement of the lymph nodes more marked in those of the groin.

Blood: Hemoglobin, 25%; red corpuscles, 1,736,000; white corpuscles, 4,200; small mononuclear, 69%; large mononuclear, 5%; polynuclear neutrophiles, 25%; eosinophiles, 1%. There was marked variation in the size and moderate variation in the shape of the red corpuscles. No nucleated forms were seen.

Nothing further is known as to the progress of the case, except that she died July 20, 1897.

CASE VII. Helen G., ten months old, came to the Out-Patient Department of the Infants' Hospital July 2, 1897. She was about a month premature. She was nursed for five months, and then given condensed milk with cereals. She had never been strong, and had always been constipated. She was brought because of fever, crying and sleeplessness for a month.

She was well developed and nourished, but of a very pale, lemon-yellow color. She had no teeth. There was a slight rosary. There was a slight systolic murmur over the whole precordia. The lungs were normal. The liver was not enlarged. The spleen was palpable 3 cm. below the costal border and was 6 cm. wide. There was a slight general enlargement of the lymph nodes.

Blood: Hemoglobin, 30%; red corpuscles, 3,708,000; white corpuscles, 18,520; small mononuclear, 31%; large mononuclear, 4%; polynuclear neutrophiles, 64%; eosinophiles, 1%. There was marked variation in the size and shape of the red corpuscles, many of them being very large. Five normoblasts were seen in counting 500 whites.

She was last seen July 29, 1897, and at that time was doing well in every way.

CASE VIII. Joseph D., aged twenty-one months, was admitted to the Infants' Hospital June 9, 1902. No history came with him.

He was well developed and nourished, but flabby. The anterior fontanelle was 2 cm. in diameter. The frontal and parietal eminences were somewhat enlarged. There were twelve teeth. There was a marked rosary and a slight

retraction of the ribs at the insertion of the diaphragm. The heart and lungs were normal. The level of the abdomen was much above that of the thorax. The liver was palpable 3 cm. below the costal border. The spleen was palpable 3 cm. below the costal border and was 4 cm. wide. The surface was smooth, the edge sharp, the notch palpable. The extremities were normal excepting for considerable enlargement of the epiphyses at the wrists. There was a slight general enlargement of the lymph nodes.

Blood: Hemoglobin, 65%; red corpuscles, 5,380,000; white corpuscles, 15,625; small mononuclear, 43%; large mononuclear, 2%; polynuclear neutrophiles, 54%; eosinophiles, 0.5%; myelocytes, 0.5%. There was slight variation in the size and shape of the red corpuscles. No nucleated forms were seen.

He was lost sight of, and nothing is known as to the further history.

CASE IX. Sylvia V., aged eleven and one-half months, entered the Infants' Hospital May 27, 1899. Nothing was known as to her history except that she had had whooping cough in February. There was not much cough at that time but the appetite was poor, she vomited occasionally and had a sore mouth.

She was markedly emaciated and very pale. There was a systolic murmur over the whole precordia. There was an occasional rale in both chests. The liver was normal. The spleen was palpable about 3½ cm. below the costal border. There was a slight general enlargement of the superficial lymph nodes. The body and extremities were covered with a fine purpuric eruption. The eyelids were puffy. There were a few hemorrhagic spots in the mouth. There was no edema of the extremities.

Blood: Markedly pale and yellow. Hemoglobin, 19%; red corpuscles, 950,000; white corpuscles, 27,000; small mononuclear, 52%; large mononuclear, 13%; polynuclear neutrophiles, 32%; eosinophiles, .5%; myelocytes, 2.5%. There was marked variation in the size and moderate variation in the shape of the red corpuscles. In counting 500 white cells, 22 megaloblasts, 8 microblasts, 24 normoblasts and 12 atypical nucleated red cells were seen.

She took but little food and vomited a great deal. The movements were fairly normal. The temperature rose steadily and she died June 1, 1899.

CASE X. Sadie C., aged twenty months, came to the Out-Patient Department of the Infants' Hospital, June 20, 1896. She was fed at first on the breast, but was soon given patent foods and then put on a general diet. She had always had more or less trouble with the digestion. She could sit and stand alone, but was unable to walk.

She was fairly developed and nourished, but flabby and pale. She had a large, square, flat head. The fontanelle was nearly closed. There were eleven teeth. There was a marked curve of weakness. There was a very marked rosary, pigeon breast and marked retraction of the ribs at the insertion of the diaphragm. The heart and lungs were normal. The liver was not enlarged. The spleen was palpable about 4 cm. below the costal border and was 8 cm. wide. The abdomen was large and soft. There was marked enlargement of the epiphyses at the wrists and moderate bow-legs. There was a slight general enlargement of the lymph nodes.

Blood: Hemoglobin, 68%; red corpuscles, 5,158,000; white corpuscles, 15,200; small mononuclear, 51%; large mononuclear, 5%; polynuclear neutrophiles, 40%; eosinophiles, 4%. There was considerable variation in the size and shape of the red corpuscles. Macrocytes were numerous. An occasional normoblast was seen.

She was seen Oct. 7, 1902, when a little more than seven years old. She was then perfectly well. The tip of the spleen was just palpable.

CASE XI. Minnie B., eighteen months old, was admitted to the Infants' Hospital Jan. 1, 1902. No history came with her.

She was fairly developed and nourished, but flabby and rather pale. The fontanelle was nearly closed. The parietal eminences were enlarged. There were twelve teeth. There was a slight rosary and flaring of the lower ribs. The heart and lungs were normal. The upper border of the liver flatness was at the fifth rib, the lower border was palpable 6 cm. below the costal border. The spleen was palpable 4 cm. below the costal border. The surface was

smooth, the consistency firm, the edge rounded and the notch distinct. The epiphyses at the wrists and ankles were enlarged and there was slight bow-legs. There was a slight general enlargement of the lymph nodes.

Urine: Normal, acid, 1012, no albumin. Blood: Hemoglobin, 75%; red corpuscles, 5,650,000; white corpuscles, 11,800; small mononuclear, 32%; large mononuclear, 8%; polynuclear neutrophils, 51%; eosinophiles, 9%. There was very slight variation in the size of the red corpuscles and none in their shape or staining reaction. No nucleated cells were seen.

She was seen Aug. 7, 1902. She was then perfectly well. The liver was palpable 4-1-2 cm. below the costal border in the nipple line. The spleen was not palpable.

CASE XII. Catherine A., twelve months old, was admitted to the Infants' Hospital April 23, 1902. She had been fed on patent foods after the first two months. Her appetite had been poor. She had always vomited and had had bad movements.

She was fairly developed and nourished, but pale. The frontal eminences were a good deal enlarged. The anterior fontanelle was 2 cm. in diameter and somewhat depressed. There was no craniotabes. There were two teeth. There was a purulent discharge from the left ear. There was a moderate rosary. The heart was normal. There was an occasional moist rale in both lungs. The level of the abdomen was above that of the thorax. The liver was palpable 2 cm. below the costal border. The spleen was palpable, running out from beneath the costal border just inside the left nipple line, downward to the level of the umbilicus and then backward into the flank. The surface was smooth and hard and the edge sharp. The notch was not made out. There was slight enlargement of the epiphyses at the wrists. There was a slight general enlargement of the lymph nodes.

Urine: pale, no albumin. Blood: hemoglobin, 60%; red corpuscles, 3,564,000; white corpuscles, 16,250; small mononuclear, 31%; large mononuclear, 8%; polynuclear neutrophils, 60%; eosinophiles, 1%. There was marked variation in the size, shape and staining reaction of the red corpuscles. One megaloblast was seen while counting 100 whites.

She remained in the hospital about two weeks. While there she had very little fever and the lungs cleared up. The movements became normal and vomiting ceased.

She was seen Dec. 19, 1902, eight months later. Her general condition was much improved. She was scarcely able to sit up alone. The liver was normal. The spleen was not palpable.

CASE XIII. Sam S., eight months old, was admitted to the Infants' Hospital, May 11, 1902. He had always been breast-fed, but for the last three months had had more or less vomiting and been constipated.

He was fairly developed and nourished. Pallor was moderate. The fontanelle was level and 2 cm. in diameter. There were no teeth. There was a marked rosary and slight flaring of the lower chest. The heart and lungs were normal. The upper border of liver flatness was in the sixth space. The lower border was palpable 3 cm. below the costal border in the nipple line. The spleen was palpable, running out from beneath the costal border in the anterior axillary line, downward to the level of the umbilicus and upward into the flank behind the posterior axillary line. The surface was smooth, the edge sharp, the notch palpable. The abdomen was much enlarged, but lax. There was marked enlargement of the epiphyses at the wrists. There was a slight general enlargement of the lymph nodes.

Urine: high, acid, trace of albumin. Sediment: many pus cells and rarely a hyalin and granular cast. Blood: hemoglobin, 00%; red corpuscles, 5,800,000; white corpuscles, 15,000; small mononuclear, 43%; large mononuclear, 2%; polynuclear neutrophils, 55%; eosinophiles, 0. Typical signs of meningitis developed a little later, and the child died after an illness of a few days.

CASE XIV. Helen P., seven months old, was admitted to the Infants' Hospital in January, 1902. Although she was breast-fed up to two weeks before entrance she had never done well after the first month. She had always vomited, had usually been constipated, but

sometimes had had diarrhea. For the last two weeks she had been fed on Eskay's food.

She was small and poorly nourished. The skin was desquamating. There was a marked yellowish pallor. The fontanelle was level. There was a venous hum in the neck. There was a very slight rosary. The heart area was normal. The first sound over the whole precordia was continued into a blowing murmur, loudest and longest at the pulmonic area. The lungs were normal. The upper border of liver flatness was at the fifth rib. The lower border was palpable 3 cm. below the costal border. The spleen was palpable, running out from behind the costal border about midway between the anterior axillary line and the nipple line, forward and downward to the level of the umbilicus in the nipple line, and backward into the flank. The surface was smooth and hard, the edge sharp, the notch palpable. The abdomen was negative. There was a considerable general enlargement of the lymph nodes. There were a few purpuric spots on the head, face and legs, and a fine purpuric rash on the arms.

Urine: straw colored, slightly acid, no albumin. Blood: hemoglobin, 55%; red corpuscles, 2,553,000; white corpuscles, 8,200; small mononuclear, 41%; large mononuclear, 4%; polynuclear neutrophils, 50%; eosinophiles, 1%; myelocytes, 1%. There was moderate variation in the size and shape of the red corpuscles with a tendency to large, but not to oval forms. There was moderate variation in the staining characteristics of the red corpuscles.

She remained in the hospital about two weeks. She took her food poorly and vomited a good deal. The movements, however, were fairly normal. She lost weight steadily. At the time of discharge the blood showed: Hemoglobin, 70%; red corpuscles, 3,260,000; white corpuscles, 13,125. She was heard from in August, 1902. She was then "perfectly well."

CASE XV. Alice C., ten months old, was brought to the Out-Patient Department of the Infants' Hospital July 14, 1897. She had always been fed on various "infant foods." She had never thrived, and had gained little or no weight. During the last few weeks she had lost both weight and strength. She had always vomited a good deal. She had had diarrhea for the first few months but since then had been constipated, the movements being normal in color. Bunches were noticed in the neck and groins at five months; they had not increased markedly since. Depressed fontanelle, dryness of the skin and nocturnal fever had been present for three months. A tumor was first noticed a week before she came to the hospital. It had increased somewhat in size during this time.

She was poorly developed and emaciated. The skin was dry and brownish. The frontal bones were considerably lower than the parietal. The fontanelle was depressed and small. The frontal eminences were large. There were no teeth. There was a slight rosary. The heart and lungs were normal. There was dullness under the upper part of the sternum, but none at the root of the lungs. The upper border of liver flatness was at the sixth rib. The lower border was palpable 5 cm. below the costal border. The edge of the liver was firm and sharp. The spleen was palpable, running out from under the ribs in the left nipple line downward to the umbilicus and then backward into the flank just above the anterior-superior spine. The surface was smooth, the consistency firm, the notch palpable. There was marked enlargement of all the superficial lymph nodes.

Blood: hemoglobin, 60%; red corpuscles, 4,340,000; white corpuscles, 31,500; small mononuclear, 29.5%; large mononuclear, 9.9%; polynuclear neutrophils, 56.5%; eosinophiles, 0.3%; myelocytes, 3.8%. There was very marked variation in the size and shape of the red corpuscles. Nucleated forms were very numerous. Of 100 nucleated cells 89 were macroblasts and 11 normoblasts. Six macroblasts showed nuclear figures. Many of the nucleated and some of the non-nucleated forms were polychromatophilic.

She was again seen Aug. 9. At that time the spleen had diminished considerably in size. She died Sept. 18. The mother wrote that she had had a hemorrhage from the bowels for two weeks before death, and that "the bunch in the side could not be felt."

CASE XVI. Charles G., ten months old, came to the Out-Patient Department of the Infants' Hospital July 11, 1898. He had been fed on the breast and condensed milk at home and had had cows' milk at a day nursery. He had always had more or less diarrhea and vomiting, varying in severity from time to time. At times he seemed sick, at others not. He was always backward, and his head perspired profusely at night. There had been a gradual increase in the size of the abdomen for two months.

He was fairly developed but poorly nourished. His color was fair, the skin dry. The anterior fontanelle was large. There was no craniotabes. There was a purulent discharge from the nose. He had two teeth. He could hold up his head, but was unable to sit alone. There was a marked rosary and flaring of the lower ribs. The heart and lungs were normal. The liver flatness began at the eighth rib in the scapular line; the lower border was palpable 5 cm. below the costal border. The spleen could be felt running out from under the ribs in the nipple line, directly downward to the level of the umbilicus, backward at a right angle into the flank and upward in the posterior axillary line. The edge was sharp and hard, the surface smooth. The abdomen was considerably enlarged and rather tense. The epiphyses at the wrists were considerably enlarged, but the extremities were otherwise normal. There was a slight general enlargement of the lymph nodes.

Blood: hemoglobin, 58%; red corpuscles, 4,408,000; white corpuscles, 47,220; small mononuclear, 36.5%; large mononuclear, 9.5%; polynuclear neutrophiles, 50.5%; eosinophiles, 1%; myelocytes, 2.5%. There was moderate variation in the size and staining qualities of the red corpuscles, but very little in their shape. In counting 500 white corpuscles, 12 normoblasts, 1 microblast and 18 macroblasts were seen.

He was soon lost sight of, and nothing is known as to the further history of the case.

CASE XVII. Maude M., eight months old, was admitted to the Infants' Hospital May 14, 1899. She undoubtedly had congenital syphilis. There was no further history.

She was small, pale and poorly nourished. The head was somewhat flattened, the frontal and parietal eminences enlarged. The anterior fontanelle was 3 cm. in diameter and bulging. The superficial veins of the scalp were considerably enlarged. The nares were occluded, and there was considerable purulent discharge. The mouth was open, and the mouth and throat dry. There were no teeth. She held her head up feebly, but could not sit alone. There was a very slight rosary. The heart and lungs were normal. The lower border of the liver was palpable 6 cm. below the costal border. The spleen could be felt coming out from behind the ribs in the anterior axillary line running downward to the level of the umbilicus and backward under the ribs at about the posterior axillary line. The surface was smooth, the edge sharp, the notch palpable. The abdomen was rather large. The extremities were normal except that the skin of the soles was dry and cracked. There was a general enlargement of the lymph nodes including the post-auricular and epitrochlear, to the size of beans.

Blood: hemoglobin, 65%; red corpuscles, 4,200,000; white corpuscles, 13,400; small mononuclear, 42%; large mononuclear, 11%; polynuclear neutrophiles, 45%; eosinophiles, 2%. There was moderate variation in the size of the red corpuscles, but little in their shape and staining reaction. No nucleated forms were seen.

She was discharged May 19, 1900. Nothing further is known as to the history of the case.

CASE XVIII. Minnie L., seventeen months old, was admitted to the Infants' Hospital Nov. 13, 1895. She had never been nursed, but had been fed on condensed milk. She did not vomit. The bowels moved once in three or four days. The movements were large, hard, whitish, foul and contained a little mucus. A hard lump had been noted in the abdomen for two months. It was as large when first discovered as at admission. She had been pale for a long time, and had lost flesh rapidly in the last three months. She was just beginning to sit up alone.

She was fairly developed and emaciated. There was

marked pallor with a yellowish tinge. The fontanelle was not closed. She had four teeth badly decayed. There was a moderate rosary. The heart and lungs were normal. The liver was normal. The spleen reached nearly to the median line, and extended to about 1 cm. above the anterior-superior spine. The abdomen was full and tense. There was an umbilical hernia. There were a few purpuric spots on the abdomen. The epiphyses at the wrists and ankles were enlarged.

Urine: normal. Blood: hemoglobin, 60%; red corpuscles, 3,556,000; white corpuscles, 12,400; small mononuclear, 28%; large mononuclear, 10%; polynuclear neutrophiles, 55%; eosinophiles, 7%. There was marked variation in the size and shape of the red corpuscles. Macrocytes were more numerous than microblasts. There was a moderate number of nucleated red corpuscles, macroblasts being the most numerous. There was an occasional free nucleus. There were no abnormal forms of white cells.

She was heard from July 29, 1902, when about eight years old. She was said to be perfectly well in every way.

CASE XIX. Jennie R., ten months old, was admitted to the Infants' Hospital June 1, 1901. She was breast-fed for five weeks, after that she was fed on a modified milk prepared at home. This mixture was a weak one and was not changed for seven months. During this time she had no gastro-enteric disturbances, but had gained weight very slowly. From this time until entrance, although still on a stronger modified milk, she had more or less disturbance of the bowels.

She was fairly developed and nourished. There was moderate pallor of the skin and mucous membranes. The anterior fontanelle was 3 cm. in diameter and level. The head was flattened on top and behind. There were two teeth. She sat alone, feebly. There was a moderate rosary. There was slight retraction of the chest at the insertion of the diaphragm. The heart and lungs were normal. The abdomen was distended. There was a slight umbilical hernia. The upper border of the liver flatness was at the upper border of the fifth rib; the lower border was palpable 3 cm. below the costal border. The spleen was felt running out from beneath the ribs in the anterior axillary line, downward just to the right of the umbilicus, then downward and backward to just above the anterior-superior spine and backward into the flank. The surface was smooth; the consistency was firm; the notch was palpable in the nipple line. The spleen was apparently somewhat tender. The epiphyses at the wrists were enlarged. The extremities were otherwise normal. There was a slight general enlargement of the lymph nodes.

Urine: pale, acid, 1010, no albumin or sugar. Blood: hemoglobin, 40%; red corpuscles, 4,000,000; white corpuscles, 18,750; small mononuclear, 34.4%; large mononuclear, 12.6%; polynuclear neutrophiles, 51%; eosinophiles, 0.2%; myelocytes, 1.8%. The red corpuscles showed marked variation in size, shape and staining reaction. There was no tendency to large forms, but a slight tendency to oval forms. Sixteen normoblasts and 9 megaloblasts were seen in counting 500 white corpuscles.

She was put on a stronger milk and beef juice, and was given maltine and iron and syrup of the iodide of iron. The temperature remained normal, she took her food fairly well and did not vomit. There was a tendency to constipation.

On June 16 the tip of the spleen only reached 3 cm. to the left of the umbilicus. The examination of the blood on this date was as follows: hemoglobin, 65%; red corpuscles, 5,132,000; white corpuscles, 18,580; small mononuclear, 23%; large mononuclear, 6%; polynuclear neutrophiles, 69%; eosinophiles, 1%; myelocytes, 1%. There was moderate variation in the size and shape of the red corpuscles with slight variation in their staining reaction. There was a slight tendency to large and oval forms. In counting 500 whites, microblast, 2 normoblasts and 10 megaloblasts were seen.

She had measles in the latter part of June. After that her improvement was even more rapid than before. The spleen was not palpable after Aug. 1.

The examination of the blood Aug. 16 was as follows:

Hemoglobin, 65%; red corpuscles, 5,175,000; white corpuscles, 17,000; small mononuclear, 48%; large mononuclear, 3%; polynuclear neutrophiles, 45%; eosinophiles, 4%. There was slight variation in the size and very little in the shape of the red corpuscles. There was none in their staining reaction. No nucleated forms were seen.

She was seen Nov. 29, 1902, eighteen months after her admission. She was then perfectly well in every way. The lower border of the liver was palpable 3 cm. below the costal border. The spleen was not palpable.

CASE XX. Gladys W., five months old, was admitted to the Infants' Hospital April 29, 1902. The father undoubtedly had syphilis. There had been no miscarriages. The first child was well. This was the second child. She was normal at birth and was breast-fed. She developed snuffles at six weeks. She began to be pale at two months, and at the same time a fine rash appeared on the skin. Since she was three months old she had vomited a good deal, at times had had diarrhea, and had lost weight steadily.

She was small and poorly nourished. The anterior fontanelle was level. The posterior fontanelle was not quite closed. The superficial veins of the scalp were enlarged. Snuffles were marked. There was a slight rosary. The heart and lungs were normal. The liver was palpable 5 cm. below the costal border. The spleen was palpable, running out from behind the ribs in the anterior axillary line, forward to the left parasternal line at the level of the umbilicus, and downward and backward to the anterior-superior spine, filling up the whole flank. The surface was smooth, the edge sharp, the notch indistinctly palpable at about the level of the umbilicus. The abdomen was large and tense. There was an umbilical and a right inguinal hernia. The palms and soles were desquamating. There was a moderate general enlargement of the lymph nodes.

Blood: hemoglobin, 55%; red corpuscles, 3,750,000; white corpuscles, 16,200; small mononuclear, 50%; large mononuclear, 6%; polynuclear neutrophiles, 39%; eosinophiles, 5%. There was very little variation in the size of the red corpuscles and none in their shape. There were no nucleated forms.

She improved rapidly on anti-syphilitic treatment, and was discharged May 12. Nothing is known as to the further history of her case.

CASE XXI. John C., seventeen months old, was admitted to the Infants' Hospital April 21, 1902. He was the first child. He was fed on the breast for five months and then was given strained rolled oats. He had vomited occasionally and had lost some weight. The history was very indefinite.

He was well developed and fairly nourished. His color was good. The fontanelle was closed. There was a slight rosary. The heart was normal. The lungs were normal. The lower border of the liver almost touched the anterior-superior spine, reached to within 2 cm. of the umbilicus and passed under the left costal border in the left nipple line. The spleen was palpable, running out from beneath the costal border in the anterior axillary line directly downward to the level of the anterior-superior spine and backward into the flank. The surface was smooth, the density increased, the edge sharp, the notch not palpable. The abdomen was large and lax. The epiphyses were considerably enlarged at the wrists and moderated at the ankles. The legs were slightly bowed. There was a slight general enlargement of the lymph nodes.

Urine: Pale, 1008, no albumin. Blood: Hemoglobin, 65%; red corpuscles, 3,720,000; white corpuscles, 10,700; small mononuclear, 30%; large mononuclear, 4%; polynuclear neutrophiles, 56%; eosinophiles, 1%. There was a little variation in the size and none in the shape of the red corpuscles. No nucleated forms were seen.

He was seen Nov. 29, 1902, seven months later. He was then a large fat, healthy-looking baby. The liver was palpable 3 cm. below the costal border. The spleen was not palpable. His color was exceptionally good.

CASE XXII. Stanley A., negro, fourteen months old, was admitted to the Infants' Hospital May 21, 1902. There had been no other children or miscarriages. He

was breast-fed up to six months and was then put on Mellin's Food. He had had no gastro-enteric disturbances. He had had a cough off and on for two months.

He was small and poorly nourished. The head was much flattened on top and the forehead prominent. The anterior fontanelle was 3 cm. in diameter. The bridge of the nose was flattened. There was marked snuffles. There was marked pallor of the mucous membranes. There was a slight rosary, and the sides of the chest were somewhat flattened. The heart was normal. The lungs were normal except for an occasional moist rale. He sat up, but feebly. The liver was palpable 3 cm. below the costal border in the nipple line. The spleen was felt running out from beneath the ribs just outside the left nipple line downward and forward to 2 cm. below and about 1 cm. outside the navel, then back into the deep abdomen. The anterior border, tip and a portion of the lower and external borders were easily made out. It then disappeared into the deep abdomen. The anterior edge was rather sharp, the surface smooth, the notch distinct. It was not tender. The whole spleen was easily movable. The abdomen was generally enlarged but lax. There was a slight enlargement of the epiphyses at the wrists. There were knock-knees. There was a moderate talipes valgus on both sides. There was a slight general enlargement of the lymph nodes. There were no ragjades and no fissures or mucous patches about the anus. There was pigmentation on the face and about the anus as if there had been an eruption at some time. The soles were dry and desquamating.

Urine: High, acid, 1022, no albumin. Blood: Hemoglobin, 50%; red corpuscles, 3,750,000; white corpuscles, 29,600; small mononuclear, 30%; large mononuclear, 18%; polynuclear neutrophiles, 48%; eosinophiles, 2%; myelocytes, 2%. There was marked variation in the size and shape of the red corpuscles, but no tendency to oval or large forms. There was a slight general polychromatophilia. In counting 200 white cells, 7 microblasts, 8 normoblasts and 12 macroblasts were seen. There was marked polychromatophilia of the nucleated forms. The most striking thing in the blood was the large number of large mononuclear cells with large, feebly staining nuclei and a small amount of feebly staining protoplasm.

The temperature at entrance was 101° F. It began to rise the next day without any apparent cause. The physical examination was entirely negative. The temperature reached 107° F. on May 24, and the child died that night.

ILLUSTRATIVE CASES OF SECONDARY ANEMIA IN INFANCY.

CASE XXIII. George T., eleven months old, was admitted to the Infants' Hospital March 6, 1902. He was premature, at seven months. He had always been fed on undiluted cows' milk. He had always cried a great deal, vomited after feeding, and had always been constipated. He had never gained.

He was poorly developed and nourished. There was marked pallor of the skin and mucous membranes. There was a slight rosary. The heart and lungs were normal. The liver was normal. The spleen was not palpable. The abdomen was negative. There was a slight enlargement of the epiphyses at the wrists and ankles. There was a moderate general enlargement of the lymph nodes.

Urine: normal, acid, no albumin. Blood: hemoglobin 25%; red corpuscles, 2,600,000; white corpuscles, 15,000; small mononuclear, 63%; large mononuclear, 3%; polynuclear neutrophiles, 33%; eosinophiles, 1%. There was marked variation in the size of the red corpuscles but none in their shape or staining reaction. No nucleated forms were seen.

He was seen Nov. 24, 1902, nearly eight months later. There has been no improvement in any way. The spleen was not palpable.

CASE XXIV. Joseph B., twenty-two months old, was seen July 22, 1897. His digestion had always been very feeble and he had always been pale. He had had bronchitis in the winter and more or less nasal discharge

since then. For two weeks he had been running a moderate temperature, and the pallor had increased.

He was well developed and nourished, but very pale. There was a slight rosary and a slight general enlargement of the lymph nodes. The physical examination was otherwise negative.

Blood: hemoglobin, 42%; red corpuscles, 4,560,000; white corpuscles, 29,720; small mononuclear, 45.5%; large mononuclear, 6%; polynuclear neutrophils, 47.5%; eosinophiles, 1. There was much variation in the size and shape of the red corpuscles. No nucleated forms were seen.

He evidently entirely recovered.

CASES OF ANEMIA AND SPLENIC TUMOR WITHOUT EXAMINATION OF THE BLOOD, BUT WITH RECOVERY.

CASE XXV. William F., eighteen months old, was seen in consultation with Dr. J. P. Torrey of Andover, July 29, 1899. He had always been very pale, but had been well in other ways.

He was well developed and nourished. Pallor was marked. The anterior fontanelle was closed. He had sixteen teeth. There was a slight rosary. The heart was normal. The liver was normal. The spleen reached nearly to the umbilicus. The surface was hard, the edge thin, the notch palpable. The abdomen was negative. The extremities were normal. The cervical lymph nodes were slightly enlarged, the others not.

He was treated with iron and arsenic. Dr. Torrey wrote Oct. 29, 1899, three months later, that the spleen was no longer palpable.

Dr. Torrey examined him again in December, 1902. The boy was then in good health, but still somewhat pale. The spleen was not enlarged.

CASE XXVI. Wolff S., thirteen months old, was admitted to the Infants' Hospital March 14, 1899. He had always been improperly fed and had always suffered from disturbances of digestion.

He was poorly developed and nourished. The fontanelle was 6 cm. in diameter. There was a marked rosary. The heart and lungs were normal. The liver was palpable almost as low as the umbilicus in the right nipple line. The spleen was palpable at the level of the umbilicus. The epiphyses at the wrists and ankles were enlarged. There was a moderate anterior bowing of the tibia. There was a moderate general enlargement of the lymph nodes.

He was seen Aug. 7, 1902, three and one-half years later. At that time he was perfectly well. The liver was normal. The spleen was not palpable. There was no enlargement of the lymph nodes.

CASE XXVII. Max S., twenty-two months old, was seen at the Out-Patient Department of the City Hospital in February, 1897. He had been very sick during the summer of 1896 with diarrhea. The abdomen had been distended, and Dr. Deering had found an enlarged spleen. He had had more or less disturbance of digestion since that time, and a few weeks before coming to the hospital had had a sharp attack of fermental diarrhea from which he was recovering.

He was well developed and nourished and moderately pale. There was a slight rosary but no other evidences of rickets. The liver was normal. The spleen was palpable about 5 cm. below the costal border. The blood was not examined at that time.

He was seen again in May, 1897, three months later. At that time he was in very good condition and of good color. The tip of the spleen was just palpable. The blood at that time showed hemoglobin, 105%; red corpuscles, 5,160,000; white corpuscles, 5,000; small mononuclear, 30%; large mononuclear, 1%; polynuclear neutrophils, 62%; eosinophiles, 7%. There was a very little variation, in the size of the red corpuscles but none in their shape. No nucleated forms were seen.

THE RELATION OF ENLARGEMENT OF THE LIVER TO THAT OF THE SPLEEN.

In estimating the size of the liver in infancy it

must be remembered that it is normally proportionately larger than in adult life. While under normal conditions it usually does not extend more than 2 or 3 cm., it may extend as much as 4 cm. below the costal border. Only six of the livers in this series were larger than this (11, 15, 16, 17, 20, 21.) Two (17, 20) of these cases had congenital syphilis. In general the largest livers were associated with the largest spleens. In three (18, 19, 22) of the five (18, 19, 20, 21, 22) cases, however, in which the spleen reached to the anterior superior spine, the liver was not enlarged. Enlargement of the liver was, therefore, evidently not dependent upon that of the spleen nor enlargement of the spleen on that of the liver.

THE RELATION OF ENLARGEMENT OF THE LYMPH NODES TO THAT OF THE SPLEEN AND LIVER.

There was a general enlargement of the lymph nodes in every case in which their condition was noted. The greatest enlargement was found in cases in which the spleen was much enlarged (14, 15), but they were moderately enlarged in a case in which the spleen was only slightly enlarged (4), and they were only slightly enlarged in three (19, 21, 22) of four cases (19, 20, 21, 22) in which the spleen was the largest. There was no evident relation between the size of the lymph nodes and that of the liver. They were much enlarged with both normal (14) and enlarged (15) livers, and slightly enlarged with both normal (2) and enlarged (21) livers. The enlargement of the lymph nodes could not have been due, therefore, to that of the spleen or liver. Enlargement of the lymph nodes is, moreover, almost invariably found in all conditions of malnutrition in infancy. Hence it must be regarded here, as elsewhere, merely as a manifestation of malnutrition.

THE RELATION OF THE NUMBER OF RED CORPUSCLES AND THE AMOUNT OF HEMOGLOBIN TO THE SIZE OF THE SPLEEN.

The number of red corpuscles bears no constant relation to the size of the spleen. This is evident if the cases are arranged according to the number of red corpuscles and compared with the arrangement according to the size of the spleen. The arrangement according to the number of red corpuscles, beginning with the largest number, is 13, 11, 8, 10, 5, 3, 16, 15, 17, 19, 22, 20, 21, 7, 12, 18, 2, 14, 4, 6, 1, 9. The two smallest counts were in two cases in which the enlargement of the spleen was slight (9, 1); the largest, 5,800,000, was in a case (13) in which the spleen reached to the umbilicus. In five cases (5, 10, 8, 11, 13) there were over five million red corpuscles, while in five others (3, 15, 16, 17, 19) there were over four million. The lowest count in the cases in which the spleen reached to the anterior-superior spine (18) was 3,556,000, while the lowest in those in which the spleen reached to the umbilicus (14) was 2,553,000.

There was no evident relation between the number of red corpuscles and the size of the liver.

The diminution in the amount of hemoglobin was always relatively greater than that in the number of red corpuscles. The hemoglobin, however, is

always relatively low in infancy, and a relatively great diminution in the amount of hemoglobin is characteristic of the anemias of infancy. The color index in these cases bears no relation to the size of the spleen or liver.

THE RELATION OF THE NUMBER OF WHITE CORPUSCLES TO THE SIZE OF THE SPLEEN.

The arrangement of the cases according to the number of white corpuscles, beginning with the minimum, is as follows: 6, 2, 14, 1, 21, 11, 18, 17, 13, 10, 8, 3, 20, 12, 5, 4, 7, 19, 9, 22, 15, 16. Accepting 14,000 as the normal limit of white corpuscles, there was no leucocytosis in eight (6, 2, 14, 1, 21, 11, 18, 17). Four of these cases (14, 17, 18, 21) were among those in which the spleen was largest. Of fourteen cases in which the number of white corpuscles was increased, the spleen was but little, or moderately, enlarged in seven (3, 4, 5, 7, 8, 9, 10), and much enlarged in seven (12, 13, 15, 16, 19, 20, 22). The largest leucocytosis (47,220) was in a case in which the spleen reached to the umbilicus (16) and the next largest (31,500) in another case in which the spleen reached to the umbilicus (15), but in one case in which the spleen reached to the umbilicus (14) there were only 8,200 white cells, and in the case with the next to the largest spleen there were only 10,700.

It is evident that there was no constant relation between the number of leucocytes and the size of the spleen. The largest spleens were sometimes unaccompanied by leucocytosis, and there was sometimes a marked leucocytosis when the spleen was only slightly enlarged. The largest leucocytoses were usually found, however, in connection with the largest spleens.

THE RELATION OF THE NUMBER OF WHITE CORPUSCLES TO THE SIZE OF THE LIVER.

There was no evident relation between the size of the liver and the number of white corpuscles. There were only 10,700 white cells in the case with the largest liver (21), while the two cases in which the leucocytosis was largest showed only a slight enlargement of the liver (15, 16). Leucocytosis was also marked in cases with normal-sized livers (9, 22).

THE RELATION OF THE NUMBER OF WHITE CORPUSCLES TO THE SIZE OF THE LYMPH NODES.

There was no evident relation between the size of the lymph nodes and the number of white corpuscles. In the two cases in which the enlargement of the lymph nodes was greatest (14, 15) there were 8,200 and 31,500 white corpuscles, respectively. There were, moreover, 47,220 white corpuscles in a case in which the enlargement was slight (16).

THE RELATION OF THE NUMBERS OF RED AND WHITE CORPUSCLES TO EACH OTHER.

The numbers of red and white cells have no constant relation to each other; for example, in one case (16) there were 4,200 white, and 1,736,000 red cells, and in another (2) 4,800 white and 3,288,000 red. In one case (16) with 4,408,000 red corpuscles there were 47,220 white, while in another (17) with 4,200,000 red corpuscles there were only 13,400.

THE RELATION OF THE MORPHOLOGICAL CHANGES IN THE RED CORPUSCLES TO THE OTHER SIGNS.

In a very general way the degree of the morphological changes varied with the number of red corpuscles, the more marked changes occurring in the cases with the smallest numbers of red corpuscles. There were many exceptions to this rule, however. The changes were, on the whole, more marked in the cases with leucocytosis.

There was no correspondence between the degree of the morphological changes and the size of the spleen. The morphological changes were most marked in four cases (1, 6, 7, 9,) in which the spleen was not much enlarged, and in four (12, 15, 19, 22) in which the spleen was much enlarged.

The morphological changes varied, therefore, rather with the number of red and white corpuscles than with the size of the spleen; that is, they formed a part of the pathological changes in the blood and were not connected with those in the spleen.

Certain peculiarities are worth noting. In some cases the morphological changes were marked while there was a comparatively slight diminution in the number of red cells. Nucleated cells were present in cases in which there was little or no diminution in the number of red corpuscles; for example, normoblasts with 5,158,000 red corpuscles (10), and megaloblasts with 4,340,000 (15) and 4,000,000 (19) red corpuscles. In several of the cases which recovered (12, 18, 19) large nucleated red corpuscles were very abundant. These changes are, of course, merely examples of the tendency of anemia in infancy to revert to the fetal type of blood.

There was no correspondence in the amount of the enlargement of the liver and of the spleen. There was no correspondence in the degree of enlargement of the lymph nodes and of the liver and spleen. There was no constant relation between the diminution in the number of red corpuscles and the size of the spleen and liver. There was no constant relation between the number of leucocytes and the size of the spleen and liver, although the largest leucocytoses were usually found in connection with the largest spleens. There was no constant relation between the number of leucocytes and the degree of enlargement of the lymph nodes. There was no constant relation between the number of red and white corpuscles. The morphological changes in the red corpuscles did not vary with the size of the spleen, but in a very general way, with many exceptions, with the number of red and white corpuscles, showing that they were a part of the pathological blood condition and not connected with the condition of the spleen. The degree of the morphological changes was in a general way a guide as to the severity of the anemia. Very marked changes did not necessarily point to a fatal outcome, however, as several cases (12, 18, 19) in which they were most marked recovered. They merely show the tendency of the blood in the anemias of infancy to revert to the fetal type. The hemoglobin was always relatively low, as it almost always is in the anemias of infancy. The condition of the blood in Cases 23 and 24, in which there was no enlargement of the spleen, shows that there is nothing characteristic about the blood

changes found in infancy in association with splenic tumor. The conclusion seems justified, therefore, that the enlargement of the spleen, liver and lymph nodes developed independently of each other, and that they were not directly connected, either as cause or effect, with the changes in the blood.

Granting that this conclusion is correct, the association of these conditions suggests that they are all the results of some common cause.

ETIOLOGY.

Rickets was present in all but two of the cases (6, 9). Neither of these had very large spleens, but they ranked first and third as regards the severity of the anemia. The rachitic changes were slight in eleven (1, 2, 3, 5, 7, 12, 14, 15, 17, 20, 21), moderate in six (4, 8, 11, 13, 18, 22), and marked in three (10, 16, 19). The enlargement of the spleen and changes in the blood were considerable in two (16, 19) of the three cases in which the rachitic changes were marked, but no greater than in other cases (15, 21) in which they were slight. It is evident, therefore, that the rickets was not the direct cause of these pathological conditions, but was itself a symptom of some common cause. Further evidence that rickets was not etiologically responsible for these conditions is the fact that 80% of the children under two years of age at the clinic from which these cases were taken show more or less marked signs of rickets, while these conditions are comparatively rare.

Disorders of the gastro-enteric tract were present in every case in which data were obtained. In two of those without data the food had been unsuitable. There was a history of improper food in all but four (2, 3, 13, 14) of the cases with data on this point. These cases were fed on the breast, and all had gastro-enteric disturbances. It is probable, therefore, that in these cases too the food, even if it was breast milk, was unsuitable. Diseases of the gastro-enteric tract, whether or not due to improper food, are not always followed by anemia and enlargement of the liver and spleen, and therefore cannot be the direct cause of these conditions. Disorders of the gastro-enteric tract, do, however, always cause disturbances of nutrition, and it is to these disturbances of nutrition that they probably owe their etiological importance.

Two (17, 20) of the cases had syphilis. It was in both associated with rickets, improper food and gastro-enteric disturbances. No especial importance can be attributed to it, therefore, as a general etiological factor. It undoubtedly acts chiefly by disturbing nutrition.

Prematurity and pertussis, each present in one case (7, 9), probably acted in the same way.

Disturbances of nutrition in infancy may produce various results. Rickets and scurvy are undoubtedly peculiar manifestations of disturbances of nutrition. In other instances disturbances of nutrition produce atrophy, anemia or enlargement of the lymph nodes, liver or spleen. Why disturbances of nutrition in one case cause rickets, in another atrophy and in another anemia or enlargement of the lymph nodes or spleen is not known. The fact that they do cause all these various conditions explains the peculiar combinations in which these conditions are found and their evident independence of each other.

CONCLUSIONS.

It seems justifiable to conclude, therefore, that when anemia, splenic tumor and enlargement of the liver or lymph nodes are found in association in infancy they are in no way dependent on each other, but are all manifestations of a common cause — disturbance of nutrition; that there is nothing characteristic about the blood changes found in association with enlargement of the spleen, as similar changes are found when there is no enlargement of the spleen; that the anemia is secondary rather than primary; that there is no justification for placing the cases of anemia in infancy associated with enlargement of the spleen or liver in a class by themselves and calling it "anemia infantum pseudo-leukenika," or "splenic anemia of infancy"; that these terms should be dropped from our nomenclature.

PROGNOSIS.

The ultimate fate of these cases is of some interest. Seven disappeared from view after a short time; two (12, 16) of these probably died; five (5, 7, 8, 17, 20) probably recovered; two (17, 20) of these were syphilitic.

Seven are known to have died; one (13) of meningitis, and six (1, 3, 6, 9, 15, 22) without complications. They died after three days, five days, one month, one month, two months and seven months. The blood changes were marked in all of these cases. They included most of the severest cases. The spleens were very large in three (13, 15, 22), but comparatively small in the others.

One (12) was doing well after eight months. Seven (4, 10, 11, 14, 18, 19, 21) were well after six months, seven months, seven months, 18 months, two and one-half years, six years, seven years. The blood changes were moderately severe in these cases. Nucleated reds were numerous in five, megaloblasts predominated in two. Nucleated red corpuscles and megaloblasts are, therefore, evidently not of so much importance in prognosis in infancy as in later life. Five of these cases (12, 14, 18, 19, 21) were among those with the largest spleens, and two (10, 11) of the others had considerably enlarged spleens. Two of the largest spleens were not palpable after seven and eight months (21, 12). Others were found absent after seven months (11), eighteen months (19), two and one-half years (4), and seven years (18). One (10) was just palpable after six years. In three cases in which the spleen was much enlarged, although the blood was not examined, it was not palpable after three months (25), five months (27) and three and one-half years (26). One (21) very large liver was of normal size after seven months, another (11) moderately enlarged, one was still slightly enlarged after seven months. The improvement in the blood condition during recovery is seen in Cases 19 and 27.

The prognosis in these cases depends, therefore, more on the condition of the blood than on the size of the spleen. Recovery may take place even when the changes in the blood are very severe. The size of the spleen has no influence on the prognosis. The largest spleens may return to the normal size in a few months.

THE REPORT OF THREE CASES IN WHICH EMBRYOS OF THE STRONGYLOIDES INTESTINALIS WERE FOUND IN THE STOOL.—AUTOPSY OF ONE CASE.

BY PHILIP KING BROWN, M.D., SAN FRANCISCO, CAL.

Two of the following three cases were patients in the wards of the Medical Department of the University of California in the service of Dr. Kerr. The cases are reported because of the interest in this subject aroused by the discovery of a case of the kind at the Johns Hopkins Hospital by Dr. Richard Strong, and two additional cases studied and reported in full with a history of the parasite and its pathological significance by Dr. William Thayer of Johns Hopkins. The subject has a further interest, for in addition to the fact that one of these patients was an American who probably contracted the trouble in this country, the two others were natives of Porto Rico, and were among a number of laborers who passed through this country on the way to the Hawaiian Islands, and one of them had been in the Hawaiian Islands and was returning. The commonness of the trouble in Porto Rico has been called attention to by the army medical corps. The absence of any serious symptoms even in the severest of my cases is a matter of some interest, but the extent to which the infection may spread in districts where the water supply is not the best suggests the need of considering this infection seriously. It is not at all certain that these parasites that bury their heads deep in the mucous membrane of the intestine, to which class the trichocephalus hominis also belongs, are as harmless as we have been led to believe. The finding of the strongyloides adult worms with the heads buried deep in the mucous membrane suggests the fact that they are true parasites of the host, and not a class that subsist upon the contents of the bowel. Complication of two of my cases with uncinariasis is interesting because of the supposed severity of the anemia which occurs with this disease. The cases are reported as follows:

CASE I.—V. M., aged eighteen. Porto Rico. Laborer. Entered City and County Hospital, Nov. 25, 1902.

Family history negative.

No alcohol. Smokes moderately. No genito-urinary history. Seven years ago in Porto Rico suffered from a fever from which he claims never to have recovered, but felt fairly well until taken with a chill a few days ago. Accompanying it were headache and general condition of prostration. Patient felt as though he must have the same fever he had in Porto Rico. He has no appetite. Pain in the right side of abdomen. No vomiting, bowels have been rather loose for some months but particularly in the last month.

Chest negative. Liver from the lower border of the fourth rib to 2 cm. below the costal margin. Spleen not enlarged. Tenderness all over the right abdomen on deep pressure not very severe except in the right mammary line below the border of the liver.

Blood examination: No plasmodia found; hemoglobin 75%; white corpuscles, 7,600; polynuclears, 67; large mononuclears, 9; small, 14; eosinophiles, 10%. Feces contained a number of larvae of the strongyloides intestinalis, ova of trichocephalus hominis, also some large oval eggs with a clear shell and a clear space inside the shell, the center being occupied by a granular mass or by what appears to be the divisions of this mass into from two to twenty cells. The character of the eggs is not definitely determined, but they are supposed to be uncinaria.

Patient discharged once from the hospital, but re-

turned four days later, feeling again very badly. Thymol in two doses, 2 gm. each, were given to remove the parasites if possible.

The result of the thymol was disappointing, for a search of the feces showed no adult uncinaria or strongyloides. Cultivation of the feces, however, enabled us to differentiate between the larvae of the strongyloides intestinalis and the uncinaria.

CASE II.—E. G., thirty years. Native of Porto Rico. Laborer. Complaints of vague pains throughout the body. No change in appetite. No diarrhea. No particular symptoms referable to stomach.

Leucocytes, 7,000; eosinophiles, 5%; hemoglobin, 95. Stools show large number of strongyloides larvae; trichocephalus eggs and eggs resembling uncinaria, from which, however, no typical larvae developed. He was a friend of case V. M., and a stool was obtained from him during one of his visits to the hospital.

CASE III.—J. P. W., age sixty-five. Pastry cook. Resident of San José, Cal. Born in Tennessee. Lived in California from 1851 to 1861, and continuously since 1868. Was in Mexico and South America in 1861, while serving on a United States warship. Got ashore on passes, and for a day or two only, about nine days in whole cruise. During Civil War he served in the army for two years, principally in Maryland and Virginia. Lived in Philadelphia three or four years just after that.

Had typhoid and malaria while a boy in Tennessee. Was very well in California except for "bilious headaches," which he has had from early boyhood. Constipated when young, more so now. Appetite generally very good. Nausea and vomiting with headaches. Never sick, except with present trouble, since he came to California. For six or eight months before this he had felt better than for many years. Bowels pretty regular. Two weeks ago had sudden nausea with vomiting. Nausea continued with less vomiting each day for four days. Vomitus was bitter and yellow, and it relieved him to get it up. No diarrhea, fever or chills. Cramps in various parts of the body when he moved. Relieved by moving about. This was only for first three days and was worse at night. Was conscious of some fever. No night sweats or cough. No history of jaundice. During bilious attacks he has had some pain in abdomen after he has vomited for a long time. Once or twice vomited a black material. No blood or coffee grounds. Never has had pains in limbs or fever before with bilious attacks.

Jan. 26, 1903, the blood showed the following condition: Red cells, 3,882,000; hemoglobin, 65%; white cells, 9,400; polymorphonuclears, 71½%; large lymphocytes, 12½; small lymphocytes, 9¾%; eosinophiles, 6½%. Urine.

On account of the eosinophilia, and because stools are being examined as a matter of routine, an examination was made in this case. The single dejection was copious, dark brown in color and formed. No mucus was apparent, and the general appearance was unsuggested. Particles of fecal matter removed indiscriminately from the mass showed dozens of embryos of the strongyloides intestinalis in every specimen, and often as many as ten or twenty in the field of a five objective Leitz. The embryos were practically all actively motile, and about the same stage of development. No adult worms were found and no eggs. Nor were they ever found, although searched for many hours on various occasions, frequently immediately after the passage of stools following drastic purging. Thymol administered in two 30 gr. doses followed by oil seemed to have no effect on the number of embryos nor did it long affect the motility of them. For some hours after the stools were passed most of the embryos were motionless, but later a good many of them regained their normal activity. Cultivation of the stools in a constant temperature oven at 37° resulted in the development of maturer stages of the larvae, but after three or four days they all died.

An attack of pneumonia occurred while the parasite was being studied, and the patient died. An autopsy was done at the earliest possible moment.

Autopsy of J. P. W., 18th Feb., 1903.

Patient died at 9 p.m., Feb. 17, of pneumonia of five days standing. Autopsy fifteen hours postmortem, rigor mortis present. No distension of the abdomen. No external conditions of note.

Left pleural cavity filled with a fibrinous clot, slightly adherent both to the lung and the chest wall, which was very much inflamed and rough. The clot peeled off rather easily, leaving both pleural surfaces very slightly roughened. The left lower lobe was solid, contained no air. Dark red on section. The left upper lobe extremely edematous. Frothy fluid flowing freely from the cut surfaces. Few adhesions at the left apex. Right lung presents almost similar condition, except that there was no consolidation of the lower lobe, although but small amount of air was to be forced from the cut surface. The diaphragmatic surface presented the same yellow clot that the left lung showed. In addition to this there was considerable quantity of purulent material well walled off, about 1½ oz. in all. This was broken into when the lung was separated from the diaphragm. There were firm adhesions between the pleural surfaces all over the anterior and axillary parts of the lung. Tubercular scar at the right apex.

Enlarged glands behind the aortic arch. Turbid fluid in the pericardium; small amount. Thick-walled left ventricle. Valves clear throughout. Muscle pale and brownish.

Abdominal cavity contained about 100 cc. of turbid yellowish fluid, and the right side of the abdomen particularly showed the intestines pretty well matted together by a purulent substance, and in the vicinity of the appendix were some old adhesions. The intestines were very red and the veins very much distended.

The mesenteric glands were not particularly enlarged.

The liver presented nothing abnormal on cut surface.

The gall bladder was distended with semi-fluid bile. The ducts were patent.

The spleen was double the natural size, and very soft. Readily torn in being moved.

Both kidneys were small, with quite adherent capsules, and on cut surface presented cloudy swelling of the cortex, and rather a pale appearance. There were a few pearl gray nodules scattered irregularly throughout the cortex about a pin head in size.

Pancreas apparently normal. Size of the stomach was normal, and externally presented no unusual signs. No evidence of any fresh infection from the appendix.

The diaphragmatic surface of the liver did not show extension of the process from the abscess of the pleura above.

The stomach and intestines were removed *en masse*, first having been tied off at intervals of about 2 feet and at the important anatomical points along the course, to facilitate the examination as to distribution of the parasites. The mucous membrane of the stomach was thickened, and an excessive quantity of adherent mucus lined it throughout. The reaction of the mucus was acid, as was also that of the upper part of the duodenum. No parasites or eggs were found anywhere in the stomach, but immediately below the pylorus, within ½ inch of the stomach, where the contents were still acid, were found the parent worms of the strongyloides intestinalis, large quantities of embryos and eggs, not alone in the intestinal contents, but deeply embedded beneath the coat of mucus which lined the entire gastro-intestinal tract. The eggs were found particularly abundant in the deeper layers, and often apparently embedded in the mucous lining, so that removing the mucus and later scraping the lining, gave the best specimens of eggs that were found at all. It was noted also that as far down as the ileocecal valve, parent worms, eggs and embryos were found closely adherent to the mucous membrane. As the examination proceeded from the duodenum, a greater number of embryos appeared to be found in the intestinal contents, and while the duodenum and jejunum showed everywhere apparently the same extent of distribution of parasites, below this point the embryos were found in greater numbers in the intestinal contents. A single field of a Leitz microscope, number four eyepiece, number six objective, showed from ten to forty or fifty of the embryos. Parent worms were found as low down as the beginning of the ascending colon, but no eggs were found in the colon, although they were found at the lower end of the ileum. Larvæ were found in the proximal end of the appendix, but none were found in the bile or the gall duct or pancreatic duct. In the upper part of the intestinal tract one to three parent worms were found

on every coverslip. Lower down it required often the search of two or three coverslips to show a single one.

An examination of sections removed from the duodenum and hardened in formalin showed an extensive disintegration of the structural layers of the mucous membrane due to postmortem change. There was no inflammatory process in the mucous layer at all, with the single exception of the appearance of a considerable number of eosinophiles immediately around certain of the worms which were buried deep down in the mucous membrane. Neither eggs nor worms were found in the muscularis mucosa, but both were found in considerable numbers in the crypts of Lieberkuhn, the parasites often projecting into the interstitial tissue, having apparently burrowed horizontally through the layers of cells. In the accompanying photographic illustrations, the relation of the eggs and parasites to the layers of mucous membrane are shown. The worms are not always straight, but appear in a number of cases to be curled up and occupying the Lieberkuhn crypts. The division of the nucleus of the eggs is shown in a few of the sections of eggs, but this division was not seen in any eggs found in the intestinal contents.

The adult parasites that were found were all of exactly the same type and represent what I take to be parthenogenetic mother worms. No adult males were found at any time. Nor were we able to cultivate them from the feces during life or from what was removed from the intestinal tract at autopsy. The direct transformation of the radiiform embryos to filariform larvæ was the only change noted, and in spite of various means employed, these larvæ generally died on the fourth or fifth day. This transformation seems to be apparently the rule, as Leichtenstern has pointed out. This observer studied a small number of cases through many years, and points out that other forms of development do occur, but not as constantly or regularly as the direct change. The whole subject of the method of development has been gone over so well and so interestingly in the article already mentioned by Dr. Thayer,¹ that I would refer any one interested in it and for illustrations of the eggs, embryos and larvæ to that article.

As regards the symptoms produced by this parasite, two of these cases were of no avail as pictures of the trouble, because of the complication with uncinaria infection. But it is notable that even in these cases the diarrhea was either absent or extremely slight. In the uncomplicated case there never was at any time any history of diarrhea, although the case was certainly a severe one. And there could scarcely be said to be a severe anemia. As Nourmand in 1877 described the disease, there appeared to be mild dyspeptic symptoms, loss of appetite, pasty, frequent stools, showing sometimes mucus and blood, and in extreme cases being choleraic in character. Nourmand calls attention to the absence of any severe anemia. Thayer and Strong's cases showed a chronic diarrhea constantly, but one was complicated by amebic dysentery. One of his cases also showed a marked secondary anemia, although the hemoglobin was 57%. The absence of eosinophilia was noted in one of his cases,

¹ Journ. Exp. Med., vol. 6, no. 1, November, 1901.

in which particular it differed from mine. The presence of the eosinophilia in some degree has been a strikingly constant symptom in every single case in which I have found intestinal parasites, and in no less than 10 or 12 cases where the trichocephalus homines alone appeared, the percentage of eosinophiles rarely fell below 5, although the total number of leucocytes was unaltered.

A CASE OF GUNSHOT WOUND OF THE STOMACH. OPERATION. RECOVERY.

BY HUGH WILLIAMS, M.D., BOSTON.

On the afternoon of August 30, 1902, I was called by Dr. Nason of Newburyport to see a case of gunshot wound of the abdomen.

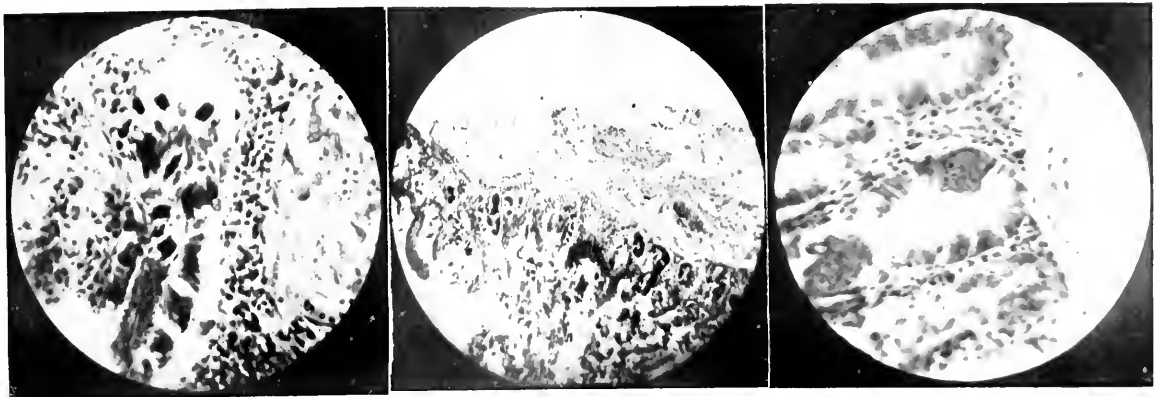
The accident, as nearly as could be ascertained, had occurred at 12.30 P.M. The patient, a boy of sixteen, had been shot by a .38 Smith & Wesson revolver.

you approached this point. This was also the point of greatest pain. The whole abdomen was flat to percussion except over the gastric area, where there was diminished resonance.

The general condition of the patient was very good. There was but little shock, and no active hemorrhage, although sufficient time had elapsed since the accident for him to have bled considerably if any large vessel had been injured. His general condition, however, did not show any such active process.

I decided to open the abdomen at once. The patient was etherized by Dr. Nason, and an emergency preparation of the abdomen made. Dr. W. B. Odiorne and Dr. Day assisted at the operation. A probe passed into the wound entered the abdominal cavity at the median line, two inches above the umbilicus. An incision was then made in the median line from the ensiform cartilage to the umbilicus, and the abdomen opened. The

STRONGYLOIDES INTESTINALIS.—BROWN.



normal in appearance, as far as distension was concerned, but the lineæ transversæ and semilunares were exaggerated, as when a strong person is contracting his abdominal muscles for show. The wound of entrance of the bullet was seen one inch to the right of the umbilicus, and about half an inch below. The track of the bullet could be seen for one inch or more, its course being at an angle from right to left, and in a direction from below, upward and inward. Except on pressure, there was no hemorrhage from the wound, which had been covered with a moist corrosive dressing. The abdomen had been shaved, and everything made ready for operation. Palpation showed general but moderate rigidity of the abdominal muscles. There was marked tenderness in the epigastrium, in the median line about two inches above the umbilicus, but there was no tenderness except as

pressure was applied between the stomach and the transverse colon, and opened the lesser peritoneal cavity. No gas, blood or gastric contents were found here, and the posterior stomach wall felt intact. The region of the foramen of Winslow and the remainder of the anterior surface of the stomach were then explored, but no hemorrhage could be found. No wound of exit from the stomach could be discovered, nor any evidence of one.

Though the patient was standing the operation remarkably well, I did not deem it safe to leave the stomach so distended with food, as my line of sutures would be three inches long, and vomiting would almost inevitably follow the operation if the stomach was not previously emptied. By removing some of the contents, I should also be able to explore the inside of the stomach. I therefore enlarged the opening in the stomach throughout its wounded surface, making the wound one and three-fourths

Left pleural cavity filled with a fibrinous clot, slightly adherent both to the lung and the chest wall, which was very much inflamed and rough. The clot peeled off rather easily, leaving both pleural surfaces very slightly roughened. The left lower lobe was solid, contained no air. Dark red on section. The left upper lobe extremely edematous. Frothy fluid flowing freely from the cut surfaces. Few adhesions at the left apex. Right lung presents almost similar condition, except that there was no consolidation of the lower lobe, although but small amount of air was to be forced from the cut surface. The diaphragmatic surface presented the same yellow clot that the left lung showed. In addition to this there was considerable quantity of purulent material well walled off, about $1\frac{1}{2}$ oz. in all. This was broken into when the lung was separated from the diaphragm. There were firm adhesions between the pleural surfaces all over the anterior and axillary parts of the lung. Tubercular scar at the right apex.

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BY HUGH WILLIAMS, M.D., BOSTON.

On the afternoon of August 30, 1902, I was called by Dr. Nason of Newburyport to see a case of gunshot wound of the abdomen.

The accident, as nearly as could be ascertained, had occurred at 12.30 P.M. The patient, a boy of sixteen, had been shooting on Plum Island with a friend of about the same age. At the time of the accident he was in a reclining position, and his friend, who was seven or eight feet away, in front and a little to his right, was unloading a 32-caliber revolver. Whether the cartridge exploded within the pistol, or was dropped upon some hard object, could not be determined, as the boys told different stories. The bullet from the exploded cartridge entered the abdomen, passing through cotton shirt and undershirt. The mid-day meal — consisting of apples, watermelon, and herring with pickles — had been eaten at noon, or about half an hour before the accident. The boy was taken in an ambulance from Plum Island to the Anna Jaques Hospital, a distance of four miles. He had not vomited; but had complained of severe pain in the epigastrium, and had been given morphia gr. 1-8. He was unable to urinate, and had been catheterized of eight ounces of normal urine. The bowels had moved thoroughly in the morning.

When I saw the patient — four hours after the injury — he was lying quietly on his back on the operating table, with the knees out straight. He was perfectly calm, — not at all disturbed either by his own condition or by his surroundings. He was strong, healthy, well-developed. The pulse was full, a little bounding, but of excellent quality, and the rate varied between 115 and 120. The temperature was 100°. The abdomen was practically normal in appearance, as far as distension was concerned, but the lineæ transversæ and semilunares were exaggerated, as when a strong person is contracting his abdominal muscles for show. The wound of entrance of the bullet was seen one inch to the right of the umbilicus, and about half an inch below. The track of the bullet could be seen for one inch or more, its course being at an angle from right to left, and in a direction from below, upward and inward. Except on pressure, there was no hemorrhage from the wound, which had been covered with a moist corrosive dressing. The abdomen had been shaved, and everything made ready for operation. Palpation showed general but moderate rigidity of the abdominal muscles. There was marked tenderness in the epigastrium, in the median line about two inches above the umbilicus, but there was no tenderness except as

you approached this point. This was also the point of greatest pain. The whole abdomen was flat to percussion except over the gastric area, where there was diminished resonance.

The general condition of the patient was very good. There was but little shock, and no active hemorrhage, although sufficient time had elapsed since the accident for him to have bled considerably if any large vessel had been injured. His general condition, however, did not show any such active process.

I decided to open the abdomen at once. The patient was etherized by Dr. Nason, and an emergency preparation of the abdomen made. Dr. W. B. Odiorne and Dr. Day assisted at the operation. A probe passed into the wound entered the abdominal cavity at the median line, two inches above the umbilicus. An incision was then made in the median line from the ensiform cartilage to the umbilicus, and the abdomen opened. The moment the peritoneum was incised, gas began to escape in small amounts, and the stomach near the pylorus presented in the wound. No fluid, intestinal or gastric contents or blood could be seen. As the direction of the bullet was upward to the left, I walled off the stomach with gauze, and delivered its anterior surface toward the fundus. This almost immediately brought into view in the anterior stomach wall a wound which, being in a glancing direction almost parallel to the wall of the stomach, showed that the bullet had lacerated the visceral peritoneum in the first inch of its course only. The ball had then penetrated deeper, and one-half inch further on it had turned directly backwards, making a ragged punctured wound through the stomach wall. This point was, approximately, two inches above the lower border of that organ and four inches from the pylorus. From this wound was escaping a little gas and a small quantity of liquid of the consistency of thick soup, though there was no evidence of any fluid having escaped before the manipulations began.

The stomach was found distended with a semi-solid material from the last meal. It was, in fact, so full that handling forced from the wound some of its contents. The wound was then partly closed with silk Lembert sutures, and well walled off with gauze, and a gauze pad was held by Dr. Odiorne over the opening. I then made an incision in the great omentum, between the stomach and the transverse colon, and opened the lesser peritoneal cavity. No gas, blood or gastric contents were found here, and the posterior stomach wall felt intact. The region of the foramen of Winslow and the remainder of the anterior surface of the stomach were then explored, but no hemorrhage could be found. No wound of exit from the stomach could be discovered, nor any evidence of one.

Though the patient was standing the operation remarkably well, I did not deem it safe to leave the stomach so distended with food, as my line of sutures would be three inches long, and vomiting would almost inevitably follow the operation if the stomach was not previously emptied. By removing some of the contents, I should also be able to explore the inside of the stomach. I therefore enlarged the opening in the stomach throughout its wounded surface, making the wound one and three-fourths

inches in length. The stomach was then rapidly emptied. The contents consisted of about three pints of odorless, semi-solid material, much like piccalilli. The internal surface was then carefully explored, and still no evidence of a wound of exit could be found, nor was the bullet found, though very nearly all the contents were removed, only a small amount remaining in the fundus. During the process of emptying the stomach, there was very little soiling of the field of operation, and what little fluid escaped seemed to be well taken care of by the walling-off gauze. The wound in the stomach was then closed by three layers of interrupted Lembert silk sutures. The whole field was flushed out with salt solution, which came back as clean as it went in. The lower part of the abdomen was inspected, and examined with the hand. There was no blood in either flank or elsewhere. The intestines were as collapsed as if the patient had been under a forty-eight hour operation. A small gauze wick was passed into the lesser peritoneal cavity and another to the line of sutures in the stomach, this point being directly under the wound of the abdominal wall, which was then partly closed with interrupted through and through silkworm gut sutures. The external wound of entrance was excised and drained with gauze. The patient stood the operation very well, his pulse at the close being 130, and in quality very little weaker than at the beginning.

It was suggested after the operation that the bullet might have made a hole in the stomach as it glanced over it, and then gone on, entering the diaphragm, and perhaps lodging in the pleural cavity. It could not have entered and injured the lung to any extent, for there was no coughing of blood, and I do not think that it merely glanced over the surface of the stomach, for exploration and examination with the hand of the area above the stomach, including the liver and the diaphragm, failed to show anything abnormal. Then, too, it seemed probable that the bullet entered the stomach, for the nature of the wound in the stomach showed that the first portion was grazed and bruised, while at the upper end there was a ragged, sharply defined wound, with no evidence of a bruise or contusion of the peritoneum beyond this point. What changed the direction of the bullet it is impossible to say. It might have been that the bullet had already begun to change its course after passing through the abdominal wall, as very little will change the course of a slug-shaped bullet; or the change of direction might have been owing to the fact that the stomach was distended and elastic, and that the bullet was nearly spent at the time.

Whether or not it was wise to empty the stomach at the time of operation, was a question that had to be decided at once. It certainly added to the danger of infection, and it also lengthened the operation; but it seemed best at the time, considering the amount of distension of the stomach and the large area to be sutured, which was not increased to any extent. The duration of the operation from the starting of the ether was forty-five minutes, and very little ether was required.

For the first two days after the operation the temperature varied between 100° and 102°, and the pulse between 90 and 120; but after this both fell

to normal, and did not give any further cause for alarm. The wick to the lesser peritoneal cavity was removed on the fifth day, and that to the line of stomach sutures on the seventh day. There was no sign of infection from either sinus or from the wound of entrance in the abdominal wall. Nothing was given by mouth for one week. The patient was fed by rectal enemata, which were well retained; and it was stated by the nurse that he had a well-formed, normal movement each day. The thirst was controlled by washing the mouth and giving a sufficient amount of salt solution by rectum. Only one dose of morphine was given during convalescence. The wounds were all healed without infection at the end of two weeks. At the end of three weeks, the patient was up, was on a light diet and feeling perfectly well. His stools were all examined, but the bullet was not found. Dr. Nason has reported this patient well at the end of five months.

The interesting questions in this case seem to me to be those of drainage and of emptying the stomach through the abdominal wound.

The boy might have recovered if the wound in the stomach had simply been sewed up, the abdominal cavity thoroughly flushed out with salt solution, and the external wound entirely closed. Patients have been known to recover under this treatment. On the other hand, it has sometimes proved fatal; for example, the case which is still fresh in every one's mind. The dangers of infection were, that the bullet was probably septic after it had passed through two layers of clothing and through the skin, and that the stomach wall was broken by it, and was leaking liquids and gas. It seems to me impossible to cleanse a wound of this kind so that it can safely be closed. There is also always the danger of a wounded pancreas, which if not drained means practically certain death. Drainage, therefore, gives the patient the benefit of a doubt which, if disregarded, may cost him his life.

If an abdominal wound of this kind is closed, especially after irrigation, the bacteria will be so disseminated that a general infection will be given every chance to assert itself. There are similar cases in which drainage seems to me to be imperative; for example, those in which it is sometimes asserted that the abdomen may be closed without drainage, such as an appendicitis, either during the ulcerative stage, when it is believed that the bacteria have not had time to get through the wall of the appendix to the peritoneum, or when the patient has passed through an acute attack and an operation is performed as soon as the temperature is normal. In both of these conditions the abdomen has sometimes been closed at the time of the operation and the patient has recovered; but I think every surgeon has seen or has heard of patients who have died of a general peritonitis when treated in this way who might have recovered if a temporary drain had been employed.

Emptying the stomach in this case was a fortunate procedure, as the subsequent history shows, — indeed, it seems to me to be the most important factor in his recovery; for there was no vomiting at any time after the operation. This could hardly have been expected if the stomach had been left distended with food. Moreover, this great advantage was gained, that the stomach sutures were put to

no unusual strain; therefore healing of the approximated surfaces was not interfered with; and the drainage took care of any local infection from leaking, either from the sutured surface or from the posterior surface of the stomach, where there might possibly have been a wound that was overlooked at the time of operation.

Clinical Department.

A CASE OF MULTIPLE FIBROMATA (FIBROMA MOLLUSCUM) AND SEROUS CYST OF NECK.

BY DAVID D. SCANNELL, M.D., BOSTON.

THE individual, the pictures of whom form the basis for this contribution, was observed in Matanzas, Cuba. On sight, he presented nothing more



than the cystic tumor of neck, striking enough in itself to be well worth a photograph. Removal of his upper clothing, in order to bring out better the



details of the cyst, disclosed the other and more striking growths.

In the presence of the illustrations, I feel that much in the way of explanation is unnecessary, excepting perhaps the following concerning the individual himself: Age seventy-two; Cuban by birth; laborer; good health always; tumor on neck of twenty years' duration, very slow, progressive enlargement, unattended by any discomfort except



that resulting from mechanical interference. The exact duration of the fibromata could not be learned; he thought the small ones on the trunk and extremities dated from childhood; the large ones pendent from the arm had developed during the last ten years.

The cyst of the neck was tense, firmly fixed, fluctuant, and slightly translucent. The fibromata were all soft and gelatinous, the large, pendulous ones giving the suggestion of containing "boiled vermicelli." There was no apparent tendency on the part of the large ones to ulcerate. The skin, especially on the trunk, was considerably thickened. In the right back, it was markedly lax, so that it could easily be lifted away from the subcutaneous tissues as much as three or four inches.

Medical Progress.

RECENT PROGRESS IN SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D., BOSTON.

(Continued from No. 21, page 558.)

THE TECHNIQUE OF GASTRIC LAVAGE.

Dr. C. Neck²¹ reports the following observation relating to gastric lavage, stating that the point in its technique noted has been used by him to advantage in clinical work, especially when it was necessary to entirely empty the stomach previous to operative work on that viscus. He claims that if the operator wishes to be sure that the stomach is entirely empty, the lavage should be finished with

²¹ Centbl. f. Chir., 1902, vol. xxix, p. 1337.

the patient in a position with the pelvis raised (Steile Beckenhochlagerung), and the stomach tube should be slowly withdrawn. When the lavage is performed, as is customary, with the patient recumbent or sitting, a certain amount of stomach contents remains, due, apparently, to the fact that the cardiac orifice is not the most dependent point of the cavity to be emptied and that at times the eye of the wash tube is not situated at that point. By placing the patient in a position which makes the cardiac orifice the lowest point, and slowly withdrawing the tube, these obstacles to the complete emptying of the cavity have been removed. This observation Dr. Neck claims to have verified by experimental work on the cadaver and clinical experience.

EXPERIMENTAL CONTRIBUTION TO THE KNOWLEDGE OF THE PATHOLOGY OF GASTRIC ULCER.

The writer, R. Dalla Vedova,²² was led to an investigation of the cause of gastric ulceration by the statement of Durante that the classical appearance of this lesion first occurred when all the tissues of the stomach wall were predisposed to it by a marked disturbance of its innervation. The investigation consisted in destroying in dogs the vagi, the celiac plexus and the splanchnic nerve (section or alcohol injection), and then studying the resulting changes in the stomach mucous membrane. In a large number of the animals marked voracity occurred during the first few days following the operation. In thirty-three of forty-five cases the results could be tabulated, showing that with injury to the vagus—six cases—no change followed in the mucous membrane and no ulcer occurred. In twelve cases of the celiac plexus, the mucous membrane was altered in five (41%), and in two ulceration followed. In fifteen cases of the splanchnic nerve the mucous membrane was affected nine times (60%), and ulceration was noted in six cases. Limited examination of the urine (postmortem) showed only occasionally a trace of albumen, never sugar or acetone. As regards the amount of hydrochloric acid in the gastric secretion, Vedova believes that at times it is increased. The anatomical changes in the mucous membrane occurred most frequently in the region of the pylorus, where either single or multiple (even to number of fifty) they appear in the form of necrosis, hemorrhages, erosions, ulcers and cicatrices. Usually, also, the stomach wall is covered with a coffee-brown, tea-like mucus. The vicinity of the ulcer which enters the stomach wall deeply was free from infiltration reaction, but in the immediate vicinity of the ulcerated surface a small-celled infiltration occurred. The vessels in the vicinity were, as a rule, thrombotic. Vedova concludes from his experiments that one can produce, by injury to the celiac plexus or splanchnic nerves in dogs, changes in the gastric wall which stand in close relationship to the gastric ulcer in man.

THE PREDISPOSING AND EXCITING CAUSES OF SUDDEN ATTACKS OF APPENDICITIS.

Riedel,²³ Jena, gives a very valuable paper on this subject.

The author sets out by promulgating certain theses, and, as these form the groundwork of his Arbeit, they will be quoted almost *in extenso*.

(1) A healthy appendix, free from foreign bodies, practically never becomes by itself the seat of that disease known as appendicitis.

(2) An otherwise healthy appendix may take part in a cecal catarrh, but this in no way alters the microscopic structure of the organ. Whether a disease analogous to appendicitis may originate in this manner or not is unsettled, but apparently it may not.

(3) Appendicitis is almost always an insidious disease, which develops with scarcely a symptom. Like cholecystitis, it is usually discovered when an acute inflammatory process attacks the organ already suffering from chronic disease.

(4) A sharp or angular foreign body may enter and perforate a healthy appendix, and rapidly produce a disease which remotely resembles suppurative appendicitis. Rounded foreign bodies (for example, enteroliths) can also, in time, perforate the organ directly; but, as a rule, they may by their presence slowly prepare the way for an acute inflammatory attack, and this latter produces the perforation.

(5) There are two predisposing causes for a sudden attack of appendicitis:

(a) An enterolith forms in a healthy appendix, and occasions more or less circumscribed secondary disease; (b) The appendix becomes the seat of an entirely characteristic primary disease.

(6) This characteristic primary disease is appendicitis granulosa.

(7) Enteroliths usually form in healthy appendices, but, exceptionally, they may arise in those affected by appendicitis granulosa or tuberculosa.

(8) Strictures or stenoses of the appendix may be formed,—sometimes as a result of the presence of enteroliths, which are later evacuated into the cecum, or sometimes as a result of appendicitis granulosa (rarer).

(9) An acute attack of non-suppurative appendicitis is only occasionally traceable to an enterolith present in an almost healthy appendix. The predisposing cause for such an attack is usually appendicitis granulosa, or stricture or stenosis.

(10) An acute attack of suppurative or gangrenous appendicitis is more common in an appendix prepared for it by the presence of an enterolith than in one the seat of appendicitis granulosa, or of stricture or stenosis.

(11) In the former, as a rule, the character of the attack is more severe, progressive, and leads more quickly to gangrene. Acute gangrene of the appendix may occur on the basis of appendicitis granulosa and of stricture and stenosis.

(12) As a rule, the acute attack in cases of stricture and stenosis tends to run a mild course. Gangrene is less common in cases of stricture than in those of appendicitis granulosa. When stenosis is present, gangrene is scarcely possible.

(13) In appendicitis granulosa the acute attack is apparently often precipitated by hemorrhage into the granulation tissue. The effused blood presses the tissues apart, elevates and injures the epithelium, and bacteria gain access to the small lymphatics of the chronically inflamed organ. The attack is very much like erysipelas of the skin.

²² Archiv. f. Verdaunungskrankheiten, Bd. viii, Hft. 3.

²³ Arch. f. klin. Chir., Annals of Surgery, June, 1902.

(14) Marked general symptoms follow the lymphatic infection. When the lymphatics of an abdominal organ which is the seat of chronic disease become infected, local peritoneal irritation often occasions vomiting.

(15) As erysipelas is sometimes mild, sometimes severe, so acute lymphangitis in the chronically inflamed appendix is sometimes mild, sometimes severe. Mild lymphangitis gives rise to non-suppurative, severe to suppurative inflammation of the appendix, and the latter often leads to gangrene, because the enterolith which prepared the soil is putrid.

(16) An acute attack in an appendix predisposed to it by any of the above-mentioned means (erosion by enterolith, appendicitis granulosa, stricture, stenosis) may lead to abscess formation without perforation of the appendix. To such abscesses alone belongs the name peri-appendicular.

(17) Occasionally, though rarely, non-suppurative appendicitis gives rise to peri-appendicular abscess remote from the appendix itself.

(18) Abscesses, especially those due to appendicitis granulosa, are comparatively frequently resorbed, because they are hardly, if at all, putrid.

(19) Appendicitis granulosa has a distinct tendency towards spontaneous recovery through obliteration of the appendix. The obliteration may ensue slowly and insidiously or rapidly after an acute attack.

(20) Strictures and stenoses rarely recover spontaneously, especially rarely if they have been caused by enteroliths.

(21) The worst enemy of the patient is the eroding enterolith; it impresses on any attack the imprint of malignancy. The acute attack in cases of appendicitis granulosa is comparatively harmless. The putridity of an enterolith leads to the formation of putrid pus.

(22) The old and frequently neglected idea that enteroliths are principally to blame for bad terminations to appendicular inflammation must be held correct. Scarcely one third of such cases run their course; all the rest are severe. Exceptionally a cure results from the escape of the stone into the cecum, generally, however, on its departure it leaves behind a stricture or stenosis of the appendix.

It will be seen that Riedel considers that acute appendicitis is due to two causes; namely, the presence of eroding enteroliths and of chronic or granulating appendicitis.

A NEW USE FOR THE APPENDIX.

A very ingenious idea²⁴ is advanced for the use of that supposedly superfluous human appendix. Dr. Weir shows the advisability of making an artificial anus at the cecum, or in the upper portion of the colon, in those persistent and intractable cases of colitis which frequently prove fatal under medical treatment. He had done one operation of this kind in which he made a Kader-Gibson fistula, by placing a medium-sized catheter in a small opening in the cecum and applying two or three rows of purse-string sutures so as to invert the adjacent peritoneal coat. When he was about to do another case the

appendix presented itself so easily that he at once made use of it in his operation. He sewed the tip of the appendix into the wound, and then, opening the end, ran a small catheter through its lumen into the cecum. If one were sure that it was patent it would be unnecessary to open the appendix until adhesions formed. Irrigations were subsequently carried on through this organ, and the case made a good recovery. The danger of shock and peritonitis is very much lessened by this means, and the subsequent treatment in closing or removing the appendix is comparatively simple, and entails very little danger.

SUTURE OF THE LIVER.

After we pass Glisson's capsule, according to Dr. R. C. Coffey,²⁵ the softer structures of the liver have no more power to retain sutures to control and counteract blood pressure than so much mush. He thinks it of no use to apply sutures directly to the liver tissue for this purpose, and employs a mattress suture where all the pressure comes on Glisson's capsule at three or four points. The pressure is all the time toward the center of the incision, and obliterates all the space at the bottom. Two sutures are used, one being applicable to an incision which does not penetrate the liver entirely, and the other is applicable to wounds in which the liver is severed through and through. One he calls the Y-suture, the other the X-suture. The Y-suture is placed as follows: "A round curved needle, at least four inches long, armed with catgut or silk, is passed through the catgut support to the bottom of the incision, comes out on the other side, passes through another catgut support, re-enters through the support of the same side, goes back parallel to the other stitch and comes out through the support from which we started, making a quilt suture. A suture is then passed from the opposite side of the liver, either straight through or indirectly, as may be convenient, includes the two threads at the bottom of the cut in its loop, comes out on the bottom of the liver and again both ends passing through a single catgut weave are tied in the form of a quilt suture, thus drawing the other suture well into the bottom of the cut. The first suture is now tied, and any amount of pressure can be used, for the line of pressure is not against the suture, but is on the catgut supports. Thus the bottom of the wound is brought in absolute apposition, and any amount of pressure desired may be used. This may not bring the surface of the liver in as close contact as is desired; therefore a second quilt suture is passed through the edges of the support, nearest the wound, simply taking in the capsule. In this way the tissues are absolutely brought into contact, and as much pressure can be brought to bear in closing a wound of the liver as in any other part of the body. In closing a wound of the liver which extends entirely through its substance, a modification must be used. Instead of the single suture which goes into the bottom of the liver, a second quilt stitch is passed through both sides on the bottom, the same as the Y-suture above, interlocking the two sutures to the center of the wound. In this way the pressure is brought to bear in a very effect-

²⁴ R. F. Weir, *Med. Rec.*, Aug. 9, 1902; *Med. News*, Sept. 27, 1902, p. 602.

²⁵ *Med. News*, Aug. 30; *Journ. Amer. Med. Ass'n*, Sept. 13, 1902, p. 655.

ual manner." The cuts which illustrate the article give a better idea of the suture than the description, and the reader is referred to the original. Coffey says, as far as he knows, this method is entirely new, but he is conducting experiments on living animals to find the amount of catgut that will be absorbed. The points which are original are the use of the catgut weave for a support and the indirect or angular pressure made by a countertraction suture. The needle should be round, full-curved and fully four inches long. The one with which the counter-stitch is made may be a simple darning-needle, or any kind of a long straight needle.

(To be continued.)

Reports of Societies.

SIXTH MEETING OF THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS, HELD IN WASHINGTON, MAY 12 AND 13, 1903.

The president, DR. W. W. KEEN, was in the chair, and made an announcement with reference to the Major Reed memorial.

SESSION OF MAY 12.

SYMPOSIUM ON THE PANCREAS AND PANCREATIC DISEASES.

DR. E. L. OPIE of Baltimore read a paper on THE ANATOMY AND HISTOLOGY OF THE PANCREAS.

PROF. R. H. CHITTENDEN of New Haven then read a paper on

THE PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY OF THE PANCREAS,

in which he referred to the many abnormalities that occur when the pancreas has been extirpated. Bodies, more or less toxic, are formed, and he believed that the cells of the pancreas had several more peculiarities of composition than one realized. He referred to the synthetic action of the pancreatic ferments upon glucose, and claimed that diet had much to do with the formation of enzymes. He believed also that the pancreatic juices were very much modified by food, and that there were many deviations from the ordinary metabolic processes of the body when the pancreas was extirpated.

DR. SIMON FLENNER of Philadelphia read a paper on

THE ETIOLOGY AND PATHOLOGICAL ANATOMY OF THE PANCREAS,

in which he referred to the relationship existing between inflammations and degenerations of the pancreas and diabetes. Commenting upon the production experimentally of hemorrhagic pancreatitis, he stated that certain forms of injury had been quite successful along this line. The nearest approach in the artificial production of hemorrhagic pancreatitis to that in man had been made by injections of natural gastric juice into the duct of Santorini, inflammatory symptoms appearing with great rapidity. Demonstrable, necrotic lesions appeared in the pancreatic cells in from four to six hours; but it is doubtful, in his opinion, whether the natural gastric juice of man ever gets into the pancreas and produces hemorrhagic pancreatitis. He did not

believe that gangrenous pancreatitis is of itself a disease, but believed it to be a secondary condition grafted upon a hemorrhagic pancreatitis. He divided suppurative pancreatitis into two forms—first, where the abscesses are small and localized, and, second, where they are large and diffuse. As regards spots of fat necrosis, they are frequently surrounded by a zone of hemorrhage; and their relation to the pancreas has long been suspected; they probably depend upon the presence of pancreatic juice. He considered that fat necrosis occurs, not only where the pancreas is in a state of acute inflammation, but also in cases of chronic inflammation.

DR. REGINALD H. FITZ of Boston read a paper on

THE SYMPTOMATOLOGY AND DIAGNOSIS OF PANCREATIC DISEASES,

in which he stated it had been known for centuries that diabetes may be associated with disease of the pancreas. In his opinion, disturbances due to pancreatic abnormalities usually indicated extensive interference with the function of the organ. He reported 29 cases of steatorrhea in which jaundice was present in 12 cases and absent in 17. He believed that there is less splitting of fat in pancreatic disease, and advises increasing the quantity of fat in persons suffering from this disease. The trouble, as he sees it, is to know just what the limitations are for this diet, and considers that a very important point to ascertain in this disease is the ability of patients to digest muscle fiber. The power of the pancreas to prepare food for assimilation should be ascertained by giving such foods as call for pancreatic activity. He referred briefly to the chemical tests for pentose, and also to the symptoms which are most important in the diagnosis of pancreatic disease.

Prof. Von Mikulicz-Radecki of Breslau read a paper on

INJURIES AND INFLAMMATORY PROCESSES OF THE PANCREAS,

and laid considerable stress upon the topographical relations of this organ. He mentioned two methods of exposing the pancreas—first, trans-peritoneally, and, secondly, retro-peritoneally. He believed that operations upon the pancreas were more dangerous than those upon any other abdominal organ, due to the fact that the general condition of the patient is usually so low. He collected 80 cases of operations, of which 41 died. Of the 80, 37 were drained. In operating he prefers to make the incision in the median line, and showed by statistics that all cases of pancreatic injuries not operated upon died, while of those operated upon many recovered. He urged early operation in these cases, claiming that far better results were secured than by waiting until abscesses formed. He believed that most cases die in the acute stage, and that the sub-acute is most favorable for operation. He mentioned four points in favor of early operation, but believed that the operation in all cases should begin as an exploratory incision.

DR. ROSWELL PARK of Buffalo read a paper on

TUMORS, CYSTS, ETC., OF THE PANCREAS, and approved of Dr. Robson's six divisions of pancre-

atic disease. He mentioned two cases of obstruction of the pancreas by lumbricoid worms, and stated that he believed hydatid cysts of the pancreas were extremely rare. He believed also that injury has more to do with pseudo-cysts than with the true pancreatic cyst, the symptoms of the latter being mainly those of pressure. Fat in the stools and glycosuria in these cases are very suggestive. Differential diagnosis of pancreatic cysts must be made from at least thirteen different kinds of cysts. The place of the incision depends upon where the tumor presents. Referring to drainage, he believed that this was often a life-saving remedy, and should be done posteriorly. In some cases he had observed that the discharge from the fistula increased when the patient became excited. He believed that cancer was most common at the head of the organ, and spoke of some which attained a great size. He considered that medicinal treatment must be symptomatic, but claimed to have gotten good results from operating, reporting 8 recoveries out of 16 cases. He referred briefly to tuberculosis and syphilis of the pancreas, and advised operation when in doubt.

DR. CHARLES G. STOCKTON of Buffalo discussed these papers, and stated that the question of diabetes in association with pancreatitis did not seem to be by any means settled, as there still seemed some reason for believing that diabetes may exist without ascertainable disease of the pancreas. One point upon which he laid considerable stress was polyuria. In his experience there are many cases in which there is relatively a large amount of sugar without corresponding increase in the quantity of urine, while in other cases there will be considerable urine with very little sugar. He mentioned a case which has been operated upon for a cyst of the pancreas in which glycosuria appeared a short time afterward. A year later this was considerably increased, and a few years afterward developed into a distinct diabetes. He mentioned that physiologists have found that the secretion of the stomach acts as a normal stimulant to the secretion of pancreatic juice, and that if the stomach secretion is diminished the secretion of the pancreas will also be, but clinically this is not the case. Where there is a disturbance of gastric juice, the intestinal digestion will be disturbed to some extent. He concluded by asking for a little delay in accepting the classification which had been suggested by Dr. Robson, although it had been favored by Professor Mikulicz and Dr. Park.

DR. HERBERT U. WILLIAMS agreed very largely with what Dr. Stockton had said, and commented upon the fact that in some respects our knowledge of pancreatitis and fat necrosis is very unique. He insisted upon the importance of fat necrosis in diagnosis, and considered that this information was easily obtained by the use of the microscope. He attached considerable importance to this information, and urged the wide circulation of its value. He dwelt briefly upon the experiments of Dr. Wells, and in referring to hemorrhagic pancreatitis mentioned the fact that it was long ago suggested that the action of the pancreatic juice upon the blood vessels might account for the hemorrhage in at least some cases. He made reference to his recent experience in endeavoring to prepare Kaiserling preparations from two specimens. His

results were extremely poor, and the color did not materialize, which in his opinion may possibly have been due to the action of the pancreatic juice. He agreed with Dr. Flexner as to the causation of acute pancreatitis, and added traumatism to the list of causes, as well as catarrh extending from the duodenum or the bile ducts. He mentioned that one often finds areas of fat necrosis at autopsy, and that sometimes these areas are associated with areas of hemorrhage.

DR. MAURICE H. RICHARDSON of Boston, continuing the discussion, said that acute lesions of the pancreas are very unusual. In seven thousand laparotomies at the Massachusetts General Hospital but six cases have been operated upon for acute pancreatic lesions; all fatal. The disease is as fatal, even though operated upon early, as it ever was, though death ensues later. In Dr. Richardson's two acute cases death followed after four weeks' drainage, the pancreas sloughing and escaping piecemeal. The lesion seems essentially fatal in infections apparently total. Patients surviving long enough for well-defined and protected abscesses have a better chance. Three hospital cases have survived. In several laparotomies Dr. Richardson has seen throughout the abdomen evidence of old healed, disseminated, fat necrosis without abnormalities in the pancreas. In operative wounds of the pancreas no bad results had followed. These wounds accompanied resection of the pylorus and operations involving the pancreas, but the number was small. The aseptic lesions of the pancreas have apparently a small mortality after operation. Five patients with cysts have all survived drainage, and one infant recovered from total extirpation of a large cyst supposed to be pancreatic. In the other cysts there was discharge of pancreatic fluid for years.

Cancer of the pancreas has been the indirect cause of death in many explorations and cholecystotomies for jaundice. Patients with jaundice and cholelithiasis associated with benign enlargements of the pancreas have, after removal of gallstones and drainage through the gall bladder, wholly and permanently recovered. By far the larger number of operations affecting the pancreas have been of this kind in Dr. Richardson's experience. In none of these cases was there any evidence, except by palpation of pancreatic disease, for all have recovered. To this condition the perhaps unjustified term "Chronic Pancreatitis" has been used. For the successful surgical treatment of acute pancreatic affections, if successful treatment is ever possible, much more must be known of the very earliest symptoms of these affections.

DR. B. S. A. MOYNIHAN of England agreed with most of what the previous speakers had said, and claimed to have operated on fifteen cases of chronic pancreatitis, of which all recovered. One of the cases was particularly interesting on account of the marked polyuria, amounting to 80 or 90 oz. daily, no sugar, and more than half of the gland was affected. He drained the gall bladder for some time, and then did a cholecyst-enterostomy. The patient progressed satisfactorily, but five months ago he developed glycosuria, and is now dying of diabetes. The second case was also very interesting, and was one in which the diagnosis had been made of chronic pancreatitis, and in which a

calculus was found in the pancreatic duct. On opening the abdomen he removed the stone, which was found to be composed of carbonate of lime. He believed that this was the first occasion in which pancreatic stone was diagnosed and found on operation. He admitted having had a small amount of experience with acute pancreatitis, and had only been able to find seven or eight cases, two of which were associated with cholelithiasis. One recovered without operation, but the other died.

PHILADELPHIA ACADEMY OF SURGERY.

STATED meeting, May 11, 1903, 8 P.M. DR. RICHARD H. HARTE, President, in the chair.

DR. WILLIAM J. MAYO, Rochester, Minn., read a paper entitled,

A REVIEW OF THREE HUNDRED AND THREE OPERATIONS UPON THE STOMACH AND FIRST PORTION OF THE DUODENUM.

Two hundred and eighty-six of these were taken from the records of St. Mary's Hospital, Rochester, Minn., and 17 from the Minnesota State Hospital for the Insane at Rochester and St. Peter. The average age of the patients was forty-two years, 42% being males and 58% females. There were 26 cases of duodenal ulcer with two deaths. Lesions in the first portion of the duodenum cannot be easily differentiated from lesions in the stomach which are due to the same causes. He divided lesions in the first portion of the duodenum into two groups — first, those caused by ulcer, and, second, those associated with gall-bladder disease. Of the ulcers limited to the duodenum, there was 1 acute perforating, 2 chronic perforating, 5 active and 3 cicatricial contractions with obstructive symptoms. Two deaths occurred, one from pneumonia and the other from exhaustion following gastro-enterostomy. Several of the cases could not be distinguished from gallstones until the operation, which was begun for that purpose, and which condition was frequently associated with it. In three cases the gall bladder was completely separated functionally from the bile tract; in four cases there were crippling adhesions to the gall bladder, but without stone or cholecystitis, requiring dissection to loosen. The differentiating features in these cases were good appetite, delayed pain, general absence of vomiting, and only in one case, and in that on only one occasion, was there hematemesis. The author expressed the opinion that surgical disease of the duodenum was much more frequent than has been supposed.

DISEASES OF THE STOMACH.

He divided these into two classes:

(1) Gastric ulcer and associated causes of serious disturbance. (2) Cancer of the stomach.

Out of the 303 cases reported in this paper 277 involved the stomach, with 28 deaths, or 10.1%; 168 of these cases were in the benign group, with 11 deaths. These cases included all the non-malignant obstructions or conditions calling for operation for gastric pain, with or without acute exacerbation. In the majority of the cases the perverted stomach secretions seemed to be the most important cause, which is shown by the almost constant association of excessive secretion with gastric

ulcer. Also in that part of the duodenum not protected by alkaline juices the same ulcers have also occurred after jejunostomy has been performed for the purpose of drainage. Drainage to relieve the excessive amount of secretion and thus produce healing of the ulcer is of great importance.

The following classification of gastric ulcer was made:

(1) Round ulcer, (a) acute; (b) chronic. It has the definite feature that there is but little thickening about the base.

(2) Mucous erosions — a condition which must be accepted with caution.

(3) Chronic ulcer with thickened base, and usually irregular in form.

(4) Benign obstruction without regard to cause.

The last two classes are the ones which most frequently call for operation; chronic ulcer is usually found in adults and more frequently in females. Spasm of the pylorus was thought to be one of the most important causes of the retention of excessive gastric secretion.

There were 109 cases of cancer of the stomach, with 17 deaths, or 15.6%. Late diagnosis and cachexia make the report of this group rather discouraging; most of the operations were of a palliative character. Early exploratory incision in suspected cases was recommended, and all the vascular and lymphatic connections with the diseased area should be removed. He then gave a full description of the method he employed in doing the operation. The period without recurrence after the operation has been varied, one case having gone two years and another three years and six months. He then discussed the three chief methods of improving stomach drainage; that is, pyloroplasty, gastro-enterostomy and gastro-duodenostomy.

DR. ALBERT VANDER VEER, Albany, N. Y., referred to the difficulty of diagnosing conditions in the lower third of the stomach and the upper third of the duodenum, referring to two cases in which he had thought that he was going to deal with a case of gastric ulcer, in which operation proved it to be duodenal ulcer. In cases where all the symptoms seemed to point very strongly to an ulcer in the stomach and none was revealed upon opening the organ, he believed it could sometimes be discovered by lifting out the organ and holding it up to the light. The difficulty of differentiating between carcinoma and ulcer when the growth occurred in the posterior wall of the stomach was commented upon and gastro-enterostomy thought to be the preferable operation for such conditions. He felt that many of the cases were left too long solely under the treatment of the medical man, and recommended exploratory operation when the clinical history and examination of the patient do not reveal clearly the conditions present. If possible, the complete operation should be done, but if the condition of the patient is such as to contraindicate this, much relief can be obtained by a gastro-enterostomy. In regard to shortening of the ligaments for the treatment of gastropexia, while he had had very little experience with this method, he felt that better results would be obtained by gastro-enterostomy with the establishment of good drainage. In regard to the pyloroplastic operation, he stated that he had in some instances gotten very

good results and in other instances the symptoms recurred, which he thought was probably due to the fact that the operation was too high up, and attributed Dr. Finney's success with this method to the fact that he made the outlet lower down.

DR. B. G. A. MOYNIHAN, Leeds, England, felt that the operation of pyloroplasty could be practically abandoned, he having done the operation three times, and in only one of the three cases did it prove satisfactory, in the third case a gastro-enterostomy being performed three or four months after the original operation. He did not feel that the operation was in any particular as satisfactory as the operation of gastro-enterostomy, stating that he had operated upon seventy-five cases by the latter method with only one death. He said that he had not used the Murphy button in the last sixty-five cases, as he believed the simple suture was preferable; but stated that in the employment of the Murphy button in the first of his cases, he had noticed that it destroyed a considerable portion of the mucous membrane around the union which he considered of very great importance, and which he had been doing in all his operations. By the method which he has employed the section of the stomach and the section of the jejunum where the anastomosis is to be made are each grasped in a pair of forceps and brought outside of the abdomen, and the continuous suture applied. In regard to malignant disease of the stomach he believed that the infection took place principally through the lymphatic system, and in the operation therefore he believed that first the greater curvature and then the lesser curvature should be removed. In regard to duodenal ulcer he believed that there were but very few cases in which this was a primary condition, but that in the majority of cases there had been a precedent gastric ulcer. Gastric ulcer is so frequently multiple that he did not believe excision to be practicable, as future trouble may result from a remaining undiscovered ulcer, and searching for the ulcer materially lengthens the operation of gastro-enterostomy.

DR. J. B. MURPHY, Chicago, referred to the fact that the great majority of all cases of carcinoma occur in the pyloric end of the stomach, and as the first set of glands to become involved by gravity are the lymphatic glands, any operation which is expected to produce permanent results must look to the removal of these glands, early operation being imperative. He further referred to the fact that about 10% of all cases of gastric carcinoma occurred in the cardiac end of the stomach, and are practically unamenable to treatment. He observed that the surgeon usually sees the cases of gastric disease in the following numerical order: (1) gastric carcinoma, (2) gastric ulcer, (3) pyloric stenosis, and (4) pyloric retention. As the gastric carcinoma is usually a sequence of the other conditions, he felt that in order to obtain the best results by operative treatment, the order in which these cases were seen should be the reverse. He believed that in order for the operation of pylorotomy to attain the best possible results, it was necessary that it should be done early. He referred to the fact that cases of gastropexia are treated erroneously by the medical man by washing out the stomach and reducing the amount of food, on the

theory that the condition is due to a weakening of the wall of the stomach, whereas, as has been definitely demonstrated by Dr. Mayo, it is due to a mechanical condition at the pylorus. He felt that the all-important factor in the operation was to secure permanent drainage of the most dependent portion of the stomach, and that the only operation which had been used a sufficient length of time to justify the statement that it was the best was gastro-enterostomy. He felt that if pyloroplasty was going to be of benefit to the patient it must be done early, in order to avoid ulceration and changes in the gastric secretions, which are apt to lead on to malignant disease. He also expressed the opinion that so soon as it became demonstrated to the physician that surgical operations were safe and afforded great relief, the cases would be sent to the surgeon much earlier.

DR. J. M. T. FINNEY, Baltimore, Md., confined his remarks to the consideration of pyloric stenosis of benign origin, and believed that the main question was thorough drainage, and any method that would produce this result he felt would be satisfactory. He referred to the fact that the advocates of gastro-enterostomy were far in excess of those who recommended pyloroplasty at the present time, which he believed to be due largely to the fact that the operation had not been properly performed. He felt that much better results could be obtained by the conjunctive work of the physician and surgeon in these cases, not necessarily with a view to immediate operation, but for the purpose of ascertaining the exact conditions present. He advocated early exploratory operation under cocaine. He felt that pyloroplasty was preferable to gastro-jejunostomy, from the fact that it makes the pylorus in a more normal position. The mortality in pylorotomy was too high to justify its employment, except in cases of pyloric cancer. He stated that he had employed the method as described by Hartman in eight cases of pyloric cancer, all of which made good recoveries and lived varying lengths of time. Owing to the nature of the growth, however, and the necessary involvement of the lymphatic structures, he felt that it was practically impossible to eradicate entirely the cancerous growth, and that recurrence would take place in a great many instances, for which reason he felt that the method advocated by Dr. Mayo of direct anastomosis of the lower end of the stomach to the duodenum would probably produce the best results. He thought that the operation of gastro-enterostomy had not been followed in all cases by the results claimed for it by some of the previous speakers, among the untoward effects frequently noted being the vicious circle and symptoms of pyloric obstruction, due to the fact that the outlet was made too high up in the stomach.

(The remarks of PROF. J.-v.-MIKULICZ-RADECKI, Breslau, Germany, were made in German, and were not reported.)

DR. J. CHALMERS D'ACOSTA commended the academy on their good fortune in having had the opportunity of listening to such great workers in this line as Drs. Mayo, Vander Veer, Moynihan, Murphy, Finney and Mikulicz-Radecki, and his appreciation of their courtesy in having participated in the papers and the discussions.

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THE ASSOCIATION OF MILITARY SURGEONS OF
 THE UNITED STATES.

THE recent highly successful meeting of this Association in Boston has drawn attention to the fact that the medical officer, regular or volunteer, must be a man of many parts and of broad learning, for he not only has to do with the care of the sick, with proper records of cases for the guidance of the government in the examination of pension claims, and with the healthful transportation of troops over long distances, but, as has been shown in the last few years, he must be capable of controlling epidemic disease among the populations temporarily subjected to military control during the continuance of war and the subsequent periods of reconstruction. He has had to meet promptly and satisfactorily the necessity of vaccinating nearly a million people in Porto Rico, the abolition of endemic yellow fever in the island of Cuba, and to attempt the control of cholera among the semi-hostile millions of the Philippines.

Nor has the demand for administrative capacity been confined to matters of sanitation. Within five years, in America, the Philippines, and South Africa, he has more than once been compelled to organize in a few days, in more or less inaccessible places, hospitals containing from five to seven hundred beds, and thenceforth to provide all the supplies necessary for their maintenance.

He has been called upon for scientific work also, and has responded promptly by his work on the etiology of yellow fever, thereby conferring a blessing upon the world which will outlive all memory of the Spanish War.

With such a broad field of labor it is not strange that the most animated discussion of this meeting

should have occurred upon the question of the education of the medical officer. The report of the Committee on the Army Medical School practically recommended that the education of the medical officer should be entirely assumed by the government, in much the same manner as is the education of line officers at West Point.

It was pointed out in the discussion that the necessary absence in this country of large, permanent military hospitals would make such a medical education exceedingly defective, and the present system of appointing medically qualified applicants and continuing the army medical school as a post-graduate school, analogous to the artillery school at Fortress Monroe and the cavalry school at Fort Riley, was more generally approved. Several gentlemen of the regular establishment recommended that this school be opened to medical officers of the militia, who should have transportation, commutation for quarters, and a certain amount of pay during their attendance. It is rather improbable, however, that any considerable number of gentlemen could be induced to abandon their private practice for five or six months of instruction in Washington.

Nevertheless, in time of war it is unavoidable that large numbers of young medical men should be called in to assist the army medical men in their duties, and it would seem that more attention to the duties of a medical officer should be introduced into the curricula of our medical schools. Could not army medical officers be detailed to give courses at the large medical schools of the country? Such details would give the military surgeons so detailed a year at a medical center, where they could do a large amount of post-graduate study in the hospitals, and continually send back into army work men fresh from the stimulating atmosphere of the great teaching centers.

The importance of the Association of Military Surgeons of the United States in bringing together the surgeons of the Army, Navy, Public Health and Marine Hospital Service, and the militia of the various states, has been fully recognized by the national government. It has been incorporated by Act of Congress, and for the last two years the national government has invited the nations of the world to send representatives from their military services to its meetings. This invitation has been promptly accepted, and medical officers have been sent from the English, Russian, French, Italian, Mexican, Japanese and Canadian medical services. The knowledge gained and the acquaintances thus formed by the medical officers of all the nations of the civilized world cannot but tend to ameliorate the sufferings occasioned by future wars.

THE INTERNATIONAL CONGRESS OF MEDICINE.

THE Fourteenth International Congress of Medicine has taken place at Madrid. Several considerations are suggested by the news which has reached us of this congress. In the first place, it is apparent that it has served as an object lesson of the necessity of careful preliminary arrangements and foresight in meeting the inevitable contingencies which must arise when a large number of people are to be accommodated. So far as we can learn, those who had the arrangements in charge fell lamentably short of their duties. It appears that a great amount of confusion regarding transportation met the foreign visitors, and that when they finally reached their goal, it was only with the greatest difficulty that they could find rest and lodging after their journey.

The confusion was worse confounded by the fact that the congress met at a most inopportune date. In the first place, the Easter holidays, when it is customary for large numbers of people to go to the larger towns, were scarcely at an end; many travelers, apart from those concerned in the congress, were returning to Madrid; the congress met at a time when general elections were about to take place throughout Spain, and finally, more members attended the congress than had been anticipated. All this naturally led to the inevitable result that hotels were overcrowded, and accommodations were at a premium. It is, however, hardly necessary to enter into the unfortunate details of mismanagement which have apparently marred this international congress. It must be remembered that various nationalities of varying tastes and habits were brought together in a Spanish city, to the customs of which no doubt many of them were utter strangers. Bull fighting on Sunday and the worship of the matador among other things, seem to have offended the good taste of the English visitors, and to have distracted their attention from the serious work of the meeting.

The scientific side of the congress, divided into the usual sections, brought forth many contributions of excellence, though none apparently of great scientific significance. There were also difficulties here. It was, for example, a matter of difficulty to find particular sections in the very large library and museum in which the meetings were held. According to the special correspondent of the *Lancet*, "Three sections met in what might be described as in the basement among exhibits of animals, elephants, crocodiles, tigers, crystals, minerals and assorted butterflies." Many chairs were provided, but there were no tables reserved for the press, and journalists were obliged to write on

their knees. Another difficulty was that in several instances it was impossible to reach one section without walking through rooms in which other sections met. There were pictures in abundance, many of them of great worth, and the museum collections were also of interest, but these again were matters apart from the business of the congress.

Most of the communications were given in Spanish, the natural consequence of which was that the work of many sections was carried on largely in the presence of empty chairs. English readers, for example, were naturally not encouraged to read their papers before an audience composed of Spaniards. These are hindrances naturally inherent in an international congress. At the best the difficulties to be overcome are manifold, and it is clear that only by the most careful arrangement can confusion be avoided. A further discouragement was that the weather during the time of the congress was exceptionally bad, interfering with the out-of-door program to an extreme degree. The formal ceremonies were somewhat characteristic of the country in which they were held, and were not conducted in the manner to which the more staid Anglo-Saxon is accustomed. In general, it must be said that this congress has suffered from various causes, some of which were clearly avoidable, and some of which were not. It will apparently not go down to posterity as a success in the same sense as the congress held three years ago in Paris was regarded.

 PRINCIPLES OF MEDICAL ETHICS.

AT its recent session, held in New Orleans, the American Medical Association took an important step in promulgating a document on the principles of medical ethics. As is generally known, the so-called Code of Ethics of the American Medical Association, first adopted in 1847, has in the supervening years led to a very considerable degree of misunderstanding, through the attempt to enforce its rulings upon members of the profession. The revision which has now taken place apparently places the entire matter upon a satisfactory basis, by changing the name from Code of Ethics to Principles of Medical Ethics, and thereby relieving the document of the somewhat unfortunate implications to which it had been subject during the last half century. The history which has led up to this ultimate revision it is certainly not necessary to relate; the fact only is now of importance that a document has been framed which, so far as one may see, can in no way give offence, and which should on the other hand prove a guide of positive value to practitioners of medicine.

We have read with care the full text of the report made before the House of Delegates, and find in it nothing to criticise. The physician's relations to the community and to his brother practitioners are given in detail, and there are certainly few points which have not been wisely touched upon by the committee in charge of the revision. To many readers it will appear that very much that is stated is well known and generally accepted by reputable physicians everywhere; at the same time, for the benefit of the uninitiated, and for men about beginning their medical practice, it is well that a brief, definite and straightforward statement should be made of the exact duties of a physician and of precisely what the profession at large will demand of him in his technical work. This the report before us seems to supply, and we should certainly commend its careful reading to physicians, whether young or widely experienced. The committee, composed of Drs. E. Eliot Harris, T. J. Happel, W. H. Welch and Joseph D. Bryant, submits to the President and members of the House of Delegates the following statement of their work in formulating the revised principles:

Your committee has given extended and careful thought to the proposed revision of the code of medical ethics referred to it for consideration. As you will note on caption of report, the word "code" has been eliminated, and the expression "The principles of medical ethics of the American Medical Association" adopted as adequately descriptive. In reference to this change it is proper to say that such action on its part is based on the idea that the American Medical Association may be conceived to occupy some such relation to the constituent state associations as the United States through its Constitution holds to the several states. The committee, for this reason, regards it as wiser to formulate the principles of medical ethics without definite reference to code or penalties, thus leaving the respective states, etc., to form such code and establish such penalties as they may regard to be fitting and proper for regulating the professional conduct of their members; provided, of course, that in so doing there be no infringement of the established ethical principles of the association. The committee regards as wise and well intended to facilitate the business of the parent organization and promote its harmony this course, which leaves to the state association large discretionary powers concerning membership and other admittedly state affairs.

Your committee has retained to a large extent the phraseology of the existing code, while aiming at condensation of expression and a better understanding of some of its statements.

The report of the committee has been reached unanimously without discussion or distrust on the part of its members, each aiming to formulate a result based on principle alone, and without regard to any past or present disagreements or misunderstandings whatsoever.

Such being the case, the committee invites your candid and unprejudiced attention and action to the results of its labor, feeling that at least some good has been accomplished.

THE VITAL STATISTICS OF THE UNITED STATES.

THE United States, as a whole, cannot be said to have an organized system of vital statistics such as is to be found in the older countries of Europe. The only attempts at collecting the vital statistics of the country at large are those which have been made in connection with the work of the United States census, during the past three or four decades. Several of the older states, however, have introduced systems of registration, beginning with that of Massachusetts in 1842.

The authorities of the Census Office have recently entered upon a commendable plan for promoting the work of registration of vital statistics throughout the country; and while the New England States, as a rule, have now adopted methods of registration which are fairly complete, there is abundant room for improvement in certain directions, which are indicated in the publications recently issued by the Census Office at Washington.

These publications consist of several circulars upon the following topics:

Legislative Requirements for Registration of Vital Statistics, including resolutions of Congress and the American Public Health Association, and a specimen form of an adequate law.

Practical Registration Methods. Use and treatment of the Standard Certificate of Death to secure the best results. Information for registrars.

Relation of Physicians to Mortality Statistics, with special reference to the statement of causes of death, and other details essential to accuracy and uniformity.

Medical Education in Vital Statistics, suggesting to Medical Colleges a special course of instruction for students upon registration and statistics.

Manual of the International Classification of Causes of Death; designed for use of officials compiling statistics.

The specimen form of law presented prohibits the removal or burial of any corpse without authority of a properly issued permit, based upon a complete and satisfactory certificate or return of the death; specifies the facts to be stated to make the return complete and satisfactory; imposes the obligation upon physicians, undertakers and others to make proper returns in every case; makes it the duty of the registrar issuing the permit to see that each return meets the requirements of the law, and also makes it the duty of the state registrar to see that the local registrars discharge their duties in a proper manner.

The circular to registrars explains the use, importance and necessity of the various details concerning each death required by the Standard Certificate; points out certain distinctions to be observed, and posts them concerning many indefinite or unsatisfactory terms used by physicians in stating causes of death.

The circular to physicians also describes the details required by the Standard Certificate; gives the titles of the International Classification, with explanatory notes showing the significance of various terms to the titles under which they are compiled, and a list of indefinite and unsatisfactory terms very frequently used by them

in reporting deaths, with a statement of the reasons why such statements are unsatisfactory.

The Circular to Medical Colleges suggests a plan of instruction of medical students in the purposes and necessity of registration,—their duties and obligations to the profession and the public,—and the relation and value of their certificates to vital statistics.

The Manual explains the International Classification as adopted by the Census Office, with an alphabetical "Index," showing to which title each one of many thousands of terms is referred. These are again grouped under each title, to show exactly what each includes.

Several special points treated in these circulars appear to us worthy of special mention as appealing to our New England population. *First*, The necessity of adopting the Standard Certificate of Death throughout the Union. Thus far, the only New England State which has adopted this form is Vermont. The custom of sending bodies from one state to another for burial, the facilities afforded for obtaining general information as to the causes of death in different states, demand the use of uniform methods in these states. *Second*, The circular of information for physicians should be widely distributed among the medical profession, and should be carefully used by every one who is called upon to sign burial certificates. The valuable list of indefinite terms published in this list has been carefully compiled from the experience of the Census Office, and is a very useful aid to the physician when he is in doubt as to the proper use of terms in signing death certificates. Very much of the uncertainty which arises in regard to the value of the published information as to the mortality from such causes of death as heart disease, cancer, diphtheria and tuberculosis is the result of the careless use of indefinite and unmeaning terms in signing death certificates. *Third*, The necessity of thorough instruction in vital statistics as an essential part of the medical curriculum. Such a course should include a general review of the origin and development of the modern system of boards of health and the basis of their operations; the utility and application of reports of disease, especially of infectious diseases; the registration of data of births and deaths, and its importance both to individuals and to the general public; the relation of vital statistics to sociological questions, to the advancement of medical science and of public hygiene, and all other matters germane to a thorough knowledge of the subject.

This subject is one of great importance to boards of health, both local and general, since, according to one of our foremost sanitary authorities, "The registration of vital statistics is the firm basis on which the whole structure of sanitary science and practice must rest. In order to learn the laws of

disease, to devise remedies and test them, we must have an approximately accurate knowledge of the movement of population and of the causes of death." (Chapin.)

MEDICAL NOTES.

WORK OF THE ADIRONDACK COTTAGE SANITARIUM.—In the eighteenth annual report of the Adirondack Cottage Sanitarium, Dr. Edward L. Trudeau sums up the work of the institution for the past year as follows: 271 patients have been treated. To 234 of these the institution has furnished the best possible means of restoration to health at a nominal cost, and to 37 entirely free of cost to them. Two years ago the free out-patient department of the sanitarium was established, which has been in constant operation since and has steadily extended its work. Free medical advice has been given, not only to patients waiting to enter the sanitarium, but also to unsuccessful applicants for admission who have remained in the town.

MEETING OF ASSOCIATION OF MEDICAL LIBRARIANS.—The sixth annual meeting of the Association of Medical Librarians was held Saturday, May 16, 1903. A large number of librarians and physicians representing the medical libraries throughout the country assembled in the morning at the Library of the Medical Society of the County of Kings, Brooklyn, N. Y., and, after an inspection of the building, were entertained at luncheon at the Union League Club by the local members, Dr. William Browning, Dr. J. M. Winfield and Mr. A. T. Huntington. The scientific sessions was held in the afternoon at the New York Academy of Medicine, the president, Dr. William Osler, in the chair. Papers and discussions were contributed by Mr. C. P. Fisher of Philadelphia, Dr. T. C. Lee of Minneapolis, Mrs. G. W. Myers and Dr. E. H. Brigham of Boston, Mr. J. S. Brownne and Dr. W. S. Dennet of New York, Mr. A. T. Huntington of Brooklyn, and others. The officers elected for the ensuing year are as follows: President, Dr. William Osler of Baltimore; vice-president, Dr. Abraham Jacobi of New York; secretary, Mr. Albert T. Huntington of Brooklyn; treasurer, Dr. George D. Hersey of Providence; executive committee, Mr. John S. Brownne of New York, Mr. Charles P. Fisher of Philadelphia, Dr. James M. Winfield of Brooklyn; manager of exchange, Miss Marcia C. Noyes of Baltimore. The meeting adjourned to meet June, 1904, at Atlantic City, N. J. A full report of the proceedings of the association will be published in the *Medical Library and Historical Journal* for July, 1903.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 27, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 38, scarlatina 36, typhoid fever 26, measles 41, smallpox 0.

THE STILLMAN INFIRMARY AT CAMBRIDGE. — Mr. James Stillman, who had previously given \$150,000 for an infirmary at Cambridge for Harvard students, has added another gift of \$50,000 for a separate ward for contagious diseases in connection with the infirmary.

SEMI-CENTENARY OF THE MAINE MEDICAL ASSOCIATION. — The Maine Medical Association this year celebrates its fiftieth anniversary. A somewhat elaborate program, including various outings, has been prepared. According to the notice sent with the program, "the committee is striving to arrange for a meeting which shall be pleasantly memorable in every respect." We wish the association success in this laudable endeavor. The meetings will be held in Portland.

LITIGATION REGARDING SMALLPOX. — During the recent epidemic of smallpox protest was made against certain unvaccinated children being permitted in the schools of Hyde Park, Mass., although it is said that they brought certificates stating that they were unfit subjects for vaccination. Suit was brought against the town by the family of the children concerned. After a somewhat prolonged trial, in which elaborate arguments on both sides were made, the jury somewhat unfortunately failed to reach an agreement. It is reported that another trial is pending.

AMENDMENT OF NEW HAMPSHIRE MEDICAL REGISTRATION LAW. — By an amendment to the Medical Registration Law of New Hampshire, enacted by the Legislature at the session of 1903, hotel physicians employed by the landlord of a summer hotel in the care of his guests or employees will hereafter be obliged to secure a license to practice, which can be obtained only by examination. The next examination will be held at Concord, June 23 and 24.

THE LYNN, MASS., HOSPITAL. — According to the recently published annual report of the Lynn Hospital, it appears that the work of the institution has shown an increase in every department over that of previous years. During the year, 1,117 patients were admitted, with an average number in the hospital each day of 53. In the out-patient

department 13,432 cases were treated during the year, of which 4,651 were new; 61 confinement cases were treated in the maternity ward, an increase of 6 over the preceding year. It is a matter of gratification to the management of the hospital that an increasing number of persons of limited means are being treated at the hospital, who are able and willing to pay a certain amount for their care.

NEW YORK.

BILLS IN OPPOSITION TO MEDICAL SENTIMENT. — By his action in regard to two bills passed by the recent Legislature, Governor Odell has placed himself in opposition to the vigorously expressed sentiment of the medical profession and the more intelligent portion of the community at large. He signed the Goodsell-Bedell Hospital Camp Bill, regulating the establishment of tuberculosis hospitals in the various counties of the State by municipalities, corporations, associations or individuals. The special feature of it is that it prevents the erection of such hospitals without the consent of the board of supervisors of the county or the town board of the town in which it is desired to place the proposed hospital. It thus makes it impossible not only for any city but for "any fraternal order, charitable society, or philanthropic individual" to establish a hospital or even a camp for consumptives except under practically prohibitive conditions. It is felt that the approval by the Governor of this ill-advised bill puts to an end for the present, at least to a very large extent, the work of public-spirited citizens of New York State in combating and restricting the ravages of tuberculosis. The prohibition of sanatoria by the town and county authorities may be regarded as a certainty, because local interests will be arrayed against such institutions, through a mistaken idea of their dangers; and until this law is repealed an incalculable amount of injury will be inflicted. The other bill referred to is the Bostwick Bill, designed to suppress the vicious practice of substitution in the compounding of physicians' prescriptions, and this admirable measure the Governor vetoed.

NOTES FROM THE PHILIPPINES.

THE MATERNITY HOSPITAL CLOSED. — On account of lack of funds, heavy running expenses and the failure of the public to contribute sufficiently to its support, one of the most praiseworthy charitable institutions in Manila, the Maternity Hospital, has been forced to close its doors. A special plea for funds was made several months ago, and a committee of American, Spanish and Filipino ladies appointed to secure subscriptions, but sufficient money could

not be secured to enable the continuance of the institution. The hospital was started in the days of Spanish sovereignty, and was in a flourishing condition at the time war was declared between Spain and the United States. As it depended principally upon the voluntary contributions of the Spanish for support, it was forced to close in 1898, but was reopened about a year ago under the patronage of prominent Filipinos. Of late, the donations from the charitably disposed have been few, and the Managing Board has decided that the institution can no longer be continued. The children now in the asylum will be taken into the families of several wealthy Filipinos.

PERIODS OF QUARANTINE. — Owing to the existence of smallpox and plague in the city, the Board of Health has passed a resolution fixing the quarantine period for plague contacts or suspects at nine days, and of plague convalescents at thirty days. Plague contacts must go to the detention camp and plague cases to the plague hospital. Smallpox contacts or suspects must be vaccinated and be quarantined in the detention camp not less than fifteen days. Cholera cases are quarantined in the infectious disease hospital until the dejecta no longer show the presence of cholera bacilli.

QUARANTINE STATIONS AT PORTS OF ENTRY. — The marine hospital authorities are now making a tour of the southern islands with a view of locating sites for quarantine stations at the ports of entry as yet unprovided with such stations, and the work of construction will be begun as soon as practicable. While the health conditions of the Philippines are not too good in themselves, conditions in China and some of the East Indian ports are much worse, and cases of infectious disease are constantly gaining entrance to the southern islands. Hong Kong at present reports ninety-five cases of plague and smallpox. In Amoy, plague is not only very bad, but is rapidly on the increase, and the marine hospital surgeons are about to notify the steamship company running boats to Amoy that they must bring no more steerage passengers from that port for the present unless they are subjected to a fifteen-day quarantine prior to embarkation. All ships entering the port of Manila and lying at the docks are to be disinfected at Mariveles quarantine prior to arrival and departure, for the purpose of destroying any rats which may be on board. Larger steamers which load and unload by means of lighters in the bay are to be disinfected with sulphur at frequent intervals for the same purpose, but rat destruction will not be carried out as rigidly as in the case of boats which have direct communication with the shore.

| RECORD OF MORTALITY | | | | | | | | | |
|---|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| FOR THE WEEK ENDING SATURDAY, MAY 16, 1903. | | | | | | | | | |
| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,343 | 400 | 20.22 | 19.73 | 3.27 | .67 | 1.34 | |
| Chicago . . . | 1,885,000 | 632 | 184 | 21.19 | 27.21 | 1.26 | 1.42 | 1.11 | |
| Philadelphia . | 1,378,527 | 474 | 102 | 21.93 | 15.82 | 1.68 | 1.05 | 1.63 | |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 165 | 39 | 25.45 | 12.72 | 1.80 | .60 | 1.80 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 135 | 45 | 31.85 | 13.33 | .74 | 4.42 | .74 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 65 | 18 | 15.38 | 7.69 | 3.08 | — | — | |
| Boston . . . | 603,163 | 229 | 63 | 24.45 | 19.21 | 2.62 | .87 | .44 | |
| Worcester . . | 132,044 | 32 | 13 | 15.62 | 6.25 | — | — | — | |
| Fall River . . | 115,549 | 31 | 15 | 22.58 | 19.35 | — | — | — | |
| Lowell . . . | 101,959 | 36 | 12 | 16.67 | 22.12 | 2.78 | 2.78 | — | |
| Cambridge . . | 98,639 | 28 | 7 | 21.42 | 14.28 | — | 7.14 | — | |
| Lynn | 72,497 | 22 | 5 | 18.18 | — | — | 4.54 | — | |
| Lawrence . . | 89,766 | 13 | 4 | 30.80 | 15.40 | 23.10 | — | — | |
| Springfield . | 69,389 | 14 | 1 | 7.14 | 14.28 | — | — | — | |
| Somerville . . | 68,110 | 20 | 8 | 30.00 | 20.00 | — | 10.00 | — | |
| New Bedford . | 67,198 | 34 | 11 | 32.35 | 11.76 | 2.94 | — | 14.70 | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brookton . . | 44,873 | 6 | 1 | 33.33 | — | — | 16.67 | — | |
| Haverhill . . | 42,104 | 9 | 1 | 11.11 | 22.22 | — | — | — | |
| Newton . . . | 37,794 | 13 | 3 | — | 7.70 | — | — | — | |
| Salem | 36,876 | 15 | 2 | 13.33 | — | — | — | — | |
| Malden . . . | 36,286 | 8 | 1 | 12.50 | — | — | — | — | |
| Chelsea . . . | 35,876 | 13 | 3 | 7.70 | 15.40 | — | — | — | |
| Fitchburg . . | 35,069 | — | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | — | — | — | — | — | — | — | |
| Everett . . . | 28,620 | 7 | 3 | 14.30 | — | — | 14.30 | — | |
| North Adams . | 27,862 | 8 | 5 | 25.00 | — | — | — | 12.50 | |
| Gloucester . . | 26,121 | 14 | 3 | 21.42 | — | 7.14 | — | — | |
| Quincy . . . | 26,042 | — | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 9 | 4 | 11.11 | 11.11 | — | — | — | |
| Brookline . . | 22,608 | 15 | 5 | 26.67 | 13.33 | — | 6.67 | 13.33 | |
| Pittsfield . . | 22,589 | 2 | — | — | 50.00 | — | — | — | |
| Chicopee . . . | 21,031 | 13 | 7 | 30.80 | — | — | — | 30.80 | |
| Medford . . . | 20,962 | 5 | 1 | — | 40.00 | — | — | — | |
| Northampton . | 19,883 | 6 | 0 | 66.67 | — | 16.67 | — | — | |
| Beverly . . . | 15,302 | 7 | 1 | 14.30 | — | — | — | — | |
| Clinton . . . | 15,161 | 4 | 1 | 25.00 | 25.00 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 4 | 0 | — | — | — | — | — | |
| Woburn . . . | 14,300 | 2 | — | — | — | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | 1 | 1 | 100.00 | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 4 | 1 | 25.00 | — | — | — | — | |
| Melrose . . . | 13,600 | 2 | 1 | — | 50.00 | — | — | — | |
| Westfield . . | 13,418 | 6 | 2 | 16.67 | 16.67 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 2 | 1 | — | — | — | — | — | |
| Frammingham . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 2 | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 5 | 1 | — | 20.00 | — | — | — | |
| Southbridge . | 11,268 | 4 | 1 | — | 25.00 | — | — | — | |
| Watertown . . | 11,077 | 2 | 1 | 100.00 | — | — | 50.00 | — | |
| Plymouth . . | 10,730 | 2 | — | — | 50.00 | — | — | — | |

Deaths reported, 3,463; under five years of age, 977; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 757, acute lung diseases 649, consumption 359, scarlet fever 45, whooping cough 42, cerebrospinal meningitis 9, smallpox 5, erysipelas 8, measles 39, typhoid fever 65, puerperal fever 7, diarrheal diseases 92, diphtheria and croup 80.


From whooping cough, New York 9, Chicago 9, Philadelphia 5, Baltimore 1, Pittsburg 6, Boston 2, Lowell 1, Cambridge 2, Lynn 1, Somerville 2, Brockton, Everett, Brookline and Watertown 1 each. From erysipelas, Chicago 1, Philadelphia 3, and Baltimore, Pittsburg, Boston and Lynn 1 each. From smallpox, Chicago 1, Philadelphia 1, Pittsburg 3.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending May 2 the death-rate was 17.5. Deaths reported, 5,049; acute diseases of the respiratory organs (London) 284, whooping cough 134, diphtheria 59, scarlet fever 56, measles 155, smallpox 15.

The death-rate ranged from 9.0 in King's Norton to 34.4 in Wigan; London 17.3, West Ham 13.5, Brighton 14.1, Portsmouth 12.8, Southampton 14.2, Plymouth 17.2, Bristol 16.2, Birmingham 19.3, Leicester 15.6, Nottingham 17.6, Bolton 17.1, Manchester 22.5, Salford 20.0, Bradford 17.5, Leeds 17.3, Hull 17.3, Newcastle-on-Tyne 19.5, Cardiff 12.1, Rhondda 19.2, Liverpool 21.5, Croydon 10.0.

METEOROLOGICAL RECORD.

For the week ending May 16, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | | Ther- mometer. | | Relative humldity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|---|-----------------|----------------|-------------------|----------|-----------------------|-----------|-----------------------|-----------|----------------------|-----------|--------------|-----------|------------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| | | | | | | | | | | | | | | |
| S. 10 | 30.30 | 60 | 75 | 46 | 78 | 44 | 61 | S E | S W | 2 | 8 | C. | C. | O. |
| M. 11 | 30.34 | 58 | 69 | 48 | 40 | 45 | 42 | S W | S W | 9 | 9 | C. | C. | O. |
| T. 12 | 30.38 | 60 | 70 | 49 | 69 | 46 | 58 | S W | S | 11 | 11 | C. | C. | O. |
| W. 13 | 30.26 | 60 | 74 | 46 | 76 | 66 | 71 | S W | S W | 3 | 14 | C. | C. | O. |
| T. 14 | 30.02 | 59 | 70 | 48 | 76 | 82 | 79 | W | S E | 10 | 4 | C. | R. | T. |
| F. 15 | 29.94 | 58 | 67 | 50 | 88 | 51 | 70 | S W | S | 4 | 7 | C. | C. | .11 |
| S. 16 | 30.25 | 53 | 59 | 47 | 72 | 87 | 80 | N | S E | 12 | 2 | C. | C. | O. |
|  | 30.21 | | 69 | 48 | | | 66 | | | | | | | .11 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE, 1903.

VAUGHAN, G. T., assistant surgeon-general. Detailed to represent the service at meeting of the Association of Military Surgeons at Boston, Mass., May 20-21, 1903.

PERRY, J. C., passed assistant surgeon. To report at Washington, D. C., May 17, 1903.

DECKER, C. E., assistant surgeon. Granted extension of leave of absence, on account of sickness, for fourteen days from April 24. May 15, 1903.

WILSON, R. L., assistant surgeon. Granted leave of absence for seven days from April 28, 1903, under provisions of paragraph 191 of the regulations.

MCLAUGHLIN, A. J., assistant surgeon. Granted leave of absence for two months from May 1. May 15, 1903.

WARD, W. K., assistant surgeon. Granted leave of absence for three days from May 14, 1903, under provisions of paragraph 191 of the regulations.

FORD, C. B., acting assistant surgeon. Granted leave of absence for fourteen days from June 3. May 15, 1903.

FRASER, A. C., acting assistant surgeon. Granted leave of absence for forty-five days, on account of sickness, from April 27. May 15, 1903.

MARSH, W. H., acting assistant surgeon. Granted leave of absence for seventeen days from May 8. May 15, 1903.

WETMORE, W. O., acting assistant surgeon. Granted extension of leave of absence for fourteen days from May 15. May 15, 1903.

BOARDS CONVENED.

Board convened to meet at San Francisco, Cal., for physical examination of an officer of the Revenue Cutter Service. Detail for the board: Passed Assistant Surgeon W. G. Stimpson, Chairman; Assistant Surgeon C. W. Vogel, Recorder.

Board convened to meet at Washington, D. C., May 25, 1903, for the physical examination of candidates for cadetship in the Revenue Cutter Service. Detail for the Board: Assistant Surgeon-General W. J. Pettus, Chairman; Assistant Surgeon-General H. D. Geddings, Recorder.

Board convened to meet at Washington, D. C., June 15, 1903, for examination of candidates for admission as assistant surgeon in the service. Detail for the board: Assistant Surgeon-General G. T. Vaughan, Chairman; Surgeon C. T. Peckham; Passed Assistant Surgeon H. S. Mathewson, Recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING MAY 23, 1903.

F. W. WEBER, surgeon. Granted sick leave for two months. L. MORRIS, passed assistant surgeon. Ordered to the "Minneapolis."

R. H. MICHELS, assistant surgeon. Ordered to the Asiatic Station via the "Solace."

E. M. BROWN, assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the Naval Hospital, Newport, R. I.

J. H. HOLLOWAY, assistant surgeon. Ordered to the "Baltimore."

A. J. GEIGER, assistant surgeon. Appointed assistant surgeon from May 6, 1903.

SOCIETY NOTICES.

MAINE MEDICAL ASSOCIATION. — The semi-centenary of the Maine Medical Association will be held in Portland, Me., June 3, 4, 5, 1903.

THE MASSACHUSETTS MEDICAL SOCIETY. — One hundred twenty-second annual meeting will be held at 9 o'clock A.M., Wednesday, June 10, 1903, in Horticultural Hall, Massachusetts and Huntington avenues, Boston. Meetings of sections will be held in the Medical Library, 8 The Fenway, on the preceding day, Tuesday, June 9.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — There will be a special meeting of the society in Sprague Hall, Medical Library, on Monday, June 1, at 8.15 P.M.

The society will take action relative to the formation of an Academy of Medicine in accordance with the plan presented by the Special Committee of the society and the amendments to that plan as suggested by the Executive Committee of the Medical Library.

ARTHUR K. STONE, M.D.,
543 Boylston St. Secretary.

RESIGNATION.

DR. A. S. HARTWELL has resigned the superintendency of the Long Island Almshouse and Hospital to enter private practice.

APPOINTMENT.

DR. SIMON F. COX has resigned from the position of first medical officer at the Long Island Hospital, Boston Harbor, and has been appointed superintendent of the institution.

RECENT DEATHS.

JOHN VAN HARTLINGEN, M.D., for thirty years a practising physician in Brooklyn, N. Y., died on May 18, at the age of fifty-seven. He was born in Millstone, N. J., and was graduated from the College of Physicians and Surgeons, New York, in 1869.

JOHN B. BURDETT, M.D., of Jersey City, N. J., died on May 21, after a long illness. He was born in Bergen County, N. J., Sept. 21, 1833. He studied medicine with the late Dr. Lewis A. Sayre of New York, and was graduated from the College of Physicians and Surgeons in that city in 1856. He had practised in Jersey City since 1858.

GUSTAVE BOUCHER, M.D., who was well known in Italian circles in Brooklyn, died at the Columbus Hospital, Borough of Manhattan, N. Y., on May 21, at the age of sixty-seven. He was born in Naples, Italy, and was graduated from the university of that city in 1864. He had practised in Brooklyn for the last twelve years.

JAMES FORSAITH RICHARDS, M.D., M.M.S.S., died in Andover, May 13, 1903, aged seventy years.

HENRY ALLEN NOYES, M.D., M.M.S.S., died in Pittsfield, March 23, 1903, aged thirty-six years.

BOOKS AND PAMPHLETS RECEIVED.

Ambulance Work and Nursing. A Handbook of First Aid to the Injured, with a Section on Nursing, etc. Illustrated. Chicago: W. T. Keener & Co.

"Wild Oats": a Sermon in Rhyme. By Maurice C. Hime, M.A., LL.D. Philadelphia: P. Blakiston's Son & Co. 1903.

National Incorporation for the American Medical Association. Issued by the New York State Medical Association.

Tettenhamer on Eosinophiles. By Edward T. Williams, M.D., of Boston. Reprint. 1902.

The Ill Health of Herbert Spencer. By George M. Gould, M.D., of Philadelphia. Reprint. 1903.

International Clinics, a Quarterly of Illustrated Clinical Lectures and especially prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. By Leading Members of the Medical Profession throughout the World. Edited by A. O. J. Kelly, A.M., M.D., with the collaboration of eleven other physicians and with regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipzig, Brussels and Carlsbad. Vol. I. Series 13. 1903. Illustrated. Philadelphia: J. B. Lippincott Co.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of Gustavus P. Head, M.D., Vol. V, Obstetrics. Edited by Reuben Peterson, A.B., M.D. April, 1903. Chicago: The Year Book Publishers.

Original Articles.

THE SYMPTOMATOLOGY AND DIAGNOSIS OF DISEASES OF THE PANCREAS.¹

BY REGINALD H. FITZ, M.D., BOSTON.²

THE consideration of the symptomatology and diagnosis of diseases of the pancreas may appropriately be introduced by referring to the memorable communication on this subject by Friedreich³ nearly thirty years ago. According to this authority "no single symptom which may occur in diseases of the pancreas is pathognomonic, and the concurrence of several does not always result in a positive diagnosis. . . . Fatty stools, mellituria, epigastric pains with the characteristics of celiac neuralgia, and a palpable tumor lead among the symptoms most useful in diagnosis;" and (p. 223) the presence of undigested, striated muscle fibers in the feces "is worthy of every consideration and may, perhaps, prove of diagnostic value."

For a while no material additions were made to our knowledge of the clinical pathology of the pancreas, but in 1887 the investigations of Müller,⁴ and especially those of v. Mering and Minkowski⁵ in 1889, excited a renewal of interest in the matter. Since then physiologists and pathologists, physicians and surgeons in various parts of the world have made numerous contributions to the knowledge of the functions and lesions of the pancreas, and this gland has become recognized as of the greatest importance in maintaining and promoting a healthy state of the body. Within the past five years have appeared the notable treatises of Körte, Oser, and, more recently, that of Mayo Robson and Moynihan. These are the authors now to be consulted for classified knowledge of the questions under consideration. From them is to be learned in what respects the clinical characteristics of pancreatic diseases are now more sharply defined than in the days of Friedreich and his predecessors.

It is generally agreed that the symptoms especially suggestive of pancreatic disease are dependent largely upon the resulting disturbances of its functions and upon the situation of the organ. The former include the various modifications in the composition of the urine and feces; the latter comprise the localized resistance, tenderness and pain, and the evidence of obstruction of the gastro-intestinal and biliary tracts. Unfortunately for diagnostic purposes, the functions of the pancreas are not the exclusive property of this gland, but are possessed to a greater or less extent by other structures and other agencies.

For more than a century it has been known that diabetes may be associated with disease of the pancreas. More than eighty years ago visible fecal fat was found to hold a like relation. Forty years later the presence of undigested muscle fibers in the feces first attracted attention. These observations have since been repeated with sufficient

frequency to lead the physician to suspect, often to assert, the presence of disease of the pancreas when one or more of these conditions have been determined. The comparison, however, of the results of anatomical investigation with clinical observation makes it evident that diseases of the pancreas much more frequently occur without the recognition of glycosuria and fat and muscle in the feces than when these abnormalities are apparent.

The physician, therefore, wishes to know if one or more of these conditions are present in some diseases of the pancreas, why are they not present in all? If found in a certain instance of a single variety, why are they not present in all or in most of the cases of this particular affection? Morbid changes of the pancreas are found frequently after death without symptoms having been observed during life to indicate their presence. On the other hand, the diagnosis of probable pancreatic disease, perhaps of the gravest sort, has been made from the recognition of one or more of the symptoms or signs which, at times, have been found associated with alterations of the pancreas, and the patient has recovered or the gland when exposed has presented no abnormal appearance.

From the data collected by Oser it is evident that the symptoms attributable to disturbed pancreatic function are almost invariably connected with chronic lesions productive of extensive destruction of pancreatic tissue or with interference to the passage of its secretion into the intestine. The pancreatic lesions usually associated with diabetes are those in which the common element of interstitial inflammation exists with a corresponding destruction of the parenchyma of the gland. This may occur in the form of the genuine, granular atrophy of Hansemann, in calculous pancreatitis, or in the sequence of chronic suppuration, cysts and tumors.

Visible fecal fat and azotorrhea, on the contrary, are oftener associated with chronic conditions interfering with the flow of pancreatic juice into the intestine, as obstruction of the ducts from calculi, stricture or tumors, than with those causing destruction of the secreting cells of the gland. Rarest of all is the presence of alterations which are associated with diabetes, and fat and numerous muscle fibers in the feces. The case reported by Fles⁶ is almost unique in these respects. His diabetic patient ate much bacon and fat meat, and evacuated so much unabsorbed fat that it could be scooped by the ounce from the feces. The latter contained also large numbers of undigested, striated muscle fibers. The autopsy showed that the pancreas was represented only by fragments of its fibrous framework and scarcely recognizable traces of the gland substance. The duct could not be found. Nevertheless it is evident from human pathology that extensive destruction of the pancreas may take place without observable modification of function. Franke⁷ extirpated a cancerous pancreas, and although the patient lived five months after the operation, there was glycosuria merely for a few days, and the stools appeared normal. The patient of Trafoyer⁸ was well seventeen years after a pancreatic slough was discharged from the bowel.

¹ Read at the Sixth Congress of American Physicians and Surgeons in Washington, D. C., May 12, 1903.

² The writer wishes to acknowledge his indebtedness to Dr. J. H. Pratt of Boston for assistance in reviewing the literature of the subject.

³ Von Ziemssen's Handb. d. Sp. Path. u. Therap., 1875, viii, 2, p. 234.

⁴ Ztschr. f. klin. Med., 1887, xii, 45.

⁵ Arch. f. exper. Path. u. Pharmacol., 1889, xxvi, 371.

⁶ Friedreich. Op. cit., 222.

⁷ Arch. f. klin. Chir., 1901, lxi, 364.

⁸ Chiari. Wiener med. Wchnschr., 1880, xxx, 139.

The inference from such observations is that in extensive destruction of the pancreas without obvious disturbance of function enough of the gland is left intact, or an accessory pancreas or other organs or agencies are present, to assume the pancreatic functions. Even when the pancreas presents an apparent integrity and fatal diabetes exists, the researches of Ssobolew⁹ and Opie¹⁰ make it evident that destruction of the islands of Langerhans may have taken place. Their investigations, and those of other observers directed to this possibility, add force to the suggestion that in the destruction of these islands may lie the important factor in explanation of diabetes in certain of the cases in which the gross appearances of the pancreas are normal. Hence with the recognition of various causes of glycosuria and diabetes, these affections, in the light of our present knowledge, are attributable to disease of the pancreas only in those instances in which there is extensive degeneration or destruction either limited to these islands or affecting also the parenchyma of the gland.

If the diabetes is associated with long-continued bronzing of the skin and enlargement of the liver, in the absence of jaundice and the characteristic distribution of the pigment in Addison's disease, the suggestion is direct that chronic fibrous pancreatitis is present. Since the original publication by Hanot and Chanfard¹¹ on this subject, the bronzed diabetes of French writers, Anschütz¹² has tabulated twenty-four cases of this combination. The view that the affection of the pancreas is the remote result of the deposition of the pigment in the hemochromatosis of v. Recklinghausen has repeatedly been favored by recent writers.¹³

Steatorrhea is next in importance to glycosuria and diabetes as evidence of disturbance of pancreatic function, although the views concerning its significance are somewhat divergent.

The presence of oil readily attracted attention, but it soon became apparent that the fat might assume a solid as well as a liquid form. It was considered that the presence of visible fat represented an increase of this constituent, the absorption of which was interfered with in consequence of the disease of the pancreas. Müller,¹⁴ however, called attention to the frequent concurrence of disturbance of biliary secretion in the cases reported. He emphasized the importance of a lack of bile in the intestine as interfering with the absorption of fat, and considered it doubtful if a lack of pancreatic juice could cause steatorrhea. He endeavored to show that a deficiency of split fat, the proportion of total fecal fat being normal, was the chief feature when there was lack of the pancreatic juice, and that interference with the flow of bile was the main cause of pathological steatorrhea. Müller reported but three cases of pancreatic disease in support of his views. Jaundice was present in one only. In another the actual condition of the pancreas and its duct was not to be determined, as the patient was seen after having been operated upon for "cyst" of the pancreas.

In order to obtain further clinical evidence on this point, a table has been prepared to show the relation between visible fecal fat, jaundice and pancreatic disease. Only those cases are included which give anatomical evidence at an autopsy, a laparotomy or by the passage of a pancreatic calculus that there was actual disease of the gland.

RELATION OF FATTY STOOLS IN PANCREATIC DISEASE TO DIABETES OR GLYCOSURIA AND TO JAUNDICE.

| LESION. | STOOLS. | DIABETES OR GLYCOSURIA. | JAUNDICE. | AUTHORITY. |
|--|--|-------------------------|---------------|--|
| Fibroadenoma. | Fatty. | Present. | Present. | Biondi. Oser, op. cit. |
| Cancer. | Fatty. | Absent. | Present. | Bowditch. Boston M. & S. J., 1872, lxxxvii, 65. |
| Cancer. | Like butter. | Absent. | Absent. | Bright. Med. Chir. Trans., 1833, xviii, 1. |
| Cancer. | Like butter. | Present. | Present. | Bright. Med. Chir. Trans., 1833, xviii, 1. |
| "Cyst." | Free fat. | Present. | Temporary. | Bull. N. Y. Med. J., 1887, 376. |
| Calculi. | Fatty. | Absent. | Absent. | Capparelli. Oser, op. cit. |
| Calculi. | Fatty. | Absent. | Absent. | Chopart. Oser, op. cit. |
| Calculus passed. | Fatty diarrhœa. | Present. | Absent. | Cipriani. Therap. Monatsh., 1898, xii, 617. |
| Cancer. | Like butter. | Absent. | Absent. | Clark. Lancet, 1851, ii, 152. |
| Atrophy, cong. syphilis. | Like asbestos. | Absent. | Absent. | Demme. Oser, op. cit. |
| Calculus. | Oily, at times like butter. | Present. | Absent. | Elliotson. Med. Chir. Trans., 1833, xviii, 77. |
| "Cyst," atrophy, fibrous tissue in head of pancreas. | Masses of fat crystals, once consistency of sweet oil. | Present. | Absent. | Goodman. Tr. Path. Soc. Phila., 1878, viii, 41. |
| Indurated pancreas, obliterated duct. | Fatty. | Absent. | Present. | Kuntzmann. Friedreich, op. cit. |
| Cancer. | Fatty. | Absent. | Absent. | Labadie-Lagrave. Oser, op. cit. |
| Calculus, atrophy. Growth of fibrous and fat tissue. | Fatty before onset of diabetes. | Present. | Absent. | Lancereaux. Bull. Acad. de Med., 1888, xix, 588. |
| Cancer. | Fatty. | Absent. | Absent. | Luithlen. Oser, op. cit. |
| Cancer. | Gray, with white portions. Fat with microscope. | Absent. | Skin bronzed. | Mager. Wiener Med. Pr., 1899, xi, 15. |
| Cancer. | Fatty. | Absent. | Present. | Maragliano. Oser, op. cit. |
| Cancer. | Very fatty, tenacious, slimy. | Present. | Absent. | Marston. Am. J. Med. Sci., 1854, xxviii, 212. |
| Scirrhus of head, obliteration of duct. | Fatty diarrhœa. | Present. | Absent. | Martsen. Oser, op. cit. |
| Cancer. | Fatty. | Absent. | Present. | Molander and Blix. Oser, op. cit. |
| Enlarged pancreas, marked fatty degeneration. | Fatty. | Absent. | Absent. | Notta. Union Méd., 1881, xxxi, 289. |
| Calculus, fibrous pancreas. Duct did not communicate with common duct or duodenum. | Gray, greasy, at times solid fat on cooling. | Present. | Absent. | Phillips. Lancet, 1900, ii, 104. |
| Cancer. | Fatty. | Absent. | Present. | Pott. Oser, op. cit. |
| Fatty degeneration. | Oily. | Present. | Absent. | Silver. Tr. Path. Soc. Lond., 1873, xxiv, 121. |
| Cancer. | Fatty. | Absent. | Present. | Roques. Bull. Soc. Anat., 1857, ii, 245. |
| Cancer, closed duct. | Silvery gray, 25% fat. | Absent. | Present. | Ziehl. Deutsche med. Wchnschr., 1833, ix, 538. |
| Rarefied pancreas, obstructed pancreatic duct. | Silvery white, consistency of salve. | Absent. | Present. | Müller. Loc. cit. |
| Pancreas appeared like fat. Calculus in duct. | Free oil or fat. | Absent. | Present. | Walker. Med. Chir. Trans., 1889, lxxii, 257. |

⁹ Centralbl. f. allg. Path. u. path. Anat., 1900, xi, 202.

¹⁰ Journ. Boston Soc. Med. Sci., 1900, iv, 251.

¹¹ Rev. de Med., 1882, ii, 385.

¹² Deutsch. Arch. f. klin. Med., 1899, lxi.

¹³ Oser. Nothnagel's Encyclopedia, Am. Edition, 1903, 737.

¹⁴ Loc. cit.

Twenty-nine cases of steatorrhea are the basis of this table. Jaundice was present in 12 and absent in 17. Among those with jaundice, tumors, chiefly cancer, were present in 8. The lesions existing in the remaining 4 cases were a cyst in 1, and induration, rarefaction and fatty transformation in 3, in which also there was either obstruction or obliteration of the duct. Of the 17 cases of steatorrhea without jaundice, in 7 the lesions were tumors, chiefly cancer; in 6 calculi were present; 2 were fatty, and 2 were single examples of cyst and atrophy.

It was considered interesting to note also the relation of diabetes or glycosuria to the steatorrhea. Diabetes was present in 11 cases and absent in 18. The lesions present in the former series were tumors, chiefly cancer in 4, calculi in 4, a cyst in 2, and fatty degeneration in 1 instance. Among the 18 cases of steatorrhea without diabetes were 11 of tumors, chiefly cancer; 2 of calculi, 2 of fatty transformation, and 1 each of atrophy and induration. Visible fecal fat, jaundice and diabetes were present in 3 cases only. 2 of tumor and 1 of cyst. This table, therefore, does not support the view that jaundice is an important factor in the origin of the fatty stools connected with disease of the pancreas. It suggests that in about three fifths of the cases of steatorrhea attributable to pancreatic disease there is neither diabetes nor jaundice, that in two fifths there is either diabetes or jaundice, in about equal proportion, and in but few instances is there a combination of diabetes and jaundice.

Müller's researches were of value in another direction, by calling attention to the clinical importance of a chemical analysis of fecal fat in cases of suspected disease of the pancreas. A table has been prepared showing the analyses given by him and others of the percentage of fat extracted from the feces in health, catarrhal jaundice and in diseases of the pancreas with and without jaundice. The last mentioned include only those actually demonstrated either by the knife or by the passage of a typical calculus.

It is evident from this table that the feces of the healthy individual contain about 20% of unabsorbed fat and that in catarrhal jaundice this ratio may be doubled. In affections of the pancreas the percentage of unabsorbed fat is generally not much increased, except when jaundice is an accompaniment, thus sustaining the position of Müller.

In health this extracted fat contains from 20% to 30% of neutral fat, and from 70% to 80% of split fats, namely, fat acids and soaps. In ten cases of disease of the pancreas the neutral fat ranged from 17.50% to 91.6%. In but two of these was the percentage of neutral fat below normal, while in nine of them it was largely or greatly increased. That of split fat, on the contrary, was decidedly diminished in nine out of eleven patients. In the remaining two it was as high as in health. The table thus bears out the view of Müller, though not without exceptions, that in pancreatic disease there is less splitting of the fat and consequently an increase of the neutral fat, thus giving a satisfactory explanation of the oily stools of the older observers.

On the other hand, there is a sufficient lack of anatomical control to permit his conclusions to be accepted without question. Enough pancreatic juice may have been supplied to affect the results of chemical analysis in many of the cases of obstruction of the duct of Wirsung by a flow through the duct of Santorini. If both ducts were closed and the pancreas extensively diseased an accessory pancreas may have existed. Müller himself recognized the influence of intestinal bacteria and gastric contents¹⁵ in splitting fat, although he regarded their importance as slight. It is obvious too, as stated by him, that the feces may contain an excess of fat not only in cases of jaundice, but also when there is a superabundance of fat in the food, and when there is disease of the absorbents within or without the intestinal wall.

Steatorrhea, therefore, is to be regarded as evidence of disease of the pancreas only when other

¹⁵Cash. Arch. f. Anat. u. Phys., 1880, 373. Volhard. Verh. d. Cong. f. inn. Med., 1901, xix, 302.

COMPARATIVE RESULTS OF ANALYSES OF FECAL FAT.

| CONDITION. | PERCENTAGES OF | | | | | AUTHORITY. |
|--|----------------|------------|--------|------------|--------------|---|
| | Extracted fat. | Fat acids. | Soaps. | Split fat. | Neutral fat. | |
| Health, milk diet. | 21.0 | 51.3 | 20.9 | 72.2 | 27.88 | Müller. Ztschr. f. klin. Med., 1887, xii, 45. |
| Health, milk diet. | | 39.8 | 40.5 | 80.3 | 20.5 | |
| Health, bread and milk. | | 25.3 | 49.7 | 75. | 24.8 | |
| Catarrhal jaundice. | 43.9 | 21.6 | 27.5 | 48.1 | 50.83 | Katz. Wiener med. Wchnschr., 1899, xlix, 153. |
| Catarrhal jaundice. | 9.56 | | | 88.59 | 11.41 | |
| Catarrhal jaundice. | 21.31 | 34.54 | 43.26 | 77.8 | 22.1 | |
| Rarefied pancreas, obstructed pancreatic duct. | 43.9 | 21.6 | 27.5 | 49.1 | 50.83 | Müller. Loc. cit. |
| Jaundice. | | | | | | [1022. |
| Necrosis of pancreas. | 33.3 | | | 29.5 | 70.1 | v. Noorden. Berl. klin. Wchnschr., 1890, xxvii, |
| Calculus in pancreas, extensive atrophy, diabetes. | 29.04 | 17.08 | 5.33 | 22.41 | 77.57 | Müller. Loc. cit. [cxvii, 348. |
| Calculi, pancreatic, found in stools. | | 19.2 | 38.2 | 57.4 | 42.6 | Klimkeit and Herter. Am. J. Med. Sci., 1902, |
| "Cyst" of pancreas. | 28.7 | 30.9 | 16.8 | 47.7 | 52. | Müller. Loc. cit. |
| Cancer of pancreas. | 33.3 | | | 8.4 | 91.6 | v. Noorden. Loc. cit. |
| Fibrous and fatty pancreas, glycosuria, jaundice. | 38.66 | | | 51.42 | 48.58 | Teleky. Wiener klin. Wchnschr., 1902, xv, 741. |
| Cancer of pancreas, closure of common and pancreatic ducts. | | 73.3 | 7.1 | 80.4 | 19.6 | Deucher. Corresp. bl. f. Schw. Aerzte, 1898, xxviii, 321. |
| Cancer of pancreas. | | 52.1 | 9.5 | 61.6 | 38.4 | |
| Large, hard pancreas, small hemorrhages, necroses, jaundice. | 34.22 | | | 13.93 | 86.07 | Katz. Loc. cit. |
| Thick flat mass in pancreas, eventual jaundice. | 46.76 | 64.92 | 17.58 | 82.5 | 17.5 | Northrup and Herter. Am. J. Med. Sci., 1899, cxvii, 131. |

causes of its presence can be excluded, the most important of which is interference with the flow of bile into the intestine. Its recognition depends not merely on the presence of fat resembling oil, butter, lard or tallow, but in doubtful cases requires the skill and facilities of the chemist trained in physiological methods.

The probability that steatorrhea due to extensive disease of the pancreas may exist for years without disturbance to the general health is suggested in the communication of Walker.¹⁶ His patient, a physician, free from jaundice, passed for twenty years large colorless stools of a peculiar putrid odor, occasionally accompanied by free oil or fat, liquid or solid. During this period he was in perfect health and in the active pursuit of his profession. He died at the age of ninety years. There was no marked absence of fat. The pancreas was large, apparently composed of nearly pure fat. The duct was rendered almost absolutely impermeable within an inch of the duodenum by a very irregular calculus.

Despite the attention which has been given since the time of Friedreich to azotorrhea, as manifested by the presence of numerous undigested muscle fibers in the feces, but little clinical evidence has been offered that this sign is likely to prove of especial value in the diagnosis of diseases of the pancreas.

gestive of disease of the pancreas. These are notably excessive in quantity as compared with that of the food taken, and are composed of unabsorbed muscle fibers, fat and carbohydrates. He has met with this condition in a number of cases in which the suspicion of pancreatic disease was confirmed.

The various possible disturbances of function in pancreatic disease have generally been sought by inspection and microscopical examination, and by the use of the simplest chemical and physical methods. It must be recognized, however, that any considerable disturbance in the digestion and assimilation of fat, muscle and carbohydrates from affections of the pancreas has almost invariably been connected with extensive and protracted lesions. It is obvious, therefore, that feeding with an increased quantity of one or the other of these constituents of diet in suspected cases of pancreatic disease might be followed by appreciable changes in the secretions and excretions earlier than otherwise would have been the case. It is clear, also, that disturbances in the digestion of fats, starches and proteids, relieved by the addition of pancreas or its preparations to the diet, provided disease of the digestive glands could be eliminated, might furnish additional evidence in favor of the pancreatic source of the disturbance.

It has repeatedly been noted that the fecal fat

RELATION BETWEEN DIABETES OR GLYCOSURIA, STEATORRHEA, AZOTORRHEA AND JAUNDICE IN DISEASES OF THE PANCREAS.

| CONDITION. | DIABETES OR GLYCOSURIA. | STEATORRHEA. | AZOTORRHEA. | JAUNDICE. | AUTHORITY. |
|--|--|------------------------------------|--|------------------|---|
| Cancer secondary to cancer of stomach. | Maltosuria. | Absent. | Present. | Absent. | v. Ackeren. Berl. klin. Wchns., 1889, xxvi, 493. |
| Only traces of parenchyma. Duct not recognized. | Present. | Present. | Present. | Absent. | Fles. v. Friedreich, op. cit. |
| Abscess. | Present three weeks before death. | Present, resembling cod-liver oil. | Present. | Absent. | Hartley. Tr. Path. Soc. Lond., 1862, xlii, 118. |
| Calculus. | Present. | Fat crystals. | Present, copious meat diet, diarrhoea. | Absent. | Lichtheim. Berl. klin. Wchns., 1894, xxi, 185. |
| Cancer. "Cyst." | Absent. Traces of sugar. | Present. Absent. | Present. Present. | Present. Absent. | Oser. Op. cit., 87. Riegner. Berl. klin. Wchns., 1890, xxviii, 959. |
| Indurated, atrophied pancreas. Almost complete obliteration of lower part of common bile duct. | Present, but almost wholly disappeared after occurrence of jaundice despite carbohydrates in diet. | Present. | Present. | Present. | Teleky. Wiener klin. Wchns., 1902, xv, 741. |
| Cyst. | Absent. | Absent. | Present. | Absent. | Muller. Loc. cit. |

In the preparation of the accompanying table but 8 cases have been found which fulfil the demanded requirements. In 6 sugar was present in the urine; in 5 there was visible fecal fat, and jaundice was present in 2 instances. In Lichtheim's case the diabetic patient's diet was composed largely of meat, but diarrhea existed, a combination sufficiently explanatory of azotorrhea without the assumption of the presence of disease of the pancreas. The relative frequency of steatorrhea as compared with azotorrhea indicates that proteids are better digested than fats if the supply of pancreatic juice is notably diminished. Any increase of undigested muscle fibers in the stools would be significant of pancreatic disease only when gastric digestion was relatively normal, and there was neither excess of meat in the diet nor diarrhea.

Bulky stools are mentioned by Oser¹⁷ as sug-

has been observed when the patient was eating abundantly of fat. It is desirable, therefore, in possible cases of pancreatic disease to increase the quantity of fat in the diet nearly to the limit which is to be reached without producing steatorrhea in healthy persons or in patients not suffering from disease interfering with the absorption of fat. It is particularly desirable to determine the toleration of fat in those cases of diabetes in which the pancreas presents no abnormal conditions. These limits are not sufficiently known at present, chiefly because the thorough appreciation of this method of investigation demands the use of especial training and a properly equipped laboratory.

Hartsen¹⁸ gave eight to ten teaspoonfuls of cod liver oil to two diabetic patients, in each of whom extreme atrophy of the pancreas was found, but there was no unusual quantity of fat observed in the feces.

¹⁶ Med. Chir. Trans., 1889, lxxii, 257.

¹⁷ Deutsche Klinik., 1901, v, 165.

¹⁸ Nothnagel's Sp. Path. u. Ther., 1898, xvii, 21.

Müller,¹⁹ despite an almost exclusive milk diet in his case of cyst of the pancreas, found only a trifling increase in the fat extracted from the feces and but little variation in the split and neutral fats from that observed when a mixed diet was taken. Herter gave an exclusive milk diet to Northrup's patient with probable cancer of the pancreas. Although the feces had been regarded as fatty before this test was applied, no chemical analysis of their composition was reported. While the milk diet was being taken (see table) there was a large excess of fat in the feces, although there was no considerable modification in the percentage of neutral fats. The especial change seems to have been an increase in the percentage of fat acids and a diminution in that of the soaps. The reported cases are few in which pancreatic disease has been found after death, and properly controlled dietetic tests with fat have been made during life. Important additions to our knowledge are likely to be made by further observations in this direction.

In like manner should be tested the capacity of the patient for digesting muscle in the intestine as compared with that of the normal individual or with one suffering from affections in which there is no reason for supposing that the pancreas or intestine is diseased. For this purpose it is important first to determine the condition of the gastric functions and then to introduce into the intestine the muscle fiber, as free as possible from the influence of gastric digestion. It may be that the glutoid capsules of Sahli, to be mentioned later, will suffice for the latter purpose, or that other more satisfactory means may be devised. Müller found well preserved muscle fibers in his case of cyst of the pancreas when the patient was not eating more meat than a healthy adult could easily digest. A similar appearance was observed during several days while the patient was taking but little meat. The evidence furnished by this patient has only a relative value, since the nature of the lesion was determined by a surgical operation and the condition of the pancreatic duct was known.

The possibility of testing the efficiency of the pancreas by attempting to produce an alimentary glycosuria also demands consideration. The researches of Wille²⁰ in this direction are especially significant. This observer gave at breakfast to each of eight hundred patients 100 gr. of glucose in a half liter of tea or coffee. This quantity was selected with the view that the limit of physiological glycosuria lay between doses of 150 and 250 grammes. The urine of the patients was collected every two hours after the glucose was taken. In fifteen of seventy-seven patients who died, glycosuria occurred, and the postmortem examination showed alterations of the pancreas. In certain instances the changes were slight and ascertained only by microscopical examination. The test was positive in three out of four cases of cancer of the pancreas. Unfortunately, the ease with which a similar result is obtained with this test in a great variety of conditions in which there is no reason to suspect disease of the pancreas makes it of little value in diagnosis under present conditions.²¹ The

comparison of the quantities of glucose necessary and the percentages of sugar obtained may lead to additional information.

The functions of the pancreas may be tested also by the use of agents which demand largely the action of the pancreatic juice to promote their absorption and elimination. Salol was first suggested for this purpose by Ewald and Sievers.²² It had been stated by Nencki that salol was split by pancreatic juice into salicylic acid and phenol, and that the former could readily be detected in the urine. It was recommended that the salol be given in capsule or in pills coated with keratin. A delay in the cleavage would suggest retention in the stomach or deficiency of pancreatic juice. Sahli²³ has suggested the use of "glutoid" capsules containing iodoform, to determine the presence of pancreatic secretion in the intestine. It is claimed that these capsules are sufficiently hardened in formaldehyde to withstand powerful gastric digestion for at least twelve hours, although rapidly digested in pancreatic juice. If there is normal motility of the stomach the iodine reaction will appear in the saliva in from four to six hours after the capsule containing the iodoform is swallowed, provided there is a satisfactory pancreatic digestion and there is no interference with intestinal absorption. Sahli²⁴ reports a number of cases in which the reaction was delayed for twenty-four hours or more, and obstruction of the pancreatic duct from cancer of the gland was found.

The late reaction is evidence of defective pancreatic digestion only when there are normal gastric motility and intestinal absorption. If the latter is defective and there is diarrhea the undigested capsule may be found in the feces. Fromme²⁵ applied this test in a case proving to be one of inoperable sarcoma of the omentum. Visible fecal fat was present, but neither jaundice nor glycosuria. The reaction did not appear till the end of twenty-seven hours. In a patient who was found to have a "cyst" of the pancreas the glutoid capsule test gave only a slightly delayed reaction, from seven and a half to nine hours. Although these cases were reported to illustrate the inaccuracy of the test the evidence given is insufficient to exclude closure of the pancreatic duct in the first, and it is possible that the "cyst" of the pancreas was an omental bursitis or, if of the pancreas, that there was no considerable interference with the passage of the pancreatic juice into the intestine.

The suggestion is obvious that if symptoms attributable to disturbed functions of the pancreas be present and other conditions, especially jaundice, be absent, the use of pancreatic preparations or of minced pancreas might favorably affect these disturbances and thus indirectly confirm the diagnosis of pancreatic disease. Fles²⁶ gave daily a calf's pancreas to his patient with atrophied pancreas and unrecognizable duct. The fat and muscle fibers disappeared from the feces, to return again when the pancreas was omitted from the diet. Repeated instances of the disappearance of visible fat from the feces and of improvement in diabetics have followed the use of pancreas and its preparations, but

²² Ewald, *Klin. d. Verdauungs Krankh.*, 1888, II, 44.

²³ Lehrs, *d. klin. Untersuch. Method.*, 1899, 110.

²⁴ Deutsches Arch. f. klin. Med., 1898, lxi, 478.

²⁵ Münch. Med. Wehnschr., 1901, xlviii, 591.

²⁶ Loc. cit.

¹⁹ Loc. cit.

²⁰ Deutsches Arch. f. klin. Med., 1899, lxiii, 546.

²¹ Naunyn. Nothnagel's Sp. Path. u. Ther., 1900, viii, 1, 21.

they are not included in this consideration as lacking the control of anatomical investigation.

The examination of the urine for pentose has attracted attention since the statement by Hammarsten²⁷ that the pancreas contained a nucleo-proteid, the cleavage of which produced pentose. Salkowski, who had discovered the condition pentosuria, recognized the identity of the pentosazon in the pancreas and that in the urine and suggested that pentosuria might be regarded as an affection of the pancreas. Blumenthal²⁸ showed that the condition might be persistent during a period of five months. Pentose was usually sought with phenylhydrazin, acetic acid and heat. Mayo Robson²⁹ states that Cammidge obtained yellow crystals in sheaves and rosettes from the urine of a patient with chronic pancreatitis by boiling it for a short time with an oxidizing agent and adding phenylhydrazin. Urine from a case of catarrhal jaundice gave a negative result when similarly treated. It was suggested by him that this test might prove useful in diagnosis. Further evidence is needed before any diagnostic importance in connection with pancreatic disease is to be attached to the presence of these crystals, since an osazon of similar appearance has been obtained by the action of phenylhydrazin on normal urine. Blumenthal,³⁰ moreover, was able to isolate nucleo-proteids from various organs and find pentose in them, which obviously excludes the pancreas as the necessary place of their origin.

It is known that the putrefaction of the proteid contents of the intestine is caused by bacteria and that their action is enhanced by the presence of pancreatic juice. In consequence the aromatic compounds, indol, skatol and phenol, are formed, and the quantities of indican and of ethereal sulphates in the urine give evidence of the extent of the proteid putrefaction and indirectly of the condition of the pancreas. Gerhardt³¹ observed an absence of indican in the urine in a case of obstruction of the small intestine, in which condition, according to Jaffé, it should have been increased. After the patient's death acute hemorrhagic pancreatitis and an obstructed pancreatic duct were found. Gerhardt suggested that the absence of indican when the small intestine was obstructed might be regarded as evidence of disease of the pancreas. Two confirmatory and one contradictory observations have been made. Oser, however, maintains that variations in the excretion of indican may have no direct relation to disease of the pancreas, hence be of no diagnostic value.

The quantity of ethereal sulphates eliminated seem to have a more constant relation to the extent of intestinal putrefaction and to the secretion of pancreatic juice. The clinical observations on these points, especially those sufficiently controlled, are few. Herter found increased indican and an increased ratio of ethereal to pre-formed sulphates in Northrup's case, in which disease of the pancreas, though not the condition of the duct, was ascertained. Edsall³² concludes, in his communication on this

subject, "if, with suspicion of pancreatic disease, factors which usually cause an increase of the ethereal sulphates be present and yet the values be found low, the test would at present appear to be of distinct practical importance in diagnosis. Constipation, gastric hypoaecidity or anacidity, icterus, grave anemia, and cachexia are very likely to cause an increase in the relative or absolute values of the ethereal sulphates."

Finally, Opie³³ has suggested the possibility of discovering in the urine the fat-splitting ferment set free in acute pancreatitis. He endeavored to determine its presence in one case by following the method proposed by Cassell and Loevenhardt, which is based upon the decomposition of ethyl butyrate by the ferment and the production of butyric acid. The urine neutralized with potassium hydroxide was divided into two portions, one of which was boiled for the purpose of destroying the ferment. Ethyl butyrate was added to each specimen. That unboiled after twenty-four hours gave an acid reaction, while the boiled specimen showed little if any change.

The symptoms which have proven most useful in diagnosis are those which call attention directly to the region of the pancreas. They are the epigastric pain, tenderness, tension and tumor, with or without obstructive jaundice, and evidence of mechanical interference with the motility of the stomach and duodenum.

Pain, when present, usually is manifested early in the course of the disease and may be the initial symptom. It often suggests gastric cramp or intestinal or biliary colic. It is occasional, paroxysmal or persistent, dull or sharp, squeezing, tearing or piercing, mild or severe, even agonizing, and not infrequently is associated with signs of collapse. It may be clearly defined near the median line, midway between the ensiform cartilage and the navel, or may shoot laterally, especially towards the left side. It occasionally is continued upwards into the thorax or downwards into the lower abdomen.

Tenderness is a frequent accompaniment, especially of persistent pain. It often is described as sensitiveness, and although usually limited to the epigastrium, may be found in the region of the spleen or in the left groin. Ultimately tender spots may appear in remoter parts of the abdomen, especially when disseminated foci of fat necrosis accompany the pancreatic affection.

Epigastric tension often is observed and may be apparent at the outset or develop later in the course of the disease. When an early symptom it is followed soon by a circumscribed, tympanitic, epigastric swelling, evidently due to gaseous distention of the stomach. The resistance found late in the course of pancreatic disease is due to the formation of a tumor. When the latter is the result of disease of the pancreas its characteristics depend largely upon the nature of the affection. Small, circumscribed, dense tumors result from chronic inflammation or neoplasms, usually of the head of the gland, while large, tense tumors of pancreatic origin in the left half of the epigastrium or symmetrically involving more or less of the upper abdomen are indicative generally of cysts of the pancreas or of collections

²⁷ Ztschr. f. phys. Chem., 1894, xix, 20.

²⁸ Berl. klin. Wchnschr., 1895, xxxii, 567.

²⁹ Op. cit., p. 78.

³⁰ Berl. klin. Wchnschr., 1897, xxxiv, 245.

³¹ Virch. Arch., 1886, cvl, 303.

³² Am. J. Med. Sci., 1901, cxxi, 401.

³³ J. H. H. Bull., 1902, xiii, 117.

of fluid in the omental bursa, more common than the former and generally confounded with them.

Jaundice, commonly slight and of short duration, is occasionally encountered in acute affections of the pancreas. Then it is oftener seen in the course of a few days after the onset of the attack than as an earlier symptom. Prolonged jaundice is a frequent accompaniment of chronic affections of the head of the pancreas, especially of fibrous inflammation and neoplasms. The association of the jaundice with distention of the gall bladder is sufficiently frequent, as noted by Courvoisier and others, to make this combination suggestive rather of disease of the pancreas than of affections of the biliary tract.

Motor disturbances of the stomach and intestine are among the usual symptoms associated with pancreatic disease. Vomiting, sometimes frequent or incessant and often distressing, is customary among the early symptoms of acute pancreatitis, and constipation, at times obstinate, is the rule. So constant are these motor disturbances that the frequent diagnosis in cases of acute pancreatitis is acute intestinal obstruction.

The prolonged motor insufficiency of the stomach mechanically induced by chronic affections of the pancreas, especially from enlargement of the head of the gland, not infrequently give rise to dilatation of the stomach. In consequence frequent or persistent vomiting may take place late in the course of pancreatic disease.

Although the diagnosis of diseases of the pancreas in the light of our present knowledge practically depends more on the symptoms calling attention to the locality of the organ than upon the evidence of disturbances of its function, it is reached eventually by the exclusion of other sources of the local symptoms than the pancreas.

The differential diagnosis lies first between acute and chronic affections and second between the several varieties of chronic pancreatic disease. The former include pancreatic hemorrhage and the hemorrhagic gangrenous and suppurative varieties of acute pancreatitis, all of which are characterized by similar symptoms and some of which presumably represent stages of the same affection. The latter include chronic pancreatitis with or without calculi, cysts and tumors.

Of acute pancreatitis it may be said now as in 1889³⁴: "The symptoms are essentially those of a peritonitis beginning in the epigastrium and occurring suddenly, during ordinary health, without obvious cause. The diagnosis, therefore, is based on pain, tenderness and tympany limited to the region of the pancreas, and on the gradual development of a deep-seated peritonitis in the same place.

DIFFERENTIAL DIAGNOSIS.

The differential diagnosis lies practically between an irritant poison, perforation of the digestive or biliary tracts and acute intestinal obstruction. An irritant poison is excluded by the history of the case and by the examination of the vomit. Perforating ulcer of the stomach or duodenum is to be excluded by the absence of pain after eating, hemorrhages from the digestive canal and cachexia.

Acute perforation of the transverse colon is rare, and the resulting peritonitis progresses more rapidly and is likely to be general. Perforation from gall-stones is usually preceded by attacks of biliary colic and jaundice, while the seat of the pain is rather in the region of the gall bladder than in that of the pancreas. Acute intestinal obstruction is most likely to give rise to doubt. It is to be eliminated by determining the potency and capacity of the large intestine, by the rarity in the epigastrium of an obstructed small intestine, by the immediate presence of localized tenderness and by the usual absence of conspicuous, general tympany or limited distention of intestinal coils."

In the cases of acute pancreatitis thus far reported no new evidence, unless that of Opie be confirmed, has been furnished which gives to the diagnosis more than a variable degree of probability. Certainty has been reached only by a laparotomy or a postmortem examination. The former has made clear the condition of the pancreas by the usual disclosure of multiple areas of disseminated fat necrosis, a condition occurring on an extensive scale only in the sequence of acute pancreatitis, or by the demonstration of the enlarged, hemorrhagic or necrotic pancreas as the focus of the surrounding peritonitic manifestations. Fortunately the exploratory laparotomy in an increasing number of cases has proven the most satisfactory method of treatment, and, like most abdominal operations for the relief of acute symptoms, is the more helpful the earlier in the course of the disease it is performed.

The diagnosis of chronic pancreatic affections is based usually on the occurrence of localized pain and upon the presence of a tumor. The pain may exist without the tumor, but the latter is rarely present without the former at some time during its formation. The pain of chronic pancreatic affections is often a deep-seated discomfort; when severe it is likely to be paroxysmal and then is suggestive of biliary colic, but is referred rather to the region of the pancreas than to that of the biliary tract. The tumor is of slow or rapid growth, large or small, perhaps distinctly palpable only in narcosis, fixed or slightly movable, and with or without symptoms of pressure upon the surrounding parts. Its position behind the stomach and above or behind the colon is made apparent by inflation and percussion of these portions of the alimentary canal. Evidences of disturbance of pancreatic function are to be sought along the lines previously mentioned, but experience has shown that definite and convenient additions to our knowledge must be made before functional disturbances of the pancreas can be ascertained sufficiently early and with sufficient certainty to render assured the pancreatic source of the disease. The discovery of sugar in the urine should lead to the examination of the feces for fat. The presence of the latter should suggest the search for undigested muscle fibers and for glycosuria, and alimentary and therapeutic tests should be applied to all suspected cases.

The differential diagnosis lies between chronic pancreatitis, with or without pancreatic calculi, cysts and tumors.

The association of jaundice with tumor has led to the diagnosis of chronic pancreatitis and to its effective treatment by Mayo Robson and others.

³⁴ Fitz, *Acute Pancreatitis*. The Middleton-Goldsmith Lecture for 1889.

The relatively rapid formation of the tumor in the sequence of symptoms suggestive of gall-stones may serve in certain instances to differentiate this condition from malignant neoplasms. The discovery of characteristic calculi in the feces has made clear in a few instances the source of discomforting or severe symptoms without tumor in the region of the pancreas, and exploratory laparotomies have confirmed or suggested the diagnosis of neoplasms of this organ.

The various possibilities of a more accurate study of the symptomatology and diagnosis of diseases of the pancreas suggest an early advance in our knowledge of the subject. With the increase of clinical laboratories in our general hospitals and with the more frequent addition of biological chemists to the force of pathologists, the errors of the past are likely to be avoided and new lines of research are sure to be planned.

SMALL CONTRIBUTIONS TO THE SURGERY OF THE INTESTINAL TRACT.¹

(1) CARDIOSPASM AND ITS TREATMENT. — (2) PEPTIC ULCER OF THE JEJUNUM. — (3) OPERATIVE TREATMENT OF SEVERE FORMS OF INVAGINATION OF THE INTESTINE. — (4) OPERATION ON MALIGNANT GROWTHS OF THE LARGE INTESTINE.

BY JOH. VON MIKULICZ, M.D., LL.D., BRESLAU, GERMANY.

WHEN your President requested me to address your society on the subject of abdominal surgery I had originally intended to give the address a larger scope, as befitting your society. Unfortunately, I was unable to write up such a subject, owing to numerous demands made upon my time. Suffice it, therefore, to speak on some minor topics of intestinal surgery, and to apologize to you for the trivial character of the communications. Moreover, I cannot refer to the literature on the matter, nor — as I ought to — mention the authorities who have treated these lesions successfully.

(1) ON CARDIOSPASM AND ITS TREATMENT.

The first subject on which I shall speak is the so-called "cardiospasm." You are all well acquainted with a certain affection of the esophagus which consists mainly of a sacculated, or fusiform, dilatation of the organ, most pronounced in the lowest portion of the esophagus. Zenker, who first has accurately described such cases, considered the lesion an idiopathic dilatation of the esophagus. This disease occurs mainly during middle life, but has also been found in old age. It is characterized by a difficulty in swallowing either liquid or solid food, until in the advanced stage of the affection only very small amounts of food can reach the stomach. The cause of this difficulty lies in the fact that the esophagus retains a portion of the ingesta instead of being completely emptied during each act of swallowing, as is normal. In advanced stages this residue amounts to a quarter or even half a liter, and the patient finally dies of inanition.

Since I first began to examine the esophagus with the esophagoscope, I have observed about

twenty cases of this affection — during the last seven years alone I have taken careful notes on fourteen cases. Twenty years ago, when I made the first esophagoscopical examinations, I showed that in all these cases there exists an abnormal occlusion of the cardiac orifice of the stomach which I consider due to a muscular spasm. I have therefore designated and described this affection under the name of "cardiospasm." While under normal conditions during the act of swallowing the cardiac orifice opens automatically, and easily admits the food into the stomach, it remains closed in case of cardiospasm, and this spasm must be overcome by the contraction of the muscular wall of the esophagus. This leads to an excentric hypertrophy of the esophageal wall, and the organ becomes more and more dilated as the free passage of the food is interfered with. Another consequence of this impeded passage of the food is a chronic esophagitis, caused by the decomposition of the contents.

This affection can be definitely diagnosed in the living subject only by means of the esophagoscope: without the esophagoscopical examination the nature of the disease can only be surmised; in many cases carcinoma of the cardiac orifice of the stomach will be suspected. Also Röntgen-rays can be of great value for the diagnosis of this affection. I should like to show you some photographs to prove this (demonstration). The affection which I have described is a primary cardiospasm, if no other lesions are demonstrable. There is, however, a secondary cardiospasm which I have occasionally observed in cases of carcinoma of the cardiac end of the stomach. This secondary cardiospasm is originally entirely different from the secondary dilatation of the esophagus, in consequence of actual esophageal carcinoma.

Two of the fourteen cases of primary cardiospasm were peculiar, in that they were followed by secondary carcinomata. In each case the carcinomatous growth was found in the first thoracic portion of the esophagus, above the dilatation. One case was diagnosed by esophagoscopical examination, the second at the autopsy. I wish to show you an illustration of the esophagus in the latter case.

I refrain from discussing the etiology and the pathogenesis of the cardiospasm, because we are only able to surmise at present. I am convinced that we have to deal with an abnormal muscular contraction of the cardiac orifice. In regard to therapy we were until recently able to do very little; regular washings of the esophagus, and removal of the decomposing residue, can relieve only the secondary esophagitis. In severe cases the patients must be fed with the tube; with very little practice the patient learns to pass the tube into the stomach. If this method is unsuccessful, we must resort to a gastric fistula.

I have repeatedly attempted to dilate the contracted cardiac orifice, partly by passing fairly thick bougies, partly by inserting into the cardia a permanent canula supplied with a valve which allows liquids to pass into the stomach but prevents a backward flow.

Neither of these methods has proved particularly successful. I decided, therefore, to resort to heroic measures in the case of a female patient of twenty-

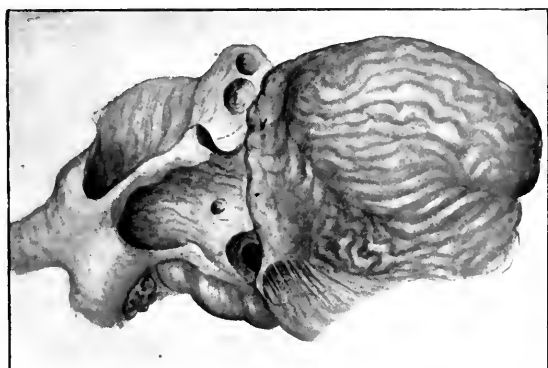
¹ Read before the American Surgical Association, Washington, D. C., May 13, 1903.

three years who was suffering intensely from the affection. The stomach was exposed by laparotomy, and an incision was made into the anterior wall wide enough to allow the entire left hand to pass into the stomach. Under the guidance of my fingers, which I pushed forward toward the cardiac end, I introduced an instrument resembling a glove-stretcher into the cardiac orifice; the dilatation was gradually affected to such an extent that the blades of the instrument were about 7 cm. apart. Thus I caused a blunt dilatation of the cardia similar to the dilatation of the sphincter ani in case of anal fissure. Then I closed the wounds in the stomach and in the parietal walls. It was a complete success; a fortnight after the operation the patient partook of solid food. During a period of observation extending over three months the patient was able to swallow every kind of food without any difficulty. She claimed never to have been in as good physical

between the stomach and the jejunum, that is, at the artificial anastomosis, or it may be situated some centimeters—sometimes 10 cm.—away from the anastomosis. Since the wall of the jejunum is considerably thinner and less resistant than that of the stomach, serious complications are more apt to follow after jejunal ulcer than after gastric ulcer. These complications are: Perforation into the abdominal cavity and death from subsequent peritonitis, or more frequently a gradual perforation through the anterior abdominal wall, usually at the site of the left rectus abdominalis, that is, a penetrating ulcer with inflammatory infiltration of the anterior abdominal wall; we have then the well-known pseudo-tumor, which sometimes occurs with gastric ulcer, and which results from this inflammatory infiltration of the abdominal parietes. If the affection is recognized early, excision of the gut and suture may effect a cure; and this has been done in

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ULCER OF THE JEJUNUM.—MIRULICZ.



ULCER OF THE JEJUNUM FOLLOWING GASTRO-ENTEROSTOMY
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The general picture of the disease closely resembles
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The period of observation in this case is too short to draw a definite conclusion about the value of the operation which I have described to you—I performed the operation about four months ago. Considering the insufficiency of all therapeutic measures for this affection, I do not hesitate, even now, to advise the performance of this operation. Personally I should not again make as large an incision into the wall of the stomach, but should prefer to introduce the dilator through a small gastric fistula; or one might construct an instrument which could be introduced into the cardia through the mouth, and act as a dilator.

(2) ON PEPTIC ULCER OF THE JEJUNUM.

The second subject of which I shall briefly speak is the so-called peptic ulcer of the jejunum, an affection which, as you know, has only recently been observed by surgeons, and only as a sequel to gastro-enterostomy. As far as I can gather from the accounts published by our German colleagues, about fifteen cases of this disease have been met with by Steinthal, Kocher, Heidenhain, Goepel, Kroenlein, Hahn and myself—I have seen five cases of it. I do not know whether more cases of this disease have been observed in America, and I should be very much interested to hear what were the experiences of my American colleagues in the matter. In our experience, peptic ulcer of the jejunum occurs only after gastro-enterostomy performed for benign affections of the stomach, such as gastric ulcer or pyloric stenosis. Moreover, it appears only after anterior gastro-enterostomy according to Woelfer's method—but it does not after v. Hacker's posterior gastro-enterostomy. It develops either during the first weeks after the operation, or it may delay for several months. The general picture of the disease closely resembles that of gastric ulcer; hence most cases were formerly regarded as a recurrence of the original trouble. Pain is a prominent symptom; it is very severe, and is increased by the ingestion of food. The ulcer lies either at the point of junction

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In most of these cases of jejunal ulcer there has been a marked hyperacidity of the gastric juice, but there are exceptions; thus Kocher found in one case a diminished amount of hydrochloric acid and even a trace of lactic acid in the gastric juice. In this direction I have made an especially interesting observation in the case of an infant of three months: The patient suffered from congenital stenosis of the pylorus, accompanied by an immense hypertrophy of the pyloric muscle, as is usual in such cases. Two months after the operation there appeared multiple jejunal ulcers, which caused the death of the child through profuse intestinal hemorrhage and peritonitis. I show you here a picture of this last case. Since the stomach during infancy contains only a small amount of hydrochloric acid, and an examination of the contents of the stomach has proved this in my case, hyperacidity of the gastric juice could not be the cause of jejunal ulcer in this patient.

Nevertheless, we are pretty certain about the etiology of peptic ulcer of the jejunum; it can be explained only by the prolonged presence of gastric juice, which reaches the jejunum without having been normally diluted and neutralized by bile and by the pancreatic secretion. On a recent visit to the Johns Hopkins Hospital in Baltimore, I had an opportunity of seeing a preparation which showed the formation of peptic ulcers in the jejunum of a dog after gastro-enterostomy. This occurred during the course of some experiments made by Dr. Stephen Watts, second assistant surgeon at that institution. An anterior or rather a ventral gastro-enterostomy was performed by suture without mechanical appliances. The dog died after three months. At the autopsy two ulcers were found in the jejunum opposite to the opening in the stomach. One of these had perforated, and caused the death of the animal.

This shows the possibility of the formation of such ulcers in animals as well as in man.

All these observations—I believe—are very important in deciding upon the best and safest

method of operating for gastric ulcer or pyloric stenosis. After these observations we are not entitled, in my opinion, to perform anterior gastro-enterostomy any longer—at least, not for benign affections of the stomach. For carcinomatous stenosis of the pylorus it may be considered, being technically the more simple operation. For the benign affections of the stomach we must choose an operation which does not expose the jejunum to the immediate action of the gastric juice, that is, an operation which restores as far as possible normal physiological conditions. The most rational method is the pyloroplasty operation, especially with Finney's modification. If this is not feasible we have to choose between gastro-duodenostomy—which recently has been advocated by Kocher—and v. Hacker's posterior gastro-enterostomy.

(3) ON OPERATIVE TREATMENT OF SEVERE FORMS OF INVAGINATION OF THE INTESTINE.

My third subject concerns the treatment of the severe forms of invagination of the intestine when disinvagination is impossible. In such cases resection of the invaginated portion of the gut offers the only possibility of saving the patient. However, this method, as usually practiced, is extremely dangerous, so that even the operation rarely restores the patient. Especially great is the danger of peritonitis. I have treated two cases in the following manner, which, in my opinion, offers the best chances for the patient's life; and indeed both cases made an uncomplicated recovery. The first case was that of a woman of twenty-seven years, the wife of a Polish merchant, who was admitted to the surgical clinic of Breslau in March, 1902, presenting the symptoms of intussusception. The patient had been sick for five weeks, presenting the characteristic symptoms of invagination, which had increased in severity up to the day of admission. Besides general meteorism, vomiting, and all other signs of intestinal obstruction, there had frequently been bloody stools. Inspection and palpation of the abdomen revealed a painful cylindrical tumor, about as thick as a man's arm, which began at about the middle of the transverse colon and ran toward the left side, corresponding in general to the direction of the descending colon, and went down into the pelvis. Examination of the anal region revealed a dark reddish-brown tumor of about the size of a fist, covered with intestinal mucosa, and protruding from the widely dilated anal orifice. Digital examination showed that this tumor was nothing but the lower end of the intussusceptum, extending into the rectum, and therefore connected with the tumor palpated through the abdominal wall. Further examination showed the prolapsed portion of intestine to be the cecum with the ileo-cecal valve, the lowest portion of which was already partly gangrenous. Thus we had here a case of ileocolic intussusception, the oral end of the large intestine being invaginated into the aboral portion down to the rectum, having dragged with it a portion of the ileum as an intussusceptum.

In view of the prolonged existence and the great extent of the invagination, as well as of the fact

that part of the intussusceptum had become gangrenous, there could be no thought of reduction by manipulation. Resection alone could be considered. However, the ordinary operation of resection seemed too heroic a measure, considering the poor state of the patient (pulse 140). She seemed unable to withstand the risk of a peritoneal affection which is incurred with the ordinary method of intestinal resection. I therefore proceeded in the following manner, which almost completely excluded the danger of a post-operative peritonitis:

An incision 20 cm. long was made along the border of the left rectus abdominis. When the abdominal cavity was opened a small amount of a brownish-red, turbid exudation was found and evacuated; the descending colon, much stretched, congested, and presenting an edematous infiltration, appeared in the opening. It was distended and showed numerous irregular transverse folds resulting from an axial dragging of the mesentery which was invaginated along with the gut. The colon was drawn up into the wound, so as to expose freely a strip of its anterior wall, about 5 to 6 cm. wide. In this position it was stitched to the abdominal wall by a series of sutures through the serous covering, and thus the parietal layer of the peritoneum was united to the visceral layer; this completely excluded the exposed portion of the colon from the peritoneal cavity. In a few places where the sutures did not seem to be quite efficient to connect the two layers owing to the transverse folds of the colon wall, small tampons of iodoform gauze were used to fill any remaining gaps.

The anterior wall of the colon, thus excluded from the peritoneal cavity, was opened by a longitudinal incision about 12 cm. in length. This incision exposed the intussusceptum, which at this point had not undergone any severe disturbances of circulation, but showed in many places ulcerations due to the pressure of the intussusciptens. The intussusceptum thus exposed consisted of two tubes of intestine, one contained within the other, the outer being colon, the inner ileum. These tubes of intestine were in contact with each other on their serous surfaces.

Hence, if the invaginated gut was to be resected at this point, it became necessary to open also the peritoneal sac, which had been dragged into the intussusceptum. In order to avoid all danger of infection in this direction I resected the invaginated gut in exact accordance with the method which I had advised for the resection of simple prolapse of the rectum, that is, the outer and inner layers of the intussusceptum were cut away step by step, and a deep catgut suture was immediately put in to close the peritoneal pocket as soon as it was opened. The site of the operation was, meanwhile, continually flushed with a normal salt solution. Thus the gut was cut and sutured at once along its entire circumference, until the mesenteric attachment was reached. In separating the mesentery we resorted to multiple ligation. Here a small strip of iodoform gauze was inserted in order to drain the mesenteric pocket into the gut. After complete resection we had to extract the resected portion which extended to the rectum. Attempts

to do this from the rectum were unsuccessful, because the intussusceptum was too tightly held by the rectum and the sigmoid flexure. By slow and careful traction we succeeded in removing it through the abdominal wound. The intussusceptum was about 45 cm. long; it consisted of a double tube, the outer being colon, the inner ileum. So the length of the entire excised portion of intestine was about a meter.

The further procedure, as well as the course of the disease, presented nothing remarkable. The main cause for congratulation was the total absence of any peritonitis, so that recovery was uninterrupted. A large artificial anus had been made by the operation, through which all fecal matter was discharged. This artificial anus was closed about eight weeks later. The patient left the clinic cured.

The same method was used with equal success in the case of a second woman of thirty-five years.

(4) ON OPERATION ON MALIGNANT GROWTHS OF THE LARGE INTESTINE.

In regard to the fourth topic I shall be brief, since I can refer to the paper which I read before the Congress of German Surgeons at Berlin a year ago. It deals with the operation for the removal of malignant tumors of the large intestine. Statistics collected until now show that the prevalent method of excision of the tumor and immediate suture of the intestine gives very bad results; the mortality varying between 30 and 50%; and most patients succumbing to peritonitis. The cause of this phenomenon is found, I believe, mainly in the secondary changes which take place in the intestinal walls under the influence of carcinomatous stenosis. The gut is dilated, its nutrition impaired and its muscular wall is insufficient; consequently after the operation we are apt to have complete atony of the intestine,—the contents are arrested at the site of the suture, the suture yields, and peritonitis results. For this reason Bloch as early as 1892 advocated operating in selected cases in two sittings. Allingham and W. Edmunds also have divided the operation in special cases. For a number of years I have, invariably, performed the operation in two sittings, and have found that the results were infinitely better than formerly. Of twenty-four cases operated on, only four died after the operation; but in none of these cases can the method of procedure be held responsible for the fatal termination. One patient died eleven days after the operation of embolism of the lung; another after a week of pneumonia; a third six weeks after the operation of general carcinomatosis, and the fourth within two days of peritonitis, caused by rupture of the carcinomatous gut during the enucleation of the tumor, so that a large amount of infective intestinal contents reached the peritoneal cavity during the operation.

As regards the technique of the two operations performed by myself, I should like to say the following. The primary incision, the enucleation of the tumor, the removal of the lymphatic glands, in short, the entire operation is performed exactly as

when one operation only is done. If now the tumor has been freed and completely enucleated, it is drawn out of the wound, the loop of gut is stitched to the parietal peritoneum with sutures including only the serous coat, and the abdominal wound is closed, leaving only room enough for the loop of the gut. Now only after the abdominal cavity is completely closed, the tumor is excised, and an artificial anus is established which is closed in two to four weeks, according to the usual methods. The disadvantage of this process is that the patient is afflicted for a few weeks with an artificial anus; but I believe that this is fully balanced by the advantage of greater safety.

In closing, I should like to say that in my experience the permanent results after operation for malignant tumor of the large intestine are very favorable, at least more so than is generally supposed. I think we should strongly point out this fact to the physicians who are still very sceptical about this operation. In compiling the joint statistics of my clinic and that of Koerte, I find that among twenty-four cases which were under observation more than four years we have nine cases without any recurrence. Among these nine are several that have been under observation much more than four years. I operated on my first case seventeen years ago, while I still conducted the clinic at Krakow.

THE SURGERY OF THE SIMPLE DISEASES OF THE STOMACH.¹

BY B. G. A. MOYNHAN, F.R.C.S., LEEDS, ENGLAND.

MR. PRESIDENT AND FELLOWS: May I be permitted at the outset of my paper to express my most cordial thanks to the fellows of the American Surgical Association for the signal honor which has been conferred upon me in asking me to present a paper to this meeting? There are few incidents so grateful to a surgeon, there can be none more encouraging, than a recognition from those best qualified to judge of the work which he is striving to do. My earnest hope is that my contribution to your proceedings may in some small measure repay you for the great courtesy which you have shown to me today:

I propose to deal in my paper with the surgery of the simple, that is, the non-malignant, diseases of the stomach. The subject, I am well aware, is one that has been debated at previous meetings of this association, but you will, I think, agree that there is still much that has to be learnt, there is still much that may engage us in profitable discussion, and I do not think, therefore, that any apology is needed for this choice of a subject.

The great majority of the simple diseases of the stomach which can be successfully treated by surgical measures are due to ulceration or to its complications and results. These various conditions can be dealt with in the following order: (1) perforation of gastric or duodenal ulcers; (2) hemorrhage from gastric or duodenal ulcers; (3) chronic ulcer, its various clinical types; (4) hour-glass stomach.

¹ Read before the American Surgical Association, May 13, 1903.

PERFORATION OF GASTRIC OR DUODENAL ULCERS.

The perforation of gastric or duodenal ulcer is one of the most serious and most overwhelming catastrophes that can befall a human being. The onset of the symptoms is sudden, the course rapid, and unless surgical measures are adopted early, the disease hastens to a fatal ending in almost every instance.

Perforation of the stomach is usually described as being of two varieties, *acute* and *chronic*; but there is an intermediate class of case, not embraced by either of these terms, which is best described as *subacute*.

In *acute perforation* the ulcer gives way suddenly and completely. A larger or smaller hole results, and through this the stomach contents are free to escape at once into the general cavity of the peritoneum.

In *subacute perforation* the ulcer probably gives way almost as quickly as in the acute form, but owing to the small size of the ulcer, or to the emptiness of the stomach, or to the instant plugging of the opening by an omental flap or tag, or to the speedy formation of lymph which forms, as it were, a cork or lid for the ulcer, the escape of fluid from the stomach is small in quantity and the damage inflicted thereby is less considerable. The symptoms at their onset may be as grave as those in acute perforation, but on opening the abdomen the ulcer may be seen to be sealed over, and no further escape of fluid is occurring.

In the subacute form of perforation I have found that there is always a complaint of greater discomfort for several days preceding the rupture. Vague general or localized pains have been felt in the abdomen, or a sharp spasm or "stitch" when the patient turned quickly, or attempted to laugh. One girl, a housemaid, felt the pain down her left side especially when reaching up to her work; another said it hurt her to bend, as her side felt stiff. These premonitory symptoms are important, and if recognized they should enable us to take measures to prevent the occurrence of perforation. They doubtless have their origin in a localized peritonitis, and the stiffness is due to the unconscious protection of an inflamed area by a muscular splint.

In *chronic perforation* the ulcer has slowly eaten its way through the stomach coats, and a protective peritonitis has had time to develop at the base. The escape of stomach contents is therefore local merely; barriers of lymph confine the fluid to a restricted area and perigastric abscess forms. A chronic perforation occurs more frequently on the posterior surface of the stomach, and the perigastric abscess occasioned thereby is recognized as "subphrenic." The acute and subacute forms of perforating ulcer are more common on the anterior surface.

There can be no doubt that recovery by medical treatment alone is possible both in the acute and in the subacute forms of perforation. I have had two cases under my care in which a diagnosis of perforation had been made by competent medical men. In both an operation was impossible, as no skilled help was available until the urgency of the symptoms seemed to have passed off. When I operated, many months later, the evidence of peri-

tonitis completely surrounding the stomach was undeniable. Though patients may recover, their recovery cannot be urged as a reason for the delay or withholding of surgical help in all cases. For the possibility of spontaneous recovery, though not denied, is yet so remote as to make it imperative to adopt operative treatment at the earliest possible moment. The risk of operation is definite, the hazard of delay is immeasurable. There are times when the diagnosis may be difficult. If morphine has been administered to still the intolerable pain, the patient's condition becomes placid and comfortable. It may be almost impossible then to recognize the extreme urgency of the case. In such circumstances I have, however, placed great reliance upon a continued hardness and rigidity of the abdominal muscles. Even when the patient expresses herself as free from pain, when the aspect has become natural, and when the pulse has returned to the normal, the abdominal rigidity remains. In the case of I. S., a girl aged seventeen, upon whom I operated for a perforated duodenal ulcer, the medical man who sent her to the infirmary had diagnosed a perforated gastric ulcer, and had told the patient and her parents that immediate operation alone could save her life. Having obtained consent to operation, he despatched the girl to the infirmary and gave a hypodermic injection of $\frac{1}{4}$ gr. morphine to lessen the distress of the journey. When I saw her shortly after her arrival, she looked in perfect health, she had no suffering, and her pulse and respirations were normal. The abdomen, though not distended, was absolutely rigid and immobile, and I did not hesitate to operate at once. In any uncertain case I should incline to operation rather than to indefinite postponement to solve the diagnosis.

I have seen a difficulty in diagnosis arise, and I know of three cases in which negative exploration has been performed, when the patient was a woman at the commencement of a menstrual period. From some unexplained and indeterminate cause a sharp attack of abdominal pain, followed by vomiting, distention, prostration and collapse had occurred in all, and had caused a confusion in the diagnosis. In the case under my own observation a history of previous similar, though less severe, attacks at the menstrual epoch, and the absence of any marked abdominal stiffness or tenderness, though the belly was obviously distended, enabled me to negative the question of perforating ulcer of the stomach.

The operation should be conducted speedily, and all means adopted to save the patient from shock. The excision of the ulcer is not necessary. My practice is to close the ulcer at once by a single catgut suture taken through from side to side, so as to prevent any further leakage during the application of the sutures. I apply two continuous sutures of Pagenstecher thread, which infold the ulcer and a portion of healthy stomach around it. After the stitches are completed, the cleansing of the peritoneum is begun. If there is much soiling a free flushing of the cavity is necessary; if the operation is done within ten to twelve hours a gentle wiping of the surrounding area with wet swabs will suffice. Drainage, as a rule, is not necessary, except in the very late cases, but when adopted it should be free and, if necessary, a second suprapubic incision

should be made. I have preferred the enlarging of the original incision and free flushing through that, to the method of multiple incisions advocated by Finney. One point I think requires emphasis: it is the multiplicity of perforating ulcers. As soon as the ulcer first discovered is sutured a rapid survey of the whole stomach is desirable, in order that any other ulcer may be laid bare. An examination of a large number of recorded cases has shown that double perforation occurs in no less than 20%. In the majority the second ulcer was on the posterior surface at a point exactly apposed to the first. In duodenal ulceration the perforation may be very large; the ulcer seems to have fallen out bodily. When the gap is stitched up a narrowing of the caliber of the duodenum results, and it may therefore be necessary to give an alternative route from the stomach by performing gastroenterostomy.

(2) HEMORRHAGE.

The bleeding from gastric or duodenal ulcers is recognizable either as hematemesis or melena. In lesser degree these symptoms are seen not infrequently; in their severer forms they are of dire significance, and may be the sole cause of the patient's death. It is but rarely that the surgeon is called upon for so momentous a judgment as is necessary in cases of severe hematemesis or severe melena. For the condition of the patient is poor, even at times desperate. Operative intervention is therefore hazardous; yet a continued bleeding will, in certain cases, inevitably end in death.

It is necessary at the outset to emphasize the fact, a fact frequently ignored, that hemorrhage may manifest itself under entirely different circumstances in different patients. In some it is the earliest and for a time the only symptom of gastric disturbance; in others it is the last expression in a long and tedious course of symptoms. In other words, the hemorrhage may occur from an *acute* or from a *chronic* ulcer of the stomach or duodenum. It will be found when the clinical history of a series of cases is examined, that whereas in the latter the bleeding varies within the widest limits both as regards quantity and frequency, in the former the clinical history is repeated in case after case in a most remarkable manner.

Hemorrhage from an acute ulcer.—Under the term "*acute ulcer*" of the stomach are probably included several varieties of pathological conditions, which are different in causation, different in destiny, but alike in the single fact that their clinical recognition is due to the bleeding which occurs from them, in abundant quantity. There is the ordinary peptic ulcer, there is the minute erosion barely recognizable even on close scrutiny, which yet opens up a vessel, and there are "weeping patches" and "villous areas" and similar indeterminate and unnumbered conditions which have been recognized when the stomach has been explored during life. To the clinician all these conditions are betrayed by their tendency to hemorrhage.

In almost every instance the hemorrhage is the first symptom. Even on close enquiry it is difficult to elicit any history of antecedent gastric discomforts. The vomiting of blood comes unex-

pectedly and suddenly, a large quantity of blood is lost and the patient suffers, often in an extreme degree, from the symptoms of hemorrhage. The pulse becomes feeble and fluttering, the face waxen, the breathing rapid and shallow, the body surface cold or clammy. For a time the symptoms may give rise to serious alarm, but a rally is seldom long delayed. The bleeding is checked spontaneously, and vomiting is rarely repeated, or if repeated the quantity of blood lost is but small.

In several of my cases a sudden, apparently causeless hemorrhage, has ushered in a long train of symptoms of dyspepsia. The acute ulcer has been the precursor, or rather the earliest stage, of a chronic ulcer.

The characteristics of hemorrhage from an acute gastric ulcer are, therefore: *Spontaneity, abruptness of onset, the rapid loss of a large quantity of blood, the marked tendency to spontaneous cessation, the infrequency of a repetition of the hemorrhage in anything but trivial quantity, and the transience of the resulting anemia.*

Hemorrhage from a chronic ulcer.—The bleeding from a chronic ulcer of the stomach or duodenum may vary within the widest limits both of frequency and of quantity. For convenience of description I should arrange the cases in four groups:

(1) In the first the hemorrhages are latent or concealed. The blood is small in quantity, and may be recognized only after minute examination of the stomach contents or of the feces. The estimates given by various writers, as to the occurrence of hemorrhage in ulcer, vary between 20% and 80%, and we are entitled to assume that this wide divergence of statement is due not so much to differences in the symptoms of ulcer but rather to the varying degrees of closeness with which the cases are observed, and to differences in the frequency and minuteness of examinations of the stomach contents or the feces. It would probably not be rash to assume that all ulcers of the stomach or duodenum bleed at some time or other, but if the bleeding be trivial and infrequently repeated, it is never likely to obtain clinical recognition.

(2) In the second group those cases should be included which are characterized by intermittent hemorrhage. The bleeding is copious, but transient, and occurs at intervals of two, three or more months. An exemplary instance of this class is the following:

A. S., female; aged twenty-eight. In May, 1898, the patient had a sudden attack of profuse bleeding from the stomach. She was in bed six weeks. For eighteen months after this her health was very poor, indigestion was constant, vomiting was occasional, constipation was invariable. For six months she was then in fairly good health, and was able to take food much better. In April, 1900, indigestion became severe, and a copious hemorrhage again occurred. Treatment was continued for six months with much benefit. In January, 1902, a third attack of hematemesis and fainting; after this she was kept in bed for four weeks. In September, 1902, again hematemesis as severe as before. From then to January, 1903, she was under constant treatment, but improvement was very slow. Anemia has been a prominent symptom since April, 1900. At the

operation a large ulcer was found in the stomach, and a second in the duodenum. Gastro-enterostomy was successfully performed.

In all the cases in this group indigestion is a prominent symptom. The hemorrhage often occurs without cause, but at times there may have been noticed an exacerbation of gastric discomfort and uneasiness for a few days. Anemia is almost constant.

(3) In the third group the cases are characterized by hemorrhages, which are rapidly repeated, and on all occasions abundant. In the majority of patients the symptoms of indigestion which have been noticed for months or years before have undergone an appreciable increase in the recent days. Then, suddenly, the hemorrhage occurs, a large quantity, a pint or a pint and a half, of blood is vomited. The patient may faint from loss of blood; he shows, always, the general symptoms of bleeding. For twelve or twenty-four hours the vomiting ceases, to reappear at the end of this time, without apparent cause, and in equal or greater quantity. A second latent period is followed by a further hemorrhage, and so the patient becomes in a condition of the gravest peril.

No better example of this class could be cited than the following: M. W., female; aged twenty-four. Has suffered from symptoms of gastric ulcer, pain, vomiting and inability to take solid food for fifteen months. Eleven weeks before admission to hospital all her symptoms became worse. Vomiting became frequent; pain was almost intolerable. During the five weeks before admission she vomited daily, and on almost all occasions some blood came. While waiting in the hospital she vomited three times in five days, and on each occasion about half a pint of blood came. She was very blanched. Pulse 112. The motions were tarry on two occasions. At the operation two old scars and one showing recent inflammation were seen. Gastro-enterostomy led to perfect recovery.

(4) The fourth group would comprise those cases in which the hemorrhage occurs in enormous quantity, inundating the patient and leading to almost instant death. The opening of the splenic artery, the aorta, the vena cava, or the pancreaticoduodenal vessels, allows of the so rapid escape of blood that the patient dies as surely and as swiftly as if his carotid or femoral vessels were divided. Such cases fortunately are rare. In my own experience only one such example has occurred, a large oval opening being then found in the splenic artery.

If, then, we accept the classification of cases of hemorrhage from gastric or duodenal ulcer into the four groups suggested, we may define their characteristics as follows:

(1) The hemorrhage is latent or concealed, is always trivial and often conspicuous.

(2) The hemorrhage is intermittent, but in moderate quantity, occurring spontaneously and with apparent caprice at infrequent intervals. The life of the patient is never in jeopardy from loss of blood, though anemia is a persisting symptom.

(3) The hemorrhage occurs generally but not always after a warning exacerbation of chronic symptoms. It is rapidly repeated, is always abundant, its persistence and excess cause grave peril, and will, if unchecked, be the determining cause of the patient's death.

(4) The hemorrhage is instant, overwhelming and lethal.

THE TREATMENT OF HEMORRHAGE.

(A) *From an acute ulcer.*—If what has been said of the characteristics of hemorrhage from an acute ulcer prove to be true, it is clear that the aid of the surgeon will rarely need to be invoked. Medical means alone will suffice in almost every instance to ensure the recovery of the patient. Though the hemorrhage is alarming from its suddenness and intensity, it may confidently be predicted that, in the majority of cases, it will not recur; or that if it recur, the quantity lost will almost certainly be small.

There are, however, a few cases in which the hemorrhage may be both copious and recurring, and may threaten the life of the patient. Under such circumstances an operation may be required. An examination of the recorded cases has convinced me that wherever surgical treatment is deemed advisable gastro-enterostomy, speedily performed, will prove the surest means of leading to the arrest of the bleeding. In not a few records one reads that the whole surface of the mucosa seemed to be "weeping blood," that multiple points of oozing appeared scattered irregularly over the stomach wall, or that a definite source of the blood, any point from which the blood chiefly ran, could not be ascertained. The surgeon has then fallen back upon styptics or the cautery, or the ligaturing of a villous patch in mass. It is difficult to convince one's self that any of these procedures have had the smallest effect for good; and in some the bleeding has recurred after the operation, and has determined the fatal issue. A search for a bleeding point is futile, harmful and, in my judgment, quite unnecessary. The performance of gastro-enterostomy will prove more effective than any other procedure, both in checking the hemorrhage and in preventing its recurrence.

(B) *From a chronic ulcer.*—It is mainly in regard to the cases included in Group 3 of the classification given above that the question of surgical treatment will arise. If we picture to ourselves the pathological conditions present in such a case, it will be seen that, though the bleeding may be spontaneously checked for a time, it will show a marked tendency to recur. The base of the ulcer is, as a rule, densely hard, and the vessel traverses it like a rigid pipe. The vessel is eaten into, as it were, by the ulcer, which erodes one side, leaving a ragged hole. Owing to the stiffening by chronic inflammatory deposit, the artery is unable to contract or retract, and the bleeding can, therefore, only be checked by the plugging of the opening by a thrombus. That such a plugging does occur there can be no doubt, for in one case I have seen it during life; on gently detaching the clot the bleeding began at once with furious onset. The tendency, indeed, even in a chronic ulcer such as I have depicted, must be to spontaneous cessation, for in no other way can the stopping and recurrence of bleeding, constantly seen, be explained. There is some condition as yet uncertain which is responsible for the detaching of the plug. This condition, I venture to think, is distention of the stomach, whereby the base of the ulcer is stretched and the

clot disturbed; for my record of cases shows indisputably that a gastro-enterostomy performed upon a patient suffering from this form of bleeding suffices to check the tendency to further hemorrhage, and permits of the speedy healing of the ulcer. In all patients so suffering a prolonged search for the ulcer in the stomach is injudicious, and the ulcer when found may, as the result of firm fusion with an adjacent structure, be irremovable. In two cases I have excised the ulcer; in the first the ulcer was on the posterior surface of the stomach, and to the opening left by its removal I anastomosed a loop of the jejunum; in the second the ulcer lay on the anterior surface near the lesser curvature towards the cardia. In this I did not perform gastro-enterostomy. In all the other cases that I have operated upon I have not attempted to deal directly with the ulcer, but have hastened to perform gastro-enterostomy. Of all the patients the one upon whom I did not perform a gastro-enterostomy was the only one I lost; the others recovered speedily and without further sign of hemorrhage.

In some cases an examination of the stomach may reveal two chronic ulcers or more, from each one of which the blood may be coming. To deal with each would be inadvisable or impossible. Cases, moreover, are recorded in which after an ulcer had been excised or ligatured in mass the bleeding had recurred and proved fatal.

In all cases, therefore, of hemorrhage from a chronic ulcer, an operation ought to be performed at the earliest possible moment. Search for, and local treatment of, the ulcer or ulcers are not necessary. A gastro-enterostomy will, without doubt, prevent a recurrence of hemorrhage and lead to a rapid healing of the ulcer from which the blood has come.

The suggestion of Dr. W. L. Rodman that the ulcer-bearing area of the stomach should be removed by partial gastrectomy is one that merits, and will doubtless receive, the careful and favorable consideration of surgeons.

CHRONIC ULCER.

Chronic ulcer of the stomach may present itself clinically in a great diversity of form. In some the onset is brusque, a copious hemorrhage from an acute ulcer being the first manifestation of gastric disease; after the lapse of a few days or weeks, however, gastralgia, vomiting and other symptoms appear, and the chronic ulcer is established. In others the onset is latent, and the early symptoms subdued. A patient may say that for several months a trivial, vague uneasiness has been experienced, that would have been forgotten but for the later accession of severer symptoms. In still others the course of the disease may present very remarkable intermissions. For several weeks the symptoms may be most marked and disabling, hemorrhage may occur on one or more occasions, but gradually an improvement is observed, and, after a time, all the distress may rapidly subside, leaving the patient in good health. The appetite may be restored, and the body weight may increase by a stone or even more. After a few months' interval a recurrence of the symptoms is observed, all the details of the former illness are repeated and

fresh hemorrhage may occur. And so the history may be repeated. In these circumstances the symptoms are due perhaps to the breaking down in the scar of a solitary ulcer, or to the fresh outbreak of ulcerated patches in other parts of the organ; of the two possibilities the former is probably the more frequent.

I have no doubt that many patients who have died from supposed malignant disease of the stomach have suffered from nothing but chronic ulceration. The induration which a persisting ulceration may cause is remarkable both for its extent and for its extraordinary mimicry of the appearances of malignant disease. In some of my own cases, and especially in one case of hour-glass stomach, the mass of inflammatory tissue was, with the knowledge I then possessed, absolutely indistinguishable by inspection and palpation from a malignant growth. Recently, however, I have in doubtful cases been able, I think, to distinguish chronic inflammatory masses by their perfect smoothness of surface. A malignant growth is always irregular, knotted, nodular or "gritty" on the surface; an inflammatory mass is more smoothly rounded off, and there is often a milky opacity of the peritoneum. The frequency with which carcinoma will develop in chronic ulcer is now generally acknowledged. Hauser estimates the frequency at 6%, a proportion which seems to me to be in excess of the truth. In my own experience only one case has been recognized.

The pathological conditions caused by chronic ulceration in the stomach are of great variety. When marked cicatricial contraction occurs the viscus is narrowed at the site of the ulcer, and an hour-glass stomach, or a trifid stomach, or a dilated stomach due to pyloric or duodenal stenosis results. If the ulcer slowly deepen a perigastritis is produced, and the stomach may become anchored to the abdominal wall, or the pancreas, or the liver, or any other neighboring structure. In all these conditions, and in others where no warping of the stomach can be found, an inveterate dyspepsia is a common symptom.

It has been the immemorial custom to look upon dyspepsia as due, chiefly, if not solely, to deficiency in the quantity or quality of the gastric juice, to some lack of adequate power in the stomach as a secreting organ. But dyspepsia of the intractable, constantly recurring form is more often a matter of physics than of chemistry. In several cases, as my records will show, I have operated for no other symptom than intolerable dyspepsia, when no diagnosis of pyloric obstruction, hour-glass stomach, or other mechanical deviation from the normal could be made. Yet at the operation abundant proof has been obtained that there was obvious distortion, or puckering or adhesion at one part or another of the organ; and that the stomach was crippled in the freedom of its action by these after-effects of ulceration. One observation I have repeatedly made in operating upon cases of chronic gastric and duodenal ulcers is that such ulcers are often multiple. If a well-marked ulcer is found at, say, the pyloric end of the stomach on the anterior surface, a second ulcer may be found, perhaps at an exactly apposing point in the posterior surface, perhaps elsewhere in

the stomach. Chronic gastric ulcers are in my experience rarely solitary.

The indications for operation in chronic ulcer of the stomach are of widely different character. When the ulcer is near the pylorus a dilated stomach will probably be the chief clinical sign; when the ulcer is in the body an hour-glass stomach may be caused; when the ulcer is nearer the cardiac end gastralgia and dyspepsia may be the only indications.

The evidences of old ulceration in the stomach are at times difficult to discover. A thin fibrous adhesion, a little crumpling of the surface, or a whitish blot on the serous coat may be all that is left of a patch of ulceration. When the stomach is pinched up between the fingers a little local thickening may be felt, or the mucous membrane may not, as it should, roll away from the muscular coat on gentle pressure. If in performing gastro-enterostomy the needle has to be passed through the stomach wall at the margin of an old ulcer, the different and greatly increased resistance to its passage is ample evidence of the change that has taken place. Inveterate dyspepsia is, in itself, an ample warrant for surgical treatment. Cases are within the experience of all in which prolonged medical treatment, most thoroughly and carefully supervised, proves ineffective, or if temporarily beneficial, is powerless to ward off the recurrence of dyspepsia. In such cases, be the physical signs what they may, an operation is desirable, and in my experience abundant justification for it will almost always be found when the stomach comes to be examined.

There are few beings so abjectly miserable as those who are the victims of intractable dyspepsia. The meal time which should be a delight is a time of despair and foreboding. The keen relish of good food, which the man in physical health should appreciate, is a joy unknown or long forgotten to the dyspeptic. A patient who has misery written in every wrinkle of a thin and haggard face, who by reason of long suffering and bitter experience has felt compelled to abandon first one dish and then another, till fluids alone can be taken, and these not always with impunity, a patient, to say the truth, whose whole life becomes embittered by the pangs of a suffering which he must inflict upon himself, this patient will find if a gastro-enterostomy be done for the chronic ulcer, which is the source of all his trouble, that his return to health and appetite is at first almost beyond belief.

Not a few of the patients upon whom I have operated have almost declined at the first to take the solid food, vegetables, puddings, pastry, and so forth that I have ordered them. And when the meal has been taken haltingly, and with grave doubt, a genuine surprise is expressed that no disablement has followed. Indeed, I do not know any operation in surgery which gives better results, which gives more complete satisfaction both to the patient and to his surgeon than gastro-enterostomy for chronic ulcer of the stomach.

OPERATIVE TREATMENT.

In operating upon chronic ulcer of the stomach I always perform gastro-enterostomy. It matters not

where the ulcer is placed, a gastro-enterostomy will relieve the symptoms completely and permanently, and will permit of the sound healing of the ulcer. This fact, I submit, is placed beyond dispute by the series of cases I am able to record.

At first sight it might appear desirable on all occasions or at all times when possible to excise the ulcer. Such a course is entirely unnecessary; moreover it is futile. For I have already pointed out that gastric ulcer is rarely solitary. If, therefore, two ulcers are found, or more than two, it is not always possible to say, even by close examination, which of the two is chiefly at fault. To excise all the ulcers, for I have seen a stomach so scarred that the ulcers seemed universal, is quite out of the question unless a partial gastrectomy is performed. But if the chief offending ulcer be excised, gastro-enterostomy would still, in my judgment, be necessary, for among the cases of excision of ulcer which are recorded there is not infrequent mention of little or no permanent improvement. In all cases, therefore, I submit gastro-enterostomy, and gastro-enterostomy alone, should be performed. Excision is unnecessary, often impossible, always insufficient, and is therefore not to be commended.

On three occasions I have performed pyloroplasty. The operation is one which, both from its ingenuity and its immediate success, appeals strongly to the surgeon. It is, however, unreliable, a return of the symptoms being not seldom observed. Of my three patients one remains perfectly well; the second is better but is certainly not in such good health as the average case of gastro-enterostomy; the third showed a speedy return of all the symptoms, and I then performed gastro-enterostomy with a perfectly satisfactory result. In this last case, and in others which I have seen, the return of the symptoms seemed to be due in part to a narrowing at the site of the pyloroplasty and in part to the formation of widespread and tough adhesions around the pyloric portion of the stomach, adhesion which must have seriously hampered the stomach in its freedom of action. Pyloroplasty is, in my judgment, an uncertain operation, and its results cannot compare with those seen after the operation of gastro-enterostomy.

In the performance of gastro-enterostomy I have made the anastomosis on the anterior and on the posterior surface, and I have used the Murphy button and Laplace's forceps as aids to the operation. I wish to speak gratefully of the help I have received from these instruments, but the greatest service they have rendered me is to convince me that they are entirely unnecessary. No better anastomosis is possible than that made with the simple suture, none is so safe, none so adaptable, and so far as speed is concerned I am content to abide the decision of the timekeeper. With the simple suture a gastro-enterostomy rarely takes, from the beginning of the incision to the last stitch, more than thirty minutes, and I have once completed the operation in seventeen minutes. I mention these times because I think the question of pace important. Speed is essential, haste is often disastrous; the two should be distinguished. Speed should be the achievement, not the aim, of an operator. His work must be thoroughly done, but being so done, then the quicker it is done the bet-

ter. I maintain that no time is saved by any mechanical appliance, and the operation is, with their aid, less perfect than it should be. I know the view which is held as to the worth of the Murphy button in America, and I have nothing but praise for the great ingenuity displayed in its making. But not the most ardent partisan will say that the Murphy button *never* courts disaster. I have seen two patients operated upon for intestinal obstruction caused by a Murphy button used for gastro-enterostomy—in one case the button had remained for six years. I have, myself, lost one patient from perforation of a button used in the performance of ileo-sigmoidostomy, three weeks after the operation. Now by the method of suture which I adopt for all forms of intestinal and gastric anastomoses there is no possibility—I speak positively—of present failure or of future mechanical disaster. The suture line has not leaked in one of my cases; the anastomosis is perfection. In one case of ileo-sigmoidostomy performed in acute obstruction due to cancer in the splenic flexure, the patient died at the end of twenty-three and a half hours. The anastomotic line was closed with the most minute perfection. I claim for the method that it is simple, speedy, applicable to all forms of anastomosis (and therefore time-saving in each, for the operator is quicker in a method he knows well) and is not open to the objection that future troubles are at least possible.

The following are the steps of the operation of gastro-enterostomy: The abdomen is opened to the right of the middle line and the fibers of the rectus are split. On opening the peritoneum a complete examination of the whole stomach and duodenum is made. The importance of this cannot be over-emphasized. A constriction in the body or towards the cardiac end may be most readily overlooked when, as is not uncommonly the case, a marked constriction at the pylorus, seen at once, is ample to account for all the symptoms. Cases of hour-glass stomach which have been overlooked at the operation, and a futile anastomosis made between the pyloric pouch and the jejunum, are recorded by several distinguished operators, and the mistake is an easy one to make unless one is determined to examine the whole of the stomach in every case. The importance of this examination of the whole stomach has recently received additional emphasis from the observation of a case upon which I operated a few months ago. I had diagnosed hour-glass stomach, and on opening the abdomen a perfect bilocular stomach at once was exposed. After demonstrating this I remarked that I always liked to see quite up to the cardiac before beginning my operation, and proceeding in the examination there was revealed another constriction and another loculus. There were, in fact, two constrictions and three loculi in the stomach—a trifid stomach. As soon as the operator is satisfied as to the conditions which exist, the great omentum and transverse colon are lifted out of the abdomen and turned upwards over the epigastrium. The under surface of the transverse mesocolon is exposed, and the vascular arch formed mainly by the middle colic artery is seen. A bloodless spot is chosen, a small incision made in the mesocolon, and the finger passed into the lesser sac. The

opening in the mesocolon is then gradually enlarged by stretching and tearing until all the fingers can be passed through it. It is very rarely necessary to ligature any vessel. The hand of an assistant now makes the posterior surface of the stomach present at this opening, and the surgeon grasps the stomach and pulls it well through. A fold of the stomach, about three inches in length, is now seized with a Doyen's clamp. The clamp is applied in such a way that the portion of the stomach embraced by it extends from the greater curvature obliquely upwards to the lesser curvature and towards the cardiac. The duodeno-jejunal angle is now sought and readily found by sweeping the finger along the under surface of the root of the transverse mesocolon to the left of the spine. The jejunum is then brought to the surface and a portion of it, about nine inches from the angle, is clamped in a second pair of Doyen's forceps. The two clamps now lie side by side on the abdominal wall, and the portions of stomach and jejunum to be anastomosed are well outside the abdomen embraced by the clamps. The whole operation area is now covered with gauze wrung out of hot sterile salt solution, the clamps alone remaining visible. A continuous suture is then introduced, uniting the serous and subserous coats of the stomach and jejunum. The stitch is commenced at the left end of the portions of gut enclosed in the clamp, and ends at the right. The length of the sutured line should be at least two inches. In front of this line an incision is now made into the stomach and jejunum, the serous and muscular layers of each being carefully divided until the mucous membrane is reached. As the cut is made the serous coat retracts and the mucous layer pouts into the incision. An ellipse of the mucous membrane is now excised from both stomach and jejunum, the portion removed being about one and three quarter inches in length and half an inch in breadth at the center. The stomach mucosa shows a tendency to retract; it is therefore seized with a pair of miniature vulsella on each side. No vessels are ligatured. The inner suture is now introduced. It embraces all the coats of the stomach and jejunum, and the individual stitches are placed close together and drawn fairly tight so as to constrict all vessels in the cut edges. The suture begins at the same point as the outer one, and is continued without interruption all round the incision to the starting point, where the ends are tied and cut short. It will be found that there is no need to interrupt the stitch at any point, for there is no tendency on the part of the sutured edges to pucker when the stitch is drawn tight. The clamps are now removed from both the stomach and the jejunum in order to see if any bleeding point is made manifest. Very rarely, about once in ten cases, a separate stitch at a bleeding point is necessary. The outer suture is now reassumed and continued round to its starting-point, being taken through the serous coat about one sixth of an inch in front of the inner suture. This outer stitch is also continuous throughout; when completed the ends are tied and cut short as with the inner stitch. There are thus two suture-lines surrounding the anastomotic opening: an inner, hemostatic, which includes all the layers of the gut; and an outer, approximating, which takes

up only the serous and subserous coats. For both stitches I use thin Pagenstecher thread. No sutures are passed through the mesocolon and stomach. The gut is lightly wiped over with a swab wet in sterile salt solution, the viscera returned within the abdomen, and the parietal wound sutured layer by layer. When the patient is replaced in bed the head and shoulders are supported by three or four pillows. The operation lasts from beginning to end about thirty to thirty-five minutes, but can be shortened by five or ten minutes if the condition of the patient demands it.

With regard to the after treatment there is but little to say. Nutrient enemata are given every four hours, and the bowel is washed out every morning with a pint of hot water; no fluid is given by the mouth for twelve hours, or until the ether sickness is over; then water in teaspoonful doses every fifteen minutes is given, and the quantity increased and the intervals lessened if sickness is not aroused. At the end of forty-eight hours milk and a little pudding, soups and such like are given. By the eighth day fish and minced chicken are taken, and in less than a fortnight solid food will be relished. The patient generally requires a caution not to overeat during the first month or two, for often the appetite is ravenous.

(4) HOUR-GLASS STOMACH.

By hour-glass stomach ("bilocular stomach"—"hour-glass contraction of the stomach") is understood that condition in which the stomach is divided into two compartments by the narrowing of the viscens at or near its center. The two loculi so formed may be almost equal in size, or one, generally the cardiac pouch, may be very much larger than the other. In one instance (Case 14) I have seen the stomach divided into three pouches, and in another (Case 15) a condition of hour-glass duodenum was associated with hour-glass stomach; so that four pouches, two larger in the stomach, two smaller in the duodenum, were seen. The isthmus connecting the two parts of the stomach is generally found at or near the middle of the viscus; but owing to stasis of the food, the cardiac complement becomes dilated, and is then much larger, thicker and more capacious than the pyloric. The pyloric pouch is, however, not seldom dilated also, and in such circumstances a pyloric or duodenal stenosis will also be found.

Pathogeny.—Hour-glass stomach is usually described as being "congenital" and "acquired." Of these forms, the congenital is said to be the more frequent.

I have carefully considered the question as to the existence of hour-glass stomach as a congenital deformity, examining all the specimens that I could find, and reading carefully the records of, I believe, all the published cases; but I remain confident in my belief, expressed in a paper in the *Lancet* two years ago, that there is no evidence whatever which will establish the claim of those who assert that the disease is often congenital in origin. Since I first threw doubts upon the congenital origin of many of the cases of hour-glass stomach, and showed that in almost all, obvious evidence of old ulceration could be found, several investigators have sup-

ported my conclusion by observations made during the course of operation or on postmortem examination. There is, indeed, no inherent improbability in the existence of congenital hour-glass stomach, but it lacks proof.

Acquired hour-glass stomach may be caused by (1) perigastric adhesions; (2) ulcer, with local perforation and anchoring to the anterior abdominal wall; (3) chronic ulcer generally at or near the middle of the organ; (4) malignant disease.

(1) Perigastric adhesions may result from many causes,—gastric ulcer, old tuberculous peritonitis, inflammatory affections of the gall bladder, etc. In rare instances these adhesions may be the sole cause of the partition of the stomach; in many they are no more than contributing causes. They were well seen in a case related by Cummston.

(2) Ulcer, with local perforation and anchoring of the stomach to the anterior abdominal wall,—this was the condition I found in my first case. It results from gradual deepening of a chronic ulcer. As the ulcer approaches the serous coat of the stomach, a few adhesions form, binding the viscus to the anterior abdominal wall, and preventing the bursting of the ulcer into the general peritoneal cavity. If the ulcer be on the posterior surface, a soldering to the pancreas may result, as in one case I have recently seen. When the stomach is anchored in its middle, the pouches on each side, but more especially on the cardiac side, show a tendency to sagging, and this, with the cicatricial contraction taking place in the ulcer, results in the hour-glass form of the stomach.

In three recorded cases an ulcer at the isthmus of an hour-glass stomach has perforated into the peritoneum and caused death. The first case was related by Siewers, the second by my friend Mr. W. H. Brown, and the third by Thomsen.

(3) Chronic ulcer: A chronic ulcer of the stomach is characterized by the thickness and induration at its base. In the healing of such an ulcer, especially if large in size or circular, a considerable amount of contraction will necessarily take place, and a high degree of narrowing of the stomach may result.

Symptoms of hour-glass stomach.—An hour-glass stomach can be diagnosed with certainty, if attention be paid to a certain combination of symptoms. In my first six cases only one was diagnosed; in my last nine cases seven were diagnosed with certainty; in one of these the diagnosis was made by the medical attendant, Dr. McGregor Young, before I was asked by him to see the patient. The symptoms will naturally vary according to the position of the constriction in the stomach; if this lies near the cardiac orifice the clinical picture will resemble that given by esophageal obstruction low down; if near the pyloric orifice the symptoms are those of dilated stomach. But, wherever the narrowing may be, attention to the following signs will, in almost every case, enable a diagnosis to be made with confidence:

(1) If the stomach tube be passed, and the stomach washed out with a known quantity of fluid, the loss of a certain quantity will be observed when the return fluid is measured. Thus, if 30 oz. be used, only 24 can be made to return, as in Dr. McGregor Young's case already mentioned. Wölff-

ler, who called attention to this sign, said that some of the fluid seemed to disappear "as though it had flowed through a large hole,"—as indeed it has, in passing from the cardiac to the pyloric pouch (Wölfler's "first sign").

(2) If the stomach be washed out until the fluid returns clear, a sudden rush of foul, evil-smelling fluid may occur; or, if the stomach be washed clean, the tube withdrawn and passed again, in a few minutes several ounces of dirty, offensive fluid may escape. The fluid has regurgitated through the connecting channel between the pyloric and cardiac pouches (Wölfler's "second sign").

(3) Paradoxical dilatation—if the stomach be palpated and a succession splash obtained, the stomach tube passed and the stomach apparently emptied, palpation will still elicit a distinct splashing sound. This is due to the fact that only the cardiac pouch is drained; the contents of the pyloric remain undisturbed and cause the splashing sound on palpation. For this phenomenon Jaworski has suggested the appropriate name "paradoxical dilatation." Jaboulay has pointed out that if the cardiac loculus be filled with water, a splashing sound can still be obtained by palpation over the pyloric pouch. The sign of paradoxical dilatation is best elicited after washing out the stomach in the ordinary manner. When the abdomen is examined at the completion of the washing and when the stomach has been apparently drained quite dry, a splashing sound is readily obtained, for some of the fluid used has escaped into the pyloric pouch through the connecting channel.

(4) Von Eiselsberg observed in one of his cases that on distending the stomach a bulging of the left side of the epigastrium was produced; after a few moments this gradually subsided and concomitantly there was a gradual filling up and bulging of the right side.

(5) Von Eiselsberg also called attention to the bubbling, forcing, "sizzling" sound which can be heard when the stethoscope is applied over the stomach after distension with CO_2 . If the two halves of a Seidlitz powder are separately given and the stomach be normal or dilated, no loud sound is heard anywhere except at the pylorus; if a constriction is present in the stomach, a loud, forcible, gushing sound can be easily distinguished at a point two or three inches to the left of the middle line.

(6) I first called attention two years ago to a sign which I have since found of great service in establishing a diagnosis of hour-glass stomach. The abdomen is carefully examined, and the stomach resonance percussed. A Seidlitz powder in two halves is then administered. On percussing, after about twenty or thirty seconds, an enormous increase in the resonance of the upper part of the stomach can be found, while the lower part remains unaltered. If the pyloric pouch can be felt, or seen to be clearly demarcated, the diagnosis is inevitable, for the increase in resonance must be in a distended cardiac segment. If the abdomen be watched for a few minutes, the pyloric pouch may sometimes be seen gradually to fill and become prominent.

(7) Schmidt-Monard and Eichorst have seen a distinct sulcus between the two pouches in-

flated with CO_2 . In Case 10, page 81, in my list, the two pouches with a hard, as I thought, malignant mass between them, could be readily seen. When both pouches were distended with CO_2 , alternate pressure upon them showed unmistakably that they communicated through a very narrow orifice, for the one could be emptied slowly into the other, and the fluid could be felt to ripple gently through. The diagnosis in such a case is simplicity itself. In Case 8 a distinct notch was seen at the lower border of the inflated stomach.

(8) Ewald has called attention to two signs which he considers of value in establishing a diagnosis. When the stomach is filled with water and examined by gastro-diaphany the transillumination is seen only in the cardiac pouch; the pyloric pouch remains dark.

(9) The deglutible India-rubber bag of Turck and Hemmeter is passed and distended. The bulging caused thereby is limited to the cardiac pouch which lies to the left of the middle line.

The two aids to diagnosis of greatest value are, it will be seen, the washing out of the stomach and its distention with gas by the administration of a Seidlitz powder in two portions. The fluid used for the washing must be carefully measured before use; the tube is then passed, and the stomach emptied, the contents set aside in a separate dish, and the washing commenced. All the fluid now returning is collected in a separate vessel and carefully measured. The two signs of Ewald are of little importance; a correct diagnosis can always be made without them.

Differential diagnosis.—The two conditions for which an hour-glass stomach is liable to be mistaken are obstructions in the lower part of the esophagus and pyloric stenosis. If the constriction in the stomach is within an inch or two of the cardiac orifice, the upper loculus of the stomach will be very small in size, and capable, therefore, of holding only small quantities of food. Food when swallowed may be regurgitated within a few minutes almost unaltered, and the patient may tell the same story of difficulty in "getting the food down," as is told by one whose esophagus is obstructed. A correct diagnosis can be made by introducing the esophageal bougie; if the bougie passes over sixteen inches from the teeth, the obstruction probably lies in the stomach.

If the constriction be near the pylorus the cardiac complement will be dilated, and will present the same appearances and signs as a dilated stomach; Wölfler's two signs (1 and 2 in the list given) will generally enable a correct diagnosis to be achieved.

If the obstruction should lie at any point between the two mentioned there should be no difficulty in making a correct diagnosis.

Treatment.—The treatment of hour-glass stomach may be beset with difficulties. If the stricture is near the cardia, or if the cardiac complement be bound up in adhesions, there may be great mechanical hindrance to the performance of any operation. When the abdomen is opened, a thorough examination of the whole stomach must first be made. The dilated pyloric sac may so completely resemble the whole stomach as to lead to the performance of a gastro-enterostomy between it

and a loop of jejunum. Several cases are recorded in which this mistake has been made, and it is therefore necessary to emphasize the importance of an examination of the whole stomach up to the cardiac orifice in every case, no matter how obvious the diagnosis of "dilated stomach" may have seemed.

In many cases of hour-glass stomach no single operation will suffice to relieve the symptoms. This is due to the fact that where a stricture is present in the body of the stomach a second stricture near the pylorus may also be found. If there be any dilatation of the pyloric complement a constriction at the pylorus or in the duodenum will certainly be found. This dual stenosis, which has not received adequate attention from any writer, accounts for the lack of permanent improvement seen in many of the recorded cases. If in such circumstances a gastro-enterostomy is performed between the cardiac pouch and the jejunum, the pyloric pouch becomes a reservoir, incapable of efficient emptying, wherein food lodges and becomes sour. Symptoms of stasis are then observed, acid, bitter eructations, occasional vomiting, a sense of heaviness and heat at the epigastrium, and distaste for food, and, as in a case recorded by Terrier, a second operation is necessary. If a gastropasty is performed the stomach cannot empty itself because of the pyloric stenosis, and the symptoms are unrelieved. Such a condition of double stenosis can therefore only be adequately treated by the performance of two operations at the same time, gastropasty and pyloroplasty, gastropasty and gastro-enterostomy from the pyloric pouch, gastro-gastrostomy and gastro-enterostomy, or a double gastro-enterostomy, a loop of jejunum being opened at two points, — at the upper into the cardiac pouch, at the lower into the pyloric.

The following are the operations that may be practised: (1) Gastropasty; (2) gastro-gastrostomy or gastro-anastomosis; (3) either of the foregoing, with gastro-enterostomy from the pyloric pouch, in cases of dual stenosis; (4) gastro-enterostomy from cardiac pouch, when the pyloric pouch is so small that it can be ignored; (5) gastro-enterostomy from both pouches; (6) partial gastrectomy.

The operation selected will necessarily depend upon the condition which is found. Thus I performed: Gastropasty alone in Cases 1, 2, 3, 5, 11; gastro-enterostomy alone in Cases 6, 7, 8, 9; gastropasty and gastro-enterostomy in Cases 12, 13; gastro-gastrostomy alone in Case 4; gastro-gastrostomy and gastro-enterostomy in Cases 14, 15.

Partial gastrectomy is the operation of choice in cases of malignant stricture in the body of the stomach. Gastropasty was first performed by Bardeleben in 1889; later by Kruckenberg, Doyen and others. Gastro-gastrostomy was first performed by Wölfler in 1894. In 1895 F. Sedgwick Watson performed a gastro-anastomosis by folding the pyloric pouch over the cardiac pouch, with the constriction as a hinge, and uniting the apposed surfaces.

The number of cases upon which this paper is based is as follows: Perforating gastric or duodenal ulcer, 12 cases, 6 recoveries; gastro-enterostomy for chronic ulcer, etc., 70 cases, 1 death; pyloroplasty, 3 cases, 0 deaths; hour-glass stomach, 15 cases, 3 deaths; gastroplication, 1 case, recovered; excision of ulcer for hematemesis, 1 case, died.

Reports of Societies.

THE SIXTH CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS, HELD IN WASHINGTON, MAY 12 AND 13, 1903.

(Concluded from No. 22, page 592.)

THE president, DR. W. W. KEEN, in the chair.

SECOND DAY, WEDNESDAY, MAY 13.¹

The subject of this session was

THE MEDICAL AND SURGICAL ASPECTS OF THE DISEASES OF THE GALL BLADDER AND BILE DUCTS.

DR. JOHN H. MUSSER of Philadelphia read a paper on

THE DIAGNOSIS OF AFFECTIONS OF THE GALL BLADDER AND BILE DUCTS,

and pleaded for the early recognition of the primary inflammations of the gall bladder and ducts, as in his opinion if these early stages were promptly recognized there would be little, if anything, seen of the secondary stages. He referred to the presence of leucocytes in these conditions, and laid great stress upon the importance of laboratory methods of diagnosis. Among other diseases with which gall bladder disease may be confused he mentioned cholelithiasis, congestion of the liver, perforation of the intestinal tract, sub-diaphragmatic abscess, pleurisy, pneumonia, pancreatic disease, syphilis of the liver, simple abscess of the liver and primary cancer of the gall bladder. He considered that there was still a great deal to be learned in reference to the hepatic function, and gave it as his opinion that one must rely very largely upon examinations of urine in making a diagnosis.

DR. GEORGE E. BREWER of New York read a paper on

THE DIFFERENTIAL DIAGNOSIS OF DISEASES OF THE GALL BLADDER AND BILE DUCTS,²

and stated that a great deal of information obtained in reference to this disease had been due to the conditions found at the time of operation. He divided the subject into (1) calculus disease; (2) inflammatory disease; and (3) new growths, and called especial attention to the pain in impacted gallstone. The presence of the gall bladder near the median line, as well as its congenital absence, was referred to, and the cause of the pain in gall-bladder disease was believed to be due to inflammatory conditions, although it may be due to pressure and spasm. The most characteristic symptom of cholelithiasis was considered to be the pain, while the most conspicuous symptoms of stone in the common duct were mentioned as jaundice, pain and fever. In the author's opinion inflammation of the gall bladder is present in most cases coming under the surgeon's hands, but a tumor of the gall-bladder was rarely found. The three chief symptoms of obstruction were given as (1) pain, (2) tumor and (3) jaundice, and the fact that gallstones were rarely found in young persons, say under twenty, was alluded to.

¹ For President's Address, see JOURNAL, p. 515.

² See JOURNAL, p. 526.

DR. C. A. HERTER of New York read a paper on

THE ETIOLOGY AND PATHOLOGY OF GALLSTONES.

He first considered their chief constituents, which he said were cholesterin and bilirubin. He exhibited a table showing the results in the formation of cholesterin after injections into the gall bladder, and mentioned that cholesterin is increased in pneumonia, and also that the quantity in the blood in relation to the quantity in the bile was very little. Speaking of bacteria in gallstones, he referred to the work of Welch, who found the streptococcus pyogenes, or the colon bacillus, while a bacterial nidus was found in one half of the stones. He believed the principal obstacle to the artificial production of stone was the flow of bile, and he did not consider that inflammation of the gall bladder, superinduced by ascites and unaccompanied by any infection, was itself sufficient to give rise to a very marked increase in the percentage of cholesterin in the bile. In conclusion he asserted that gallstones may be produced experimentally by the introduction of bacteria, although he felt there was considerable evidence of the fact that we were going a little too far in assuming that all cases of gallstone were due to bacteria and nothing else.

PROF. C. A. EWALD of Berlin read a paper on

THE DISEASES OF THE GALL BLADDER AND THE BILE DUCT, WITH ESPECIAL REFERENCE TO DISEASES OF THE STOMACH AND INTESTINES,

and made the statement that gallstones arise from a catarrhal condition of the mucosa. As proof of the fact that a predisposition to this condition may exist, he referred to the occurrence of the malady in several members of the same family. He raised the question as to gallstones causing pain, and gave it as his opinion that the colic may be due to contractions or inflammations with or without stone. Personally he looked upon the pain as being a very variable factor, and as at times originating from the transverse colon. He attached great importance to chemical and microscopical examinations of the gastric contents, and stated that hyperchlorhydria was frequently present before an attack, but disappeared with it. Speaking of gall-bladder colic, which he said was variable, irregular and frequently occurred at night, he called attention to the similarity between it and gastric crises. He briefly alluded to the importance of differentiation between acute pancreatic disease and gall bladder colic, and expressed the opinion that a tumor of the gall bladder was more frequently absent than present. He claimed that the stones may perforate into the colon and the contents of the intestines may be vomited, while infection of the bile passages from carcinoma occurred fairly frequently. In the author's opinion 95% of the cases of carcinoma were complicated with cholelithiasis. He called attention to the fact that carcinoma is more frequent in women than in men, the percentage being about four to one, and stated it was unknown why stone should sometimes cause ulceration and at other times carcinoma. He believed that carcinoma of the biliary passages was less frequent in women than in men, and expressed himself as being in favor of medical treatment being

employed first in cases of gall bladder disease. During an attack of acute inflammation he advised the use of the ordinary known remedies, except where the attack was unusually severe, or in the case of a recurrent attack, in which he recommended prompt operation. He alluded to the possible fatal results of a parenchymatous hemorrhage, and also to the unfortunate results which sometimes follow operation.

DR. WILLIAM J. MAYO of Rochester, Minn., read a paper entitled,

"A STUDY OF FIVE HUNDRED AND THIRTY-FOUR OPERATIONS UPON THE GALL BLADDER AND BILE DUCTS."

He began his paper with the statement that in nature's defense against infection within the abdominal cavity there were three weak situations; the Fallopian tube, the appendix and the gall bladder, of which the first to gain an accepted surgical position was the infective lesions of the tube. He believed that the ease of diagnosis and the remarkable results of operative interference contributed largely to this result. While he admitted that the appendix, after much discussion, had also reached an assured place in surgery, he claimed that the gall bladder had been slow to receive that attention from the medical public which its importance deserved. He stated that these patients were usually along in years, by reason of degenerative lesions or adipose tissue were poor subjects for operative interference, and did not usually die with that tragic suddenness which oftentimes marked appendicitis. He compared the similarity between the appendix and the gall bladder, and explained why perforation and sudden death were less frequent in diseases of the gall bladder than the appendix. As a cause of chronic distress and disability in adult life, he believed that diseases of the gall bladder nearly equalled in frequency those of the appendix, while in later years the gall bladder undoubtedly took first place. In St. Mary's hospital, with which the author is connected, there were 345 operations for appendicitis, as compared with 143 on the gall bladder, 98 on the ovaries and tubes, and 77 on the stomach. The 534 operations upon the gall bladder and bile passages, which formed the basis of this paper, were performed upon 518 patients, with 19 deaths, a mortality of 3.5%; of the total number 510 were for gallstone disease with a mortality of 3%. Considering stones in the gall bladder as uncomplicated, there were 208 cases with two deaths, a mortality of less than 1%.

PROF. HANS KEHR of Halberstadt, Germany, read a paper on

THE SURGICAL TREATMENT OF OBSTRUCTION OF THE COMMON BILE DUCT BY STONE OR TUMOR.

He looked upon the pressure of bile as the chief factor in forcing stones through the duct. He did not believe that one could determine whether the stones were large or small at the time of the colic, nor whether they passed through the ductus choledochus or not. The rarity of acute obstructions of the duct, and the possibility of a spontaneous cure, were alluded to, but little importance was attached to the passage of a stone on account of the proba-

^a See JOURNAL, p. 545.

bility that others were left behind. If pancreatic trouble be associated with stone in the gall bladder he advised treating this at the same time, but owing to the fact that all the broken parts of a stone might not pass through, he was not in favor of breaking up the stone. He believed that drainage was more quickly performed than suturing, and felt that in colotomy, with sutures, many stones were sometimes left behind. The pathological conditions present had a great deal to do with the success of the operation, which he advised should be done by the use of a free abdominal incision, and a generous quantity of gauze packing, which he claimed played a most important part in the results obtained. While he admitted that the treatment of obstruction of the ductus choledochus properly belonged to internal medicine, he was not in favor of waiting more than three months before operating. He did not think an incision into the hepatic duct was very often necessary, but did think that the after treatment following operation was extremely important.

DR. FRANK BILLINGS of Chicago, in opening the discussion, spoke more particularly of the diagnosis of gallstones in the earlier stages. In spite of the fact that the surgeon had in the greater part of the operations done in the last few years so enlightened us in the diagnosis that it could be more readily made than formerly, he still believed there were many cases where it was absolutely impossible to make a rational diagnosis. The pain, which he said had been referred to by many writers of the present day as being the most prominent symptom, was usually in the region of the gall-bladder apparatus, was not always severe, nor always colicky in character, and not necessarily present because there were points of tenderness. The latter he felt might be elicited in most patients whose abdominal walls were not too thick, and in this connection he mentioned a phenomenon which he had noticed in almost every case, that is, the reflection of the tenderness elicited by pressure within the gall-bladder region towards the epigastrium, thus explaining the reason for pain in the region of the stomach when gallstones existed. Jaundice he did not think existed unless the gallstone had escaped from the cyst, and had passed into the cystic duct, causing obstruction; but he thought it might also occur from the infection passing from the gall bladder through the gall ducts into the liver. He was not in favor of this pain or this tenderness being taken as a sure sign of gallstone, because there were other conditions which might produce pain in this region. Within one year two patients had been brought to him who had been operated upon for cystic gallstones without the stones having been found, and in each case they were found to be suffering from gastric crises due to locomotor ataxia. While he admitted that more than one case of appendicitis had been operated upon for gallstone, and also that the pain in pneumonia may be confused with gall-bladder colic, yet he insisted that a careful examination will enable one to separate these conditions and make a diagnosis. In one sense he looked upon gallstones as being harmless, and as not presenting symptoms which make a diagnosis possible until infection of the gall-bladder region had occurred, and he felt that very frequently by the time one was able to make a diagnosis of gallstone, the case had ad-

vanced sufficiently to make it a surgical one and no longer a medical one. Taking it for granted that a diagnosis had been made, and especially if a history had been elicited of previous attacks, or of the passage of stone, he argued that an operation was indicated immediately. So strongly did he feel this that he made it a point to so inform his patients and insist that they take the responsibility, if they did not heed his advice. His mode of procedure was to first try to get rid of the infection by proper food and drink, and in the case of women adjustment of the dress and proper respiratory exercise, and if all these failed, he advised that a surgeon be consulted at once.

DR. GEORGE DOCK said he would only take up one or two points on account of the subject being such a broad one and the time allotted being so limited. He asserted that there was a class of cases of disease due to gallstone that was easily recognized, and only carelessness or ignorance would prevent them from being sent to a surgeon at once. He admitted, however, that many of the patients so referred would not go to a surgeon, largely owing to their ignorance of the beneficial results to be obtained from surgical treatment. He felt that the discussion on the papers presented to the congress would go a long way towards diminishing this fear and removing this ignorance. While in some cases all the ordinary symptoms may be absent, in others he found that the symptoms resembled appendicitis or renal colic, but most of them he argued could easily be separated by a careful examination. He acknowledged however that some cases would still remain obscure and would only be cleared up by the surgeon. He claimed that much more had been learned from the surgeon than from the pathologist in these cases, largely because many have no history of gallstone disease and many more do not come to autopsy at all, so that the pathologist does not have an opportunity of studying them. He reported having been particularly impressed with cases of stomach disease that simulated gallstone disease and diseases of the biliary tract involving the stomach, and regretted that much valuable time may be lost in temporizing with cases of this kind. He detailed the case of a patient who recently called upon him in whom a careful examination showed a marked dilatation of the stomach without any history pointing to the cause, and he believed the case was one of latent ulcer of the stomach followed by cicatricial contraction. The patient was in a desperate condition, and was at once referred to the surgical clinic for treatment; but a few days before the operation was to have been performed, while the stomach was being washed out, a gallstone came up with the stomach washing. Although confronted with this evidence of disease the patient could recall no symptoms of tenderness in the region of the gall bladder, but examination before this had shown a resistance in this region. The patient finally came to operation, which unfortunately terminated fatally and it was found that he had old and very extensive disease of the gall bladder and cystic duct, so that they were almost unrecognizable. The stone that escaped into the stomach during life was only one of a number that lay just at the orifice of the duct, a quarter of an inch below the pylorus, while the obstruction was just beyond the pylorus. The speaker called attention particularly to the fact that

the most careful cross-questioning of the patient failed to elicit any information which could have been of any assistance in making a diagnosis. In referring to another case which recently came under his observation the statement was made that the condition of the stomach was so similar that he hesitated to make a diagnosis, but in this case cross examination elicited a history of mild attacks of jaundice.

DR. HENRY SEWALL discussed the papers at some length and fully reviewed the subject matter under the following seventeen different headings:

(1) Remarks confined to a synoptical statement of the physiological conditions whose modifications lead to gallstone formation.

(2) The bile is a continuous secretion with rhythmic acceleration, due to contraction of the larger bile ducts.

(3) It will be interesting to consider how the bile gets into the gall bladder during the intervals between its outpourings into the intestine.

(4) While the common duct sphincter is in action, the first resistance offered to outflowing bile must be met at the sphincter in the intestinal wall. The common duct must then be filled up, and the gall bladder is later filled by a current from the hepatic to the cystic duct, which current penetrates the common duct but a short distance. This leaves the common duct full of stagnant bile, or less probably there are rhythmic anti-peristaltic contractions of the common duct emptying it into the cystic duct.

(5) The cystic duct communicates with the common duct by porelike openings, probably less than 2 mm. in diameter. A thin shelf of mucous membrane separates the openings of the cystic to the hepatic duct. The duct wall at the confluence of the cystic and hepatic ducts is noticeably stiffer than that of the common duct contiguous, so that slight internal pressure could pour fluid into the cystic duct without collapsing the opening of the same.

(6) When the end of the common duct is slit longitudinally, the mucous membrane of the portion of the duct which is included in the intestinal wall is rough and corrugated as compared with the smooth line of the rest of the duct (new point). This suggests that the sphincter muscle keeps the whole half to three quarters inch of duct within the intestinal wall free from bile, and thus prevents bile from flowing into the pancreatic duct, which would be the case were the sphincter action confined to the very extremity of the duct.

(7) Bile normally enters the intestine by intermittent spurts, due to a rhythmic reflex action consisting in a simultaneous relaxation of the duct sphincter and contraction of the gall-bladder muscle, whose normal stimulus is the acid chyme from the stomach acting on the afferent nerves (vagus fibers) in the mucous membrane of the duodenum.

(8) It is granted on all sides that the dangers of gallstone disease depend upon bacterial invasion of the gall bladder and gall ducts. The formation of gallstones may, indeed, presuppose such invasion.

(9) Stagnant bile invites the multiplication of germs within it. What physiological means are

there for preventing micro-organisms from penetrating the ducts and for resisting them when they have once gained admission?

(10) As regards the entrance of germs from the intestine, the sphincter muscle of the duct must form a useful barrier, but germs must be constantly penetrating the common duct.

(11) The hepatic radicals are probably well protected from foreign bodies by the direction of the stream of bile in them, but germs once in the common duct must find ready access to the gall bladder except as to the possible filtering power of the Heisterian valve in the cystic duct.

(12) Even supposing bacteria have penetrated to the gall bladder, reflex action ever and anon expels bile therefrom, and at the same time flushes both the cystic and the common ducts. The fluid returned to the gall bladder is sterile and slightly antiseptic. A prominent or principal use of the gall bladder is to serve as a flush tank for the common and cystic ducts. It may be suspected that atrophy or extirpation of the gall bladder might predispose to cholangitis.

(13) It is well known that all factors that restrict the free outflowing of bile (dress, habits of eating, etc.) predispose to gallstones. Also, if bile, when secreted by the liver, is already infected, it cannot serve as a cleansing fluid.

(14) Even after infection of the gall bladder there probably is considerable power of self-protection in the biliary apparatus. It is not uncommon for the surgeon to find evidences of many separate and successive attacks of cholecystitis (different sets of stones, etc.).

(15) Also, when once a stone is formed, the anatomical relations of the outlet of the gall bladder and the cystic duct are very effective in keeping the stone harmlessly within the gall bladder (natural pathological selection). Further evidence is furnished by the frequent atrophy of the gall bladders containing stone. The cessation of the stream of bile into the bladder, combined with more or less stenosis of the cystic duct, must largely obviate the chances of reinfection of the gall bladder, which contains stones.

(16) As acid chyme is the normal stimulus to the gall bladder reflex, a healthy motor and secretory function of the stomach is essential to a normal flow of bile (otherwise stagnation and infection). The reflex must also be interfered with by duodenal indigestion and duodenal catarrh extending into the gall duct, which must at least lead to the stagnation of bile.

(17) The salts of the bile acid are the normal solvents of cholesterin, the most frequent constituent of gallstones. A normal metabolism of the liver as to its bile acid forming power must have an important relation to the precipitation of cholesterin. Also the normal resorptive power of the intestine is necessary to the proper resorption and internal circulation of bile which is thus used as a solvent. Again the cholesterin secreted by the liver cells probably results from metabolism of the body as a whole, and must depend in amount on the general health.

DR. E. G. JANEWAY of New York, in discussion laid great stress upon the importance, in cases of obstruction by stone, of the character of the food

taken by the patient being under the control of the physician. He reported having recently seen a case of complete obstruction where the physician in charge, who was a well-versed man and had made somewhat of a special study of this class of cases, told him that the bile flowed into the intestine. The diagnosis, therefore, could not be complete obstruction, but careful cross-questioning of the patient elicited the fact that he had been eating very largely of spinach which had stained the passages green. This shows very clearly the necessity of the physician being thoroughly acquainted with the character of the food taken by the patient. Brief report was made of two cases operated on for gallstone obstruction where the disease was ulcer of the duodenum.

PROF. B. G. A. MOYNIHAN of Leeds, England, stated that a considerable number of cases of gallstone disease occurred in England, and then stated the trend of their surgical experience in that country. Referring to Dr. Mayo's remarks, the author expressed himself as pleased to hear that in the performance of operations upon the common duct, Dr. Mayo was using a similar incision to that in use in England, and the speaker claimed that a great deal of the improvement in mortality was without a doubt due to the kind of incision employed, through which one was able to see the gall bladder and pull out through the wound about one third of the liver. In addition, one can get the common duct open and suture it if necessary, which little detail in the operation has not only given very considerable satisfaction, but has made possible an operation upon the common duct in twenty or thirty minutes. These operations used to be considered extremely serious in England, but the mortality recently, since the improved incision has been employed, has not been more than 3 or 4 %. Brief mention was made of the fact that surgeons are being driven oftener and oftener to an inspection of the gall bladder which the present incision permits. He commented on the fact that sometimes where cholecystotomy had been performed there had not been complete abolition of all the trouble, as the patients have complained of an uneasiness in the old scar. For many reasons surgeons have been driven to the performance of the operation of cholecystectomy, and the alterations have lain chiefly along this line.

Adjourned.

Recent Literature.

Diseases of the Skin. By H. RADCLIFFE CROCKER. Third edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Company. 1903.

A third edition of Dr. Crocker's well-known book has at last appeared, many of the articles having been entirely rewritten, and all thoroughly revised. While adding much to the usefulness of the work, this has increased its size very greatly, so that the volume is too large for comfortable reading. The English edition, we believe, appears in two volumes. The advances made in dermatology are strikingly illustrated by the large number of

new articles that Dr. Crocker has found it necessary to insert, numbering in all over thirty. There are also many new illustrations, some of them of marked excellence. Many of the old cuts of microscopical specimens seem rather antiquated compared with those of the present day, and might well have been omitted. The book will be of great interest to any one especially interested in dermatology, as it is stamped with the personality of the author, and contains much that is lacking in the ordinary textbook. The book will be turned to with interest by teachers when preparing for exercises, and it will be a valuable addition to the library of the general practitioner who has a good working knowledge of dermatology. Some criticism might be made of the amount of space allotted to various subjects, epithelioma, for instance, occupying a relatively small space as compared with many unusual affections. While of great interest and value for the specialist or advanced student, we cannot think that the book is specially adapted for a textbook for beginners, and indeed it is difficult to see how any single book could suit both purposes. Dr. Crocker's book, however, will for a long time maintain its place as one of the best treatises on dermatology that have appeared in any language.

The Practical Treatment of Stammering and Stuttering. By GEORGE ANDREW LEWIS. And a *Treatise on the Cultivation of the Voice.* By GEORGE B. HINSON, M.A. 12mo. pp. 415. With 19 illustrations. Detroit: George Andrew Lewis. 1902.

This volume is the work of two teachers of the art of speech. The discussion of the nature of speech defects and of the mechanism of speech is somewhat prolix, and fails to present clearly the physiology of the speech processes, but the practical teaching of the methods to be employed in overcoming speech defects is much better, and these chapters should prove of service to the sufferer, so far as printed instructions can be of help. The last quarter of the book contains a collection of the time-worn selections for practice, which recalls the sorrows inflicted by the amateur elocutionist.

The Care of the Baby. A Manual for Mothers and Nurses, containing Practical Directions for the Management of Infancy and Childhood in Health and in Disease. By J. P. CROZER GRIFFITH, M.D., Clinical Professor of Diseases of Children in the Hospital of the University of Pennsylvania; Physician to the Children's Hospital, Philadelphia. Third edition. Thoroughly revised. 436 pages, fully illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Dr. Griffith's manual is one of the best of the sort which we have seen. It is very practical and full of good common-sense advice. We are glad to see that the importance of wool in infants' clothing and the necessity of protecting them is duly emphasized. We can hardly agree with his position regarding sterilization *versus* pasteurization. A physician would hardly make a mistake in recommending this work to mothers, nurses or those who are interested in children.

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THE SURGICAL TREATMENT OF INTRACTABLE FACIAL PARALYSIS.

ONE of the hopeful fields of the surgery of the nervous system is the various operations which may be performed upon peripheral nerves. There are very natural discouragements in relation to the surgery of the brain or spinal cord, but owing to the very remarkable reparative processes which take place in the peripheral nerves, it has long been felt that here lies a very unusual opportunity for the skill and ingenuity of the surgeon. The suture of severed nerves after injury has come to be a routine practice, and the question of more complicated anastomoses between nerves of different functions is a subject which is just now attracting special attention. The utility of such operations naturally comes in those cases in which a hopeless degeneration of a functionally important nerve has taken place, and in which the possibility of the restoration of function is gone unless it be possible to bring into service a neighboring nerve through an anastomosis. It is apparently true on the physiological side that nerves innervating various groups of muscles may be made, in a measure at least, to perform each other's functions. This fact has been shown experimentally.

Following out the general idea which this physiological fact demonstrates, C. A. Ballance, H. A. Ballance and Purves Stewart have published in the *British Medical Journal* for May 2 a report of their experience in the treatment of chronic peripheral facial paralysis by means of effecting an anastomosis with the spinal accessory nerve. Recognizing that a certain proportion of extracerebral facial paralyses are irremediable by ordinary methods of

treatment, these writers maintain that it is a rational procedure to attempt to regain an innervation for the facial muscles through the medium of another nerve than the seventh. It will be remembered that Ballance and Stewart have recently published a monograph, based largely on experimental work, in which they claim to have shown that the regeneration of peripheral nerves takes place from the peripheral stump of a divided nerve as well as from the central end, irrespective of the preliminary suture. If this be the fact, they maintain that it is a reasonable procedure to unite the peripheral portion of a facial nerve which has been damaged, for example, within the ear, to a healthy nerve of a different source. With this as a theoretical basis, the authors proceeded as follows in the cases upon which they operated: Having examined by electricity to determine the survival of muscle fibers on the paralyzed side of the face, the facial nerve was exposed at its point of exit from the stylomastoid foramen. The trunk of the nerve was then cut as high as possible, the spinal accessory nerve exposed and incised at a level convenient for union with the divided facial, and was fixed by silk sutures into the peripheral segment of the facial nerve. After healing, the muscles were persistently treated with galvanism, followed by faradism, and in every case in which a microscopic examination was made new nerve fibers were demonstrated in the distal segment of the paralyzed facial nerve.

In one recent case the facial was united by anastomosis to the hypoglossal nerve, but the final results are not as yet reported. Sufficient improvement occurred in the face in the various cases operated upon to justify the hope that this or a similar operation may become a recognized one for this more or less serious deformity. The writers think that the hypoglossal is a more suitable nerve for this anastomosis than the spinal accessory, and are inclined to advise the operation in the future which unites the facial and the hypoglossal rather than the anastomosis of the facial and spinal accessory. This is due to the fact that they believe that, inasmuch as the center for the face and for the tongue are closely associated in the cerebral cortex, it is probable that dissociated facial movement through the tongue center would be greater than when working through the shoulder center, one great disadvantage of the spinal accessory anastomosis being that the movements of the face and shoulder were definitely associated in the cases operated upon. So far as they had observed in their series of cases, movement of the face, unassociated with that of the trapezius and sternomastoid, did not occur, the theory being that the accomplishment of dissociated

facial movement is a matter of cortical education, if one may use that term.

The final conclusions are that peripheral facial palsy is remediable by the anastomosis of the facial and spinal accessory nerves, but that the extent of recovery is limited to associated movements in conjunction with the shoulder; that the anastomosis of the facial and hypoglossal nerves is rather to be recommended than the foregoing, for the reasons which we have given; that those cases are suitable for operation in which the paralysis has lasted so long that recovery is no longer to be looked for; that nerves which have suffered from an infective neuritis make the prognosis after operative treatment less favorable than in traumatic cases.

Up to this time it need hardly be said that this operation has been rarely performed, and the few cases that have been reported have not been sufficiently satisfactory to excite any great enthusiasm as to its efficiency. In the May number of the *Annals of Surgery* Harvey Cushing reports a case recently operated upon, with the result that the paralysis of the facial muscles is much less noticeable during rest than before the operation, but that extensive voluntary movement is only produced with accompanying movement of the shoulder. There was, however, in his case some independent control in minor movements.

Criticism or comment upon this somewhat radical operative procedure is difficult to make in the present limited state of our knowledge regarding such anastomoses. From a theoretical point of view, it is clear that we have sufficient data to make such an operation at least reasonable; from the practical point of view, the experience of the writers we have quoted and others is already sufficient to demonstrate that the technical part of the operation may be successfully performed. It is also true that the deformity of an incurable facial paralysis is such as to render the sufferer willing in most cases to undergo any means of treatment which offers a fair hope of relief. It seems likely that a sufficiently long education, even of such highly specialized nerves as those under consideration, might ultimately lead to an independent action which would finally eliminate the unpleasant complication of associated movement. We are in general thoroughly convinced that surgery has its limitations; but we are quite sure that in certain lines of work these limitations have not yet been reached, and that the surgery of peripheral nerves offers a peculiarly promising field for surgeons who combine physiological and anatomical knowledge with a high degree of manual dexterity. Such surgeons, we venture to believe, will increase in numbers with the years.

THE DISTRIBUTION OF CANCER.

IN our eagerness to discover the exciting cause of cancer chief attention has of late been paid to experimental and microscopic study, a field which needs to be worked over in the most thorough possible fashion. It should not, however, be forgotten that other methods of inquiry may throw light on certain of the related problems regarding the appearance of the disease. An interesting piece of work from this latter point of view has recently come from the pen of Mr. D'Arcy Power, published in the *Practitioner* for May. His attention has in late years been directed to a careful investigation of the localities in which deaths from cancer have apparently been exceptionally numerous, and the study of two of these localities forms the basis of the paper before us.

The first district to which attention is called is a flat region, slightly above sea level, well watered, and in the neighborhood of fens and marsh lands. Most of the residents live in one or two small villages, but intermarriage in different generations is not particularly prevalent. Although mental disorders and tuberculosis are frequent, cancer is the prevailing disease. The entire population of the district is about twelve thousand, and during the years 1872 to 1898 one hundred and seventy-three cases of cancer were observed. The interest in these figures lies particularly in the manner in which the cases were distributed, since it appears that the disease clings to certain spots and buildings, regardless of their age; nor does it appear that the disease is in any way limited to the houses of the poor. The water supply was apparently not responsible; nevertheless a large proportion of the cases occurred near the stream which watered the district. This fact was so well marked that the opinion is maintained that cancer has some relation to the marshy grounds and to the streams. It was also noted that the general health of the population was on the whole poor, possibly predisposing the inhabitants to the disease.

Another village studied consisted of 456 persons in 1891. Here again a stream divides the village, the stream lying just below the level upon which the houses were built. The surrounding country was well wooded, and the whole village swarmed with gnats, flies and mosquitos. There was practically no drainage, the villagers kept pigs, and the water was polluted. Illness of various sorts was common among the population. Since 1869, of 264 deaths from all causes, 44 have been due to cancer or consumption in the proportion of 17 to 27. In the single year 1892, however, there were seven cases of cancer. The microscopic examination of the gnats and flies revealed nothing noteworthy. Bad

water supply, it is suggested, may have acted as a contributory factor, but certainly cannot be looked upon as the main cause. Mr. Power believes that the increase of cancer in the first village described is real, but in the second apparent only, and, as he himself says, the number of persons examined in the second investigation is too few from which to draw conclusions of value.

In general it is recognized that fallacies of a palpable sort beset this sort of investigation, an opinion with which we would entirely agree. At the same time, in view of the present situation regarding our knowledge of the etiology of the disease, it is manifestly our duty to investigate the conditions existing where the incidence of cancer seems to be particularly frequent. It is always possible that some key to the matter will be found when a sufficient number of data are collected from which deductions may be drawn. Mr. Power is inclined to attach a certain significance to the so-called hereditary element in the cancer problem, but very rightly acknowledges that the predisposing causes need to be further studied before the actual degree of hereditary influence may be determined. As in all matters regarding statistics, numbers constitute the saving grace, and even then false deductions may only too easily be drawn. In the meantime we most heartily commend to other students of the subject the general method of investigation which Mr. Power has adopted in this case, negative as it was. Elusive as the fundamental problems in medicine are, it is not a chimerical hope that definite knowledge will soon be forthcoming in relation to the etiology and distribution of this dreaded disease.

SURRA.

THE army authorities in the Philippines have lately sent a commission of line officers and a veterinary surgeon to study surra, the horse disease so prevalent here, as it occurs in India and the Dutch East Indies. It is unfortunate that a medical officer was not also detailed as a member of this commission, as the army surgeons in the Philippines were the ones who first proved the existence of surra in the islands, discovered the specific micro-organism of the disease, and demonstrated its transmissibility through the medium of a biting fly. In fact, whatever the army has known about surra before the present commission started was due to the work of a class of men not represented on this commission.

Recently the commission has forwarded a report from India, made by an English veterinarian, which has been published as a circular from military headquarters. This report says, in brief, that surra is

due to the presence of an infusorium in the blood. In India epidemics occur chiefly in the period June to October; in the winter and spring months cases are rare. The disease is uniformly fatal. It is not contagious, but can be transmitted to other animals by inoculation. The disease exists in an endemic form in certain districts, and animals allowed to remain in these districts after April contract surra. An undescribed species of biting fly is stated to be common in the districts and seasons when surra prevails. The necessity for the prompt removal and destruction of horse droppings is emphasized, though apparently not because of the favorable medium for the development of flies which such droppings furnish. All this is in accordance with what our own army surgeons have determined. The report then says: "There is no doubt but that the disease is communicated through the grass or water supplied to the animals," and goes on to discuss the necessity for their purity and the manner in which these can be secured in India. This, however, is at variance with common sense after what has been scientifically demonstrated with reference to the cause and transmission of surra in the Philippines. The surra parasite has been found, the transference of the disease by inoculation has been demonstrated, the biting fly acting as intermediate host has been identified, and the continued existence of the surra parasite in such flies taken from animals affected with surra has been proven. This should be sufficient for the formation of suitable rules for the prevention of surra, without dragging in the question of water, grass and general hygiene, and by so much obscuring the essential fact that the disease is insect-borne. That the military authorities have stamped with their approval a report which says that surra is transmitted by food, water, insects and other agencies is to be regretted as again confusing a matter which the army surgeons had practically solved. The affair furnishes a good illustration of the tendency on the part of line officers to overlook the work of their medical *confrères* and to depreciate the importance of their services in connection with the study and prevention of disease and matters of general hygiene.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 3, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 36, scarlatina 45, typhoid fever 11, measles 39, smallpox 0.

OPPOSITION TO NURSES' BILL. — The so-called Nurses' Bill, designed to limit the hours of work for nurses in certain public institutions, has again been given a hearing. Several opponents to the bill appeared, among whom were Dr. Copp, executive officer of the State Board of Insanity; Dr. Page, superintendent of the Danvers Hospital; and Dr. Lane, of the Boston Insane Hospital. These remonstrants were in general of the same opinion, that the bill represented entirely unnecessary legislation, and that its passage would introduce complications in the management of institutions where nurses are employed which would inevitably lead to much trouble and annoyance. It was maintained that the tendency in the management of institutions is toward shorter hours, and that the introduction of this unnecessary restriction at the present time would complicate an already very complicated problem. It is certainly hoped that this bill will not pass.

THE BOSTON SOCIETY OF MEDICAL SCIENCES. — A meeting of this society was held at the Harvard Medical School, Tuesday, June 2, at which the following papers were presented: Dr. C. S. Butler, "The Thoracic Duct"; Dr. Theodore Hough, "The Action of Alcohol on Muscular Fatigue"; Mr. S. B. Wolbach, "The Morphology of the Tubercle Bacillus," with lantern slides; Dr. H. A. Christian, "The Neuroglia Tissue, Ependymal Markings and Retinal Rosettes of Teratoid Tumors," a lantern-slide demonstration; Dr. William McKibbin, "Mosquitos and Malaria," with lantern slides; Dr. H. Lincoln Chase, "Efforts to Abate the Mosquito Nuisance in Brookline, Mass."

Dr. Hough's experimental work on the action of alcohol was of interest in showing that it had practically no effect in increasing the power of muscular work. Injections of inert fluids in frogs produced the same results as injections of alcohol. Dr. McKibbin's discussion of the situation at Worcester, Mass., with regard to malaria, showed the great prevalence of anopheles in and about the city, and demonstrated the necessity of active measures if the nuisance is to be abated. The results of mosquito extermination in Brookline should be an object lesson to those in authority in Worcester.

MALARIA IN WORCESTER, MASS. — In spite of the very marked prevalence of malaria in Worcester, Mass., the city government has vetoed a bill appropriating \$1,200 for the extermination of the anopheles. In view of the demonstration which has been made of the relationship of malaria to this variety of mosquito, it is little short of incredible that intelligent men should adopt this penurious policy.

NEW YORK.

WORK OF TENEMENT HOUSE DEPARTMENT. — Something of the work accomplished by the new Tenement House Department, which came into existence in January of last year, has recently been given out. During the year 1902 more than \$20,000,000 worth of tenement houses were built, and in the first three months of 1903, \$10,000,000 worth. These have all been constructed in accordance with the requirements of the new laws, without a single dark room, with fireproof stairs and stair enclosures, and with separate toilet conveniences for each apartment. More than 80% of the houses also have baths. No house can be occupied until its owner or manager has received from the department a certificate to the effect that the legal requirements have been fulfilled in its erection. It is stated that investigations made just prior to the establishment of the department showed that less than 30% of the tenements in Manhattan were constructed in accordance with the law as it then stood, and that in Brooklyn there was a complete disregard of all legal requirements.

NOTES FROM THE PHILIPPINES.

MALARIA. — To assist in controlling malaria among the natives the civil health officials for the Philippines have recently purchased a million quinine pills from the army medical authorities. The military has a large excess of quinine over its immediate and prospective needs, and has been glad to dispose of part of this surplus to the civil authorities at a lower rate than the latter could purchase it elsewhere in Manila.

Malaria is quite prevalent at a number of military stations, and the breaking up of the post of Alfonso XIII, on the Island of Paragua, has been recommended because of the disease. Alfonso XIII is garrisoned by a company of native scouts, many of whom are married and sleep out of barracks, so that it is difficult to enforce the use of mosquito nets, something that Filipinos seem to dislike. The natives state that mosquitos do not annoy them, and do not bite them as much as they bite white people, but the fact of the great prevalence of malaria among them — as at Alfonso XIII there were 71 cases of malaria out of the total of 74 treated in one month — would scarcely bear out their belief. It is a curious fact, and one wholly unexpected, that in the Philippines there is but little malaria in the region near the seacoast and the low-lying rice-field districts, while the disease attains its greatest frequency and virulence on the high ground of the interior. Careful entomological work done by the Army Medical Department has shown, however, that the anopheles, of which several new varieties

have been found to exist in the Philippines, occurs almost never on the lower levels, but is the common mosquito of the foothills of the interior mountain ranges. By far the most common variety of mosquito of the rice fields is the true yellow-fever-carrying *Aegomyia*, a fact which bodes ill for the islands if the yellow fever infection is ever imported, as it is much more liable to be after the Panama Canal is completed.

Orders requiring the use of mosquito bars by soldiers as a protection against malaria are now in force throughout all the northern islands, but their use has to be carefully watched to be sure that it is effective. Soldiers are a heedless lot where health is concerned, and are so used to having others think for them as to neglect the most obviously essential details. Inspection frequently shows mosquito bars to have become practically mosquito traps from simply being dropped to the floor around the cot at night. Many mosquitos roost during the day under the cot, and of course at night rise inside the net to annoy the sleeper. One would think that the victim would search out and destroy the imprisoned mosquitos on the following morning, but not so with the average soldier. Inspection frequently shows a mosquito bar carefully folded up out of the way and containing from one to a score of contented mosquitos, gorged with blood and only waiting for night to be again allowed to suck their fill.

Miscellany.

THE RELATION OF AGE, SEX AND CONJUGAL CONDITION TO DEATH FROM TYPHOID FEVER.

MOOREHOUSE, in a paper¹ on the above subject, based upon a study of the death reports of the city of Cleveland for thirteen years, from 1890 to 1902 inclusive, and following the lines of a previous similar study in regard to tuberculosis, reaches the following conclusions:

(1) Typhoid fever in Cleveland furnished, during the thirteen years under consideration, 3% of the total deaths (excluding deaths of non-residents and stillbirths). The number of deaths reported by the Health Department in the same period was 2.5% of the same total. The mortality was 56 to each 100,000 of the average estimated population.

(2) Nineteen percent of all tuberculous deaths occur between the years 20 and 25, 36% between 20 and 30, and 50% between 18.5 and 35.4 years.

(3) One and eight-tenths percent of all deaths were male deaths from typhoid fever. Fifty-eight and one-tenth percent of all deaths from typhoid fever were male deaths.

(4) One and two-tenths percent of all deaths were female deaths from typhoid fever. Forty-one and nine-tenths of all deaths from typhoid fever were female deaths.

(5) In proportion to the total, the greatest number of deaths both for males and females is found in the five-year period between the ages of 20 and 25 years.

(6) In proportion to the living population by age the greatest number of deaths occurs between 20 and 25 years. In this respect the mortality of typhoid fever differs essentially from that of tuberculosis, in which the highest mortality is found well past middle life.

(7) The conclusions given in the previous paper on the relation between the conjugal condition and the married state were that tuberculosis delayed and prevented marriage and that we might infer that marriage in women increases the liability to death from tuberculosis. A further computation with the material of the other study made in the course of the present investigation will, it seems to me, warrant us in withdrawing the second of these conclusions. We have shown that the excess of deaths of the married in tuberculosis is practically the same for males and females, namely, about 39% of the total mortality of each sex, and that the same relation holds in typhoid fever, but with a much lessened excess of deaths in the married, this excess for each sex being about 10% of the corresponding total mortality. The fact that the percentage excess of married over single mortality in tuberculosis is four times that found in typhoid fever tends to strengthen our conclusion that tuberculosis frequently delays and prevents marriages.

On the basis of this study there is, presumably, no relation between the conjugal condition and death from typhoid fever unless it be a moderate increase in liability to infection on the part of the unmarried, and this, if it exists, is thought to bear equally on the two sexes.

Obituary.

OCTAVIUS A. WHITE, M.D.

Octavius A. White, M.D., one of the group of eminent Southern physicians who have reflected so much honor on the profession in New York, and the father of Dr. J. Blake White, died on May 25, in the seventy-eighth year of his age. He was born in Charleston, S. C., on Feb. 8, 1826, and was graduated from the College of Charleston in 1846 and the South Carolina Medical College in 1848. He practised with much success in Charleston until the outbreak of the Civil War, when he became a surgeon in the Confederate Army. He was especially known as a yellow fever expert, and at one time during the war he was sent by special request into the Union lines to treat Northern soldiers suffering from the fever in the military hospital at Goldsborough, N. C. Later he won the love of the prisoners confined in the Confederate prison at Florence, S. C., by his devoted attention to them during an outbreak of the disease. In 1876 he was appointed by the American Medical Association to investigate and report upon the yellow fever epidemic at Savannah. After the war Dr. White removed to New York, where he has ever since occupied a prominent position in the medical world. He was possessed of much inventive capacity, and for many years contributed constantly to periodical professional literature. He was one of the most genial of men, and up to the last was as young in his feelings as when starting in life. He had been ill for some time, and an autopsy, made at his own request, revealed carcinoma of the pylorus, with secondary growths in the liver and pancreas.

¹ Cleveland Med. Journ., May, 1903.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 23, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|------------------|-----------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . . | 3,785,156 | 1,399 | 422 | 22.87 | 19.44 | 3.93 | .43 | 1.93 | |
| Chicago . . . | 1,885,000 | 619 | 178 | 24.87 | 23.41 | 1.61 | 1.93 | 2.10 | |
| Philadelphia . . | 1,378,527 | 472 | 89 | 27.31 | 13.34 | 2.33 | 1.48 | .85 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 198 | 47 | 22.22 | 11.11 | 1.51 | .50 | .50 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 157 | 47 | 29.94 | 13.37 | 3.18 | 1.27 | 1.91 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 82 | 29 | 21.96 | 14.64 | 1.22 | — | 2.44 | |
| Boston . . . | 603,163 | 196 | 52 | 25.00 | 15.30 | 2.04 | 2.50 | 2.01 | |
| Worcester . . . | 132,044 | 36 | 6 | 5.55 | 13.88 | — | — | — | |
| Fall River . . . | 115,549 | 49 | 19 | 30.60 | 20.40 | — | — | 2.04 | |
| Lowell . . . | 101,959 | 33 | 16 | 15.15 | 15.15 | — | — | 3.03 | |
| Cambridge . . . | 98,639 | 19 | 7 | 21.05 | 21.05 | 5.26 | — | 5.26 | |
| Lynn . . . | 72,497 | 20 | 5 | 20.00 | — | — | — | — | |
| Lawrence . . . | 69,766 | 31 | 13 | 19.35 | 9.68 | 3.22 | — | — | |
| Springfield . . | 69,389 | 20 | 7 | 10.00 | 5.00 | — | — | — | |
| Somerville . . . | 68,110 | 12 | 1 | 25.00 | 16.67 | — | 8.33 | — | |
| New Bedford . . | 67,198 | 38 | 16 | 28.94 | 7.89 | — | — | 13.15 | |
| Holyoke . . . | 49,286 | 15 | 8 | 40.00 | 6.67 | — | — | — | |
| Brockton . . . | 44,873 | 10 | 1 | 20.00 | — | — | — | — | |
| Haverhill . . . | 42,104 | 9 | — | 22.22 | 11.11 | — | — | — | |
| Newton . . . | 37,794 | 9 | — | 11.11 | — | — | — | — | |
| Salem . . . | 36,876 | 12 | 2 | 8.33 | — | — | — | — | |
| Malden . . . | 36,286 | 14 | 1 | — | 7.14 | — | — | — | |
| Chelsea . . . | 35,876 | 8 | 0 | — | — | — | — | — | |
| Fitchburg . . . | 35,069 | 5 | 1 | — | — | — | — | — | |
| Taunton . . . | 33,656 | 10 | 2 | 20.00 | 10.00 | — | — | 10.00 | |
| Everett . . . | 28,620 | 6 | 3 | 16.67 | — | 16.67 | — | — | |
| North Adams . . | 27,862 | 6 | 1 | — | — | — | — | — | |
| Gloucester . . . | 26,121 | 9 | 2 | 11.11 | — | 11.11 | — | — | |
| Quincy . . . | 26,042 | — | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 6 | 1 | — | 16.67 | — | — | — | |
| Brookline . . . | 22,608 | 1 | — | — | 100.00 | — | — | — | |
| Pittsfield . . . | 22,589 | 12 | — | 8.33 | 25.00 | — | — | — | |
| Chicopee . . . | 21,031 | 9 | 3 | 33.33 | — | — | — | 22.22 | |
| Medford . . . | 20,962 | 1 | — | 100.00 | — | — | — | — | |
| Northampton . . | 19,883 | 10 | 1 | 20.00 | — | — | — | 10.00 | |
| Beverly . . . | 15,302 | 4 | — | — | 25.00 | — | — | — | |
| Clinton . . . | 15,161 | 5 | — | — | 20.00 | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 3 | 0 | 33.33 | 66.67 | — | — | — | |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — | |
| Hyde Park . . . | 14,175 | 7 | 0 | 28.60 | 28.60 | — | — | — | |
| Adams . . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 5 | 1 | 20.00 | — | — | — | 20.00 | |
| Melrose . . . | 13,600 | 3 | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 6 | 3 | 16.67 | 50.00 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 5 | 1 | — | 20.00 | — | — | — | |
| Framingham . . . | 12,534 | 4 | 2 | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 3 | — | — | 33.33 | — | — | — | |
| Weymouth . . . | 11,344 | — | — | — | — | — | — | — | |
| Southbridge . . | 11,268 | 3 | 1 | 33.33 | 33.33 | — | — | — | |
| Watertown . . . | 11,077 | 0 | — | — | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,581; under five years of age, 988; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 842; acute lung diseases 619, consumption 380, scarlet fever 67, whooping cough 36, cerebrospinal meningitis 8, smallpox 7, erysipelas 3, measles 45, typhoid fever 75, diarrheal diseases 111, diphtheria and croup 94.


From whooping cough, New York 6, Chicago 12, Philadelphia 7, Baltimore 1, Pittsburg 2, Boston 5, and Lowell, Cambridge and Somerville 1 each. From erysipelas, Chicago, Philadelphia and Baltimore 1 each. From smallpox, Philadelphia 4, Pittsburg 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending May 9 the death-rate was 16.0. Deaths reported, 4,618; acute diseases of the respiratory organs (London) 260, whooping cough 124, diphtheria 50, measles 137, smallpox 14, scarlet fever 48.

The death-rate ranged from 8.02 in Willesden to 23.5 in Wigan; London 15.7, West Ham 14.4, Brighton 11.2, Portsmouth 14.4, Southampton 17.5, Plymouth 16.8, Bristol 13.7, Birmingham 18.1, Leicester 13.7, Nottingham 17.4, Bolton 16.2, Manchester 19.3, Salford 17.5, Bradford 18.2, Leeds 15.6, Hull 11.1, Newcastle-on-Tyne 14.8, Cardiff 11.2, Rhondda 17.0, Liverpool 20.9, Croydon 10.3.

METEOROLOGICAL RECORD.

For the week ending May 23, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| | | | | | | | | | | | | | | |
| S. . . 17 | 30.14 | 66 | 84 | 49 | 62 | 50 | 56 | W | S W | 11 | 15 | C. | C. | O. |
| M. . . 18 | 29.98 | 74 | 88 | 60 | 69 | 54 | 62 | W | N E | 8 | 5 | C. | C. | O. |
| T. . . 19 | 29.90 | 76 | 88 | 64 | 61 | 62 | 62 | W | S W | 8 | 11 | C. | C. | O. |
| W. . . 20 | 29.89 | 70 | 80 | 59 | 69 | 49 | 59 | E | S W | 4 | 11 | C. | C. | O. |
| T. . . 21 | 29.93 | 75 | 84 | 66 | 46 | 47 | 46 | N W | S W | 12 | 13 | C. | C. | O. |
| F. . . 22 | 29.80 | 72 | 84 | 60 | 61 | 47 | 54 | W | N | 10 | 14 | C. | C. | O. |
| S. . . 23 | 30.03 | 58 | 68 | 48 | 44 | 40 | 42 | N | N | 12 | 12 | C. | C. | O. |
| | | | | | | | | | | Fl. | | | | |
|  | 29.95 | | 82 | 58 | | 54 | | | | | | | | .01 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☉ Mean for week.

SOCIETY NOTICE.

MASSACHUSETTS MEDICO-LEGAL SOCIETY.—The annual meeting will be held at Sprague Hall of the Boston Medical Library, 8 The Fenway, on Tuesday, June 9, 1903, at 1 o'clock, P.M. Preceding the meeting a lunch will be served to members and friends at 12.30 P.M.

FRED E. JONES, M.D.,
Secretary.

Quincy, June 1, 1903.

APPOINTMENTS.

MASSACHUSETTS GENERAL HOSPITAL.—DR. JAMES G. MUMFORD, DR. WILLIAM A. BROOKS, JR., and DR. CHARLES A. PORTER have been made assistant visiting surgeons to the hospital.

BOOKS AND PAMPHLETS RECEIVED.

Surgery of the Heart. By Benjamin Merrill Ricketts, Ph.B., M.D., of Cincinnati. Reprint. 1903.

On Certain Precautions Required in Making and Interpreting the So-called "Colon Test" for Potable Waters. By Samuel C. Prescott. Reprint. 1903.

A Note on Methods of Isolating Colon Bacilli. By Samuel C. Prescott. Reprint. 1903.

A System of Physiologic Therapeutics, a Practical Exposition of the Methods, other than Drug-giving, Useful for the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A.M., M.D. Vol. x. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Lea's Series of Pocket Text-Books. Bacteriology, a Manual for Students and Practitioners. By Fred C. Zapffe, M.D. Series edited by Bern B. Gannadot, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

The Buckeye Doctor, a Tale for Physicians and Physicians' Patients. By William W. Pennell, M.D. New York: The Grafton Press. 1903.

The Refraction and Motility of the Eye, for Students and Practitioners. By William Norwood Suter, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Practical Handbook of the Pathology of the Skin, an Introduction to the Histology, Pathology, and Bacteriology of the Skin, with Special Reference to Technique. By J. M. H. MacLeod, A.M., M.D., M.R.C.P. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Original Articles.

DERMATO-MYOSITIS.¹

BY F. FORCHHEIMER, M.D., CINCINNATI, OHIO.

This form of myositis was unknown as a clinical entity until 1887, when Unverricht called attention to it as polymyositis progressiva acuta, which name he changed to dermatomyositis acuta in 1891. Before Unverricht's first publication E. Wagner (1883) had recorded a case under the title of "A Case of Rare Muscular Disease," and Potain (1875) another with the diagnosis of chronic glanders. In 1887 E. Wagner published the account of another case under polymyositis acuta, and Hepp one with the diagnosis of pseudo-trichinosis. The designation which forms the title of the paper is the one universally accepted, except, laterally, Lépine of Lyons has called the disease angio-myositis. The history of the case which I believe to be a case of dermatomyositis is as follows:

Mrs. A. B., aged forty; family history negative as to tuberculosis, syphilis, gout and rheumatism, but markedly neurotic. The antecedent history is that of a very neurotic woman; she has had much headache; married at twenty-five; she has had two children, whose rearing has given her much anxiety, increasing her neurotic tendencies. She was thrown out of a pony cart, striking upon her head, and had cerebral concussion, which was followed by a very sharp attack of traumatic neurasthenia. In June, 1901, when partially recovered, the sudden death of her brother produced great worry, care and anxiety, which caused her to use up all the little reserve nerve force that had been stored up, and from this time on she has not been well. She began to complain of irritation of the skin, of the mucous membrane of the vagina and rectum, of irregular menstruation, scant and offensive urination, constipation, headache, and pain in various parts of the body.

Aug. 20, 1901, she noticed a small pustule on the left leg where the garter had pressed, accompanied by itching and muscular soreness, but no swelling. Sept. 8, 1901, her general condition being as noted before, she noticed itching over the left gluteal mass, which was accompanied by an erythematous eruption and the formation of a pustule; she cannot state which appeared first. Sept. 10-12, 1901, three lesions of the same nature developed in the ischio-rectal region, and, fearing an ischio-rectal abscess, she was entrusted to the care of my colleague, Dr. P. S. Conner, who opened the pustules, and finally made a deep incision, giving no relief and finding no pus. There now was a cessation of local symptoms for two weeks, which returned in the ischio-rectal region, in the form of deep swellings, which were repeatedly incised without result, and, her general condition becoming so bad that she had to go to bed, I was again called in. I found her in the following condition: The patient was emaciated, weak, very nervous, depressed; temperature 102° F; pulse 110, small and occasionally irregular. There was an erythematous rash upon her face, the eyelids and the whole region around the eyes was very puffy; the rash

extended over the neck, chest and back. The internal organs were normal, except that the spleen was enlarged, being felt below the free border of the ribs. During the next twenty-four hours she passed 900 cc. of urine, specific gravity 1015, no abnormal constituents and non-toxic. A blood examination gave the following: Red corpuscles, 4,102,000; white corpuscles, 5,200; Hb. 6.72% (Fleischl); polymorphonuclear cells, 79%; small lymphocytes, 18%; large lymphocytes, 2.5%; eosinophiles, 0.5%; no poikilocytosis; no nucleated red cells. About this time there appeared upon the right leg a condition characterized by the following appearances: The skin over the lower end of the peroneus brevis was edematous; the edema was hard, it did not extend beyond the ankle. Motion produced great pain, as did also pressure, especially at the insertion of the tendon. There was no pain in the joint, and the nerves were not sensitive to pressure. There was no pain at all when the leg was kept perfectly quiet. All the reflexes were normal.

The next day, Oct. 21, 1901, the hard edema has spread; there is also evidence of a small pustule over the place first affected, which was again incised but with no result.

Oct. 24, 1901. Another lesion, the same as the one just described, appears upon the left leg, with the same results.

Oct. 28, 1901. The same condition is noticed upon the right thigh, but as the edema is not so well marked, I find that the rectus muscle is swollen, almost simulating fluctuation but hard, over an area as large as the palm of my hand. The patient complains of pain in breathing, which is found to be due to an inflammatory condition in the intercostal muscles, which are found to be very painful upon pressure. The edema extends over the abdomen to the lower thoracic region. During all this time the general condition of the patient goes from bad to worse: the fever continues as a remittent fever, ranging from 100° to 102° F.; the pulse rapid, somewhat out of ratio with the temperature and more irregular, and the general appearance of the patient indicates a much more serious condition than is warranted by the local symptoms.

Oct. 29, 1901. Another lesion has developed upon the right thigh, and to-day the general condition becomes still worse: more or less general hyperesthesia, sleeplessness, severe headaches, total loss of appetite and great depression; temperature is normal; pulse from 96 to 108; the local condition stationary except in that the edema is disappearing. During the last week furfuraceous desquamation is taking place over all the parts that have been affected by the skin process, leaving pigmentation of the skin which never disappears entirely.

Nov. 5, 1901. The pulse is now 75 to 84. The muscular symptoms persist, and there is some improvement in the general condition.

Nov. 8, 1901. The last local manifestation presents itself in the form of an urticarial rash upon the left leg and thigh. From this time on there was a gradual improvement of local symptoms. Generally there is a return of the neurasthenic condition. There was a constant struggle to feed the patient. This could only be done by liquid food, and although

¹ Read at the eighteenth annual meeting of the Association of American Physicians, Washington, May 12, 1903.

she received at least 3,000 cc. of liquid food daily, the quantity of urine never went above 2,000 cc., the average being 1,400 cc., nothing abnormal being found in it and several additional tests for toxicity proving negative. The bowels during the whole course of the disease were constipated. There was much flatus, and when the bowels were moved by artificial means, the result was always a small, scyballous mass, extremely dry and very offensive. Repeated blood examinations showed about the same condition as noticed before. For obvious reasons neither microscopic nor electric examinations could be made, but electric examinations made during convalescence and at the time of writing show conclusively that the muscles which had been affected are atrophied. There is no reaction to either galvanic or faradic current. It is of interest to note that on Nov. 3, 1901, inunctions of Crede's ointment were begun and that the local manifestations of the disease disappeared two days afterward.

The convalescence was extremely slow, and it was only in the fall of 1902 that she had gained fifteen pounds and was able to walk about with any comfort. An examination on Mar. 20, 1903, shows pigmentation about the face, but to a much less degree than before; the muscles affected are still slightly tender upon pressure and motion. The patient states that movements requiring special efforts of the muscles affected are carried out very clumsily; she states that in mounting her horse she finds her former elasticity is gone, and that she requires an unusual amount of assistance in mounting and dismounting.

At the present time, in view of the publications of Pfeiffer and of Lorenz, it is necessary to demonstrate that this case is one of dermato-myositis, for in 1893 Lewy reported twenty cases of this disease, which at the hands of Pfeiffer (1896) were reduced to twelve, although two cases apparently characteristic (Herz and Frankel) had been reported in the meantime; and Lorenz (1898) is willing to add only three more to Pfeiffer's list; this, notwithstanding the fact that nearly thirty cases have been reported under the various titles of polymyositis progressiva acuta, polymyositis acuta or dermato-myositis before Pfeiffer's publication, and four more up to the date of Lorenz' article. Unverricht (1887), who first described the disease as polymyositis progressiva acuta, changed this name to dermato-myositis (1891), because a case reported by Plehn showed that the disease was not progressive, as far as a fatal termination was concerned, and also because he wanted to give prominence to the lesions in the skin. Lorenz does not accept this case, so inflexible are his diagnostic requirements, but puts it into another class of muscular diseases. There is no doubt but that the classification of cases reported as dermato-myositis requires great care, but, on the other hand, there are certain criteria which are sufficient to establish the fact that an individual case belongs to this class.

Unverricht defines the disease as one characterized by fever, enlargement of the spleen, edema, acute marked inflammatory condition of the muscles, especially of the extremities, with extension to the muscles of respiration and deglutition, not affecting those of the eyes, the tongue and the dia-

phragm, and an eruption presenting the appearance of an urticaria-like or erysipeloid eruption. In his second paper he adds hemorrhagic eruptions as of special importance, because of their constancy. If we compare this with Pfeiffer we find an essential agreement; he adds that the diagnosis is easy when Unverricht's description is followed, and that, for the present, chronic and abortive forms must not be accepted. Lorenz adds the following in his general description: There is usually a prodromal period of several days, malaise, rheumatoid pains, and with these an ascending type of fever to 40° C.; then the symptoms on the part of the skin, cellular tissue and muscles; the edema usually beginning upon the face, especially on the eyelids; usually enlarged spleen; constantly profuse sweats. The disease attacks a large number of the muscles of the body; in most of the cases the muscles of the trunk are implicated (intercostal muscles and diaphragm) and in many cases those of the larynx and pharynx. In a few cases the muscles of deglutition and respiration are not affected, or there may be improvement in the existing affection of these muscles when the patients do not die. He has added to Unverricht's description: The prodromal period, the sudden onset with fever, the beginning of the process as far as the skin is concerned upon the face ("gewöhnlich"), the constancy of profuse sweats, and the involvement of a large part of the muscular apparatus, not especially of the extremities, and the eruption, not so limited as to character. If we compare the symptoms of Unverricht and Lorenz, we find that the latter, having a greater number of cases from which he could generalize, has extended the clinical picture, but, upon the whole, the diagnosis of the disease would have to be determined by the cardinal symptoms,—those on the part of the skin, the muscles, the connective tissue, and the general symptoms. On the part of the skin we have the eruption and the sweats; the edema is an inflammatory edema; the muscles are swollen, painful to touch and upon motion; the general symptoms are fever, enlarged spleen, those due to affections consecutive upon the involvement of muscles in various parts of the body. The onset of the disease may be very gradual or very sudden; the course of the disease may be acute, subacute or chronic. Of these symptoms, fever is most commonly present, as well as the symptoms on the part of the skin, the connective tissues and the muscles. Yet Unverricht reports a case in which only the three latter groups of symptoms were present. This is reported tentatively by himself, and is accepted fully by Lorenz, although fever, sweats and an enlarged spleen are absent as well as the characteristic eruption of Unverricht.

If we now analyze the case presented, we will find as follows: It is difficult to determine when the beginning of the disease occurred, as the patient did not come under my observation until there was inflammation of muscle and of skin (Aug. 20, 1901). According to her own account there were prodromal symptoms before the first onset, and a cessation of all symptoms before the second onset of the disease. This second onset was in my opinion characteristic of the disease in that there were present symptoms on the part of the skin, the connective tissues, the muscles and general symptoms. The skin symp-

toms were erythema, pustules and urticaria; they began, as they do in a large number of cases, about the face, involving the eyelids. The muscles of the thighs, legs and the intercostal muscles were affected. The edema was the characteristic edema, and extended over the affected parts and over the abdomen and lower thoracic region. The general symptoms were fever, enlarged spleen, increased pulse-rate, depression and symptoms on the part of the urinary and digestive apparatus. The lesions of the skin led to pigmentation, as in Löwenfeld's case. The inflammation of the muscles led to atrophy. The disease lasted two and a half months, and the convalescence was very slow. The exceptional conditions in this case may be noted as follows: If we consider the beginning of the disease from Aug. 20 we will have to look at its complete outbreak as a relapse, which does occur in this disease. The first onset which, at best, can be looked upon as belonging to the abortive type, may also have been the cause of the second attack. As to the existence of abortive attacks, we have already seen what Pfeiffer says upon the subject, and as applied to this case I should certainly hesitate to call it one, in that there were symptoms only on the part of the skin, rudimentary affection of the muscles and no edema. Yet it is impossible to decide this question, if we accept rudimentary forms at all. If we reject this form, then the solution is easily arrived at, but this would be in direct opposition to the knowledge derived from our observation of other diseases, in that we find abortive forms in all diseases. The skin symptoms were somewhat different from those of any of the cases reported, in that there were found pustules; this could not be looked upon as militating against the diagnosis, as in one of Oppenheim's cases there were ulcers. There were also no sweats; on the contrary, the skin was constantly dry, so much so that the patient complained of it. Lorenz in ascribing a constancy to this symptom overestimates their frequency in saying they are constant, in that they are only found in eight of his fifteen cases. There were also symptoms on the part of the heart; this was a neurosis, as the patient had at times suffered with the same condition long before she had her dermatomyositis, and except on direct provocation she has been free from it since. But even if it had been an organic disease it would not affect the diagnosis, as Potain's case had a fresh endocarditis, and it is no longer accepted that the muscle of the heart remains unaffected (Pfeiffer).

In a number of cases (Senator) the pulse-temperature ratio was found as in the case reported. Depression and sleeplessness have also been reported (Wagner, Hepp, Potain). Disturbances of the gastro-intestinal tract also are accepted (Unverricht), but not much stress is laid upon this condition. One of Senator's cases had an attack of botulism from eating spoiled crabs, but in none of the recorded cases do I find so much persistent trouble as my patient had. In no other case was there noted oliguria as was found in the one reported. On the day the patient's blood was examined she passed 900 cc. of urine with low specific gravity (1015), and the specific gravity of the blood (chloroform-benzine mixture) was 1033; this was not due to the low quantity of Hb, which was 70%, as

with a specific gravity of 1038 of the blood the Hb ought not to exceed 35%. In this case there was a remarkable retention of fluid in the blood, which was not excreted either by the kidneys, the skin or the bowels; how much was exhaled it was impossible to determine. We have then in this case all the typical symptoms of dermatomyositis present, besides those especially noted, and with this the diagnosis seems clear as, for the present, the disease must simply be looked upon as a syndrome. At least this must be the case until the etiology has been worked out. Many things have been accused of producing this disease: botulism and intestinal autoinfection (Senator), in four cases there was found tuberculosis (Strümpell), CO poisoning (Litten), gregarines (Unverricht, Strümpell, Köster) which have never been found, overexertion (Löwenfeld), toxemias and infections (Hepp), and, finally, vasomotor disturbances due to some unknown cause (Köster). In one case (Frankel) there was a septicopyemia from a purulent otitis media; it is sufficiently characteristic to be classed with dermatomyositis. Nearly all authors reject it (Bonnet, Pfeiffer, Lorenz) because it is manifestly due to sepsis, yet Senator accepts it as dermatomyositis, but prefers to have it called a secondary dermatomyositis. The septic origin of this disease is strengthened by the occurrence of a mygdalitis (Hepp) and stomatitis (Strümpell) as a possible source of infection, but yet in the majority of cases, as in the one here reported, the clinical picture varies very much from the average case of septicopyemia. The only possibility of this case being looked upon as a sepsis would be the one that before the intermission of symptoms there was an infection from the skin; on the other hand the skin lesion, that is, the pustules, were present in the recrudescence of the affection. Köster's hypothesis is very seductive, and many things in the case reported point to the existence of serious vasomotor disturbance. Indeed, part of the manifestations of the skin are comparable with the conditions found in angio-neurotic edema and others with those in scleroderma. If anything at all has been shown as to etiology it is that apparently the disease may be produced by a number of causes. Until these are worked out we can only rely upon symptomatology for diagnosis, and the symptoms are being added to with an increase in number of cases reported. But it seems to me premature to accept the diagnosis unless there are present sufficient symptoms and sufficiently characteristic. The clinical picture of a case of dermatomyositis, when typical, is one not to be forgotten, and the diagnosis is easy only when it is typical and when one has already seen a case.

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POLIENCEPHALOMYELITIS AND ALLIED CONDITIONS.¹

BY E. W. TAYLOR, M.D., BOSTON.

From the Neurological Department, Massachusetts General Hospital.

AFFECTIONS of the central nervous system characterized by acute or subacute onset, with signs of general infection, followed by focal paralyses of varying character, form a large class of imperfectly understood conditions. This group is enlarging as our experience and knowledge grows. Of the conditions included in the class to which I refer, poliomyelitis has undoubtedly been the longest recognized and the most carefully studied, both from the clinical and anatomical side. Knowledge of this disease of positive scientific value dates back nearly fifty years, to the earliest certain description by Duchenne in 1855. The far less striking symptomatology of various allied cranial, pontine and bulbar affections naturally deferred their adequate description and attempted classification to a very much later date. In fact, a comprehensive classification of these varied inflammatory conditions seems even yet not forthcoming. A stimulus to the study of focal inflammatory affections of the brain was given by Wernicke² in 1881 through his publication on the subject of a peculiar form of encephalitis characterized by an acute hemorrhagic inflammation involving cranial nerve nuclei in the gray matter of the third and fourth ventricles and of the aqueduct of Sylvius, usually occurring in alcoholic patients. This he called acute superior hemorrhagic poli-encephalitis. In 1884 Strümpell³ attempted to show the dependence of certain cases of infantile cerebral paralysis upon a cortical encephalitis, a proposition which aroused much discussion, and has not met with universal acceptance. As with many other fields in neurology, Oppenheim's name is closely associated with the development of our knowledge of this general subject, by papers written in 1895⁴ and 1899,⁵ and by his exhaustive monograph on the topic "Encephalitis" in the Nothnagel series. A large number of contributions have appeared within the last few years, with comparatively few valuable postmortem investigations.

¹ Presented, by title, at the meeting of the American Neurological Association, May 12, 1903.

² Wernicke: Lehrbuch der Gehirnkrankheiten, 1881, §47, p. 229. Analogies between certain lesions of the brain and cord are foreshadowed in this early work.

³ Strümpell: Tageblatt der Naturforscherversammlung zu Magdeburg, 1884. Also, Deutsch. Arch. f. klin. Med., xlvii, p. 53, 1890-91. The latter paper contains an important discussion on the subject of encephalitis in relation to so-called infantile cerebral paralysis and also on the relationships of various inflammatory affections of the brain and cord.

⁴ Oppenheim: Deutsche Ztschr. f. Nervenhe., vi, 1895.

⁵ Oppenheim: *Idem*, xv, p. 1, 1899. In these publications exhaustive bibliographical references may be found.

A very recent paper by Alice Hamilton⁶ on a case of Patrick's, with an excellent microscopic study and a review of the important literature on the pathological side of poli-encephalomyelitis, brings the general subject up to the present time.

The researches of the past twenty years have clearly brought out the fact that a condition usually inflammatory, of more or less sudden onset, may occur in various portions of the brain or spinal cord, or both, showing predilection for the gray matter and giving rise to secondary symptoms dependent upon the part involved. The more important of these conditions are: Encephalitis, encephalomyelitis, acute ophthalmoplegia, acute poli-encephalitis, superior and inferior, acute or apoplectiform bulbar paralysis, poli-encephalomyelitis and poliomyelitis. From this large general group I wish to call particular attention on the clinical side to the rare combination of symptoms which is known and sufficiently well described as acute poli-encephalomyelitis, a probable inflammatory affection of portions of the gray matter of the brain and spinal cord.

CASE I. POLIENCEPHALOMYELITIS (POLIENCEPHALITIS SUPERIOR AND INFERIOR WITH CERVICAL ANTERIOR POLIOMYELITIS).

James N. (Out-Patient Neurological Department, Massachusetts General Hospital, No. 18,863), twenty-seven years old, unmarried, an American by birth, an electric lineman by occupation, was taken ill Dec. 26, 1897. His stomach was disordered; he had a sensation of numbness, and considerable general pain. He gave up his work for several days, and then resumed it, but again had nausea, chilly sensations, possible fever, without headache. He worked more or less during this period, but did not feel thoroughly well. Finally, about Feb. 1, he grew worse and went to bed, with attacks of vomiting. About March 1, various paralyses (to be described later) had completely developed. In December he had noticed some deafness of the right ear, but other paralyses came on insidiously during the three months of his illness up to March 1. He was unable, Dec. 5, 1899, to remember whether or not the very marked paralyses, for which he sought advice, came on gradually or suddenly. During March his weakness (paralysis) increased. He had no cough, and his legs were never involved during the illness.

He came to the Neurological Clinic, Massachusetts General Hospital, Dec. 5, 1899. Examination showed him to be a somewhat unusually intelligent man. He had been told that the illness described above was influenza, an opinion with which it is entirely possible to agree. His earlier history had no bearing on the present condition; he had not had syphilis, but had undergone a gonorrhea seven years before; he had never taken alcohol in any form to excess, and none at all for the two years preceding his illness. Naturally he was a strong man, but had lost much weight, some of which, however, he had begun to regain. His physical condition, apart from extensive paralyses, was good, and he had shown a constant tendency toward improvement. He had never had trouble with the bladder or rectal sphincters.

Detailed examination showed the following facts (Figs. 1 and 2):

Cranial nerves.—No disorder was found in the sense of smell. The optic nerves showed no pathological alteration, beyond the fact that probably as a congenital condition the retinal arteries and veins were tortuous. Vision was also reduced about half in the right eye. There was complete paralysis of the external rectus of the right eye, partial of the left. There was no paralysis of accommodation and the pupils reacted well to light (Dr. F. E. Cheney). In the distribution of the fifth nerve there was a very slight diminution of sensation by fine tests on the right side of the face beneath the orbit and on the cheek.

⁶ Hamilton: Journ. Med. Research, viii, p. 11, 1902.

Movements of the jaw muscles on the right side were much impaired; chewing movements were possible only on the right side. The lower jaw could be voluntarily moved toward the left only as far as the line of the upper teeth (pterygoid), very much less than movement toward the other side. A slight weakness of the right masseter was however detectable on tight closing of the jaws. The jaws were also imperfectly opened, $1\frac{1}{2}$ inch, in spite of the fact that the patient had an unusually large mouth (fifth and seventh nerves to the digastric muscles).

The *facial nerve* was involved in all its branches on the right side, but had shown constant improvement. *Electrical examination* gave no response to strong faradic currents, direct or indirect; to galvanism there was normal response from nerve and muscle on the left side; on the right CaC currents of 9 m. a. applied over the nerve gave only the slightest slow contractions of muscles about the mouth. The same strength of current applied to the muscles gave slightly better contractions, slow in character, with $\text{CaC} > \text{AnC}$; partial R. D.



FIG. 1.

Hearing was much impaired on the right side; bone conduction was much reduced, and watch-tick could be heard only at a distance of less than an inch. There was also slight disturbance of hearing in the left ear.

Taste was not affected. There was no regurgitation of food or difficulty in swallowing. There was slight deviation of the uvula; the left vocal cord was stationary (paralysis of recurrent nerve); the right cord moved freely but with slight loss of abduction; there was slight movement of the tip of the left arytenoid (Dr. A. Coolidge, Jr.). The tongue, *hypoglossal nerve*, was protruded imperfectly, and toward the left; all movements were imperfect, but there was no visible atrophy. The muscles supplied by the *spinal accessory nerve* were apparently strong, but there was considerable sagging of the left shoulder.

In addition to these cranial nerve involvements, the trunk and extremity muscles were in general affected as follows: There was a marked paresis of the intercostal muscles, and of the pectorals on both sides with indications of fibrillation. There was slight spinal curvature with the convexity to the left. The scapula stood out more than normally from the chest wall, and the rhomboids were weak, especially of the right side. The arms could with difficulty be raised above the horizontal; weakness of both deltoids. All the muscles of the upper arms were flabby, and the muscles of the forearms very much

atrophied, especially on the left side. The arms were perfectly flaccid, weak, with the deep reflexes retained on the right side and lost on the left. There was atrophy of hand muscles, notably of the interossei (Figs. 1 and 2).

The interossei and other small hand muscles in general responded with sluggish or no contraction. In all the muscles tested there was a quantitative diminution of excitability to galvanism, but no true R. D.

The legs showed no atrophy. The movements were free and executed with good strength. The knee jerks were normal; there was no ankle clonus, a slight plantar reflex, and normal cremaster, abdominal and epigastric reactions.



FIG. 2.

Sensation: Except for the slight disturbances in the face already alluded to there was no discoverable alteration of sensibility except that on the left side opposite the umbilicus there was an area, about as large as one's hand, in which the appreciation of pain, touch and temperature was lost. There was also a small area of subjective numbness below the elbow on the left arm.

The *heart* was normal; the breathing somewhat labored on account of muscle involvements; he had lost about thirty-five pounds in weight, some of which, as before stated, he had begun to recover. In general he was a well man, except for the physical disabilities to which reference has been made. He showed a constant tendency toward improvement.

To summarize the important points in this case, we have the history of an acute illness (influenza?), followed, in the course of three months, by widespread paralysis accompanied by atrophy and electrical alterations involving most of the cranial nerves including and below the fifth, also the arms, shoulders and hands, and sensibility in certain areas to a less but still definite degree, with outcome in recovery with muscular and slight sensory defect. In spite of the lack of confirmatory post-mortem evidence, it is certainly justifiable to make a diagnosis in this case of a typical poliomyelomyelitis, from the character of the onset, the distribution and persistence of the paralysis, the muscular atrophy, with definite changes in electrical reactions at the end of two years, and the tendency merely, toward improvement. The persistent signs clearly point toward focal destructive lesions, presumably of inflammatory character, chiefly localized in the gray matter of the brain stem and upper cord.

The opinion is justified, though it must be made with caution in view of Oppenheim's⁷ experience, that lesions of recognized character exist in the various cranial nerve nuclei and in the cervical cord to account for the persistent disabilities.

The following case is of interest both because of its similarity in its early course to the foregoing and also because of the apparently almost complete restitution of function of the affected muscles and nerves:

CASE II. POLIENEPHALOMYELITIS (INVOLVEMENT OF PONS AND CORD).

J. McR. Seen May 24, 1900, in consultation with Dr. S. O. Baldwin of South Framingham, Mass., was an unmarried man of thirty-two, a stableman by occupation.

He was a robust, strong man, and his previous history had been good. He claimed to have had no venereal disease and was not alcoholic. About three weeks before, he had begun to feel ill, with poor appetite, diminished power of work, chilly sensations, etc. This continued for about a week, during which he remained at his work. Toward the end of this first week he noticed a tingling sensation in one foot, which extended in a short time to the other extremities. In this condition and feeling ill, he went to Dr. Baldwin's office, and while there fell to the floor, because of rapidly increasing weakness which he had noticed only in mild degree before. He was taken to the hospital, where a practically complete paralysis of the legs quickly developed. His arms were also very markedly involved, though to a somewhat less degree than the legs. Power over the sphincters was not impaired. His appetite was at this time good, but his sleep was much disturbed. The pulse had averaged about ninety; the heart had shown no abnormality. The temperature had been about normal, excepting one day, when it was elevated, thought to be due to the excitement of too many visitors. Bowel and bladder functions remained normal. For two days, beginning May 22, an internal strabismus and an involvement of the facial nerves had been noted.

Physical examination, May 24, showed the following condition of the *cranial nerves*: The *first* and *second* were uninvolved; the *third* showed the pupils equally dilated, with normal light response and no muscular palsies, so far as could be determined by the tests used. The *fourth* was probably uninvolved; the *fifth* showed normal sensibility in its distribution, with a probable slight paresis of the motor portions. The mouth was imperfectly opened (*seventh*, *fifth*?). There was definite paresis of the left *sixth* nerve. All branches of the *seventh* nerve on both sides were involved to a very marked degree. The *eighth* to the *twelfth*, inclusive, were normal.

The *arms* were markedly parietic; there was practically no strength in the hands. The *legs* were in a state of complete flaccid paralysis, except for slight movements of the toes. There was no apparent muscular atrophy; it was not possible to make an electrical examination.

The *knee jerks* were not obtained, and the *superficial reflexes*, plantar, cremaster, abdominal, epigastric, were absent.

Sensibility was everywhere preserved, excepting for a doubtful slight loss of muscle sense in the toes; no astereognosis. A slight defect in speech was evidently due to the double facial paresis. His mind was perfectly clear and had been so from the first.

On July 19, 1900, Dr. Baldwin reported steady improvement; walking was possible without aid of cane or crutch; his lips remained parietic; his eyesight was normal, except for occasional diplopia when overtired. A month later the improvement had continued. He could walk without assistance and could use his arms to a certain extent. The facial nerves had not recovered.

A letter from Dr. Baldwin, dated Jan. 13, 1903, states that the patient disappeared from his observation in the summer of 1900, but that he has learned indirectly that he is now able to do hard farm labor, and looks and seems well. From this it would appear that the recovery of muscular power had been practically complete.

⁷ Oppenheim: *Loc. cit.*, 1899.

In this case, after an acute attack of unknown character, there was a rapid development of motor paralysis, involving all four extremities and the sixth and seventh cranial nerves to marked degree, with probable recovery, without defect. The resemblance to Case I is apparent. The onset in both was similar, though, so far as ascertainable, more acute in Case II. The resulting paralyses in both cases involved both cranial and spinal motor nerves, with emphasis on the cranial nerves in the first and on spinal nerves (both arms and legs) in the second. The first might have been called a polienccephalitis with an accompanying poliomyelitis, and the second a poliomyelitis with a relatively slight complicating localized polienccephalitis. The two are, however, very evidently variations of the same general process, and are properly included together as cases of polienccephalomyelitis. The acute onset of paralysis with abolition of knee jerk, under conditions apparently of general infection, strongly suggests poliomyelitis, especially as observed in the adult. The point of chief interest, however, is the fact of the apparently complete recovery of motor power, in distinction to Case I, in which, although at first of far less extent, the paralysis and wasting of the arm muscles was marked at the end of two years.

A further illustration of very marked involvement of spinal motor neurones, with coincident, though slight, affection of one seventh nerve with recovery, is given by the following case:

CASE III. POLIENEPHALOMYELITIS (INVOLVEMENT OF CORD AND SEVENTH NERVE).

W. W. C. (Out-Patient Neurological Department, Massachusetts General Hospital, No. 23,523), fifty-six years old, married, an American by birth, by occupation a factory manager, gave this history: He was not exposed to lead or arsenic in his work, or at home; he was a large water drinker, but took little tea or coffee and no alcohol; he had had no infectious disease preceding the attack about to be described, and denied venereal infection. Beyond so-called "bilious attacks" when a young man, he had always been well, and rather unusually industrious in his work.

Preceding his illness he had been working very hard, including Sundays, and had had considerable business anxiety for many years. Feb. 9, 1903, he was exposed to a violent snowstorm, but was not especially chilled. The following two days he felt as well as usual. On the third day, Feb. 12, he noticed a beginning weakness of the legs, especially on going upstairs; he could walk without discomfort on a level; he thinks he had no chill or elevation of temperature, and there was absolutely no pain. At noon of the same day he noticed weakness of the arms, and later increasing difficulty in the use of his legs, although he could still walk. The next day his legs were worse and his hands felt heavy; he sent for a physician, who noted a slight elevation in temperature. He found it difficult to rise from a lying position, but was up and dressed, finding, however, increasing difficulty in getting about. From this time on he continued to grow gradually more and more helpless, and could not turn in bed unaided. His bowels were loose, his mind clear, he had no headache and was without pain, except for an "aching" sensation in the thighs, due, no doubt, to muscular weakness. He remained essentially in this condition three weeks before going to the hospital. He was practically helpless, although he could still write with much difficulty. During this period a definite paresis of the left seventh nerve developed, and there was possible slight difficulty in swallowing. There was no diplopia or involvement of other cranial nerves.

He was admitted to the Massachusetts General Hos-

pital March 13, in the service of Dr. W. W. Gannett, to whom I am indebted for an opportunity to study the case. His temperature then was 101.8°; pulse 110; respirations 24; the temperature for three or four weeks remained slightly elevated, with one exacerbation, due to an intercurrent cause. The pupils were equal and reacted to light; the fundus was normal; there was paresis of the left seventh nerve involving all branches and of all body and extremity muscles, without disorder of sensibility. The knee jerks were absent; plantar reflexes, normal; no Kernig sign. Hgb. was 85; leucocyte count 13,500. The urine at one time showed the slightest trace of albumen and occasional casts, with a specific gravity of 1020. The heart gave a slight systolic murmur at the apex, with a possible accentuation of the second pulmonic sound.

During the month of his stay in the hospital he steadily improved, until he was able to walk feebly and the paresis of the seventh nerve had practically disappeared; he was discharged to the Out-Patient Department. Examination, April 13, gave the following result: No involvement of any cranial nerves, except the seventh and possibly the motor portion of one fifth nerve (difficulty in moving the jaw toward the left). *Muscles*: Head movements sufficiently strong; trapezii normal and rhomboids normal; deltoids fair; biceps somewhat weak; supination of forearm good; grip weak, but all movements possible; quadriceps weak and weakness of extensors of leg, right greater than left; difficulty in rising and sitting; extension of feet at ankles imperfect, especially on the right. There were no indications of fibrillation in the muscles. *Sensibility* was everywhere normal; no Romberg. The *knee jerks* were present, the left more active than the right; the front tap and Achilles reflexes present, left greater than right. None of the superficial reflexes were obtained. Heart and pupils were normal. *Electrical examination*.—Quantitative diminution to faradism of left seventh nerve, direct and indirect. To galvanism, slight response from nerve; increased from muscle; somewhat slow. $\text{CaC} > \text{AnC}$. No alterations in forearms, hands or right foot.

There has been steady improvement in this case; when last seen, June 6, he was able to walk without crutches, and was apparently rapidly recovering his full strength.

The similarity of this case in its early course to the symptom-complex of acute ascending paralysis, the association with it of what would commonly be called a peripheral facial palsy, the vague history of infection, the whole condition following an exposure, as the only obtainable etiological factor, are points of interest in the interpretation and classification of the condition. It suggests also the shadowy border-line between so-called central and peripheral affections, and forces upon us the conviction that in certain of these cases we are dealing with an infective agent, which falls far short of leading to destructive changes in the brain or cord. The process was limited to motor neurones, began as an adult poliomyelitis might, but recovered. The analogy between this and more violent, demonstrable inflammatory processes should not be lost sight of.

The following case illustrates a similar process to those described, but limiting itself to the lower cranial nerve nuclei—poliencephalitis inferior. Dr. G. L. Walton⁸ has recently reported a case, interesting in this connection, in which there was an associated superior and inferior poliencephalitis, also an unusual combination. Cases of uncomplicated superior poliencephalitis (ophthalmoplegia) are much less uncommon.

CASE IV. POLIENCOPHALITIS INFERIOR.

A. McL. (Out-Patient Neurological Department, Massachusetts General Hospital, No. 21,605 B.), gave the fol-

lowing history: He was a deputy sheriff from Nova Scotia, sixty-two years old, who had led an active life without notable illness. He had always been temperate in his habits, and denied venereal disease.

About three months before the onset of the illness, about to be described, he began to lose weight, which amounted finally to about forty-five pound. His stomach came out of order; there was a sensation of heat with eructations. He felt generally weak, but was able to do his work. The first threatening symptom he noticed was a sense of "black rings" in the air, "a kind of blackness over everything"; he was unable to focus his eyes properly. This occurred in March, 1901. Glasses did not essentially help this condition. The latter part of the following month a paralysis of the left side of the face suddenly developed; this was followed in about a week by a paralysis of the other side of the face. Two days after this he was aware of a sensation of numbness in the right arm, side, leg and foot. This was temporary. The face remained paralysed, and a sense of oppression and difficulty in opening his eyes, with which he was at first annoyed, improved. During the early part of his illness his speech is said to have been unintelligible. From the first he had had difficulty in swallowing, but none in masticating; the former had improved for a time and then grown worse again. He was under the impression that he had had some disturbance with the sense of smell; he had noticed no trouble with his ears. There had been some head pain and considerable pain in the back. In general he had improved. There was no history of influenza.

Physical examination Oct. 11, 1902, showed the following abnormalities in the distributions of the cranial nerves: *Smell* was unaffected; the *optic nerves* (Dr. A. G. Morse) showed no fundus changes in the left eye, and a pallor of the temporal side of the disc in the right eye; there was no hemianopsia. The *external muscles* of the eyes showed no paralysis, as determined by ordinary tests. The pupils reacted sluggishly to light, better with accommodation; they were equal and sufficiently regular in outline. There was no disturbance in the sensory divisions of the *fifth nerves*. The motor portions were also uninvolved, unless a difficulty in opening the mouth may be in part attributed to that nerve from its supply to the digastric muscles. The *facial nerves* were both markedly affected, all branches being involved. There was a marked tendency to secondary spasm in many of the facial muscles. *Electrical examination* gave a quantitative diminution of reaction to faradism, somewhat greater left than right. The same condition was found by galvanic stimulation. The $\text{CaC} > \text{AnC}$ on both sides and the reaction in certain muscles was slow, a highly modified R. D. Satisfactory examination of the lower branch was not possible, owing to a heavy beard. The great difficulty in opening the mouth was probably attributable to the involvement of the facial nerves, in their innervation of one belly of the digastric muscles. *Hearing* was impaired to a certain degree in both ears, but more on the left. Bone conduction was preserved in both. The *vagus-glossopharyngeal* group showed slight changes. Taste was somewhat involved (chorda tympani?); sweet and salt were recognized, acid doubtful, and bitter (quinine solution) was not appreciated. There was a slight paresis of the soft palate; the larynx was normal; swallowing was done with difficulty; liquids were taken more easily than solids, probably on account of difficulty in opening the mouth. There was and had been no actual regurgitation. The *spinal accessory* nerve in its distribution to the trapezius on both sides was apparently involved, as shown by a marked difficulty in the backward bending of the head. The *hypoglossal* nerves were also involved to a certain degree. The tongue was protruded with difficulty to about half an inch beyond the teeth, and was imperfectly movable when in this position. In protrusion the tongue was markedly concave on its superior surface.

There was no involvement of motor spinal nerve and no disorders of sensation. The *knee jerks* were normal; the pulse when examined was 60, of good quality, without evidence of arteriosclerosis, and the heart showed nothing noteworthy. The urine contained no albumen. In general, the patient had markedly improved; his chief complaint was of difficulty in swallowing.

⁸ Walton: Bost. Med. and Surg. Journ., cxlii, p. 109, 1900.

In this case there is a wholly uncertain history of an acute infection, but an evident failure in health from unknown cause, to which was super-added in a relatively short space of time paralyzes involving to an extreme degree, but limited to, the lower cranial nerves, with decided improvement a year and a half after the onset of the disease. The analogy to the previous cases is self-evident; the sharp limitation of the process to the nerve nuclei of the bulb and lower pons is noteworthy, particularly since it could not be classed as an acute apoplectic form bulbar paralysis.

A still more limited process is occasionally seen, in which both seventh nerves are involved, and in which a question of diagnosis may well arise as to whether such an isolated involvement should be regarded as a sharply localized polienccephalitis or as a double palsy of the so-called peripheral type. Objections to both suppositions may be urged on the clinical side, and pathological verification of so rare a condition is not yet forthcoming.

The two following cases are worthy of report in this connection:

CASES V AND VI. DOUBLE FACIAL PARALYSIS (POLIENCCEPHALITIS?)

(a) Mrs. K. H. (Out-Patient Neurological Department, Massachusetts General Hospital, No. 19,125), a married woman of forty, was first seen Feb. 6, 1900. She gave the following history: For two months preceding she had had pain in the left side of the face which later extended to the right side. The sight, she thought, was affected, especially on the left side. For three or four weeks she had not been able to close her eyes completely, and she had had difficulty in closing her mouth. The tongue seemed "stiff," and the saliva thick. She also complained of pain in the back, and a general feeling of weakness. She had lost her appetite; the bowels were costive; sleep poor; menstruation regular. She had had six children, four living, the youngest three years old, and two miscarriages, the last one a little more than a year before. She had an iritis, probably of about one year's standing. Her temperature at the first examination was 99, and pulse 128. She was not alcoholic, and had no history of influenza. There had been no headache; on one occasion a doubtful diplopia; her arms and legs had at no time been affected.

Physical examination showed no involvement of cranial nerves, excepting the seventh on each side, the right somewhat more than the left. The upper branches in both were affected. *Electrical examination* gave a marked quantitative diminution to faradism on both sides; there was slight galvanic response, both direct and indirect, with slow contractions, partial R. D. The outline of the left pupil was irregular (iritis), and the light reflex sluggish. The external muscles of the eyes were of normal balance, and the fundus was normal. The knee jerks were present and the plantar reflex normal. The patient improved somewhat under iodide of potash, mercury and temporary hospital care. In Jan., 1902, she was again seen, and showed continued improvement as regards the facial paralysis. She could close her eyes with comparative ease, but her face still had a drawn and somewhat unnatural, expressionless look. She complained of sensations of stiffness about the eyes and mouth, and the voluntary muscles were evidently moved with difficulty. There were also a number of vague subjective sensory disorders, and the urine was high colored, but without albumen.

(b) James M. (Out-Patient Neurological Department, Massachusetts General Hospital, No. 23,232), thirty-two years old, married, a Scotchman, and a coachman by occupation, came to the hospital Jan. 20, 1903, with the following history: He had always been well and strong, and not given to drink. Four weeks before, he went to bed, feeling perfectly well, after his usual daily employment of driving not on a particularly cold or blustering

day. He awoke with a paralysis in about equal degree of both seventh nerves, with pain about the ears, in the temporal region, and the usual sensation of stiffness and awkwardness of the facial muscles. He was annoyed by pain through his eyes, and lachrymation, but was otherwise well, and suffered no loss of appetite, nor so far as ascertainable any rise of temperature. He had had some headache for the past two weeks.

Examination showed no other cranial nerve involvement beyond the two seventh nerves. Slight voluntary movements of the facial muscles were possible, somewhat more pronounced on the left side. The muscles over which he had most control were those of the chin, on the right as well as left side, although the other muscles of the right side were in great measure paralyzed. The eyes could be only partially closed, and the upper branches of the nerves were equally involved with the lower.

Electrical examination.—With faradic currents as strong as could be borne, very slight response from nerve, less on right than on left. With the galvanic current 5MA, slow, feeble reactions from the muscles were obtained of small amplitude. On the forehead $An=Ca$; over the lower facial muscles $Ca>An$.⁵

Syphilis as a cause of the paralysis in this latter case should be considered, though its agency, on the whole, seems unlikely.

In the foregoing two cases, whatever the nature of the causative lesion may have been, it is evident that its manifestations were sharply limited to the facial nerves. In Case *a* there had been a period of general ill health followed by a paralysis of both facial nerves, with a tendency toward recovery, though less than one might expect in the so-called peripheral variety. In Case *b* the onset bore all the characteristics of an ordinary facial palsy involving both nerves. There was no prodromal febrile condition; the patient woke with the paralysis almost completely developed after a day of his usual good health. Signs of infection were wholly lacking. The rarity of bilateral facial paralysis is, however, so great that the possibility at least of a nuclear involvement (polienccephalitis) must be considered. The two cases are mentioned here because of their rarity and also to illustrate the possibility of the existence of an exceedingly small focal inflammatory lesion involving isolated nerves.

It would not be difficult to multiply cases in which the diagnosis of one or another form of polienccephalitis and allied conditions has been made. Within the last three years eight cases have been so diagnosticated at the Massachusetts General Hospital, excluding the more chronic forms. The purpose of this paper is rather to draw attention to the unusual condition of polienccephalomyelitis, and to attempt a consideration of some of the relationships of the acute, presumably inflammatory conditions arising in the nervous system, of which this is a striking and suggestive type.

(To be continued.)

CONGENITAL INSPIRATORY STRIDOR.

BY D. CROSBY GREENE, JR., M.D., BOSTON.

DURING the past three years five infants have been brought to the Boston Children's Hospital on account of an apparent difficulty in breathing, accompanied by a crowing sound. The following case is a typical one:

⁵ For a brief report of a similar case see, Preston: Med. Record, Aug. 11, 1900, p. 237.

L. M., a girl four and a half months old, was brought on Feb. 12, 1902, with a distinct inspiratory stridor, which had been noted by the mother immediately after birth and had increased up to the time of the visit. It was present during sleeping and waking and was louder when the child cried or made any exertion. In other respects the child had been well. On examination she appeared well developed and nourished and of good color. With each inspiration there was a stridorous, musical note, but no marked dyspnea and no obstruction to nasal breathing. The expiration was quiet and free and the voice appeared normal, the cry being perfectly clear. Examination of the chest by percussion was negative. On auscultation normal vesiculatory respiration was heard throughout the chest, but during inspiration the stridor was communicated to all parts of the chest.

There was slight supra-sternal retraction and the larynx was lowered with each inspiration. Laryngoscopic examination revealed an infolding of the lateral borders of the epiglottis backwards so that they almost touched posteriorly, converting the epiglottis into a tube with a narrow slit behind. Further than this my examination was negative.

The case was next seen a month later, at which time no change had taken place in the stridor nor in the general condition. After that the child was lost sight of until April 22, 1903, when she was a year and a half old. The stridor had then entirely disappeared and the breathing was normal. The mother stated that the sound began to diminish at the eleventh month, disappeared at first when the child was quiet or asleep, but reappeared when it was excited, and gradually stopped altogether by the end of the thirteenth month. The child had been troubled with a bad cough during the last fall and winter, but had recovered and appeared strong and well nourished. Laryngoscopic examination at the last visit revealed the same condition of the epiglottis that was noted at first, with the exception of the natural increase in size and a slightly wider separation of the lateral borders of the epiglottis.

The other four cases presented a similar condition. One died of pneumonia at the age of six months. Another early developed bony rickets with marked enlargement of the epiphyses of the long bones, rosary and considerable deformity of the chest. Of the remaining two, one outgrew the stridor at about one year of age, and the other still has a distinct inspiratory stridor at the age of fifteen months. The rachitic child is now six months old and still has the stridor.

The appearance of the epiglottis was the same in all the cases. I was unable to make out anything below the level of the epiglottis in any of them.

Many cases of this affection have been reported in recent years, and while there has been a fair degree of unanimity as regards the symptomatology and diagnosis, there has been much dispute as to the cause. Different observers have proposed various theories, which may be classified as follows:

(1) Those which explain the trouble as due to a defective development of the respiratory centers in the cortex. The stridor is said to be produced by a spasm of the glottis brought about by a lack of

co-ordination of the respiratory movements, comparable to the condition found in stammering.¹

(2) Reflex irritation from adenoids is assigned by Smith as a cause for spasm of the glottis, producing inspiratory stridor. This observer records the disappearance of the stridor after removal of the vegetations from the naso-pharynx. But his testimony conflicts with that of Clarke and Variot, who found in a number of cases that the operation had no effect on the character of the respiration.

(3) Robertson also believed that the seat of the trouble was in the glottis, but he explained it as a paralysis of abduction, that is to say, of the posterior crico-arytenoid muscles.

(4) Other observers, notably Avellis, have placed the lesion below the larynx and declare that the sound is produced by a narrowing of the trachea from compression. Avellis reports cases in which he found at autopsy a greatly enlarged thymus, and draws the conclusion that inspiratory stridor is always due to a hypertrophy of this gland.

(5) On the other hand, the weight of opinion is largely in favor of locating the difficulty in the vestibule of the larynx. Lees, Refslund, Sutherland, Lack and Variot have published the results of autopsies performed in these cases in support of this view, which agrees with a large number of laryngoscopic examinations made by them and others.

They affirm that the essential lesion is a malformation of the upper part of the larynx, which is found in all cases, and consists in a lax condition of the cartilages at the site of the attachment of the aryepiglottic folds, which permits of an abnormal approximation of these folds during inspiration. They form, as it were, a supplementary glottis. This condition is always associated with a deformity of the epiglottis. In some cases the epiglottis is found folded backwards on its long diameter, so that its lateral borders almost meet posteriorly, forming a gutter which is almost a closed tube. In others there is a folding downward and backward of the upper part of the epiglottis, so that it projects over the air passage. Although deformity of the epiglottis is probably not the cause of the stridor, it is always present. Variot and LeMarc Hadour report a case followed by them in which the gradual disappearance of the stridor was accompanied by an unfolding of the epiglottis and its approach to a normal shape. Rocaz made a similar observation.

Others have failed to remark such modification in the shape of the epiglottis with the disappearance of the stridor. My two cases which have outgrown the symptom still show a marked inrolling of the lateral margins of the epiglottis.

Variot showed that the sound could not originate in the trachea by intubing a case, with the result that the stridor completely disappeared.

SYMPTOMATOLOGY.

The essential symptom is a modification of the respiratory sound during inspiration, characterized by a musical note, which has been likened to the crowing of a chicken or, in mild cases, to the purring of a cat. It is always noted immediately after birth or within a few days, although it may

¹ McBride, Stamm, Herzfeld, Thomson, Logan Turner.

often be overlooked at first, owing to the excitement attendant on the birth of the child. The sound is continuous during waking and sleeping, is aggravated when the child is excited or exerts itself physically, and is quieter during sleep. In other words, anything which increases the force of the respiration augments the sound. The expiration is usually quiet, but when the stridor is very intense it may also be heard during expiration. The voice is in no way affected by the condition. The larynx moves up and down with the respiration, and supra- and infra-sternal retraction are often both present. In spite of this evident obstruction to the respiration, the infants do not appear distressed or uncomfortable. Temporary cyanosis sometimes occurs during the height of the stridor, but it is never continuous.

Under favorable conditions the general health and development are not interfered with, but the obstruction seems to render the children susceptible to pulmonary affections. Among the reported cases are several deaths from pneumonia, one from diphtheria and one from measles. Many cases of bronchitis have occurred. One of my cases died of pneumonia, and one had a bronchitis lasting several months.

Laryngoscopic examination in infants is very difficult and unsatisfactory; but, although the glottis cannot in my experience be made out in these cases, the deformity of the epiglottis can be readily seen and, in favorable cases, the approximation of the aryepiglottic folds also.

The stridor usually increases up to the third or fourth month, and remains the same until the child is about a year old. It then becomes gradually less noisy; disappears at first at intervals when the child is quiet or sleeping, and reappears during physical or mental excitement, and finally disappears altogether.

In one instance it lasted only one month (Cerf.). In another it persisted until the end of the third year (Lack).

DIAGNOSIS.

The diagnosis is based on the following distinctive features of this affection:

- (1) Its appearance at birth.
- (2) The limitation of the sound to inspiration.
- (3) The absence of continuous cyanosis.
- (4) The constancy of the sound independent of the position of the child.
- (5) The laryngoscopic appearance of the epiglottis and ary-epiglottic folds.

In laryngismus stridulosus, which is due to a true spasm of the glottis, we have a condition which begins some time after birth, usually about the period of dentition. The spasms occur in more or less severe paroxysms, with marked cyanosis, convulsions and actual cessation of respiration. The rachitic diathesis is almost invariably associated with it.

In stridor due to pressure on the trachea from an enlarged thymus or enlarged bronchial glands, the sound is not confined to inspiration, but is heard also in expiration. It is affected by the position, being louder when the child is on its back, since the pressure is thus increased. If the thymus is much hypertrophied it can be palpated just above

the sternal notch, and its boundaries made out by percussion.

Snoring due to adenoids can be easily excluded by examination. Their removal does away with whatever respiratory obstruction they may cause if present.

PROGNOSIS.

The prognosis is good. The condition itself is not a direct menace to health, but its presence adds to the danger of any disease of the respiratory tract. One death from laryngeal obstruction due simply to this affection is reported (Lack).

TREATMENT.

The treatment is purely prophylactic. It is of great importance that these infants should be properly nourished in order to combat the respiratory diseases to which they are susceptible. Intubation or tracheotomy may be required in very rare cases, but in the great majority there is no danger of asphyxiation, and operative interference is hardly to be thought of.

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AVULSION OF THE TIBIAL TUBERCLE OCCURRING IN A GIRL OF THIRTEEN.

BY FRANCIS D. DONOGHUE, M.D., BOSTON,

Instructor in Clinical Surgery, Tufts Medical School.

LESIONS of the tibial tubercle occurring in adolescence, judged by the literature on the subject, might be accounted rare, but careful study of knee-joint injury with the x-ray will undoubtedly make an exact diagnosis possible in many cases now dismissed as strains. The paper by Dr. R. B. Osgood in the *BOSTON MEDICAL AND SURGICAL JOURNAL* of Jan. 23, 1903, thoroughly covers all that we know about this condition and reviews in detail all reported cases. The number of cases reported, however, is so small that each new case is an interesting study, especially if it differs from those already on record. In all of the ten cases reported the lesion of the tubercle occurred in boys between the ages of thirteen and sixteen, and in all of these cases the boys are described as "active, athletic and well-developed muscularly." The case I wish to report is unique in the fact that it occurred in a girl of thirteen, but also "athletic and well-developed." The history of the case is typical, and

simply goes to show that with the increase in athletics and gymnastic work among young girls, we may expect to find in them the same forms of joint injury now seen in boys.

The history of the case is as follows: Jennie F., age thirteen, weight 80 lbs., height 5 feet 3 inches, came to the Boston Dispensary March 18, 1903, complaining of pain about knee and difficulty in walking. About five weeks before this time, while vaulting over a horse in the gymnasium, she fell,

SURGICAL TREATMENT OF PANCREATIC CYSTS.

"Cysts of the pancreas, while rarely encountered, are still the most common pathologic condition of this deep-seated organ that we are called upon to treat surgically," says A. Morgan Cartledge.²⁷ Since Gussenbauer, in 1882, first operated successfully by incision and drainage for pancreatic cysts, there have been collected by Körte and others about one hundred and twenty-one cases. Most operators have followed Gussenbauer; that is, incised the

TIBIAL TUBERCLE — DONOGHUE.



(3) It is not wise to operate during the acute attack of cholecystitis.

(4) Patients much reduced by long-continued suffering do not bear well prolonged operations upon the gall bladder and ducts.

(5) Robson's observation that patients with carcinoma of intra-abdominal organs do not bear gall-bladder operations well has been borne out by my experience.

(6) If the operation cannot be postponed in presence of extreme jaundice, it should be confined to simple drainage of the gall bladder.

J. Potarka²⁸ commends the method published by Versesco at the Thirteenth International Medical Congress, which, up to the present time, has attracted little attention. He describes it as follows: For special instruments are required a Whitehead speculum, a cork cylinder fitted with a wire handle 89 cm. in length and having a diameter of 3 to 3.5 cm., also "Karlobader" needles. With the patient under general or spinal anesthesia and the sphincter ani dilated, the cork cylinder is inserted and the speculum withdrawn. The marginal zone of mucous

²⁷ Med. News, March 28, 1903, p. 602; Am. Gyn., January, 1903.

²⁸ Rev. de Chir., vol. XXI, No. 5.

often be overlooked at first, owing to the excitement attendant on the birth of the child. The sound is continuous during waking and sleeping, is aggravated when the child is excited or exerts itself physically, and is quieter during sleep. In other words, anything which increases the force of the respiration augments the sound. The expiration is usually quiet, but when the stridor is very intense it may also be heard during expiration. The voice is in no way affected by the condition.

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Under treatment, by strapping, the leg became almost functionally perfect, and aside from slight pain on pressure, or when kneeling, she has recovered.

I am indebted to Dr. Gardner of the Boston Dispensary for the excellent pictures of the knee.

Medical Progress.

RECENT PROGRESS IN SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.,
BOSTON.

(Continued from No. 22, page 590.)

SURGERY OF THE GALL BLADDER.

Dr. A. J. Ochsner,²⁶ in an article on "Surgery of the Gall-Bladder," gives the following conclusions:

(1) The diagnosis of disease of the gall bladder and of gallstones requires further study and observation.

(2) The classical symptoms must be supplemented in order to be sufficient as a basis for diagnosis.

(3) It is not wise to operate during the acute attack of cholecystitis.

(4) Patients much reduced by long-continued suffering do not bear well prolonged operations upon the gall bladder and ducts.

(5) Robson's observation that patients with carcinoma of intra-abdominal organs do not bear gall-bladder operations well has been borne out by my experience.

(6) If the operation cannot be postponed in presence of extreme jaundice, it should be confined to simple drainage of the gall bladder.

²⁶ *Annals of Surgery*, June, 1902.

SURGICAL TREATMENT OF PANCREATIC CYSTS.

"Cysts of the pancreas, while rarely encountered, are still the most common pathologic condition of this deep-seated organ that we are called upon to treat surgically," says A. Morgan Cartledge.²⁷ Since Gussenbauer, in 1882, first operated successfully by incision and drainage for pancreatic cysts, there have been collected by Körte and others about one hundred and twenty-one cases. Most operators have followed Gussenbauer; that is, incised the cyst, stitched to the parietal peritoneum and drained. According to Böckel, the cases so treated number one hundred and fifteen. This author also collected twenty-five cases where extirpation, either complete or partial, of the sac was practised, with four deaths. A comparison of these results, shown by the statistics, would seem to indicate that incision and drainage should be practised as a routine procedure in pancreatic cysts. It is a well-known fact that these accumulations, in and about the pancreas, do not pursue the same anatomical route in presenting toward the surface. This fact should have great weight in deciding for or against complete extirpation. Undoubtedly, evolution most often takes place below the stomach and above the transverse colon, the cyst carrying before it the gastrocolic omentum. Cysts so presenting are best suited to extirpation, or, as the author prefers, enucleation. Probably the most frequent evolution of the cyst is above the stomach, or between the stomach and the liver. Such a cyst, if adherent at all, would present the gravest dangers in its enucleation. Can the manner or direction of the growth be ascertained with sufficient accuracy as to enable us to select a method procedure? Oftentimes the physical signs presented by the tumor will suggest this. The cyst which has evolved above the stomach is on a high plane, and much more fixed than below. Cysts presenting below the stomach tend to displace the pancreas downward by traction, and so induce a condition of otosis of this and surrounding organs. So great may this tendency be that acting in conjunction with deep inspiration on the part of the patient the operator may carry the cyst almost to the pelvic brim. Finally, the question may be settled by a sufficiently long incision in the abdominal wall as to permit of inspection. That extirpation is the best ideal operation, did safety permit, few would dispute who have had experience with incision and drainage. The latter is slow and disagreeable to a tantalizing extent, both for patient and surgeon.

A NEW OPERATIVE TECHNIQUE FOR HEMORRHOIDS.

J. Potarka²⁸ commends the method published by Versesco at the Thirteenth International Medical Congress, which, up to the present time, has attracted little attention. He describes it as follows: For special instruments are required a Whitehead speculum, a cork cylinder fitted with a wire handle 89 cm. in length and having a diameter of 3 to 3.5 cm., also "Karlöbader" needles. With the patient under general or spinal anesthesia and the sphincter ani dilated, the cork cylinder is inserted and the speculum withdrawn. The marginal zone of mucous

²⁷ *Med. News*, March 28, 1903, p. 602; *Am. Gyn.*, January, 1903.

²⁸ *Rev. de Chir.*, vol. xxi, No. 5.

membrane is then fastened to the cork cylinder, with the needles at distances about 1 cm. apart along its entire circumference. After a circular incision of the mucous membrane, the sphincter is pushed aside or retracted, and the affected membrane either freed of the varicose veins or circularly resected. This resection is done gradually while the cork cylinder is withdrawn, and the resulting muco-cutaneous border is at once sutured to the corresponding cut surface of the anus. The operation is rapidly performed and is not accompanied by much hemorrhage. In five cases in which this method was employed by Potarka the result is described as quite satisfactory.

AMPUTATION STUMP COVERED WITH THE TENDON OF ACHILLES.

Aseptic and antiseptic methods have aided surgeons in undertaking plastic methods which would otherwise fail. Dr. Wilms²⁹ (Leipsic) describes an amputation stump capable of bearing pressure and covered with the tendon of Achilles. Bier has recently opened the discussion of this entire question by his admirable paper on the subject of making osteoplastic flaps with which to cover the ends of the bones. Wilms differs in some particulars from Bier, notably wherein the latter teaches that it is not possible to cover the bones successfully in amputations in the leg by soft-tissue flaps which lie between the skin and the bones and protect the skin from attrition. Bier, moreover, claims that the usual case will permit one to produce hypertrophy of the skin by massage and use. Wilms' observation is that where there is only skin over the bone atrophy is far more apt to occur through mere pressure. In a sixteen-year-old boy Wilms recently amputated the leg about a hand's breadth above the malleoli, and by saving the tendon of Achilles was able to bring it forward over the ends of the bones and stitch it to the anterior surface of the tibia, where it stayed in place very well. The patient was discharged at the end of four weeks with a very excellent stump, capable of bearing pressure and entirely without tenderness. Wilms suggests that a similar use of this tendon and its muscle may prove to be the means of very greatly increasing the general function of all amputation stumps in the leg.

APPLICATION OF PARAFFIN PRODUCTS.

Delie³⁰ contributes some data as to the most satisfactory melting point of paraffin when used for subcutaneous injection to relieve defects, deformities, etc. He found a great difference of opinion among operators. Some, as Gersuny, Stein and others, reject a paraffin which melts above 50° C. They dread the difficulty of the injection *per se*, also the tendency of the high temperature necessary for the injection which may excite an inflammatory reaction or necrosis. Others, among whom is mentioned Eckstein, prefer the paraffin with a high melting point. They avoid, by careful injection, a diffuse spreading into the surrounding tissues, which makes an otherwise brilliant immediate result often a deceptive one.

Delie uses, according to the location of the injection,

different mixtures. In case of a defect of the "bridge" of the nose externally, he uses paraffin having a high melting point; when there is atrophy of the cartilage, a lower one. He has observed an essential diminution of the "catarrh" seen with atrophy. When the membrane is markedly sclerotic, he did not succeed in diminishing the width of the nasal cavity with paraffin. For the detailed description of the instruments and the author's technique, the reader is referred to the original article.

Dawbarn³¹ of New York uses in cases of angioma a mixture of white paraffin (one part) and white vaseline (nine parts), which is liquid above 108° F. This mixture is injected at a temperature of 120° F. He injects into the arteries in these cases.

In this connection the case reported by Leiser³² is of interest. Three paraffin injections were made to relieve the deformity of a depressed nose. A collapse followed the last injection, from which the patient was resuscitated by subcutaneous use of ether and artificial respiration. Recovery was followed by many hours of vomiting and complete amaurosis of the left eye. It was supposed that the injection had caused a thrombus of the ophthalmic vein, into which the vena dorsalis nasi empties. Leiser comments on the danger of paraffin injections.

On the other hand, A. E. Stein³³ reported, at the Thirty-first Surgical Congress of German Surgeons in Berlin, in April, 1902, a series of favorable results from paraffin injection for the relief of depressed noses, scar contractions and cleft palates. Histologically it was shown that after six months the mass was partly encapsulated, partly grown through by connective tissue. Hard paraffin was not free from danger. The material recommended for injection was an exactly proportioned mixture of paraffin and vaseline.

A NEW METHOD OF REDUCING DISLOCATIONS OF THE SHOULDER.

The principle of the method of Dr. Hofmeister³⁴ (Tubingen) consists in the application of a systematic permanent extension of the upper extremity by weights. The incentive to this procedure emanated from Stimson's plan to place the patient in a hammock and allow the arm to pass through a hole in the hammock, and by attaching weights, eight to twelve pounds, to the dependent arm, a reduction is accomplished within four to six minutes. The author finds this method efficient, yet enumerates as drawbacks the great pressure exerted on the axilla by the hole in the hammock, which tends to increase the venous stasis favored so strongly by the dependent position of the arm. Both of these factors tend to make this method painful, and, finally, a bulky apparatus (?) operates against a general use of this method of Stimson. These disadvantages the author claims to have offset by his method. The patient is comfortably placed upon his sound side. Extension straps

³¹ Ann. of Surg., 1902, vol. xxxvi, p. 269.

³² Deutsche med. Woch., 1902, No. 14.

³³ Centralbl. f. Chir., 1902, Bd. xxix, Beilage, s. 45.

³⁴ Beiträge zur klin. Chir., Bd. xxx, Heft. 2; Ann. of Surg., August, 1902.

²⁹ Centralbl. f. Chir., 1902, No. 27; Med. News, Aug. 30, 1902.

³⁰ Rev. hebdom. de laryngol. et otol. et de rhinol., 1902, No. 22.

are then applied to the arm of the affected side, as high up as the deltoid insertion, and secured with a roller bandage tightly applied, to prevent sliding of soft parts on the bone. A rope, connected with the straps, is guided over a set of pulleys attached to the end of a rod. The rod is raised to a sufficient height to permit of full extension of the arm. Ten pounds are first fastened to the end of the cord, and at intervals of five minutes additional ten pounds are added until forty pounds are reached. Five to fifteen minutes' action of this force suffices to effect a reduction, which may set in sooner sometimes. Once the reduction set in after two minutes. A dislocation of two weeks' standing was reduced with forty pounds' weight in forty-five minutes. In four instances reduction was hastened as soon as the head of humerus was on margin of the glenoid, by drawing the head towards the acromion process, removal of the weights, and slowly adducting the arm. The latter procedure is eminently proper even after perfect reduction, since bringing the arm from complete extension to the side of the chest in careless fashion may result in a dislocation. Seven times this method was employed, in each instance successfully. The constant moderate traction of the weights overcomes the contraction of the muscles. The avoidance of a narcosis, the relative simplicity (?) of the technique, and its absolute harmlessness are advantages which may make this method more popular among practitioners than the manipulative procedures of Kocher.

TECHNIQUE OF THE MURPHY BUTTON.

Rehm³⁵ reports the following method, which he considers a simpler and easier one for suturing the button in place. In case of entero-anastomosis the incision in the intestine for the button is made a little longer than the diameter of the button used. The first half of the button is then inserted, and a single Lembert suture set so as to close the wound around the stem of the button tightly and crowd it into the opposite end of the wound, thus fixing the button in place. If one suture is not sufficient a second or more are used. In order to prevent the button from slipping into the intestine, the shank is held by a pair of forceps. The other half of the button is now similarly sutured in the other portion of the intestine and the two halves united in the usual manner. If desired the wound can be guarded by a second row of peritoneal sutures. In a dog this serous suture was omitted. The button was defecated on the fourth day. On the fifth the intestine was found united and patent. In "end-to-end" resection the plan is the same. It is important that the size of the selected button should correspond to the lumen of the resected gut. In a test case the button was recovered on the fourth day. At the end of two months the dog was killed. The intestinal wound was very smooth, and its site found with difficulty. Rehm claims for the method that its practicability has been shown experimentally. Its technique is very simple. It requires less time than the usual method.

A MODIFIED METHOD OF LUMBAR ANESTHESIA.

Although this method, on account of its attendant

risks, has not been very extensively employed in this country, still the reports relating to its use elsewhere are always of interest. A recent publication of Kozlowski³⁶ describing a modification of the original Bier method, which he claims to be free from the disagreeable after-effects, is of interest in this connection. Kozlowski uses Tropacocaine (Merck) in place of cocaine hydrochlorate. The drug in dry powder form (generally 0.05 gm.) is taken direct from the original bottle with a sterile instrument and placed in a sterilized, dry, warm glass vessel, graduated to grams. The puncture of the spine is made in the median line, between the second and third or the third and fourth lumbar arches, and the escaping fluid allowed to drop on to the Tropacocaine in the glass vessel. By gently shaking the vessel, the drug is dissolved perfectly in the cerebrospinal fluid, and then about 5 gm. of the fluid, which represents a 1% solution of Tropacocaine, is at once drawn into the syringe and injected into the subarachnoid space. The drug has in no case been sterilized by the operator, but is used direct from the original bottle, and in spite of this fact no deleterious effects have been observed. Apparently the powder as such is sterile. If desired it could be sterilized by hot air or in alcohol (in the latter case the powder would be allowed to recrystallize by the evaporation of the alcohol before use). This, however, Kozlowski considers superfluous if the ordinary aseptic technique (sterile instruments, no handling of the drug with the fingers, etc.) is strictly observed. In thirty-two cases in which Kozlowski has used this method the results have been satisfactory. Not only has he found the method simple, easy of execution and of short duration, but also it has not been followed by the disagreeable symptom of the so-called "aseptic meningitis" (discomfort, sweating, nausea, vomiting, headache, sensation of heat, etc.), which characterizes the use of cocaine by the Bier method. Also, and what is more important, he has met no case of septic infection, the thing most dreaded in spinal anesthesia. The correctness of Kozlowski's observations should be confirmed by the experience of others, and the method thoroughly tested before it is generally used. Also the risk of septic meningitis from an error of operative aseptic technique is as great by Kozlowski's method as by the usual operation for producing spinal anesthesia. This is the one factor which has up to the present time deterred surgeons from using this method of anesthesia if it could be avoided. The risk was considered too great. Until this danger can be avoided, spinal anesthesia will have a limited field.

ARE ANTISEPTICS OF ANY VALUE IN HAND DISINFECTION?—AN EXPERIMENTAL STUDY FROM THE SURGICAL CLINIC OF DR. ROSWELL PARK.

Dr. Edgar McQuire,³⁷ in an article on the above subject, makes the following conclusions:

- (1) Absolute sterility of the hands is impossible by any method.
- (2) There is no royal road to sterilizing the skin—nothing takes the place of long and vigorous mechanical scrubbing.
- (3) The longer the hands are scrubbed under

³⁵ Centralbl. f. Chir., 1902, Bd. xxix, s. 1153.

³⁷ Amer. Med., Feb. 28, 1903, p. 331.

³⁶ Centralbl. f. Chir., 1902, Bd. xxix, s. 1228.

aseptic precautions, the nearer the approach to sterility.

(4) The use of antiseptics on the skin is, at least, questionable; under the usual conditions it is distinctly harmful.

(5) When the true value of antiseptics is understood we will have cleaner hands, due to more conscientious scrubbing.

(6) The use of rubber gloves, while not ideal, is the nearest approach to it.

(7) The operator whose hands perspire freely ought to wear gloves in every case, regardless of all objections to them.

THE STELLWAGEN TREPHINE.

Dr. J. C. DaCosta has described the details of this instrument devised by Dr. T. C. Stellwagen, which is intended to be used to cut an osteoplastic flap when this method of opening the cranial cavity is desired, for example, exploration for tumors, etc., and for which purpose a chisel and mallet, the trephine, the Gigli saw or a surgical engine are the usual instruments selected for this purpose. Dr. Da Costa has used the Stellwagen instrument quite satisfactorily in one case when he operated for epilepsy. For the details of the appliance the reader is referred to Dr. Da Costa's³⁸ article. Briefly, it is so arranged that a cutting edge is rotated about a central pin, so as to divide the scalp in the circle desired. A saw is then substituted for the knife, and rotated in a similar manner till the bone is divided. The size of the flap can be regulated as desired by altering the length of the saw-bearing arm of the instrument, which is really the radius of the circular border of the flap cut. The instrument is simple and easily sterilized.

Reports of Societies.

EIGHTEENTH ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN PHYSICIANS.

WASHINGTON, D. C., May 12-14.

THE meeting was called to order by the president, DR. JAMES STEWART of Montreal, at 10 A.M.

ADDRESS OF THE PRESIDENT.

DR. STEWART said that in occupying the high position of president of the Association of American Physicians he felt that it was his first duty to acknowledge the great honor conferred upon him. Continuing, Dr. Stewart said that the association was one whose work had made it known and respected wherever modern medicine is taught and practised, and that he appreciated very highly the compliment paid, not only himself, but his colleagues across the line; that the generous manner in which Canadians had been received in the association, from the very beginning, was a matter for which all were deeply grateful. The existence of this association of clinicians, pathologists, bacteriologists and chemists was an index of the ever-advancing character and increasing precision of the work.

³⁸ Ann. of Surg., 1902, Vol. xxxvi, p. 78.

In contrasting the work performed by the association since its inception in 1886 with that of the last few years, he said it was apparent that there had been a considerable change in the character of the papers read. The proportion of more or less purely scientific papers had steadily increased in numbers and in value. The papers of the more or less purely clinical type had been from the first of a high order, and continued to be of the same high character. The program of this meeting was an index of much valuable and laborious work that would be heard during the session.

Quoting the words of a recent writer of the *Edinburgh Review*, Dr. Stewart said: "The new century begins its history from a vastly higher standpoint all round than its predecessor did. Our chief hope for the future lies in the desire, which has become so much more acute and general within the last few years, to get away from the bondage of theories and hypotheses, and to be able to question and cross-question facts till their meaning becomes plain. The true students of medicine are to-day everywhere struggling to get to the heart of the disturbing influence which breaks up the harmony of health and life." It was most gratifying to find the prominent part many members of the association were taking in the solving of the different problems that had so long resisted patient investigation; that the very recent splendid contribution to practical medicine made by one of the members would stand forever to the glory of American medicine. The noble way in which hospitals and research laboratories had been endowed, both in the United States and Canada, was a matter for much gratitude; it was a harbinger of a time that would come when the recurring waves of charlatanism would cease. The names of Johns Hopkins, Rockefeller, Morgan, Vanderbilt, Strathcona would live to be blessed for ages.

In closing his remarks Dr. Stewart paid a tribute to the members who had passed away during the last year, all, he said, men of high promise who had left behind them evidence of excellent and abiding work. They were Dr. Wyatt Johnson, who died of septic poisoning acquired in the postmortem room of the Montreal General Hospital; Dr. Frederick Packard, who died in November last of typhoid fever; and Major Walter Reed, whose death was caused by appendicitis, and whose fame mainly rested on the remarkable series of researches that he conducted in conjunction with Drs. Carroll, Lazear and Agramonte, on the yellow fever commission of the United States Army.

The following papers were read and discussed:

BATHYCARDIA (LOW HEART). DR. E. G. JANEWAY, NEW YORK.

The writer proposed the term "bathycardia" to signify a low position of the heart, due to anatomical conditions and not to disease. Referring to an anatomical cause of the condition he said the patients all have long, flat chests; that there was often difficulty in placing the apex of the heart, the tendency being to place it too high rather than too low. There was liability to mistake it for other conditions of the heart and also to suppose there was an abnormal state of the lung. There was apt

to be a production of greater symptoms from stomach disturbance.

In discussion, Dr. OSLER said a very interesting condition also was the descent of the heart in great hypertrophy, particularly that of the right heart, producing bulging in the right para-sternal line. He had found it to be mistaken for aneurism.

Dr. WILLIAMS asked the writer if there was any record of the position of the tube and the distance of the tube from the patient when the radiograph was made, saying that it made a great difference whether the tube was near or far away, and he thought it important that there should be on the radiograph some indication of the position of the tube. It was only in this way that radiographs of different cases could be compared.

Dr. MCPHEDRAN said in regard to the point of Professor Osler's as to the great hypertrophy of the right ventricle, he would like to know if he referred to hypertrophy and dilatation. A few days ago he had had a death from mitro-stenosis, without dilatation, but with extreme hypertrophy; there was no sign on the thorax of any derangement.

Dr. JANEWAY said in closing that the radiographs had been taken by Dr. Caldwell, and he did not know the exact distance; it was done rather to show the position of the heart than anything else.

POST-TYPHOID SEPSIS. DR. FRANCIS DELAFIELD, NEW YORK.

The author described the different fevers following typhoid, which he said might be due to the typhoid bacillus, or to other infections, but were not typhoid fever. They must be distinguished from the true relapses of that disease, and the writer exhibited a number of charts explaining the diagnostic points of differentiation. He referred to the ordinary, moderate rise of temperature occurring within a short time after the end of typhoid and lasting for only a few hours and to the post-typhoid fevers lasting for one or more weeks. He believed that in order to bring these fevers to an end it was necessary to get the patients out of bed and to give them solid food; some improved on food alone, but generally it was necessary to get them out of bed as well.

In discussion — Dr. KOPLIK said in children it was very common to see the temperature run as illustrated in the charts of Dr. Delafield for a short period. Where the child had been sick with typhoid fever for four or five weeks and the temperature had fallen to normal he immediately began to have the patient, in spite of the low temperature which might exist, fed and gotten out of bed. He deprecated the custom of starving these cases, for on getting them out of bed and feeding them the temperature would disappear. He thought the condition due to lack of nutrition, or some slight reinfection independent of the typhoid fever.

Dr. PEABODY agreed with Dr. Delafield that the results of getting these patients out of bed and feeding them were good. He usually followed the dictates of the patient's appetite, drawing the inference when the patient was really hungry that the stomach was in a condition to do some work; it was, of course, important to distinguish between real hunger and the desire of the patient to eat in order

to get well. He thought the best solid food to begin with was the hard-boiled egg, boiled until a touch was sufficient to reduce it to a fine powder. He considered this much preferable to the soft boiled or raw egg, because the stomach was saved the work of coagulation.

Dr. ROBINSON thought that as far as his observations went there were a certain number of cases in which this was not true; that there was a certain period after typhoid when the temperature was irregular, with unaccountable rises, and that if food were given the temperature did not drop. He advocated the use of mild purgatives in these cases, and thought that with their use there would be fewer of these unexplained rises in temperature.

ARTIFICIAL IMMUNITY IN EXPERIMENTAL TUBERCULOSIS.

DR. E. L. TRUDEAU, SARANAC LAKE.

The author presented a brief abstract of the recent more successful attempts at the production of artificial immunization against tuberculous infection, and spoke of the writer's work in that direction and also that of Koch, Falk, Martin, Groncher, Gourmont, Dor, Behring and others. The evidence tended to show that the attainment of a certain degree of toxin immunity does not protect against reinfection, and that whatever degree of immunity had been obtained experimentally was due rather to a bacteriolytic, or as Behring called it an isopathic immunity. A living germ seemed necessary to the production of whatever degree of immunity had already been attained experimentally. He said that the great majority of mankind had in a varying degree a natural immunity against tuberculosis, but that this immunity was only relative, and was maintained only so long as the general health was kept up to a high standard.

STUDIES IN MAMMALIAN TUBERCULOSIS III. DESCRIPTION OF A BOVINE BACILLUS FROM THE HUMAN BODY.

A SIMPLE CULTURE TEST FOR DISTINGUISHING THE BOVINE FROM THE HUMAN TYPE OF BACILLI. DR. THEOBALD SMITH, BOSTON.

The author described tubercle bacilli isolated from man, cattle, dog and cat. Two specially worthy of attention were isolated from the mesenteric lymph nodes of children. One could be promptly identified as belonging to the human type of bacilli, and hence of human origin. The other differed from it very profoundly, and after a careful study the writer finds it agreeing in all characteristics with the bovine type. A test is described with the aid of which the bovine and the human type may be differentiated in bouillon cultures. The author concludes that the bovine bacillus does invade the human body, but that such invasion is very rare.

In discussion — Dr. OSLER asked if there were any macroscopic differences between the mesenteric glands in the two cases, and said that twenty-five years ago Dr. Creighton had suggested that some cases of human tuberculosis might be of bovine origin on account of the similarity of the lesions, whereas the majority of lesions were unlike those of bovine tuberculosis. He thought it would be interesting for those working on the subject to determine whether the lymphatic type of tuberculosis in man is any more closely allied to the bovine type.

Dr. Smith said in answer to Dr. Osler's question he had not seen the autopsies, but thought they showed no macroscopic differences. In the case that turned out to be bovine, however, the mesenteric glands contained numbers of the bacilli, while the glands in the other case did not contain any. The general autopsy conditions were much like those of human tuberculosis.

THE TRANSMISSION OF BOVINE TUBERCULOSIS IN MILK.
DR. GEORGE M. KOBER, WASHINGTON.

The writer considered a collection of cases of tuberculosis attributed to infectious milk, and said a review of the evidence indicated the agency of milk of tuberculous cows in the spread of the disease, especially in children, although the degree of danger apparently was not as great as was commonly assumed. He thought the importance of the subject from a hygienic and economic standpoint demanded further elucidation before Koch's conclusions that bovine and human tuberculosis are different, and that human tuberculosis could not be conveyed to cattle, and that man is insusceptible to bovine tuberculosis, could be accepted, particularly inasmuch as the results of recent investigations tend to disprove the claims of Koch.

In discussion — Dr. THEOBALD SMITH thought it was pretty well agreed that the difference between the tuberculosis of man and animal was slight, but the question to be determined was how much difference is there. There were profound pathological differences, and their identity had not been established by their immunizing qualities.

TUBERCULOSIS OF THE TONSILS, THE TONSILS AS PORTALS OF TUBERCULAR INFECTION. DR. HENRY KOPLIK, NEW YORK.

In considering the matter of the tonsils as the seat of tuberculosis the writer referred to the work of Conheim, Orth, Strassman, Schlenker, Kruckmann and others, and said the cases divide themselves first into those observed clinically, and those in which postmortem examinations have been made. He considered the primary isolated tuberculosis of the tonsil very rare, while the secondary forms, especially those occurring with pulmonary phthisis, were quite common. He referred to the constancy of occurrence of the cervical lymph nodes with tonsillar tuberculosis of both varieties. Isolated forms of tuberculosis of the lymph nodes were especially common and interesting as occurring in children, and the writer mentioned a number of cases. The secondary enlargement of these nodes was only of interest as complicating tuberculosis elsewhere. Children furnish the largest quota of cases of tuberculosis of the tonsils, the cause of which was to be found in the greater activity and growth of lymph tissue in these subjects. Considering the tonsils as portals of infection and their rôle as carriers of infection throughout the body, the writer said it was first thought that these nodes were infected from below through the bronchial nodes, which may exceptionally occur, but as a rule the tubercle bacillus enters the tonsils and infects the nodes from above. This was illustrated by cases of Friedman. In tubercular peritonitis with tonsillar tuberculosis and tuberculosis of the lymph

nodes the manner of infection was by the injection of infected food or sputum for the most part. A number of cases were cited in conclusion.

A SKIN LESION ASSOCIATED WITH RAPID GROWTH OF LONG BONES. (LES VERGETURES DE CROISSANCE — JULES COMBY.) DR. W. P. NORTHRUP, NEW YORK.

The writer considered that the conditions for producing the lesion were adolescence, typhoid fever, prolonged rest in bed and excessive growth of the long bones. That these might "not rarely," according to Comby, result in frayings or frets (*des eraillures*), welts, wales (*des vergetures*), of the skin, over the epiphyses of the long bones. The author also exhibited photographs showing the condition referred to.

In discussion — Dr. JACOB thought the case was but an excess of what is seen frequently; that we all notice after cases of typhoid fever in a growing child that growth takes place then very rapidly. This he attributed to epiphyseal hyperemia producing an exaggeration of the normal process, and thought that lying in bed had nothing to do with it. The reverse was seen in rachitis, so that in rickety children we had the stunted limbs and in those who had had the infectious fevers there was apt to be rapid growth.

Dr. OSLER thought the condition referred to by Dr. Northrup could not always be due to rapid growth, as it occurred in adults after fever, and was not uncommon after typhoid. He had had a friend who had the welts come on his back, producing a remarkable deformity, following typhoid when he was at least thirty.

Dr. JANEWAY said it was not only in pregnant women that these markings were to be found, as might be inferred from what had been said in their description, but they were frequently seen in fat men.

THE VISCERAL LESIONS OF THE ERYTHEMA GROUP OF SKIN DISEASES. — THIRD SERIES. DR. WILLIAM OSLER.

Read by title.

DERMATO-MYOSITIS. DR. F. FORCHHEIMER, CINCINNATI.

The paper of Dr. Forchheimer added another case of this rare disease to the literature of the subject and also dealt with the classification and etiology of the affection.¹

OBSERVATIONS UPON RESULTS OBTAINED IN INFANT FEEDING WITH VARIOUS FORMS OF MILK IN TENEMENTS AND INSTITUTIONS IN NEW YORK. CLINICAL REPORT — DR. L. EMMETT HOLT. BACTERIOLOGICAL REPORT — DR. WILLIAM H. PARK.

The authors made a report upon about six hundred infants who were observed in their homes for a period of three months; two thirds of the observations being made in the summer and one third in winter, with the purpose of ascertaining to what degree results depended upon the different factors of care, surroundings, atmospheric heat, sterilized or raw milk and different grades of milk with particular reference to the number of bacteria present.

(To be continued.)

¹ See JOURNAL, p. 631.

Recent Literature.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science, by leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D. In twenty-one volumes. Volume xxi. Supplement. New York: William Wood & Co. 1903.

This twenty-first, or supplementary volume, of the "Twentieth Century Practice," illustrates two things: (1) The great activity and fertile progressive changes in modern medical science; (2) the appreciation by publishers and editors of these conditions, and their energy and thoroughness in trying to meet them. The last and closing volume of this encyclopedia was published at the end of 1900, and yet in two years the necessity arises for a supplementary volume, which only the most skillful editing, careful pruning and the omission of such matter as bibliographies has kept within 850 octavo pages. Even more striking is the fact that one of the principal contributions to the last volume was an article on yellow fever, written by a very experienced observer and student, which contained no reference to the *Stegomyia* mosquito, because its relation to this disease was not then understood. Our views in regard to the etiology, the prevention, the prophylaxis of yellow fever have undergone a revolution in that brief time, and in the present supplement this disease is dealt with in an entirely new article by Ex-Surgeon General Sternberg of the United States Army, under whose fostering care the work done in Havana by United States Army medical officers was carried out.

In the same way, the discovery by Shiga, of Japan, of a bacillus of dysentery necessitates a revision of this subject, which is provided for in an article by Shiga himself on bacillary dysentery. The illustrative results of radiography demand and have received suitable consideration. The investigations of cancer, although so far of a negative character, and the advances in hematology, have met due attention.

There is a chapter on protozoa, but already since its publication the announcement of the results of the work of Councilman and his assistants would seem to suggest the possible necessity for a still further revision of the pages devoted to vaccine and smallpox.

With the present zeal and enlarging facilities for medical research, the editors and publishers of encyclopedic medical works will have to lead strenuous lives.

A Treatise on Massage. By DOUGLAS GRAHAM, M.D. Third edition, revised, enlarged and illustrated. 8vo. pp. 462 with 63 illustrations. Philadelphia: J. B. Lippincott Company. 1902.

This new edition of Dr. Graham's well-known treatise is one third larger than the previous edition. Eight new chapters have been added, and the former chapters have been considerably revised. The new chapters discuss the neurone theory in its possible relation to massage, with especial reference to the hypothesis that the neurones possess powers of contraction, and also treat of the application of massage in various joint affections, cardiac and pulmonary

diseases, Raynaud's disease and spinal curvature. The book is so well known to all interested in massage that we need only add that the present edition has been made much more valuable than the previous editions.

Psychopathological Researches. Studies in Mental Dissociation. By BORIS SIDIS, M.A., Ph.D. 8vo. pp. xxii, 329. With 26 figures in the text and 10 plates. New York: G. E. Stechert, 1902.

The various researches collected in this volume were undertaken at the Pathological Institute of the New York State Hospitals before the overturn in that institution, and they have been published under the auspices of the psychopathic hospital and laboratory of the New York Infirmary for Women and Children. The volume is prefaced by some general remarks concerning psychopathological research by Dr. Sidis, and is made up of various exhaustive studies of individual cases of mental dissociation in functional psychoses, alcoholic amnesia, psychic epilepsy, depressive delusional states, functional motor disturbances and psychomotor epilepsy by Sidis, White and Parker. The studies follow in the main the work of Janet in his investigations of mental dissociation in hysterical subjects and of the tendency to the formation of dual personalities in such subjects, but they go a step farther in finding such dissociation in cases of epilepsy. As a result of their investigations they were led to attempt to break up the morbid dissociations by the aid of suggestion with apparent benefit. The studies are of decided interest, and suggest promising possibilities, but it is still somewhat doubtful how fully the work of Janet himself or of his disciples in this country, can be accepted.

The Operations of Surgery. Intended especially for the use of those recently appointed on a hospital staff and for those preparing for the higher examinations. By W. H. A. JACOBSON, M.Ch. (Oxon.), F.R.C.S., Surgeon Guy's Hospital, and F. J. STEWARD, M.S. (Lond.), F.R.C.S., Assistant Surgeon Guy's Hospital and the Hospital for Sick Children, Great Ormond Street; Surgeon in Charge of the Throat Department, Guy's Hospital. Fourth edition. With 550 illustrations. Vols. I and II. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1902.

With the possible exception of Bryant's "Operative Surgery," this is the best operative surgery in the English language. The book has unquestionably been written "*con amore*," and we can assure Mr. Jacobson that he has accomplished a great good in that he has enabled men to do operations in surgery more safely than if this book had not been written. The bibliography is very full. The writers have appreciated the international character of surgery. There are some omissions, as, for example, the "blocking" of nerves by cocaine, and the use of infiltration and local anesthesia in abdominal surgery. The strength of the work, however, is the personal experience of the writers and their critical judgment, which is brought out very strongly. To the hospital surgeon, the book is really of great value, in that it will serve to refresh his memory whenever necessary.

Anatomy of the Brain and Spinal Cord, with special Reference to the Grouping and Chaining of Neurons into Conduction Paths. By HARRIS E. SANTEE, M.D., Ph.D. Third edition, revised and enlarged, pp. xviii, 226, xxxvi. With two illustrations. Chicago: E. H. Colegrove. 1903.

This little volume is a praiseworthy attempt to set forth the essential facts of the anatomy of the central nervous system for the student of medicine. Unfortunately, a fatal error was committed at the start. It is impossible to give an adequate conception of the complex anatomy of the central nervous system without the aid of illustrations, and the only illustrations in the work are two misleading diagrams of the brain cortex. The volume before us is interleaved, however, so that the student, if sufficiently skillful, could illustrate it himself if he had other books before him, but this would be a considerable task. Aside from this fundamental defect the book is concisely and clearly written, and shows considerable study of the subject. The chapter on the tracing of impulses through the various projection systems is especially to be commended, as affording the best method of understanding the complex anatomy of the parts, but the fulsome praise of Dr. Eckley, who writes the introduction, that this "is the most comprehensive exposition of the conduction paths in our language," is somewhat in excess. The effort to be concise has led sometimes to too positive statements, as that "Gowers' tract carries thermic and pathetic impulses." Absolute errors, too, exist. The columns of Burdach and Goll, for example, are described as wholly distinct, and no mention is made of the fact that the latter is made up of fibers from the former. Goll's column, we are told "carries impulses of the muscular sense, and is particularly involved in locomotor ataxia." The distinction between fissures and sulci is not observed in the description of the brain cortex. The reversal of the picture in reproducing the diagram of the cortex used as a frontispiece has led to an unfortunate error which might mislead the student. The picture shows the right hemisphere with the centers of speech, and the text neglects to specify the left in the description.

A Text-Book of the Science and Art of Obstetrics. By HENRY J. GARRIGUES, A.M., M.D., Consulting Obstetric Surgeon to the New York Maternity Hospital, Gynecologist to St. Mark's Hospital, Professor of Obstetrics in the Post-Graduate Medical School (retired), etc. With 504 illustrations. Philadelphia and London: J. B. Lippincott Company. 1902.

The author of this new work is already widely known from his numerous writings in gynecology and obstetrics, and particularly from his book, "Diseases of Women," which has been justly popular, and has run through several editions. It might be seriously questioned if in these times even the most indefatigable worker could produce two comprehensive and satisfactory textbooks even on so closely allied subjects as obstetrics and gynecology. This author has certainly made very praiseworthy attempts which are well worthy of commendation, and which would be creditable to any writer. Although the author states that owing to the fact that many of its principles have

been firmly established for a very long time, obstetrics may be taught in a more didactic and less discursive way than gynecology; yet we do not find, as a rule, that his methods are too positive. We believe that a textbook is improved by adopting a firm tone. There are, to be sure, statements in the book which are open to serious question, and others which merit the most severe criticism, and particularly chapter five; but, aside from this chapter, they do not materially mar the good tone of the work as a whole. This book would be greatly improved by omitting this chapter bodily from future editions, as it contains many statements which had better be left unprinted. The author's statement that in the last twenty-five years only four really great improvements in obstetrics have been made — antiseptics (with asepsis), the axis traction forceps, the improved Caesarian section, and the revival of symphyseotomy — is more than questionable.

In this connection it is interesting to note the author's opinion on the operation of symphyseotomy, which has not, in our opinion, merited or received at the hands of the obstetric surgeon generally the high position in which he places it. He says that at the present time it is very difficult to give rules when symphyseotomy is indicated, but he is inclined to think it should be performed much oftener than it is in America. It is plainly evident that the author's ideas are not altogether American, but are essentially foreign, for he remarks that in hospital practice certain rules for symphyseotomy might be followed, if for no other reason than in order to perform the operation often, to become familiar with it and improve its technique; that the obstetrician in charge of such an important institution as a lying-in hospital owes greater allegiance to science than to anything else; while in private practice the case is different, as the accoucheur is here engaged to see a woman safely through her confinement. This is decidedly contrary to the belief and teaching in this community, at least, as neither the law, custom or public opinion countenances a man in treating his hospital patients differently from what he would his private patients under similar circumstances. He even goes so far as to say that difficult forceps and version operations ought to be replaced by symphyseotomy.

The author's rules for asepsis are usually excellent. He depends rather more upon lysol as an antiseptic in confinement work than is generally customary. He also still clings to the air-borne theory of puerperal infection, as would be expected from an acquaintance with his previous writings, and many of his old arguments are here introduced, but many of them have become obsolete.

We have made a number of criticisms of the book, those which have seemed most prominent in our reading; but, on the other hand, much excellent advice is offered throughout the book. One of the most important truisms vouchsafed is the statement that, "if doctors would only practice antiseptic midwifery and seek help in time, many a life might be spared that is now extinguished with the perforator, or falls a prey to the no less deadly microbes."

As a whole the book is a most excellent one, and will, we believe, after certain changes and eliminations have been made, take its place among the first half dozen of American textbooks on obstetrics.

The Practice of Surgery. A treatise on surgery for the use of practitioners and students. By HENRY R. WHARTON, M.D., Clinical Professor of Surgery, Woman's Medical College of Pennsylvania; Surgeon to the Presbyterian and the Children's Hospitals; Consulting Surgeon to St. Christopher's Hospital and the Bryn Mawr Hospital; Fellow of the American Surgical Association, and B. FARQUHAR CURTIS, M.D., Professor of Clinical Surgery and Adjunct Professor of the Principles of Surgery in the University and Bellevue Medical College of New York; Surgeon to St. Luke's Hospital, Bellevue Hospital, and the Memorial Hospital; Fellow of the American Surgical Association. Profusely illustrated. Third edition. Philadelphia and London: J. B. Lippincott Company. 1902.

This book has reached its third edition, and is arranged in the following manner: First, a description of the various injuries and surgical diseases sufficiently full to enable the practitioner to recognize them when met with in practical work; second, full directions for the treatment of such injuries and diseases as would usually be attended by the general practitioner; third, a sketch of the treatment of the more difficult conditions, such as would allow the practitioner to advise patients intelligently in obtaining special skilled surgical attention; fourth, an outline of the accepted facts and theories of the etiology and pathology of the various surgical affections sufficient to form a foundation for the clinical picture and give directions for the treatment.

A special chapter on the injuries of the eye and its appendages has been contributed by Professor de Schweinitz.

The book as a whole is a very satisfactory one. It contains all the essential knowledge, and is a safe guide for students and practitioners. The illustrations on dislocations are capital, and the majority of the illustrations are original. A just appreciation of the importance of subjects has been maintained, and it may properly be said that it makes one of the best textbooks of surgery.

On the Cure of the Morphia Habit without Suffering (Physiological Demorphinisation). By OSCAR JENNINGS, M.D., M.R.C.S. Second edition, revised and enlarged. 12mo. pp. xii, 211. With 9 diagrams. New York: William Wood & Co. 1901.

The important factors of the craving for morphine, the writer contends, are heart depression, gastric hyperacidity and nervous irritability. Various sphygmographic tracings are given in support of the first of these contentions. In addition the patient must have his life regulated, although not put under absolute restraint. The writer favors gradual reduction of morphine, always avoiding such rapid reduction as to cause distress, and substituting rectal for hypodermic injections. Sphygmographic tracings are made of the pulse, and any decline is treated by sparteine. Bicarbonate of soda is given for the hyperacidity, and hot air baths or Turkish baths for the nervous restlessness. A light diet and avoidance of physical effort are also essential. The writer reports a number of cases where a cure was obtained without suffering by these methods.

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TYPHOID FEVER AND BLANKETS.

THE *British Medical Journal* gives the following as the "real facts" in regard to an outbreak of typhoid fever which occurred on board the training ship "*Cornwall*":

"Ten cases of typhoid fever having occurred on the training ship '*Cornwall*' early in April, an investigation into its origin was duly undertaken; and as no other cause was found, attention was at last directed to certain blankets recently taken into use. Stains on them awakened suspicion, and examination by Professor Klein, F.R.S., proved that the blankets were swarming with typhoid bacilli in an active condition. The blankets in question had been offered to the authorities of the ship at an unusually low rate, and as the sample submitted was good, a considerable number were at once bought. The vendor was a merchant in the East End, and on investigation it turned out that the '*Cornwall*' blankets were merely a very small part of a very large consignment recently received by the vendor from another merchant, the bulk of which had been already distributed to many different localities in England. The city of London authorities at once warned the medical officers of health of all districts known to be concerned, and the latter immediately seized and disinfected all blankets from the same source which they were able to find. In a good many cases the blankets had been bought by the public and used without evil result, and no cases of typhoid except those on the '*Cornwall*' have been traced to this cause. All the blankets concerned were army blankets, and the question that next arose was how they came to be upon the market at all, whether clean or unclean."

The incident has attracted the attention of the daily press, has been the subject of much discussion accompanied by details far more sensational than those given by our medical contemporary, and the British war office has not escaped stringent criticism.

Apparently a very large number of blankets—many thousand—which had been used by the

British troops in South Africa in hospitals and elsewhere were sold by the government, it is said at the vile price of five cents apiece, and in due course found their way to London, and were widely scattered. It appears that according to the regulations such blankets should be torn into four pieces before being sold, and thus rendered useless except for paper manufacturers. Various belated morals are being drawn from the occurrence, and an official inquiry has been demanded.

In the meantime there is apparently no doubt that a bacteriological experiment upon a large scale in regard to the viability of the typhoid bacillus under certain conditions has been one of the results of this unusual commercial transaction on the part of government officials.

SUNDRY PUBLIC DOCUMENTS.

Our knowledge of the progress of public affairs is largely gained through the annual reports of the various branches of the state or city government. It is unusual to take up one of these reports, bearing more or less directly on medical matters, without being impressed with the great amount of work, complicated in detail and often of great value, which is being done by our various boards of public-spirited physicians. We have at hand several of these reports which deserve mention in these columns.

The State Board of Insanity, in its fourth annual report, gives evidence of progress in the difficult problems which come under its supervision. From this report it appears that there has been an increase of 465 insane in the year under consideration, over the preceding year. The reasons given for this greater number are fewer discharges to almshouses and fewer patients whose conditions or claims allowed of deportation. Again, as always, there is complaint of the overcrowding in hospitals devoted to these purposes. Under existing conditions this appears absolutely unavoidable, but it is a regrettable fact that when a definite need for greater accommodation declares itself there should not be a rapid response by those in authority. A combination of economy and liberality is particularly demanded in this type of hospital work.

It is suggested also that ultimately all insane inmates of almshouses, now numbering about 900, according to new legislation, must be received into special hospitals. Provision is urged for at least 600 additional patients. There is an interesting passage in this report on the colony idea in the treatment of the chronic cases and the possibility of evolving intermediate types between such colonies and the asylum. The State Colony at Gardner,

comprising 1,600 acres, was formally opened Oct. 22, 1902. Progress in this work is confidently expected during the year. This and many other points of interest are taken up in this public document, with the usual details which always accompany such reports. It is to be hoped that as further progress is made in the classification and study of the great material which comes under the supervision of this board, a definite place may be found in their yearly report for a discussion of methods of study, results and work done, and for the development of a system of definite clinical and pathological inquiry by competent men. Excellent work in this line is now being done in New York State.

The annual report of Worcester's Board of Health calls attention, among other items of interest, to the presence of malaria in virulent form throughout the city, a matter to which we have already briefly called attention. The Board of Health makes a modest request that low places be filled and pools be petrolled, quoting Brookline as an example of what may be done, assuming that about \$1,500 in addition to the regular appropriation would be necessary to begin the work with success. This modest request, which would undoubtedly lead to a very great amelioration of the unfortunate conditions now existing in the city regarding malaria, we understand has met with a cold reception from the city government, so that unless undertaken by private means malaria will apparently continue to flourish in the city. Typhoid fever has been reported to the extent of 90 cases with 18 deaths during the year ending Dec. 31, 1902, less by 20 than in 1901. Many of the cases were sporadic, but some were directly traceable to a certain milkman's route. Definite directions are given in the report of a somewhat popular sort regarding tuberculosis and its prevention. We have no knowledge of how widely this particular report may be read, but it is certainly advisable to spread the gospel regarding tuberculosis by every legitimate means.

A third report, which has perhaps a more definite medical bearing than is commonly understood, is the report of the Metropolitan Water and Sewerage Board, filling a goodly volume of 334 pages, with numerous instructive illustrations. It is certainly well that we as physicians should have some definite idea of the work which is being done under the supervision of this board. We are inclined to think few can have such a realization who have not looked over this carefully prepared report, describing the work undertaken and in contemplation throughout the state.

We have from year to year in these columns also

made mention of the yearly work of the New York State Reformatory at Elmira, an institution which has long been in the public eye, and which offers much of value to the physician as well as to the criminologist. It has for some years been the custom at this institution to incorporate in the yearly report an accurate statement of the medical conditions prevailing at the institution. This is all the more valuable inasmuch as the institution is primarily a prison and not a hospital. Systematic work, for example, is being done upon the eye, and the possible relationship which may ultimately be established by the collection of such statistics regarding the relation of the criminal type to abnormalities of this special sense should be awaited with interest.

CONGENITAL DISLOCATION OF THE HIP; OLD AND NEW METHODS OF REDUCTION.

THE cases of congenital dislocation of the hip operated upon by Dr. Lorenz in Boston six months ago were examined by the surgical staff of the Children's Hospital Tuesday, June 9, in the presence of members of the Massachusetts Medical Society who visited the hospital at the time of the annual meeting. The plaster of Paris bandages were removed, x-ray photographs were taken and limbs were measured. The conditions were reported to be satisfactory in five of the six cases. The sixth case, a boy of ten, was the one in which Professor Lorenz failed to reduce the dislocation. The boy is thought by his parents to walk better than before the attempted reduction. Precise details of the ultimate results in these cases will be published after a sufficient time has elapsed to determine the permanence of the cure.

Other cases of this deformity, operated upon by surgeons of the Children's Hospital shortly before and since Professor Lorenz' visit, were also shown. Four cases were presented of reduction in which the operation had been successfully performed by the aid of a new mechanical device invented by Mr. Ralph W. Bartlett of Boston.

In one of these no reduction had been attempted by Dr. Lorenz, on account of the age of the child, forcible manual reduction had subsequently been twice attempted at the hospital without success. In another case the child was thirteen years of age, beyond the usual age limit for successful reduction.

Forcible mechanical reduction was demonstrated in a case operated upon before members of the Massachusetts Medical Society present, and the advantages and disadvantages of the appliance shown.

From what was seen it appeared to be possible

to apply the force necessary for stretching the contracted parts before reduction with greater precision by means of this mechanical appliance than by the hands; and the appliance promises to be of great assistance in some of the older cases where manual reduction is difficult, if not impossible.

A fuller description of the later methods employed in reducing congenital dislocation of the hip will appear shortly in this JOURNAL.

VAGITUS UTERINUS.

THE utterance of a cry by the unborn child while still in its mother's uterus is a sufficiently unusual and interesting phenomenon to merit the publication of a case reported by Dr. Palmer on another page, especially when its occurrence is as well attested as in this instance. The condition has long been recognized as possible under certain rare circumstances, and is spoken of by a few authors under the name of *Vagitus Uterinus*. Authentic cases are so rare, however, that more or less haziness and doubt have always accompanied the reported cases. The most recent reported case is that of Reidhaar in the *Centralblatt für Gynäkologie* for 1902, who also mentions several other instances. Reidhaar was inducing labor at the thirty-fourth week for a febrile condition on the part of the mother, so that at that time the fetus could not have been very robust. Some time after rupture of the membranes seven distinct intrauterine fetal cries were heard, and others later. The child was delivered by forceps sixteen hours after the first cry. It was asphyxiated at birth, but was easily resuscitated and made a good recovery.

It has been claimed that the fetus does not breathe in the uterus under these conditions. That air must be inspired and expired in order to produce an audible cry it does not seem necessary to discuss. The case of Reidhaar would seem to prove that intrauterine breathing is not by any means an indication for prompt delivery in order to preserve the life of the child. It is not uncommon to see, in breech cases after the birth of the body, attempts at respiration; and these efforts have been regarded as requiring immediate relief, either by extraction or by favoring the entrance of air into the vagina. It has even been claimed that any condition which diminishes the supply of oxygen to the fetal blood, such as pressure on the cord, always induces attempts at respiration in the fetus, even in the uterus. If this were true, cases of intrauterine cry would probably be much more frequent. It is more likely that the condition arises only in the presence of some unusual condition

such as the introduction of air in considerable quantities into the uterus.

It would seem, *a priori*, impossible for the fetus in the uterus to cry without breathing; and this can occur only when air has entered the uterus, usually after some form of manipulation, such as the introduction of the hand or an instrument. Operative interference in the birth of the second of full term twins would seem to be the most favorable time for this to result, because of the fully dilated canal, the strength of the fetus, and the delay of the birth after the previous stimulating effect of the uterine contractions.

THE "SPOTTED FEVER" OF THE BITTER ROOT VALLEY.

THE state of Montana is the forty-first state to swing into line and appoint a state board of health, leaving a half-dozen states, or more, without such boards. The State's first biennial report shows commendable progress in sanitary matters in this, its first year of existence.

In addition to the usual matter relative to the prevalence of infectious diseases and their prevention, fully one half of the report is devoted to a very interesting discussion of a disease prevalent in the Bitter Root Valley and known as "spotted fever." The disease is quite sharply limited to certain localities, and prevails from March to July; more than half of the reported cases were in May and June. It attacks persons of any age and of either sex, but those whose occupations take them to the foothills in spring are most affected. All symptoms and lesions point to a specific infection. There is scarcely any evidence of direct transmission from one human being to another. No symptoms point to infection through the digestive tract or the respiratory organs. In all cases examined there were small wounds of the skin as though made by ticks. Details of 114 cases are given, of which 81, or over 70%, proved fatal. Autopsies were made in several instances. The board recommends a careful investigation as to the causes of this disease. An interesting point is the question whether the gray gopher of that region acts as a host for the hematozoon, which has been found in the blood of infected patients.

MEDICAL NOTES.

A LABORATORY INVESTIGATOR DIES FROM PLAGUE.—The death from plague in Berlin is reported of an Austrian doctor who was working there in the laboratory of the Institute of Infectious Diseases.

UN BEL RECORD.—Il *Boston Medical and Surgical Journal*, nostro eccellente confratello americano, ha festeggiato il 75° anniversario della sua fondazione. Un solo giornale settimanale medico, crediamo, ha una più lunga esistenza ed è il *Lancet*, di Londra. — Il *Policlinico*, Roma.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, June 10, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 29, typhoid fever 11, measles 46, smallpox 0.

BOSTON MORTALITY STATISTICS.—One hundred and sixty-eight deaths occurred during the week ending June 6, as against 202 during the corresponding week last year, according to the report from the Board of Health, giving a death-rate of 14.94. For the summer season this is unusually low. Of this number of deaths 95 were males and 73 were females; 106 were born in the United States, 59 in foreign countries and 3 unknown; 34 were of American parentage, 108 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 31 cases, 4 deaths; scarlatina, 41 cases, 3 deaths; typhoid fever, 9 cases, 2 deaths; measles, 42 cases, 2 deaths; tuberculosis, 10 cases, 25 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 17, whooping-cough, 2; heart disease, 10; bronchitis, 4; marasmus, 2. There were 10 deaths from violent causes. The number of children who died under one year was 27; under five years, 44; persons over sixty years, 38; deaths in public institutions, 58.

NEW YORK.

REPORT OF ST. JOHN'S GUILD.—The thirty-sixth annual report of St. John's Guild, recently published, shows that during last summer the floating hospitals "*Emma Abbott*" and "*Helen C. Jailliard*" carried 81,554 patients,—42,651 children and 15,700 babies, with 23,203 women; 1,784 patients were admitted at the Seaside Hospital at New Dorp, Staten Island. The disbursement of the guild in connection with this work was \$135,199. It is stated that while the season taxed the hospitals to their utmost, no child who needed the care they afforded was turned away.

MORTALITY DURING MAY.—The reports of the Health Department show that the mortality in the city during the month of May represented an annual death-rate of 18.54, against 18.47 for April and 18.91 for May of last year. The corrected death-rate, excluding non-residents and infants under one

week old, was 17.72. The mortality would have been considerably greater than in the month previous but for the fact that in the last week of May the death-rate was exceptionally low. This was only 16.35, and the corrected rate, 15.51. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from measles increased from $7\frac{3}{4}$ in April to $15\frac{3}{4}$ in May; the weekly average of deaths from whooping-cough, from $5\frac{1}{4}$ to $7\frac{1}{4}$; from typhoid fever, from $7\frac{1}{4}$ to $7\frac{1}{2}$; from pneumonia, from 143 to 149 $\frac{3}{4}$; from diarrheal diseases, from $40\frac{1}{4}$ to $40\frac{1}{2}$, and from diarrheal diseases in children under two years old from $30\frac{3}{4}$ to $44\frac{1}{4}$. Among the diseases which showed a decline in mortality were the following: The weekly average of deaths from scarlet fever decreased from $23\frac{1}{2}$ to $19\frac{1}{4}$; from influenza, from $10\frac{1}{2}$ to $4\frac{1}{4}$; from broncho-pneumonia, from $72\frac{1}{2}$ to $62\frac{1}{2}$; from pulmonary tuberculosis, from $162\frac{1}{2}$ to $154\frac{1}{2}$; from cancer, from 51 to $46\frac{3}{4}$, and from organic heart diseases, from $100\frac{1}{4}$ to 91 $\frac{1}{2}$.

CORNELL UNIVERSITY MEDICAL SCHOOL.—The commencement exercises of the medical department of Cornell University were held in the Carnegie Music Hall on June 3, when degrees were conferred upon a class of sixty, two of whom were women. President Schurman made an address to the graduates, in the course of which he said that there would never come a time when the legislature of any of the states would pass a law limiting the study of medicine or law to college graduates. His remarks in regard to what preliminary education should be required from students applying for entrance to the professional schools were as follows: "The most serious question which confronts us is, Shall we admit them from the common schools or high schools, or shall we demand of them before admittance the college degree? It is stated that the professions of law and medicine are already overcrowded, and that it is a matter of expediency alone, and not a matter of either educational or political nature, that it is advisable to bar all but the holders of college degrees." We could probably support four or five institutions by limiting the students to holders of degrees; but would such a course be advisable? The question alone is, Can you follow the course of study laid down as necessary in either profession? In cities of the size of New York, Chicago, Boston and Philadelphia institutions admitting only men who are possessed of a degree would probably get along, for always in large cities are to be found a number of young men who have a degree; but what would be the result? Preparatory schools would spring up all over the country. Liberal culture is not essential to a professional course,

although it is almost invaluable. It is best for Cornell in the future to maintain her ancient spirit of democracy, which is to leave the doors of her professional schools open to all those who are capable of following the course of study."

COMMENCEMENT AT NEW YORK UNIVERSITY.—At the seventy-first annual commencement of New York University, which was held on June 4, the degree of Doctor of Medicine was conferred on seventy-three graduates, and of Doctor of Veterinary Surgery on eleven.

GLANDERS.—Two fatal cases of glanders in the human subject recently occurred at Newark, N. J. The second of the patients was transferred to the German Hospital, New York, where he died after much suffering on June 3.

A CENTENARIAN.—Barnett Davis, a native of Russia, died in Williamsburgh, Borough of Brooklyn, New York, on May 30, at the age of one hundred and one years.

APPROPRIATION FOR STABLE FOR DEPARTMENT OF STREET CLEANING.—At a meeting of the Board of Estimate and Apportionment, held on June 5, the sum of \$395,000 was appropriated for a large stable, to be located in Brooklyn, for the use of the department of street cleaning. The buildings are to house hundreds of horses and carts, and the plans include a repair shop, dressing rooms equipped with lockers and shower baths for the street cleaners, a storage room and a hospital for sick horses. In making a personal appeal for the appropriation Dr. Woodbury, the commissioner of the department, stated that last year it was necessary to shoot sixty horses affected with glanders because there was no way of keeping the sick animals isolated, and that he thought it cruel and inhuman to turn sick horses out of doors and then shoot them.

BIRTH-RATE OF MANHATTAN BOROUGH.—The birth-rate in the Borough of Manhattan was increased from 27.27 in 1900 to 27.90 in 1902, and in the first four months of 1903 it rose to 30. Better tenement houses, cleaner streets and stricter accountability of physicians are probably all factors in this increase. The rate is somewhat smaller in the other boroughs, owing, no doubt, to less complete returns.

NOTES FROM THE PHILIPPINES.

DREDGING OF THE HARBOR.—A much needed sanitary improvement has just been authorized in the destruction of the wall of the old city of Manila between the Santo Domingo and Almacen gates, the erection of a retaining wall along the south bank of

the Pasig, and the reclamation for commercial purposes of a considerable area of land. The moat which crosses in front of the Santo Domingo gate is to be filled in, after drains have been placed in it. Bids for the performance of the work are to be at once advertized for in Manila, Hong Kong and Singapore. Work on the dredging of the harbor and reclamation of ground for wharves is going on rapidly, the largest hydraulic dredge in the world being employed in the work, which is destined to make Manila one of the great seaports of the world.

Correspondence.

MANILA LETTER.

SPECIAL CORRESPONDENCE.

MANILA, April 25, 1903.

NEW HOSPITAL BUILDINGS FOR CHINESE.—CHINESE MEDICAL PRACTICE.

HERETOFORE the Chinese in Manila, when affected with cholera, smallpox or plague, have been required to go to the general contagious disease hospitals at San Lazaro. They have objected to this, preferring to remain by themselves, and the Chinese Chamber of Commerce has requested the Board of Health that hereafter all Chinese with contagious diseases be sent to isolation hospitals to be constructed at the Chinese hospital. Recently a meeting was held at which nearly all the wealthy and influential Chinese of the city were present, and it was decided to erect four buildings near the Chinese General Hospital, to be used as wards for cholera, plague and smallpox cases, and for a detention camp for contacts and suspects. A large sum of money will be expended to make the buildings and their equipment as complete as possible. The old General Hospital is also to be renovated and its use continued as at present, but under improved conditions.

CHINESE GENERAL HOSPITAL.

This Chinese General Hospital, located in the La Loma District, is managed by the Chinese themselves and supported by contributions from the Chinese merchants, for the Celestial not only prefers to keep to himself, but is unwilling to have his countrymen become charges upon foreigners. Treatment in the Chinese hospital is gratuitous; non-contagious cases that desire return to China have their passage paid, if necessary, by the Chinese Chamber of Commerce. The General Hospital is located in a large Spanish building, which is built around a central court yard. Two sides of the square are used as wards; the other two as offices, dispensary and kitchen. The maximum capacity is eighty beds, but at present one of the wards is not used, and there were, at a recent visit, but about sixty cases in hospital. An attempt is made to separate the medical and surgical cases, though operative surgery is not practised, and surgical cases, outside of fractures and dislocations, are treated medically. The hospital buildings were found unexpectedly clean, although the coolie patients were uniformly dirty in their persons. Bathing is not indulged in by the patients except when prescribed by the Chinese "practicante," or quack doctor, in attendance. Apparently he has no very high opinion of balneotherapy, and does not believe in the use of water externally, for many of the patients did not appear to have been bathed for weeks and longer. The wards extend longitudinally through the center of the main buildings, windows opening from them into the outside corridors, which in turn were closed in with shell latticed shutters. The windows opening from the wards into the corridors were all carefully closed with heavy board shutters, for the instinctive aversion of the Chinaman to fresh air when he is well becomes a mania when he is sick, as it is believed that all sorts of dire results may follow if the windows

are left open so that the evil spirits—and fresh air—may enter. The beds in the wards are of wood, with cane bottoms covered with native mats. Each bed has a mosquito bar, which is something that the Filipino is unwilling to use, while a red curtain hung at the foot of each bed prevents a view of the occupant by persons passing down the center of the ward. No acute cases seemed to be under treatment. The majority of the cases appeared to be of pulmonary tuberculosis and beriberi. Several severe cases of advanced syphilis were noticed in the surgical ward, also a number of severe cases of leg ulcer. None of these cases seemed to be doing well, as the resident Chinese doctor practises purely by the old Chinese medical ideas, and has no conception of modern scientific medicine. Operative surgery, even of the most minor nature, is quite beyond him. Nevertheless, the Chinese prefer him, and refuse treatment by Dr. Tee Han Kee, a Chinese physician newly arrived in Manila, who was educated in the government medical school in Hong Kong, and is a thoroughly well qualified man. However, even the most bigoted Chinaman can see that the latter gets results that the Chinese quacks cannot attain, and as time goes on Dr. Kee may be able to live down the disgrace of having had a modern medical education. The dispensary of the hospital was equipped with all the articles of the Chinese materia medica, from the vegetable, mineral and animal kingdoms. Most of the medicines noted were dried roots and herbs, and were administered in the form of decoctions. Mercury, in some of its forms, is a favorite remedy with the Chinese, and they fully understand its value in syphilis, which is very common among them. The kitchen of the hospital was clean, and the food, consisting of rice, fish, pork and other articles of Chinese "chow," looked quite appetizing. There seemed to be no attempt at dieting in dysentery and fevers. Following the customs of all races except the Anglo-Saxon, the latrines adjoined the kitchen and were found unexpectedly clean. A small detached building is used as a mortuary. Across the hospital yard is a long, shedlike building, with grated windows. This is divided into a number of small cells, six or eight feet square, each of which contained an insane Chinaman. The insane are kept in these cells from the time they enter the hospital until they die; unless they break out, as not infrequently happens. One wretch had escaped the previous night, and was returned by the Chinese at the time the hospital was being visited. He objected strongly to being returned, and struggled violently. One unruly patient was observed sitting on the floor of his cell with his feet confined in stocks. He was raving wildly, much to the amusement of a group of Filipinos. All the "locos" seen were provided with cigarettes and matches; why they do not burn the place down is incomprehensible. The type of disease is chiefly mania, with a few cases of melancholia.

Near the Chinese hospital are the present temporary buildings of the Chinese contagious disease hospital. There were separate wards for plague, smallpox and cholera. The buildings were cheap bamboo and nipa affairs, and will be burned down to make room for those of the new modern contagious disease hospital. One case of smallpox was observed, with eight cases of plague. All the latter presented the typical symptoms of the disease. All seemed to suffer much pain, and lay in a characteristic position with the thighs flexed to relax tension on the buboes. Several cases were delirious, and all had the peculiar facies almost pathognomonic of this disease. One of the patients was a young Chinese woman, whose bright silk clothing and gaudy embroideries seemed to mock her dying condition; but as the Chinese and Filipinos commonly sleep in their day clothing, some rather unexpected costumes may be seen in the hospitals on the persons of the sick, as no clothing for the latter is provided. The food in the Chinese contagious disease hospital seemed to be good, and the buildings again were unexpectedly clean. Until recently the Chinese attendants took no measures for disinfection; but since the Board of Health has prescribed what should be done, the directions have been followed with the utmost faithfulness. A Chinese "practicante" is in charge of the Chinese plague patients. There is no special treatment. Most of them die, but they would

probably do this under the most modern treatment. It is customary to incise the buboes as soon as fluctuation can be determined. The rate of bubonic plague is much higher among the Chinese than the Malays, as the former live in buildings which furnish a more favorable environment for the plague bacillus; and as the coolies wear no shoes, they are more liable to infections through abrasions of the lower extremities than are the better protected Filipinos. The death-rate among those infected is also higher, as the Mongolian appears to be specially susceptible to the disease.

The new Chinese contagious disease hospital is to be made most complete, according to modern sanitary ideas. A general sewerage system is projected, together with an uncontaminated water supply. The latter will be obtained from a deep driven well, and forced by a wind-mill into a storage tank, whence it will be distributed over the hospital and detention camp. The two institutions will be located about a half-mile apart, and well isolated from all habitations and public roads. The buildings will be of hardwood with corrugated iron roofs, be raised on piles, have cement floors, and have the ground underneath the buildings cemented. There will be free ridge ventilation, and an interior casing of the ceiling to prevent overheating. Each building used as ward or detention building will have a semi-detached kitchen at one end and latrine at the other. The other buildings will be offices, quarters for attendants, mortuary, receiving ward, etc. The Chinese wish things complete, whatever the cost. The Chinese merchants also decided, at the same recent meeting, to go to any expense to put their places of business in good sanitary condition and improve the Chinese quarters of Manila, and to coöperate in every way possible with the Board of Health in its operations against plague and the other transmissible diseases. The secretary of the Chamber of Commerce lately stated for publication that his people proposed to support the government in every way possible and demonstrate their interest in the welfare of the islands. The policy of the Chinese Chamber of Commerce is very broad and progressive, and the health authorities have found it of much advantage to work among the Chinese through that institution in the prevention of opposition and distrust on the part of the lower class of coolies, who have the greatest respect for the opinions of their more wealthy countrymen and do not question their orders or advice.

THE INTRAUTERINE CRY.

SOUTH FRAMINGHAM, MASS.,

June 1, 1903.

MR. EDITOR: I send you the following brief report of a rare case, merely as a matter of interest and record: On April 13 last I was called in consultation by Dr. R. M. Raymond, by whose courtesy I am permitted to report the case, to assist him in a case of child-birth, — twins, breech presentation in both cases.

The mother was Mrs. L. M., thirty-six years old, strong and well formed; had had five children before, the third and fifth being instrumental with good recoveries. In this case labor began at 6 A.M., and the first child was born unaided at 8.45 A.M., breech-presenting, with but little difficulty. When the breech of the second child presented, a hand and arm came also, making interference necessary. We gave ether, and while Dr. Raymond had his hand in the uterus after the feet of the child, and I was making pressure and steadying the child from above, we were startled by the uncanny sound of the child crying vigorously *in utero*, so plainly as to be heard by the two doctors and two nurses. The child cried for perhaps a minute, but was not delivered until fully five minutes later, when it was very much alive. The vagina was not particularly roomy, and there was no evidence of air being sucked in.

Both mother and children did well. I would like to know how it is physically possible for a child to cry in its mother's womb, and how often such cases have been known?

Yours respectfully,

LEWIS M. PALMER, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 30, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Whooping cough. | Scarlet fever. | |
| New York . . . | 3,785,156 | 1,170 | 344 | 24.70 | 16.07 | 3.59 | .51 | 1.29 | |
| Chicago . . . | 1,885,060 | 581 | 133 | 24.61 | 18.41 | 2.41 | .86 | 1.24 | |
| Philadelphia . . | 1,378,327 | 444 | 115 | 29.50 | 9.67 | 1.77 | 2.70 | 1.10 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 333,712 | 154 | 31 | 27.92 | 13.63 | 2.59 | — | .65 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,904 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 123 | 44 | 32.52 | 18.82 | 3.25 | 2.43 | 3.25 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . | 298,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 56 | 16 | 35.34 | 14.13 | 3.53 | — | 5.30 | |
| Boston . . . | 603,163 | 183 | 42 | 27.86 | 12.57 | 3.27 | 1.09 | .55 | |
| Worcester . . . | 132,044 | 25 | — | 12.00 | 24.00 | 4.00 | — | — | |
| Fall River . . . | 115,549 | 41 | 21 | 26.83 | 21.95 | — | 2.43 | 4.87 | |
| Lowell . . . | 101,959 | 27 | 5 | 14.81 | 7.40 | 7.40 | — | — | |
| Cambridge . . . | 98,693 | 24 | 3 | 20.83 | 16.67 | — | — | — | |
| Lynn . . . | 72,497 | — | — | — | — | — | — | — | |
| Lawrence . . . | 69,766 | 18 | 9 | 33.33 | 5.55 | 11.11 | 5.55 | — | |
| Springfield . . | 69,389 | 7 | 2 | — | — | — | — | — | |
| Somerville . . . | 68,110 | — | — | — | — | — | — | — | |
| New Bedford . . | 67,198 | 32 | 17 | 34.37 | 15.62 | — | — | 28.12 | |
| Holyoke . . . | 49,286 | 16 | 7 | 18.75 | 31.25 | — | — | — | |
| Brockton . . . | 44,873 | 12 | 0 | 25.00 | — | — | — | — | |
| Haverhill . . . | 42,104 | 20 | 4 | 25.00 | 20.00 | — | — | — | |
| Newton . . . | 37,794 | 4 | 1 | — | — | — | — | — | |
| Salem . . . | 36,876 | 12 | 4 | 16.67 | — | — | — | — | |
| Malden . . . | 36,286 | — | — | — | — | — | — | — | |
| Chelsea . . . | 35,876 | 7 | 3 | — | 28.60 | — | — | — | |
| Fitchburg . . . | 35,069 | 6 | 3 | — | — | — | — | — | |
| Taunton . . . | 33,656 | 13 | 1 | 7.70 | 15.40 | — | — | — | |
| Everett . . . | 28,620 | 8 | 4 | 12.50 | — | — | 12.50 | — | |
| North Adams . . | 27,862 | — | — | — | — | — | — | — | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 1 | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 5 | 1 | 20.00 | — | — | — | — | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsford . . . | 22,589 | 11 | 1 | 9.09 | 18.18 | — | — | — | |
| Chicopee . . . | 21,031 | 9 | 3 | 33.33 | — | — | — | 9.09 | |
| Medford . . . | 20,962 | 3 | — | 33.33 | 33.33 | 33.33 | — | — | |
| Northampton . . | 19,883 | 8 | 1 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 2 | — | 50.00 | — | — | — | — | |
| Clinton . . . | 15,161 | 1 | — | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | — | — | — | — | — | — | — | |
| Woburn . . . | 14,300 | 2 | — | — | 50.00 | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | 2 | 2 | 50.00 | — | — | — | 50.00 | |
| Attleboro . . . | 13,677 | 1 | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 2 | 0 | — | — | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 6 | 1 | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 2 | — | — | — | — | — | — | |
| Frammingham . . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 4 | — | — | 50.00 | — | — | — | |
| Weymouth . . . | 11,344 | 3 | 1 | 66.67 | — | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 2 | — | 50.00 | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,069; under five years of age, 846; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 771, acute lung diseases 453, consumption 364, scarlet fever 49, whooping cough 31, cerebrospinal meningitis 11, smallpox 11, erysipelas 10, measles 28, typhoid fever 65, diarrheal diseases 100, diphtheria and croup 86.

From whooping cough, New York 6, Chicago 5, Philadelphia 12, Pittsburg 3, Boston 2, Fall River 1, Lawrence 1, Everett 1. From erysipelas, New York 4, Chicago 1, Philadelphia 2, Baltimore 1, Pittsburg 1, Fall River 1. From smallpox, Chicago 1, Philadelphia 7, Pittsburg 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending May 16, the death-rate was 15.4. Deaths reported, 4,441: acute diseases of the respiratory organs (London) 225, whooping cough 110, diphtheria 52, measles 125, smallpox 17, scarlet fever 41.

The death-rate ranged from 3.3 in Homsey to 24.1 in Middlesbrough; London 14.4, West Ham 11.8, Brighton 13.7, Portsmouth 13.9, Southampton 16.1, Plymouth 14.0, Bristol 14.5, Birmingham 16.1, Leicester 13.0, Nottingham 17.4, Bolton 16.5, Manchester 19.1, Salford 14.5, Bradford 14.7, Leeds 14.9, Hull 18.6, Newcastle-on-Tyne 17.6, Cardiff 14.8, Rhondda 12.2, Liverpool 20.0, Willesden 8.6, Wigan 19.3.

METEOROLOGICAL RECORD.

For the week ending May 30, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. |
|----------------|-------------|----|--------------|----------|--------------------|----|--------------------|-----|-------------------|----|---------|----|---------------------|
| | Daily mean. | | Daily mean. | Maximum. | Minimum. | | | | | | | | |
| S. .24 | 30.18 | 52 | 60 | 44 | 49 | 55 | 52 | E | S W | 7 | 13 | F. | O. |
| M. .25 | 30.31 | 52 | 58 | 46 | 58 | 58 | 58 | N | S | 9 | 9 | C. | C. |
| T. .26 | 30.38 | 52 | 68 | 47 | 49 | 50 | 50 | S W | S | 6 | 12 | C. | O. |
| W. .27 | 30.23 | 62 | 73 | 50 | 72 | 75 | 74 | S W | S W | 13 | 13 | F. | O. |
| T. .28 | 30.07 | 68 | 75 | 62 | 76 | 85 | 80 | S W | S W | 14 | 19 | O. | O. |
| F. .29 | 30.12 | 70 | 79 | 61 | 42 | 49 | 46 | W | N W | 8 | 6 | C. | O. |
| S. .30 | 30.11 | 58 | 67 | 50 | 90 | 50 | 70 | N E | N | 10 | 9 | R. | C. |
| Mean for week. | 30.20 | | 69 | 51 | | 61 | | | | | | | .06 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ‡ Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JUNE 4, 1903.

BROWN, W. B., passed assistant surgeon. To proceed to Memphis, Tenn., for special temporary duty. June 1, 1903.

WICKES, H. W., passed assistant surgeon. Granted leave of absence for one day, June 10. June 4, 1903.

GREENE, J. B., passed assistant surgeon. Granted leave of absence for eight days from June 10. June 2, 1903.

LUMSDEN, L. L., passed assistant surgeon. Bureau order of May 26, 1903, directing Passed Assistant Surgeon Lumsden to proceed to San Juan, P. R., for temporary duty, amended so that he shall be relieved from duty at New Orleans, La. May 29, 1903.

KING, W. W., assistant surgeon. Granted leave of absence for two months from June 10. June 2, 1903.

ROBERTSON, H. MCG., assistant surgeon. Granted leave of absence for seven days from May 29, 1903, under paragraph 191 of the Regulations.

GOLDSBOROUGH, B. W., acting assistant surgeon. Granted leave of absence for seven days from June 3. May 29, 1903.

SINCLAIR, A. N., acting assistant surgeon. Granted leave of absence for twenty-five days from June 24. June 3, 1903.

TAPPAN, J. W., acting assistant surgeon. Granted leave of absence for one month from May 25. June 3, 1903.

ALLEN, G. C., pharmacist. Granted leave of absence for seven days from May 29, 1903, under paragraph 210 of the Regulations.

MASON, M. R., pharmacist. Relieved from duty at San Francisco, Cal., and directed to proceed to Dutch Harbor, Alaska, for special temporary duty; thence to Nome, Alaska, and report to acting assistant surgeon in charge for temporary duty. May 29, 1903.

BOARD CONVENED.

Board convened to meet at the Marine Hospital, Boston, Mass., June 2, 1903, for the physical examination of an officer of the revenue cutter service. Detail for the board: Surgeon R. M. Woodward, chairman; Assistant Surgeon W. C. Rucker, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JUNE 6, 1903.

M. W. BAKER, assistant surgeon. Detached from the Naval Academy and ordered to the "Brooklyn."

W. B. GROVE, passed assistant surgeon. Detached from the Naval Dispensary and ordered to the Naval Hospital, Philadelphia, Pa.

A. FARENHOLT, passed assistant surgeon. Detached from the "Independence" and ordered to the "Boston."

G. PICKRELL, surgeon. Detached from the Naval Academy and ordered to the "Texas."

H. E. AMES, surgeon. Detached from the "Texas" and ordered to the Naval Academy.

G. A. LUNG, surgeon. Detached from the Naval Hospital, Philadelphia, Pa., and granted sick leave for three months.

G. F. DUNCAN, acting assistant surgeon. Ordered to duty with Recruiting Party No. 8.

W. P. KEENE, acting assistant surgeon. Ordered home to wait orders.

SOCIETY NOTICE.

AMERICAN CONGRESS ON TUBERCULOSIS.—The annual meeting of the American Congress on Tuberculosis will be held at the Press Club, No. 116 Nassau Street, New York City, on Wednesday, June 10, 1903.

SAMUEL BELL THOMAS,
Secretary.

APPOINTMENTS.

The following appointments have been announced in the Medical Department of Columbia University: DRs. SMITH ELY JELLIFFE, W. A. BASSEDO and FRANK S. MEARA, instructors in materia medica and therapeutics; DRs. E. HODENPYL, JOHN H. LARKIN and NORMAN E. DITMAN, instructors in pathology; DR. FRANCIS E. WOOD, instructor in clinical pathology; DR. FREDERICK R. BAILEY and A. N. MILLER, instructors in normal histology; DRs. W. B. COLEY, FORBES HAWKES and CLARENCE A. MACWILLIAMS, instructors in surgery.

RESIGNATION.

DR. JAMES R. McLANE has resigned as dean of the College of Physicians and Surgeons, the Medical Department of Columbia University.

RECENT DEATHS.

CHARLES FRANKLIN HAMLIN, M.D., M.M.S.S., died in Medway, May 16, 1903, aged thirty-three years.

BOOKS AND PAMPHLETS RECEIVED.

On the Correlation of the Work of Physical Training with Instruction in Personal Hygiene. By Theodore Hough, Boston. 1903.

A Further Contribution to the Distribution of Cancer. By D'Arcy Power, F.R.C.S., of London. Reprint. 1903.

On the Mechanism of the Action of Saline Purgatives, and the Counteraction of their Effect by Calcium. By John Bruce MacCallum, M.D. University of California Publications. May, 1903.

Postmortem Pathology, a Manual of Postmortem Examinations and the Interpretations to be drawn therefrom; a Practical Treatise for Students and Practitioners. By Henry W. Cattell, A.M., M.D. Illustrated. Philadelphia and London: J. B. Lippincott Company. 1903.

Travail du Laboratoire de M. Le Professeur Agrégé H. Roger. Contribution à l'Etude du Testicule dans Quelques Infections. Orchites Experimentales par Le Dr. Charles Esmonet. Paris: G. Steinheil. 1903.

The Surgical Treatment of Gastric and Duodenal Ulcers. By B. G. A. Moynihan, M.S. (Lond.), F.R.C.S. (Eng.). Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Zahresbericht über die Fortschritte in der Lehre von den Pathogenen Mikroorganismen umfassend Bacterien, Pilze und Protozoen Unter Mitwirkung von Fachgenossen bearbeitet und herausgegeben von Dr. med. P. von Baumgarten und Dr. med. F. Tangl. Siebzehnter Jahrgang. 1901. Erste Abtheilung. Leipzig: Verlag von S. Hirzel. 1903.

A Method of Determining the Internal Dimensions, Configuration and Inclination of the Female Pelvis. By Hugo Ebrnfest of St. Louis, Mo. Reprint. 1903.

The Treatment of Chronic Diarrhea. By Charles D. Aaron, M.D., of Detroit, Mich. Reprint. 1903.

Studies on the Leucocytes. By Edward T. Williams, M.D., of Boston. 1903.

Prophylactic Treatment of the Eyes in the New-Born. By Hugo Ehrenfest, M.D., of St. Louis, Mo. Reprint. 1903.

Original Articles.

THE NEED OF AN INSTITUTION FOR THE EDUCATION OF NURSES INDEPENDENT OF THE HOSPITALS.

BY FRANCIS P. DENNY, M.D., BROOKLINE, MASS.

THE PRESENT RELATION OF HOSPITALS TO UNDERGRADUATE NURSES.

THE hospital and the undergraduate nurse have been found to be essential to each other's well-being. In no way can the nurse get a large and varied experience under supervision except in a hospital. For the hospital the undergraduate nurses, under the close supervision of graduate head nurses, give the most satisfactory service that can be had. They are far better for the hospital than the graduate nurses alone, as every physician will admit who has had experience with both kinds of nursing. The undergraduate is not only the best, but she is the most economical for the hospital.

In order to have the benefit of the efficient and economical undergraduate nursing, almost every hospital has established a training school of its own. In a few instances the schools have been nominally independent of the hospitals, but the connection is usually a very close one.

It has thus come about that since the earliest days of the trained nurse the education of nurses has been almost entirely in the hands of hospitals — institutions supported by funds given for the care of the sick poor, which have taken up the training of nurses chiefly for economic reasons. Developing under such conditions, it is not unnatural that the education of the nurse has suffered.

Expressions of dissatisfaction with the present system are not infrequently heard. Dr. R. C. Cabot¹ has contributed an excellent article on the subject, entitled "Suggestions for the Improvement of Training Schools for Nurses." The Waltham Training School, which is practically independent of the hospital, has established a course of training quite different from the usual hospital training school, and much more in accord with modern educational ideas. Much that has been said by Dr. Worcester and others in regard to the course of training at Waltham is a most just criticism of the usual training school methods. There is a movement on foot also on the part of the nurses themselves to secure improvement in their education.

As the training of nurses is at present almost completely in the control of the hospitals, any movement for the improvement of the training must come from the hospitals, or at least have their co-operation. Reforms will be more easily brought about if it can be shown that they will benefit the hospitals as well as the nurses. It is because of the belief that the interests of the hospitals will be advanced by radical changes in the training of nurses that this communication has been written. The subject was especially suggested to the writer by the problem of nursing in two small hospitals

recently established near Boston, one a small general hospital and the other a special hospital for contagious diseases.

DISADVANTAGE OF THE PRESENT SYSTEM FOR THE SMALL GENERAL HOSPITAL AND FOR SPECIAL HOSPITALS.

In order to have the best nursing, each small hospital must take up the training of nurses. The small training school has some advantages over the larger ones. The superintendent can give more personal attention to each nurse. The conditions in the small hospital are more like those in private nursing. The disadvantage of the small hospital is in teaching the elementary principles of science on which the science of nursing is based. The instruction and courses of lectures which are given in the large training schools are a real burden to the small hospitals. As the curriculum of the training schools is constantly being enlarged and improved, it will become more and more difficult for the small hospitals to give the required instruction. This disadvantage would be overcome if some educational institution would give the instruction to the nurse before she entered the hospital.

Certain hospitals are established for the care of a special class of cases. Thus there are surgical, gynecological and obstetrical hospitals, and hospitals for nervous, insane and contagious cases. In these special hospitals there is the same difficulty as in the small general hospital in giving the proper instruction. In addition to this, the special hospital can give the nurse practical experience only in one direction, and not such practice in general nursing as she ought to have. As a result the graduates of the special hospitals are at a disadvantage. This difficulty is partly overcome by a few training schools which send their nurses to other hospitals for more varied experience.

The need of the special hospitals is for an educational institution which would assume the whole responsibility of the training of the nurses and send them to the special hospital for relatively short periods to get experience in that particular branch of nursing, which would be rounded out by practical work in other special or general hospitals.

The needs of the small and special hospitals have been mentioned first because they are so obvious and urgent. For the large hospitals the present system seems at first sight to be fairly satisfactory. An effort will be made to show that it is satisfactory and not a burden to the hospitals only because the instruction given is inadequate and the methods of teaching far inferior to those in other professional schools.

METHODS OF EDUCATION IN HOSPITAL TRAINING SCHOOLS.

On entering the training school the pupil nurse begins at once to do practical work in the wards. At first she does only the simplest things — cleaning, bed-making, carrying meal trays, etc. Under the instruction of the older nurses she is gradually taught to do all the ordinary hospital nursing.

¹ Cabot: BOST. MED. AND SURG. JOURN., Nov. 21, 1901.

After she has been working a variable length of time she begins to study textbooks and attend recitations and lectures. These studies have to be carried on in the rush of her hospital work. When on night duty she is often awakened early so as to be able to attend lectures or recitations. The demands of the hospital on the nurses are constantly increasing. In the effort to get the routine work done she has no time to digest and assimilate the great mass of experience and teaching which she is daily receiving. She cannot stop to consider the reason for what she is doing. In fact, the course of instruction is often so arranged that the nurse learns to do part of her work from the example of older nurses before she studies the principles which it is necessary for her to know to properly understand what she is doing.

The teaching of the nurses is done chiefly by the superintendent of nurses. Her position is largely an executive one, and she is selected by the hospital in great part for her executive ability. In many of the schools she teaches, in addition to nursing proper, anatomy, physiology, chemistry, materia medica, pathology, etc. For her knowledge of these subjects she is usually dependent on textbooks and on the instruction which she herself received in the same or some similar training school, for at present there is no opportunity even for the head nurses to get better instruction.

The teaching of the superintendent of nurses and her assistants is usually supplemented by courses of lectures given by a number of different persons, most of whom are physicians on the hospital staff. The list of these lectures given by men who are authorities or leading specialists in the subjects treated makes a very impressive showing in the annual reports. These lectures are, however, not always well planned for the needs of the nurses. They are often incomplete and disconnected. As a whole they form an unimportant part in the education of the nurse.

The teaching in the training schools is chiefly didactic. There are few charts and little apparatus used in illustrating the lectures. There is little that could be called laboratory work — a method of instruction which is considered most important in teaching sciences even in the grammar and high schools.

From this brief consideration of the hospital training schools it is evident that the changes most urgently needed are: (1) leisure for study; (2) instruction in the principles of nursing before beginning practical work; (3) instruction by those who are especially fitted to teach; (4) improved methods of instruction.

NURSES SHOULD BE EDUCATED FOR A PROFESSION.

The ideal to be kept in mind in the training of the nurse is, as Dr. Cabot has said, to make it a preparation for a profession. The apprentice learns his trade by doing the simplest things first, and then learning to do that which is more difficult from the example and instruction of those who have been working longer. The training of the nurse resembles an apprenticeship far too much. That method would be more suitable if she were always to remain

a hospital nurse; but she is being trained for private nursing. Here she must adapt herself to different conditions. She will not have a head nurse or house officer at hand day and night to advise her. In private nursing she needs good powers of observation, clear reasoning and sound judgment — qualities which are not developed by the apprenticeship system.

A profession differs from a trade in that the work of the profession is preceded by a study of the principles on which the work is based. The Massachusetts Institute of Technology, which has such an excellent reputation for fitting men for practical work and responsible positions, gives its students little or no practical experience in the work of their professions, but it teaches them the principles on which that work is to be based. It teaches those principles only in a small way by lectures and textbooks, much more by work in the laboratory, the workshop and the field. In fitting for the medical profession, four years are spent in studying the principles of medicine, and of that time the greater and most important part of the instruction is in the dissecting room, the laboratory and the clinic. Is it reasonable that utterly different methods of instruction should be employed in the education of a nurse?

The nurse should have some knowledge which the physician possesses. For example, she should understand the principles of asepsis, of domestic and personal hygiene, the chemistry of cooking and the nutritive values of food just as well as the physician, and she should be taught them by similar methods.

AN INSTITUTION IS NEEDED TO GIVE A PRELIMINARY COURSE OF INSTRUCTION.

Hospital experience is important and necessary for the medical student, and it will doubtless soon be part of the required work for a degree in all the best schools. It rightly comes at the end of the medical course. In the same way the hospital work of the nurse should be preceded by a course of study in the principles of nursing. This course should cover at least one year. It would probably be lengthened after a time just as the medical education has been lengthened.

Without going at all into the details of such a year's work, one could say that among the subjects studied would be the following, which are now taught in the hospital training schools: *anatomy and physiology*, sufficient to give the nurse such a knowledge of the human body, and the functions of its various organs, as she should possess; *chemistry*, especially the chemistry of cooking and of digestion; *pathology and bacteriology*, to give her a general knowledge of disease processes, especially of the infectious diseases, and of suppuration; *domestic and personal hygiene*.

These courses should be given by persons having a wide knowledge of the subjects taught, and should be especially adapted to the needs of the nurse. The lectures should be well illustrated. Laboratory work should form an important part of the course. The development of the powers of observation, of reasoning and of judgment should be one of the chief objects of this preliminary training.

One can easily imagine a year's work planned

especially for the needs of the nurse which would be exceedingly interesting and stimulating. With such a preliminary training the nurse would approach the practical work in the hospital in an entirely different spirit.

Each hospital cannot possibly give such a preliminary course as has been outlined. Even if it were possible, it would not be an economical system. A single plant—the same corps of teachers, the same lecture rooms and laboratories—could provide for a number of different hospitals. It would be an advantage to have several sections with courses beginning and ending at different periods of the year. In this way all the nurses would not be ready to begin their practical work at the same time.

If there were an educational institution to give this preliminary training, the hospitals could require all candidates to furnish a certificate of having taken such a course, and could select the best of those presenting themselves for the hospital positions, just as is now done in the case of house officers.

The nurse's diploma should come from this educational institution, rather than from the hospital. Its award should represent good work in the preliminary course, together with satisfactory service in a hospital in which there was a high standard of nursing.

There appear to be no serious objections to such a system from the point of view of the hospitals. They will be relieved of all instruction except in the practice of nursing. It seems certain also that the hospitals would be supplied with better nurses, and would receive better service. A nurse will more intelligently take up the work of preventing and treating bed sores, if she has already learned something about the cause and formation of bed sores. If she has studied anatomy she can more readily be taught to syringe the ear or pass a rectal tube or catheter. She will more intelligently carry out the practice of asepsis if she has some knowledge of suppuration, and, in some simple experiment which she herself performed, has found suppurative bacteria on her own hands.

The chief gain for the nurse from such a change will of course be that she will have a better preparation for private nursing. Too often a nurse's work deteriorates after a few years' absence from the hospital. It may happen that she spends many months with a single case, during which time her experience amounts to practically nothing. With a knowledge of the *principles* of nursing as a foundation for her training, she will not so easily lose her hold of the work. With a better trained mind her reason will more often come to the aid of her memory in meeting emergencies.

Other changes and reforms in the training of nurses are needed. Dr. Cabot has suggested some of the most important, and the Waltham Training School has many excellent features which should be followed by other schools. Such reforms are sure to come if the training is wholly in the control of an institution whose only object is to secure the best possible education for the nurse.

Any plan to increase the educational features of a nurse's training is sure to be met with the objec-

tion, just as in the early days of the trained nurse, that there is danger of a nurse knowing too much and overstepping her position. Experience has shown, however, that increased education does not have that effect. It is a *little* knowledge which is dangerous. Diagnosis and treatment of disease would not be taught the nurse any more than at present. The nurse's broader education will enable her to see her own work and position in truer perspective.

The establishment of such radical changes as have been suggested, for which the co-operation of so many varied interests is necessary, will require great tact and judgment. If, however, all parties concerned have a true interest in securing a better education for the nurse, such a plan could be carried out.

What has been said here is intended only as a criticism of the present *system* of training, and not of the work of those who are engaged in teaching or practising nursing. On the contrary, it is felt that the fine work which is now being done under such adverse conditions is the best indication of the good results to be derived from an education worthy of the profession.

HEMOSTASIS BY COMPRESSION AND HEAT.

BY JOHN W. KEEFE, M.D., PROVIDENCE,

Attending Surgeon to the Rhode Island and St. Joseph's Hospitals.

FURTHER experience with the Downes' electro-thermic angiotribe leads me to think that we may dispense with the use of the ligature; certainly to a great extent, if not wholly. Since November, 1902, I have not used a ligature in the abdominal cases operated upon in my gynecological service. I wish to report in addition to the work published in the BOSTON MEDICAL AND SURGICAL JOURNAL, Jan. 8, 1903, the following series of cases taken from my service at the St. Joseph's and the Rhode Island Hospitals, in which the electro-thermic angiotribe was used:

CASE XII. Celiotomy. Double salpingo-oophorectomy. Ureters catheterized. Hydrosalpinx and cystic ovaries. Fibroid. Electro-thermic angiotribe. Recovery.

Female, thirty-seven years of age. She has been married fourteen years, and never has been pregnant.

Dec. 27, 1902. Median celiotomy. Both Fallopian tubes were found markedly distended and filled with dark-colored serum. The ovaries had undergone cystic degeneration. Both tubes and ovaries were removed with the aid of Downes' electro-thermic angiotribe, four applications of 45 seconds each being necessary. Catheters were introduced and allowed to remain in the ureters during the operation to serve as guides to locate the ureters. A small pedunculated fibroid was removed with the clamp. Patient made a good recovery.

CASE XIII. Celiotomy. Salpingo-oophorectomy. Ureters catheterized. Electro-thermic angiotribe. Recovery.

Female, single, nineteen years of age. Two years ago the left tube and ovary were removed at another hospital with relief until recently, when severe pain is almost constantly complained of on right side. A painful mass can be felt in right ovarian region.

Jan. 3, 1903. Ether. Median abdominal incision. Catheters passed into ureters and allowed to remain during the operation. The electro-thermic angiotribe

was made to grasp the broad ligament just below the left tube and ovary and include the ovarian artery. The current of 60 amperes was applied for 50 seconds, the clamp removed and the desiccated strip of tissue three-eighths of an inch wide was cut through with the scissors. The left round ligament was grasped near the uterus with the electro-thermic clamp, and was crushed, cauterized and divided.

The right broad and round ligaments were treated in a similar manner. The bladder was then separated from the uterus and a posterior peritoneal flap made. The electro-thermic clamp was made to grasp the left uterine artery and the current applied for 50 seconds; the uterus cut across, and the right uterine artery treated in a similar manner with a clamp. The desiccated strip left was cut in the center with scissors. The peritoneum was united with a continuous cumol catgut suture. Abdomen closed in layers, cumol catgut in peritoneum, chromicized and cumolized catgut in fascia and subcuticular silver wire in skin. Recovery normal.

CASE XIV. Celiotomy. Right salpingo-oöphorectomy. Appendectomy. Ureters catheterized. Electro-thermic angiatribe. Recovery.

Female, thirty-two years of age; married. Operated upon five years ago, left tube and ovary removed. Severe pain on right side for last six weeks.

Dec. 30, 1902. Celiotomy. Ureters catheterized and catheters left in during the operation. Adhesions broken up. Right tube and ovary, also appendix clamped with electro-thermic angiatribe and removed. Stump of appendix invaginated with silk purse-string suture. Abdomen closed in layers. Recovery uneventful.

CASE XV. Celiotomy. Double salpingo-oöphorectomy. Curettage. Ureters catheterized. Salpingitis. Cystic ovaries. Endometritis. Electro-thermic angiatribe. Recovery.

Female, twenty-five years of age; married; no children or miscarriages; irregular and painful menstruation; pain in right side of pelvis.

Jan. 6, 1903. Celiotomy. Median. Both ovaries and tubes adherent; ovaries cystic. Four applications of the electro-thermic angiatribe, current 60 amperes, left on 45 seconds. Desiccated strip cut through with scissors. Catheters introduced into ureters and remained in during operation. Abdomen closed in layers. Recovery normal.

CASE XVI. Celiotomy. Abdominal hysterectomy. Double salpingo-oöphorectomy; curettage; ureters catheterized. Salpingitis; cystic ovaries. Recovery.

Female, twenty-eight years of age; widow. Has had menorrhagia and severe pain in left side and back. Menstruation irregular; painful flow for ten or fifteen days.

Jan. 10, 1903. Celiotomy. Median. Ureters catheterized. Left allowed to remain during operation. The electro-thermic angiatribe was applied to the left broad, left round, right round and right broad ligaments in rotation, and current turned on for about 50 seconds each. The bladder was separated and a posterior peritoneal flap stripped from the uterus. The left uterine artery was treated with the electro-thermic clamp, the uterus cut across and the right uterine artery served in like manner. A continuous cumol catgut suture united the separated pelvic peritoneum. Abdominal wound closed in layers. Recovery uneventful.

CASE XVII. Celiotomy. Left salpingo-oöphorectomy. Appendectomy. Ureters catheterized; cystic ovary; adherent appendix. Electro-thermic angiatribe. Recovery.

Female, twenty years of age; single. Was in hospital one year ago with inflammation of bowels. Since then has had severe pains in right side of pelvis, worse during past month.

Jan. 20, 1903. Celiotomy. Median. Both ureters catheterized and catheters left *in situ* during operation. Small left ovarian cyst. Removal of cyst of ovary and tube on left side with electro-thermic angiatribe. Appendix adherent throughout its entire length. It was cut free, clamped with the electro-thermic angiatribe and cut across through path of the clamp. Stump inverted and silk purse-string suture inserted in cecum. Abdomen closed in layers. Recovery uneventful.

CASE XVIII. Celiotomy. Appendectomy. Electro-thermic angiatribe. Recovery.

Male, twenty-three years of age; single. First attack four days ago, of general abdominal pain; vomited; rigidity; pain and dullness over McBurney's point. No tumor. Leucocytes, 12,500.

Jan. 23, 1903. Gridiron incision in right iliac region. Slight amount of fluid exudate and local peritonitis. Appendix adherent; distal portion gangrenous but not perforated. Meso appendix and base of appendix treated with electro-thermic angiatribe. Current, 60 amperes applied for 45 seconds. Incision in path of the clamp. Purse-string suture over inverted stump of the appendix. Flushed with saline solution and one cigarette drain inserted; partial closure of wound. Discharged cured, Feb. 26.

CASE XIX. Celiomy. Appendectomy. General peritonitis. Electro-thermic angiatribe. Recovery.

Male, twenty-one years of age; married. This is his first attack; symptoms commenced three days ago; pain in abdomen; vomited; chill day before entrance; abdomen distended, rigid and tender on pressure all over. Dullness in flanks. No palpable tumor. Leucocytes, 20,500.

Jan. 24, 1903. Celiotomy. Three-inch incision outer border of rectus. Appendix removed with the electro-thermic angiatribe. Purse-string suture inserted about base of appendix. Intestine shows evidence of general peritonitis, free fluid in abdominal cavity. Flaky, fibrinous exudate on intestine. Cavity flushed with normal salt solution. Six cigarette drains inserted in different parts of abdomen. Intravenous injection of 1,250 cc. salt solution during operation. Partial closure of incision with interrupted silk-worm gut and chromicized cumol gut. Feb. 28 discharged cured.

CASE XX. Vaginal hysterectomy. Right salpingo-oöphorectomy; ureters, catheterized. Electro-thermic angiatribe. Fibroid. Recovery.

Female, forty-four years of age; married. Never pregnant. Felt a growing mass in pelvis for many years.

Jan. 27, 1903. Operation. Ether. Ureters catheterized to serve as guides. Cervix amputated with cautery knife. Bladder separated from uterus and posterior cul de sac opened. Two applications of the electro-thermic angiatribe on each side, for 45 seconds each. The uterus and right tube and ovary removed by cutting with scissors in path left by angiatribe. The left tube and ovary allowed to remain. Vagina packed with iodoform gauze. Recovery uneventful. Feb. 20, discharged cured.

CASE XXI. Celiotomy. Abdominal hysterectomy. Double salpingo-oöphorectomy. Ureters catheterized. Fibroids. Electro-thermic angiatribe. Recovery.

Female, thirty-nine years of age; widow. Never pregnant. Noticed present trouble five years ago. Metrorrhagia, pelvic pain.

Feb. 3, 1903. Celiotomy. Median incision. The electro-thermic angiatribe was applied six times, 50 seconds each, 60 amperes, in the following order: across left ovarian artery and broad ligament; left round ligament, left uterine artery, then a supra-cervical amputation of uterus after separating bladder, then clamp applied to right uterine artery, right round ligament, right ovarian artery and right broad ligament. Peritoneum closed over stump with cumol gut; catheters left in ureters during operation. Wound closed in layers. Recovery uneventful. Discharged March 1 cured.

CASE XXII. Celiotomy. Appendectomy. Acute appendicitis. General peritonitis. Electro-thermic angiatribe. Recovery.

Male, twenty-four years of age; single. Three days ago he was taken with general abdominal pain; vomited; general rigidity and tenderness more marked on right side. Dullness on percussion in right iliac fossa. Leucocytes, 12,500.

Feb. 3, 1903. Celiotomy. Gridiron incision. Fluid exudate; edema of parietal peritoneum. Large perforated and gangrenous appendix removed with the aid of the electro-thermic angiatribe. Mattress silk suture over stump. Abdomen flushed with saline solution. Pus in pelvis and among coils of intestine in general abdominal cavity. Five sterile gauze cigarette drains

inserted in different directions. Incision partially closed, in layers with chromicized cumol gut. All wicks removed Feb. 14. Discharged March 9, cured.

CASE XXIII. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Female, fourteen years of age; single. First attack of appendicitis last Christmas. Chills, pain, vomiting, constipation.

Jan. 20, 1903. Abdominal pain; vomited. At present time systolic murmur at apex and heard in back; tenderness on deep pressure over appendix. Leucocytes, 10,500.

Feb. 9, 1903. Celiotomy. Gridiron incision. Appendix found adherent to cecum, showing evidence of inflammation. Appendix removed with electro-thermic angiotribe, current applied for 45 seconds, cut made in path of angiotribe. Purse-string suture about the stump of appendix. Small cigarette drain left in for three days. Wound partially closed in layers with chromicized cumol gut. March 1, sitting up. Discharged March 8, cured.

CASE XXIV. Celiotomy. Multilocular ovarian cyst. Appendectomy. Recovery.

Female, seventeen years of age; single. Menstruation always irregular, intervals often six months. Abdomen commenced to swell Dec. 15, and has grown gradually larger until it is the size of a full term pregnancy. Flowing more or less during past three weeks. Systolic murmur present.

Feb. 14, 1903. Celiotomy. Median incision. Numerous adhesions of abdominal wall, intestine and appendix to a large multilocular ovarian cyst arising from the left side were separated. Long pedicle clamped across with the electro-thermic angiotribe for 60 seconds. Pedicle severed in the desiccated strip of tissue left by the clamp and tumor removed. Appendix removed with the clamp. Abdomen flushed and left full of normal salt solution. Abdominal wound closed in layers. Exceptionally good recovery. Discharged March 1, 1903.

CASE XXV. Celiotomy. Appendectomy. Interval operation. Recurrent appendicitis. Electro-thermic angiotribe. Recovery.

Female, twenty-five years of age; married. First attack of appendicitis two years ago. Abdominal pain, vomiting, chills, diarrhea. Has had similar attacks, about every four months since. Last attack was last January. At present she has local tenderness over appendix. Leucocytes, 8,500. Appendix palpable.

Feb. 16, 1903. Celiotomy. Gridiron incision. Appendix found adherent to cecum, congested and thickened. Removed with electro-thermic clamp. Purse-string suture inserted about inverted stump. Abdominal wound closed in layers with chromicized cumol gut and subcuticular silver wire. Discharged March 9, cured.

CASE XXVI. Celiotomy. Abdominal hysterectomy. Appendectomy. Ureters catheterized. Double salpingo-oophorectomy. Fibroid. Recovery.

Female, thirty-six years of age; married. Never pregnant. Severe pelvic pain each month; backache and headache.

Feb. 21, 1903. Celiotomy. Median. Ureters catheterized and catheters allowed to remain during the operation. Multiple fibroids in the uterus found. Broad and round ligaments clamped on each side with the electro-thermic angiotribe and current applied. Bladder separated and clamps applied so as to grasp each uterine artery. Uterus cut across at internal uterine os. Peritoneum united with cumol gut. Appendix removed with the electro-thermic clamp; purse-string of silk about stump. Abdominal wound closed in layers. Recovery rapid. Discharged March 18, 1903, cured.

CASE XXVII. Celiotomy. Removal of Meckel's diverticulum. Death.

Male, seventeen years of age; single. Three years ago ill with severe abdominal pain, most severe to right of umbilicus; vomited; duration five days. Diagnosed by his physician as appendicitis. In good health from then to present time. Three days before entering Rhode Island Hospital was taken with abdominal pain and vomiting. Vomiting has continued; no movement of bowels during last twenty-four hours. Vomitus of dark color and fecal odor. Mental apathy and hebetude. Abdomen uniformly distended, rigid and tender on left

as well as right side. Dullness in flanks; no palpable tumor.

Feb. 23, 1903. Celiotomy. Incision enter border right rectus, beginning below level of umbilicus. Intestine found dilated and injected. Cecum with normal appendix presented at the wound. Four feet from ileocecal valve a diverticulum was found arising from the ileum with its upper end attached to the abdominal wall near the umbilicus. This band constricted the gut, producing obstruction. The diverticulum was cut at its attachment to the abdominal wall and clamped with the electro-thermic angiotribe near its junction with the ileum. The current was applied for 50 seconds, and the diverticulum removed by cutting through the path of the angiotribe. A purse-string suture inserted about the inverted stump of the diverticulum. Abdominal cavity was flushed with normal salt solution. While I was closing the abdominal wound the patient, whose condition was good until now, regurgitated some of the contents of the stomach, which entered the trachea and lungs, producing cyanosis and death in a half hour.

CASE XXVIII. Amputation of leg. Electro-thermic angiotribe. Recovery.

Male, thirty-eight years of age; single. Operated upon by another surgeon for popliteal aneurism by tying the femoral artery in Scarpa's triangle. Gangrene of foot and lower portion of the leg followed.

Feb. 25, 1903. Operation. Amputation of the leg at middle third, lateral flap method. Vessels clamped and cauterized with the electro-thermic angiotribe. No ligatures used. Wound suppurated, and is healing by granulation. No secondary hemorrhage.

CASE XXIX. Celiotomy. Appendectomy. Acute appendicitis. Electro-thermic angiotribe. Death.

Male, twenty-four years of age; single. Yesterday morning awoke with abdominal pain, which increased during the day; vomited several times. Pain became localized in right iliac fossa. Leucocytes, 12,500.

Feb. 25, 1903. Celiotomy. Gridiron incision. Appendix firmly bound down with adhesions. Cecal end of appendix distended and contained a concretion; tip gray and gangrenous. Appendix clamped with electro-thermic angiotribe; current applied for 45 seconds. Appendix removed and purse-string suture of silk about stump. Patient seemed to be steadily improving until the evening of March 4; vomited and had some abdominal distress. March 7, died. Autopsy showed intestinal obstruction from adhesions; peritonitis.

CASE XXX. Celiotomy. Appendectomy. Recurrent appendicitis. Electro-thermic angiotribe. Recovery.

Male, thirty-one years of age; single. One year and nine months ago ill with abdominal pain, becoming localized in right iliac fossa; vomited. Five days ago taken with pain, nausea, chills, vomiting. Up and about next day. Examination showed tenderness on deep pressure over McBurney's point. Leucocytes, 10,500.

Feb. 25, 1903. Celiotomy. Gridiron incision over palpable appendix, which was found to be congested and thickened. Mesentery was clamped with electro-thermic angiotribe for 25 seconds and appendix for 35 seconds. Appendix removed by cutting in path of clamp. Purse-string suture of silk over invaginated stump. Abdomen closed in layers with chromicized cumol gut. Silver wire subcutaneously. March 22, discharged, cured.

CASE XXXI. Celiotomy. Appendectomy. Appendicitis. General suppurative peritonitis. Electro-thermic angiotribe. Recovery.

Male, nine years of age. Illness commenced Feb. 21, with chill, pain in abdomen and vomiting. Three days later seemed much better and was up and about. Feb. 26 pain localized in right iliac fossa; another chill. Entered Rhode Island Hospital Feb. 27. Abdomen distended, rigid, tender on pressure all over. Leucocytes, 15,000.

Feb. 27, 1903. Celiotomy. Gridiron incision. Two portions of gangrenous omentum excised. A gangrenous and perforated appendix clamped with the electro-thermic angiotribe; current applied for 10 seconds and appendix removed. Purse-string suture in stump. Three separate pockets of pus evacuated, one in pelvis, one in umbilical region and one in region of the splen.

Abdominal cavity flushed out with normal salt solution. Six cigarette drains of sterilized gauze and rubber placed in abdominal cavity in different directions. April 1 still in hospital, but gradually improving.

CASE XXXII. Celiotomy. Abdominal hysterectomy. Salpingo-oophorectomy. Removal of intraligamentary cyst. Ureters catheterized. Appendectomy. Electro-thermic angiotribe. Recovery.

Female, forty-three years of age; single. Abdomen size of an eight months' pregnancy.

March 5, 1903. Celiotomy. Median incision. Ureters catheterized, and both catheters left in ureters during the operation. Large intraligamentary cyst presented; punctured with trocar and some of contents removed. The growth was adherent to uterus and intestine. The broad ligaments were clamped on either side with electro-thermic angiotribe; the round ligaments and uterine arteries were also treated by using the clamp. Uterus cut across at internal os, removing tubes, ovaries, intraligamentary cyst and uterus. Appendix was bound down, elongated, and removed with the aid of the electro-thermic angiotribe. Stump invaginated and purse-string suture applied. Uninterrupted recovery. March 29 discharged, cured.

CASE XXXIII. Celiotomy. Appendectomy. Acute appendicitis. Electro-thermic angiotribe. Recovery.

Male, age ten years. March 6 taken sick with abdominal pain and vomited, pain localized in right iliac fossa. Next day was worse; vomited. Entered Rhode Island Hospital March 8. Pain less; abdomen not rigid or distended; no visible or palpable tumor. Some tenderness on deep pressure over McBurney's point. Leucocytes, 15,500.

March 8, 1902. Celiotomy. Small gridiron incision. Appendix found inflamed with a long vascular mesentery. Appendix removed with the aid of the electro-thermic angiotribe. Purse-string suture over invaginated stump. Abdominal wound closed in layers. March 11 developed lobar pneumonia in the right side. March 27 discharged, cured.

CASE XXXIV. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Female, twenty years of age; single. First attack March 8, 1903. She was taken with pain in lower right abdominal region while at supper. Nausea, but no vomiting. Rigidity, local tenderness, dullness, and mass on palpation. Entered Rhode Island Hospital March 11, 1903.

March 11, 1903. Celiotomy. Gridiron incision. Transversalis fascia and subserous tissues found edematous. Small collection of offensive pus found on opening peritoneal cavity; this was wiped away. A large, perforated appendix was removed with the electro-thermic angiotribe, the current being applied for 50 seconds. The stump was invaginated and covered by inserting a purse-string suture of silk. A fecal concretion the size of a date seed was found free in the peritoneal cavity and removed. Irrigation with normal saline solution and two cigarette drains inserted, one into Douglas' pouch, the other down to stump of appendix. Wound partially closed in layers. Recovery uneventful. Discharged charged April 9.

CASE XXXV. Celiotomy. Double salpingo-oophorectomy. Appendectomy. Ureters catheterized. Recovery.

Female, twenty years of age; single. During the last six years has suffered a great deal from pelvic pain and backache. Profuse, foul discharge from vagina.

March 14, 1903. Celiotomy. Median incision. Ureters catheterized and catheters allowed to remain in ureters during the operation to serve as guides to locate the ureters. The omentum was adherent to the parietal peritoneum, uterus and bladder. Everything in pelvis adherent. Both tubes and ovaries were found diseased, and were removed with the aid of the electro-thermic angiotribe; four applications of 50 seconds each being found necessary. Intra-abdominal shortening of the round ligaments by forming loops in them, held the uterus in good position. The appendix was crushed and cauterized with the electro-thermic angiotribe; it was then excised by cutting through the aseptic path left by the clamp, with no soiling of the peritoneum by the contents of the appendix. Recovery uneventful.

CASE XXXVI. Extra-uterine pregnancy. Celiotomy. Left salpingo-oophorectomy. Appendectomy. Ureters catheterized. Electro-thermic angiotribe. Recovery.

Female, twenty-five years of age; married. She has had three children, last one four months ago; did not nurse child. Two months after last confinement she felt a sharp pain in left side followed by a hemorrhage from the vagina. Flowed more or less during the last six weeks, chills, sweats and rise of temperature. The cervix is soft, uterus enlarged and a mass may be felt in the abdomen extending to within a few inches of the umbilicus.

Feb. 5, 1903. Ether. Incision into posterior cul de sac and drainage through vagina. In one month there was no discharge; patient had greatly improved; mass had become quite small and temperature was normal.

March 23, 1903. Celiotomy. Median incision. Both ureters catheterized and catheters left *in situ* during operation. Dr. Downes of Philadelphia was kind enough to favor us with his method of using the Downes' electro-thermic angiotribe, and in a very dexterous manner removed a ruptured tube on the left side with a diseased ovary. One application of the clamp of about 40 seconds being sufficient.

Dr. Downes then placed the small electro-thermic angiotribe on the base of the appendix, and applied the current for about 30 seconds. A clamp was placed on the dry path left by the clamp, and the portion of the appendix beyond this clamp was removed. The stump was invaginated and a purse-string suture united the peritoneum above it. The abdominal wound was closed in layers. Recovery uneventful.

CASE XXXVII. Celiotomy. Appendectomy. Interval operation. Electro-thermic angiotribe. Recovery.

Male, nineteen years of age; single. One year and a half ago he had his first attack of appendicitis. Sudden cramplike pains in lower right abdominal cavity. Nauseated; vomited and perspired freely. In bed three days. Sat up, and he had return of trouble, which lasted a week. March 7, 1903, similar symptoms; in bed four days. Entered Rhode Island Hospital March 21. Tenderness and a small palpable mass may be felt at McBurney's point. Leucocytes, 10,500.

March 23, 1903. Gas-ether. Celiotomy. Gridiron incision. A long, injected and thickened appendix, curled upon itself, was clamped near its junction with the cecum with the Downes' electro-thermic angiotribe, and a current of 60 amperes applied for 45 seconds. An artery clamp was placed on the path left by the angiotribe, and the peritoneum drawn over the stump with a purse-string suture of silk. Abdominal wound closed with cumol and chromicized cumol catgut and sub-cuticular silver wire. Recovery uneventful.

CASE XXXVIII. Celiotomy. Appendectomy. Interval operation. Electro-thermic angiotribe. Recovery.

Female, twenty-six years of age; single. First attack of appendicitis last October; ill one week. Abdominal pain; vomiting; pain becoming localized in right iliac fossa, chill and constipation. In December another attack of pain, less severe, vomiting; pain radiated from region of appendix. March 18 the attack commenced from which she is now convalescing. Local tenderness and slight rigidity over region of the appendix. Leucocytes, 8,000.

March 23, 1903. Celiotomy. Incision at outer border of the right rectus muscle. Diseased appendix removed, the electro-thermic angiotribe being used. Stump invaginated and purse-string suture of silk united peritoneum over the stump. Abdominal wound closed with cumol gut in peritoneum, chromicized cumol gut in fascia, and sub-cuticular silver wire in skin. Wound covered with silver foil and an aseptic dressing. Wire removed in ten days. One dressing. Recovery uneventful.

CASE XXXIX. Resection of 14 inches of small intestine. End-to-end anastomosis with the aid of the electro-thermic angiotribe. Death.

Incarcerated and strangulated scrotal hernia with peritonitis.

Male, fifty-seven years of age; widower; wheelwright. Entered the Rhode Island Hospital March 27, 1903, with the following history: Fifteen years ago, while lift-

ing, a hernia appeared in the left inguinal region. He has never worn a truss, and the hernia was reducible until three and one-half weeks ago. At this time he was taken with sharp abdominal pain radiating from site of the hernia; nausea; vomiting. Remained in bed three days and was treated by a physician. Then he went to bed and called another physician, who found the strangulated hernia, which was partially reduced, giving some relief. During the past two weeks he has been nauseated, and vomited almost every day. Last night felt weaker and more prostrated, and the vomiting was continuous and severe. Bowels have moved with the aid of cathartics and enemata. During the past year he was run over by a team and on another occasion he fell into a trench that was being dug for a sewer. These accidents shook him up considerably, and he has been failing in his general health, having lost about twenty pounds.

Physical examination.—Poorly nourished. Anxious expression. Intermitting and weak pulse. Slight diffuse tenderness over abdomen. A hard tense scrotal hernia is found on the left side about the size of an orange. It feels almost cartilaginous in consistency, and is dull on percussion. **Diagnosis.**—Incarcerated and strangulated hernia.

March 27, 1903, 8.30 p.m. **Operation.**—Under cocaine anesthesia. Infiltration method in skin, Schleich's solution 1 to 1,000. Patient did not seem to feel incision through skin and internal oblique muscle. A 4% solution of cocaine was then injected into the ilio-hypogastric nerve, and the cord and sac with its contents isolated from the inguinal canal. This procedure caused the patient quite a little pain, although two members of the house staff engaged the patient in conversation during the operation and a sheet hid the field of operation from the patient. The sac was opened after isolating the cord and found to contain a coil of intestine, portions of which were chocolate colored. The coils in the scrotum were adherent to each other and to the lining of the sac, and the most dependent portion of this mass was gangrenous and surrounded by about a drachm of pus. To free the adherent coils from each other was impossible, as they were firmly bound together with old adhesions and formed one solid mass. Some of the intestine in the abdomen was drawn through the wound into the inguinal canal, a resection of 14 inches of the intestine made with the aid of the electro-thermic angiotribe. I carried out the method which I had previously practiced with success on a number of dogs.

A dog which is still alive and in good condition, although he has been operated upon twice, four inches of the intestine having been removed on one occasion and five on the other, with the aid of the electro-thermic angiotribe, followed by end-to-end anastomosis. The three-eighths electro-thermic angiotribe was placed on the intestine at a right angle to its long axis, and the current of 60 ampères applied for one minute. On removal the desiccated strip remaining was clamped by two straight forceps, to guard against leakage should there happen to be a faulty technique, and was cut between the forceps. A similar procedure was carried out on the intestine 14 inches beyond. The mesentery attached to the partially excised portion of intestine was clamped in three sections, the current being applied about 45 seconds each time, and the diseased intestine removed by cutting through the dry path left by the clamp.

The patient seemed to suffer very little pain during these manipulations, although no cocaine was applied to the intestine, and yet when I placed the sutures in the skin to close the wound he complained considerably with the entrance of each stitch. The ends of the intestine were now placed in apposition, and a loop stitch of silk joined the intestine near the mesentery. Two Lembert sutures were then placed in the ends of the intestine, thus dividing the circumference of the gut into thirds. Then a Cushing right-angle suture approximated the peritoneum of the ends of the intestine. This was followed by a similar suture over the last, which was an extra safeguard against leakage. Two Cushing sutures now approximated the rent in the mesentery. The intestine was now rendered patulous by invaginating the gut with the finger near the site of union, using sufficient

force to separate the desiccated strip left by the angiotribe. Gas and feces could be pressed through the united ends with no leakage. The gut was dropped into the abdominal cavity, and the wound closed as in the Bassini operation. Silk sutures were used in the intestine. The patient received several drachms of whiskey during the operation, and seemed in fair condition at the close. During the next two days he vomited at intervals and complained little of pain. Bowels moved freely. Four days and one-half after the operation he died. During the last twenty-four hours he had not vomited, and had a dozen bowel movements. A partial autopsy showed good union about the site of the anastomosis; no gas or intestinal contents could be pressed through the bond of union. There was general peritonitis due to a continuance of the peritonitis present at the time of the operation or an infection by contamination with the pus present in the lower part of the excised portion. The operation proved the worth of cocaine in an extensive abdominal operation and the value of the electro-thermic angiotribe, there being no leakage of the intestinal contents during the operation.

CASE XL. Amputation of thigh. Electro-thermic hemostasis of vessels. No ligatures used.

Male, fifty-three years of age; widower; oyster-opener. Was run over by a freight train and the right leg almost crushed off just below the knee with a fracture at the middle and lower thirds of the femur, with a crushing of the soft parts of the lower part of the thigh.

March 31, 1903. **Operation.** Ether. Amputation just below the middle of the thigh, by the circular, musculo-cutaneous flap method was made. The femoral artery and vein was grasped at the same time with the Downes' electro-thermic angiotribe, and the current applied for 50 seconds. Later there being some oozing into the vicinity of eschar, these vessels were again crushed and cauterized, leaving the current on for the same length of time. Several other vessels were crushed and cauterized with the electro-thermic angiotribe. No ligatures were used. Wound closed with silk-worm gut. Cigarette drain. Intravenous saline solution during operation. Recovery.

CASE XLI. Varicocele. Electro-thermic angiotribe. Recovery.

Male, eighteen years of age; single. Entered the Rhode Island Hospital March 30, complaining of varicocele.

April 1, 1903. **Operation.** Gas-ether. Incision over cord on left side, veins isolated, crushed and cauterized with the electro-thermic angiotribe. Wound closed with catgut sutures. Recovery.

CASE XLII. Nephrectomy. Pyelonephritis. Downes' electro-thermic angiotribe. Recovery.

Female, married, thirty-five years of age. In June, 1900, a surgeon did an exploratory celiotomy and found distended left kidney, which was drained by an incision in the left lumbar region, pus and urine being discharged. In October she was operated upon by another surgeon, and again in January, 1901, by still another, incision being made into the kidney. Entered the Rhode Island Hospital March 25, 1903. Has had pus and urine discharging more or less ever since last operation; when sinus closes there is considerable pain until it opens again.

March 27, under cocaine anesthesia I catheterized the right ureter with the patient in the Trendelenburg position, using a modified Kelly's cystoscope with small electric light in the bladder. Right kidney not diseased.

April 1, 1903. Chloroform anesthesia. Catheter placed in left ureter as a guide. Left lumbar incision and removal of kidney with its pelvis enormously dilated, and but a small portion of the cortex at one pole remaining. Three applications of the electro-thermic angiotribe closed all bleeding points. The kidney was raised from its bed with difficulty on account of its shape and its intimate relation by adhesions with the surrounding parts. The wound was partially closed and two wicks of gauze introduced. April 8. The patient has done well since the operation, and has averaged 50 ounces of urine each day.

CASE XLIII. Celiotomy. Abdominal hysterectomy. Double salpingo-oophorectomy. Appendectomy. Ureters catheterized. Recovery.

Female, age thirty; married. One child and one still-birth, the latter eight years ago. Present trouble dates back five years. Pelvic pain, headache, backache; yellowish vaginal discharge; metrorrhagia. Pain more severe on right side.

April 1, 1903. Celiotomy. Pus tube and ovarian cysts on both sides. Many adhesions. A pan-hysterectomy and appendectomy was performed without the use of ligatures, the electro-thermic angiotribe checking the hemorrhage with six applications of 45 seconds each. The right ureter was catheterized and the catheter left in as a guide during the operation. April 12, patient in good condition.

CASE XLIV. Celiotomy. Abdominal hysterectomy. Salpingo-oophorectomy. Fibroids. Appendectomy. Ureters catheterized. Electro-thermic angiotribe. Recovery.

Female, twenty-nine years of age; married. One year and nine months ago, following the birth of a child, the attending physician found uterine fibroids.

April 2, 1903. Celiotomy. Large fibroid extending above the umbilicus presented. Removed with the aid of the electro-thermic angiotribe, clamping in the following order: The right ovarian artery, left ovarian artery, right round ligament, left round ligament, right uterine artery, left uterine artery, and supra-cervical amputation of the uterus. Ureters were catheterized, the catheters being left in place during the operation to serve as guides. Appendix also removed with the aid of the electro-thermic angiotribe. Stump inverted and purse-string suture placed over the stump. Recovery uneventful.

CASE XLV. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Female, age twenty-six; single. She was taken ill, in this her first attack, at two o'clock this morning, with general abdominal pain, which increased in intensity, until partially relieved by morphia. By 8 A.M. pain was localized in the right iliac region. Nausea. Examination shows local tenderness over McBurney's point; no rigidity or mass on palpation. Leucocytes, 16,000.

April 3, 1903. Gas-ether anesthesia. Celiotomy. Gridiron incision. Cecum with appendix rolled out of the wound without a finger having entered the abdominal cavity. The appendix and mesentery were grasped in a single bite by the electro-thermic angiotribe, and the current applied for 45 seconds. The appendix was removed by cutting through the path left by the angiotribe. The stump invaginated, and a purse-string suture placed above it. The abdominal wound was closed in layers. Recovery uneventful.

CASE XLVI. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Female, thirty-one years of age; single. She had an attack of appendicitis last summer. Present illness commenced three days ago; general abdominal pain, headache, constipation, and has vomited each day since.

Temperature 104, pulse 120. Abdomen distended, localized tenderness on pressure over McBurney's point. No muscular rigidity.

April 4, 1903. Celiotomy. Gridiron incision. Cecum picked up with the thumb forceps and drawn out of the wound, the appendix following. A large inflamed appendix on the verge of perforation was clamped near its base with the electro-thermic angiotribe, the current being applied for 45 seconds, and the appendix removed by cutting in the path of the clamp. The stump was invaginated and covered by placing a purse-string suture above it. Recovery uneventful.

CASE XLVII. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Male, eighteen years of age; single. He has had seven attacks of appendicitis since last July, three of which were within the last five weeks. General abdominal pain becoming localized in the right iliac fossa. Vomited with each attack.

April 9, 1903. Celiotomy. Gridiron incision. The appendix was found inflamed, thickened, and adherent to the cecum throughout its length. It was clamped across near its base with the electro-thermic angiotribe and removed by cutting through the path of the clamp. The stump was inverted and the peritoneum brought together

with a purse-string suture of silk. Drain left in for two days. Wound closed in layers. Recovery.

CASE XLVIII. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Male, age twenty years; single. Three weeks ago was taken with pain in the abdomen radiating to the right iliac fossa; vomited. Symptoms have gradually lessened until at the present time there is slight tenderness over the region of the appendix.

April 10, 1903. Celiotomy. Gridiron incision and cecum presented, and with the aid of the forceps was drawn outside, the appendix following. A large inflamed appendix was removed with the aid of the electro-thermic angiotribe. The stump was invaginated and the peritoneum above approximated with a purse-string suture. The forceps was the only thing that entered the abdominal cavity during the operation. The wound was closed in layers with chromicized and cumolized gut for the muscles and silver subcuticular suture for the skin. Recovery uneventful.

CASE XLIX. Celiotomy. Appendectomy. Electro-thermic angiotribe. Recovery.

Male, married; thirty-six years of age. Has had indigestion during the last ten years and twenty-two attacks of appendicitis, covering a period of five years. The last attack was two years ago. Symptoms during these attacks are sharp pain across abdomen, later becoming localized in right iliac fossa; nausea; vomiting and constipation.

April 21, 1903. Celiotomy. Gridiron incision in right iliac region. Cecum withdrawn from abdomen followed by the appendix. Downes' electro-thermic clamp applied, including base of appendix with its mesentery. The current was turned on for 45 seconds, and the appendix removed by cutting through compressed area. Purse-string suture about base of appendix, invaginating stump. Wound closed in layers. Ten days later dressing applied at operation removed and silver wire suture withdrawn. Primary union. Two weeks from operation walking about his room.

CASE L. Celiotomy. Appendectomy. Removal cyst. Catheterization of ureters. Electro-thermic angiotribe. Recovery.

Female, twenty years of age; single, mill-hand. Menses at thirteen, always regular, lasting three to five days. Some pain three days before flow. Menstruated last two weeks ago. Present trouble began one and a half years ago with swelling of abdomen. This tumor has gradually increased in size. Little pain except occasional backache. *Physical examination.*—Well nourished, heart and lungs normal. Abdominal tumor present rising gradually from pubes and sloping gradually to ensiform. On palpation tumor is very tense and elastic. Percussion is flat except in flanks. Percussion wave present. Tumor is freely movable except in right side of pelvis, where it is apparently attached. By vaginal examination the uterus could not be definitely made out on account of the tumor, but there is a small mass felt in the posterior end-de-sac, apparently the fundus of the uterus.

April 23, 1903. Celiotomy. Incision in median line. Large cyst of right ovary filling whole abdominal cavity. Cyst had a long pedicle, which was clamped across with the electro-thermic angiotribe and cut away, after evacuating the contents of cyst through a canula. Clamp was left on 55 seconds. Left ovary cystic, and plastic work done on this. Sutured with cumol gut. Appendix was swollen and injected. It was clamped across with one bite of clamp and removed. Stump invaginated with purse string of silk and reinforced with a second one. Abdominal incision closed with cumol gut in peritoneum, chromicized cumol gut in fascia and silver wire subcutaneously. Recovery uneventful.

This report completes a series of fifty cases in which the electro-thermic angiotribe was used: Forty-five celiotomies, 13 abdominal hysterectomies, 2 salpingo-oophorectomies, 28 appendectomies, 2 ovarian cysts, 1 resection of intestine, 1 nephrectomy, 1 amputation of thigh, 1 amputation of leg, 1 varicocele, 2 hemorrhoids, 1 removal

of Meckel's diverticulum, 1 ruptured tubal pregnancy, 2 vaginal hysterectomies.

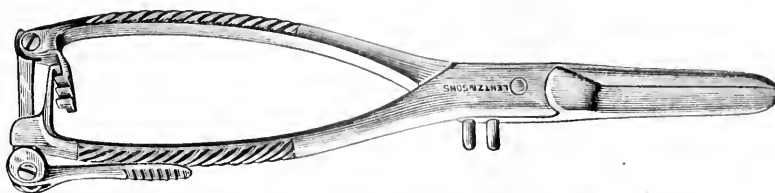
Although pressure and heat have been used for more than a quarter of a century for preventing hemorrhage, the methods heretofore employed for this purpose were in the developmental stage and in consequence were but seldom employed. Baker Brown, in 1862, heated a heavy clamp by the aid of the actual cautery, until the pedicle of an ovarian tumor was rendered dry and bloodless. His results even in this pre-aseptic period were better than his confrères', which may have been due in part to this method.

The instrument perfected by Downes, known as the electro-thermic angiotribe, is unquestionably

tures passed one-fourth of an inch beyond the cauterized areas unite the stomach and bowel. The compressed area will slough in from 30 to 36 hours, as shown by actual experience with dogs.

The most interesting case to me was the resection of fourteen inches of the intestine on a man; following numerous experiments on dogs. The ease with which we may resect the bowel, and the perfect asepsis assured by the use of the electro-thermic angiotribe, is certain to eliminate the mechanical appliances now in use for this purpose. The wide range of usefulness of this instrument renders a surgical outfit incomplete without it.

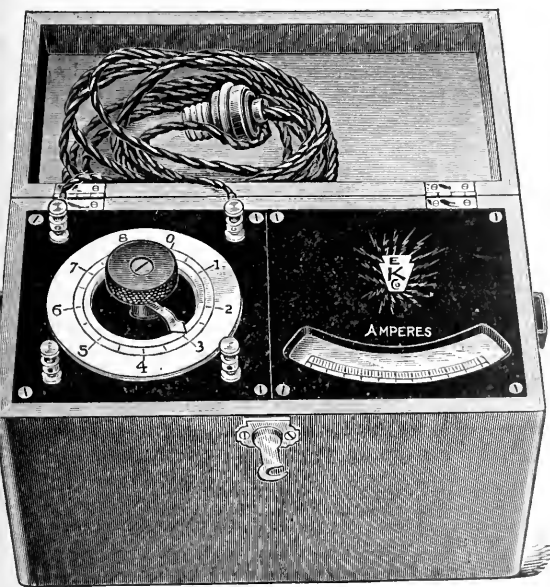
The advantages of the use of the electro-thermic angiotribe are: the exclusion of the ligature; hemo-



ELECTRIC ANGIOTRIBE.

of practical value, as shown by the results in the foregoing cases, no secondary hemorrhage having taken place. The femoral was clamped in a thigh amputation and the anterior and posterior tibials in an amputation of the leg. In an operation upon a dog I clamped the femoral and applied the current until the vessel parted, having been completely charred; yet no hemorrhage or edema followed. I performed complete gastrectomy on a dog and found the method, with the use of the proper electro-thermic angiotribe, of marked improvement over the usual technique. I also found the clamp useful doing a gastro-enterostomy. The fold in the stomach of the proper size is grasped with the

stasis *en masse* or of isolated blood vessels; aseptic gastrectomy; gastro-enterostomy and resection of intestine; appendectomy; salpingectomy; extrusion of septic material during operation being rendered impossible; sterile occlusion of the Fallopian tube; absence of irritable and painful stumps; less tendency to post-operative adhesions; rapidity of operation; no secondary hemorrhage from slipping of ligatures, or suppurating sinuses due to ligatures; less pain subsequent to operation, and there is no puckering or dragging on the tissues; value in removal of cancer as there can be no danger of inoculation, with cancerous material during the operation, and the heat destroys the cancer cells beyond the point of application of the clamps.



DIRECT CURRENT TRANSFORMER.

electro-thermic angiotribe and pressure and heat applied. A similar process is carried out on a fold of the intestine at the desired point of union. Su-

POLIOENCEPHALOMYELITIS AND ALLIED CONDITIONS.

BY E. W. TAYLOR, M.D., BOSTON.

From the Neurological Department, Massachusetts General Hospital.

(Concluded from No. 24, page 638.)

The term "inflammation" as applied to affections of the nervous system has led to the same confusion as in other organs. It is well for practical purposes to limit its meaning to the exudative phenomena produced by an irritant acting temporarily, with accompanying signs of general infection, and thereby to distinguish lesions which may be called inflammatory from others in which these phenomena are not present. For example, in the present state of our knowledge we shall not be very far wrong in making a sharp distinction between degenerative affections of chronic, continuous course like progressive muscular atrophy, with its accompanying bulbar manifestations and diseases of acute onset, ending in death, or in partial or even complete recovery, such as poliomyelitis or polioencephalitis. It is safe to assume that the causes which lead to degenerative

conditions are essentially unlike those which lead to conditions characterized by sudden onset and very frequently, at least, by exudation.⁹ The chronic affections of insidious onset and progressive course, leading to definite degenerations, may for the purposes of the present discussion be ignored. It is also not my purpose to consider those inflammatory conditions included under the general head of meningitis. There is left a large group of affections, to which allusion was made at the outset, and clinical examples of which and of closely allied conditions we have given, which are widespread in distribution through the brain and cord and which are characterized by relatively sudden onset with symptoms of infection. Looking at the matter from a broad point of view, it seems evident, though it has not been sufficiently recognized, that these affections represent the symptomatic expression of a common underlying cause, differing, as they do, essentially because of their widely separated locations in functionally varied parts of the nervous system. It is, for example, probable that poliomyelitis and poliencephalitis are simply two expressions of one disease process, in the same sense that Pott's disease and lesions of the lungs are two expressions of tuberculosis. The analogy is sufficiently exact, in spite of the fundamental difference that the cause of tuberculosis is known, whereas the cause of the affections under consideration is as yet wholly vague.

In our confusing nomenclature which persists still in describing diseases of the nervous system under the artificial anatomical divisions of brain, spinal cord and peripheral nerves, we insist upon the unessential element. No doubt every medical student thinks of poliomyelitis, for example, as a disease of the spinal cord, without analogies to other affections of similar onset. It would unquestionably conduce to rationality, if not always to convenience, to teach the more fundamental associations of these conditions under the conception of acute general infections, with special local manifestations. This is particularly true of the large array of acute inflammatory affections, to some of which I have alluded in this paper.

In searching for evidence in support of this statement our appeal must naturally be to the underlying pathological changes, which are perhaps still insufficient to justify dogmatic assertions, and to the association of symptoms and signs which point to combined lesions of brain and cord under identical conditions of onset in the same or different persons. This ground I have, in general, covered in a recent paper on "Poliomyelitis of the Adult,"¹¹ and also in a paper on "Landry's Paralysis,"¹² published in conjunction with Dr. J. E. Clark. The attempt in these papers was made to show that there is ample justification for the assumption that various inflammatory affections, probably including so-called Landry's paralysis, are varieties of an underlying disease, but that our attention has hitherto been directed to the differ-

ences rather than to the similarities of the conditions under consideration.

In this connection the following published cases, transitional in character, among many which might be quoted, are instructive: Bailey and Ewing¹³ have reported a case of Landry's paralysis in which lesions of an inflammatory sort were found beyond the confines of the spinal cord, in the oblongata and even in the cerebellum. Greene, Wilson and Rothrock¹⁴ have reported an instance of acute onset under signs of infection, resulting in death after extensive paralyses had developed, life being preserved for forty-one days by artificial respiration. In this case a violent inflammation involved the ventral horns and the brain stem. Sherman and Spiller,¹⁵ under the title "A case of poliencephalomyelitis in an adult, presenting the clinical picture of Landry's paralysis, and fatal in thirty-eight hours after first definite motor symptoms," describe an exceedingly important case of violently acute course, in which postmortem engorgement of vessels, cellular infiltration of gray matter, hemorrhages and consequent destructive lesions of nerve elements in the cord, oblongata and brain, in lessening degrees, were the characteristic lesions. Spiller concludes from this and other reported cases that poliomyelitis bears a close relationship to non-purulent encephalitis and to poliencephalitis superior.

The following case, clinically observed and reported in another place,¹⁶ is of interest. A boy of fourteen was attacked with a poliomyelitis involving both arms and legs. Several days after the onset he became somnolent and later stuporous, and so remained, with slight intermissions, for about eight weeks. From this he gradually recovered without mental or focal brain defect, but with a persistent and characteristic flaccid paralysis of the extremities. The association of an encephalitis with the undoubted poliomyelitis is strongly suggested by this case. In the epidemics of poliomyelitis studied by Medin¹⁷ and Caverly¹⁸ similar associations of symptoms were repeatedly observed. Observations of the same character have also been made by Gombault,¹⁹ Rissler,²⁰ Redlich,²¹ Jagić,²² Bülow-Hansen and Harbitz,²³ Oppenheim,²⁴ Kaiser²⁵ and others. Kaiser, for example, found in a case of a month and a half standing the lesions of poliomyelitis, with associated inflammatory alterations in the pons and oblongata. A case simulating poliomyelitis reported by Putnam²⁶ in 1883, in which the whole cord, both gray and white matter, was involved in an inflammatory process, is of much importance as showing a further vagary of these acute inflammations. Through the courtesy of Dr. H. F. Vickery and Dr. J. H. Wright I have recently had an opportunity of studying a remarkable and very obscure case at the Massachusetts General Hospital, which is no doubt analogous to Putnam's. The

⁹ It is evident that our knowledge must be very much more complete before we may say with definiteness that exudation accompanies those cases which are of rapid onset and yet go on to recovery. This fact, however, should not alter the general argument.

¹¹ Taylor: *Journ. Nerv. and Ment. Dis.*, xxix, p. 449, 1902.

¹² Taylor and Clark: *Journ. Nerv. and Ment. Dis.*, xxvii, p. 177, 1900.

¹³ Bailey and Ewing: *N. Y. Med. Journ.*, July 4, 11, 1896.

¹⁴ Greene, Wilson and Rothrock: *Phil. Med. Journ.*, Dec. 3, 1898.

¹⁵ Sherman and Spiller: *Phil. Med. Journ.*, v, p. 734, 1900.

¹⁶ Taylor: *Loc. cit.*, 1902.

¹⁷ Medin: *Verhandl. X Med. Cong.*, Berlin, vi, p. 37, 1891.

¹⁸ Caverly: *N. Y. Med. Rec.*, xlv, p. 673, 1894.

¹⁹ Gombault: *Arch. de Physiol.*, v, p. 80, 1873.

²⁰ Rissler: *Nordiskt med. Arkiv*, xx, p. 1, 1888.

²¹ Redlich: *Wien. klin. Woch.*, vii, p. 287, 1894.

²² Jagić: *Wien. med. Woch.*, xlix, p. 394, 1899.

²³ Bülow-Hansen and Harbitz: *Ziegler's Beiträge*, xxv, p. 517, 1899.

²⁴ Oppenheim: *Loc. cit.*, 1899.

²⁵ Kaiser: *Deutsch. Ztschr. f. Nervenhe.*, vii, p. 359, 1895.

²⁶ Putnam: *Journ. Nerv. and Ment. Dis.*, p. 14, January, 1883.

patient was admitted with high temperature, comatose, and without focal signs on the part of the nervous system. He died without a definite diagnosis. The autopsy showed multiple hemorrhages in the brain and cord of varying age, as indicated by the condition of the blood corpuscles, and very numerous in the white matter. There was in many localities a compensatory overgrowth of neuroglia. This case should be interpreted as an acute hemorrhagic encephalomyelitis. It represents a rare but perfectly definite form of acute inflammation of the central nervous system, and resembles closely cases reported by Strümpell in 1890.

Within a few months F. E. Batten²⁷ has published the results of his work on the clinical and pathological relationships of inflammatory conditions of the brain and cord. He discusses the question of thrombosis of small vessels and the production of infarctions and their relations to acute inflammations, with the general conclusion that acute encephalitis and acute poliomyelitis are pathologically identical, and also clinically, so far as their different localities permit.

Walton's case, to which I have alluded, of the combination of superior and inferior poli-encephalitis, and the cases reported in this paper of poli-encephalomyelitis, inferior poli-encephalitis and possible lesions of the nuclei of the seventh nerves alone, with those to which reference has just been made, will serve to establish the point that combinations and transitional forms of most varying character, as studied both from the clinical and pathological standpoint, characterize the affections under consideration. If this be granted, the recognition of the probability of a common basis should logically follow. Making use of the facts we have, we may certainly, therefore, assume as a safe working hypothesis the essential identity of this group of acute infections, characterized usually by visible inflammatory reactions in the brain or cord.

The following queries which forthwith suggest themselves are evidently unanswerable, but it is, nevertheless, desirable to state them:

First: Why, under the hypothesis of a common cause, should such varied portions of the nervous system be affected in the same or different individuals?

Secondly: Why should the anatomical alterations in certain cases bear so uncertain a relationship to clinical symptoms?

Thirdly: What relation has the character of the lesion to the prognosis of these affections?

These are all questions which take us into the future, very far beyond our present elementary knowledge. So far as I am aware, no satisfactory answer has ever been made to the first question. Why are various portions of the nervous system affected under apparently similar conditions? An appeal to hereditary predisposition, always an explanation of last resort, or to the more tangible distribution of blood vessels, or to use or disuse of certain nerve groups, evidently does not help us in the understanding of the fundamental matter at issue. The fact is, at least, continually impressed upon us that the brain or cord, or parts of the brain and cord, are frequently involved under

superficially identical conditions. To determine these conditions is the work which lies before us.

An answer to the second question as to why anatomical alterations in certain cases bear so uncertain a relationship to clinical symptoms is involved in similar difficulties. The fact we know beyond question that apparently identical symptoms may be produced by lesions of varying character. A case, for example, having all the characteristics of acute poliomyelitis may show post-mortem none of the inflammatory reactions which our experience has led us to expect. Such a case Dr. G. A. Waterman and I have recently reported,²⁸ in which a flaccid paralysis of all four extremities gave no postmortem evidence of lesion beyond slight alterations in ventral horn cells, without the least evidence of inflammatory exudate. A second case,²⁹ diagnosticated as Landry's paralysis, showed postmortem an extensive disintegration with inflammatory exudate in the ventral horns, requiring an anatomical diagnosis of poliomyelitis. Of interest in this connection are the cases of asthenic bulbar paralysis,³⁰ of pseudo-bulbar paralysis³¹ and the whole curious history of Landry's paralysis as contrasted with the acute exudative inflammatory affections of the oblongata and cord. Oppenheim³² has recently drawn attention to the difficulty of determining the exact underlying pathological condition in the type of affection of which I have given clinical examples, owing to the relatively good prognosis. On the basis of two autopsies he discusses this and other related questions at much length. In one case diagnosticated as poli-encephalomyelitis, the postmortem findings, though definite, were wholly insufficient to account for the marked symptoms observed during life. Similar observations have been made by others. In the three cases of poli-encephalomyelitis reported in this paper, the condition of the muscular system, persistent paralyses, atrophy and electrical alterations in the first, force us to the conviction of an underlying characteristic change in the gray matter of portions of the brain stem and cervical cord. In striking and interesting contrast to this are the second and third cases, in which, after very extensive paralyses, involving especially the extremities, an essentially complete recovery took place. In these cases the organic lesion must have been slight and remediable, though the immediate effect was more severe than in the first case. The fatality of this type of disease depends not upon the extent of the anatomical alterations, but upon the nature of the poison which usually but not always produces them. The poison which kills without alterations may be far more virulent than that which produces marked inflammatory reactions. This undoubted fact leads us back of superficial microscopic appearances to a study of causes and chemical interrelations, which lies outside the field of pathological anatomy. In an admirable review of the "Relation of Infectious Processes to Diseases of the Nervous

²⁸ Taylor and Waterman: *Bost. Med. and Surg. Journ.*, cxlvii, p. 691, 1902.

²⁹ Taylor: *Loc. cit.*, 1902. A case reported by Thomas is also of this character—*Ann. Journ. Med. Sc.*, August, 1898.

³⁰ Paul, *Bost. Med. and Surg. Journ.*, Dec. 20, 1900, has reported an interesting case of this character from the Massachusetts General Hospital clinic.

³¹ Hoppe: *Berl. Klin. Woch.*, 1892, No. 14.

³² Oppenheim: *Loc. cit.*, 1899.

²⁷ Batten: *Lancet*, Dec. 20, 1902; *abs. in Med. News*, Feb. 14, 1903.

System," Dr. J. J. Putnam³³ summarizes this question of the relation of lesion and toxic cause as follows: "That the mere absence of demonstrable lesions in a given case of poisoning cannot be taken as proof that the pathogenesis of the symptoms is not the same as in another case where lesions were found. That which is characteristic is often the primary action of the poison, rather than the effects of the lesions, even when lesions are present."

The practical third question of the prognosis of these affections ultimately must depend upon a knowledge of the exciting cause or causes. The lesions produced evidently have only a partial bearing on the matter as indicated by what has just been said. The earlier cases of the Wernicke type were described as usually fatal. The type supposed to be closely associated with influenza and other general infections is apparently far less so. Unquestionably very many of the cases recover, with or without permanent defects; no prognostic criterion can be laid down except the general one of a judgment based upon the violence of the preliminary infection, and even this is uncertain, particularly in those cases which are of somewhat subacute onset.

In the foregoing remarks I have attempted to give concrete examples of types of disease, unusual in themselves, but chiefly of importance as illustrating the fact that a large group of affections exists, very confusing in detail, which are too rarely regarded under a single category. A recognition of a broad, general pathological and, so far as possible, etiological point of view is eminently desirable, if we are to progress in these matters beyond the merely descriptive stage. It is likewise evident that were we to lay stress only upon the evidence of infection, in the broad sense, our group of affections could well be extended to include the various manifestations of infectious neuritis, and also of so-called transverse and disseminated myelitis, claimed to be due to a localized inflammation. This would, however, lead beyond the limits set for this discussion, and would divert attention from the main point at issue, which is to suggest the identity of a group of cerebro-spinal affections chiefly on a pathological-anatomical basis.

The following conclusions, therefore, appear legitimate:

That a large group of affections of the central nervous system exists, provisionally to be regarded as inflammatory, in which may be included encephalitis, poli-encephalitis, superior and inferior, poli-encephalomyelitis, poliomyelitis, encephalomyelitis and, with reservations, Landry's paralysis, and possibly myasthenia gravis, and certain apparent peripheral nerve infections;

That these affections should be regarded as essentially identical, differing only in symptomatic expression;

That the evidence for this lies in the simultaneous involvement in individual cases of various portions of the nervous system, a notable example of which is given in poli-encephalomyelitis;

That we should gain in our understanding of

these and various other affections of the nervous system if we adopted a classification based on pathological alterations and on etiology, wherever possible, rather than on clinical symptoms determined by anatomical subdivisions;

That, admitting a somewhat definite pathological alteration of the nature of inflammation, as a fairly constant factor, we may assume the existence of a common exciting, probably toxic, cause;

That the nature of this cause is practically unknown, that its manifestations are not always uniform and that our final understanding of the distribution and prognosis of these affections must depend, first, upon our knowledge of these exciting causes, and, secondly, upon the nature of individual susceptibility and resistance.

Clinical Department.

A CASE OF PAGET'S DISEASE OF THE NIPPLE TREATED BY THE X-RAY.

BY EDITH R. MEEK, M.D., BOSTON.

Mrs. T., colored, aged thirty-two years, was sent to me by Dr. M. E. V. Fraser for treatment of a chronic obstinate disease of the right breast. According to the patient, it began two years ago as a pimple on the nipple; the symptoms had extended slowly, and at the time I first saw her the nipple and areola were involved. The entire surface was bright red, moist, with here and there small bleeding points; the nipple was not retracted, on the contrary, was quite prominent. No nodules were found in the breast, the lymphatic glands were not affected, the border of the lesion was well defined. At no time had the patient been troubled with pain nor itching. During the greater part of the two years she had been under treatment at the various skin and surgical clinics of this city.

A specimen for microscopical examination was taken, and the following report was returned by Dr. T. J. Leary of Tufts Medical School: "Received a small piece of skin. Microscopical examination shows a uniform thickening of the epidermal layer, the normal epithelium being replaced by elongated alveoli of large pale cells separated indefinitely by strands of connective tissue. The new growth is sharply marked off from the underlying connective tissue, and no metastases are evident in the lymphatics beneath the surface layer. Both new growth and underlying tissues are markedly infiltrated with lymphoid and plasma cells. Diagnosis—Carcinoma of skin."

Operation was advised and refused. X-ray treatments were given; the first week, a treatment of twenty minutes daily, the second week six treatments, the third week four, the fifth week three. As a precautionary measure, the axillary glands on that side were given a few exposures. Within ten days marked improvement was noted; the end of the fourth week the nipple and areola were perfectly normal in appearance. At the beginning of the sixth week another specimen for examination was taken, and the report of normal skin and subcutaneous tissue was returned by Dr. Leary.

³³ Putnam: *Am. Journ. Med. Sc.*, March, 1895. This paper contains a valuable bibliography and an important discussion of the whole subject of infection in relation to diseases of the nervous system.

In the earlier stages this disease closely simulates eczema, but in this especial case there was at no time itching; the color was bright red; there was an absence of exacerbations, and the outline of the lesion was sharply defined. In the majority of the cases the right breast is the affected part, fully 75% of the reported cases having had this situation. Forrest reports a case in which a chronic eczema of the breast in a male was followed by carcinoma. The patient was seventy-two years of age, and had had for some time a discharge from the nipple, which produced crusting, underneath which was a red secreting surface. In the course of six months the nipple retracted, and swelling of the lymphatics along the lower border of the pectoral muscles and the axilla occurred. At the time of observation all signs of cancer were present.

Other parts of the body are sometimes affected, such cases being reported by Crocker, Piek and Ravogli. In all of the fifteen cases observed by Paget two years elapsed before carcinomatous degeneration was noted. Stelwagon and other recent observers claim that the process is malignant from the beginning. During reports two cases: "The first had been in existence ten years; varied treatments had been tried, including tar, chloral, carbolic acid; a great deal of relief was obtained from an ointment of pyrogallic acid, an open wound being produced; this was allowed to granulate under simple ointment; three months later the disease relapsed into its former state; the entire surface was then curetted, but in six weeks there was a return. Excision of the whole gland was advised." The second case was treated in the same way, with a similar result. Stelwagon reports one case improved by x-ray.

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2. Crocker: London Patholog. Soc'y Trans., vol. x, 1889, p. 187.
3. Piek: Prager med. Woch., 1891, p. 282.
4. Ravogli: Journ. Cutan. Dis., 1894, p. 222.
5. During: Amer. Journ. Amer. Sci., July, 1883.

Medical Progress.

REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.,
BOSTON.

THE CLINICAL VALUE OF BLOOD PRESSURE DETERMINATIONS AS A GUIDE TO STIMULATION IN SICK CHILDREN.

Cook¹ used a modification of the Riva-Rocci sphygmomanometer. He found that the blood pressure during the first three months normally varied from 75 mm. to 90 mm.; during the second year from 85 mm. to 95 mm., and during the rest of early childhood from 90 m. to 105 mm. or 110 mm. He found that the blood pressure of children was a much more absolute quantity than in adults. For a child of eighteen months 80 mm. may be considered moderately low, 70 mm. to 75 mm. low and 60 mm. very low. Physiological rises in the blood pressure occur in a healthy child from crying, pain, coughing, any form of excitement and after feeding. These

normal variations do not as a rule confuse observations on cases requiring stimulation, as such children are usually listless and do not take much nourishment. Their vasomotor system seems unable to respond to physiological stimuli.

Alcohol in single doses was unsatisfactory as a stimulant for immediacy, permanency or reliability. In repeated doses it appeared to have a marked and permanent beneficial effect. Thus it would seem not to be indicated when urgent stimulation is required, although very useful during the course of a depressing toxic or marantic illness. Strychnin was found to have a more positive effect on the blood pressure. Hypodermic doses of $\frac{1}{100}$ of a grain to infants during the first year, of $\frac{1}{200}$ of a grain during the second year and of $\frac{1}{100}$ of a grain during early childhood, as a rule produced a rise in the blood pressure in from ten minutes to twenty minutes, which was well maintained for from two hours to six hours, provided the child was not moribund. Digitalin given hypodermically in the same doses acted more quickly and produced a higher rise in the blood pressure. The elevation was not maintained so long, however. The rise usually began in from five to ten minutes and lasted one or two hours. It sometimes reached as high as 20 or 30 mm.

Children not needing stimulation do not show these marked responses to strychnin and digitalin, nor do the moribund, in whom the vasomotor center is insensitive to stimulants. It is in the large intermediate class of toxic and marantic conditions accompanied by low-tension pulse that carefully regulated drug stimulation gives such satisfactory results.

Infusions of normal salt solution had no true stimulant action, although they seemed useful in some toxic and wasting conditions either by increasing elimination or by supplying needed fluid to the tissues. Their use seems inadvisable in acute prostration or collapse, as the afferent impulses from the needle puncture and local tissue distention only make further drains upon the lowered vitality. In these conditions digitalin, which acts most promptly, is the drug of choice, followed by strychnin, which maintains the bettered condition.

It was found that by routine determinations every one, two or three hours, according to the severity of the case, variations in blood pressure could be met and corrected by regulating the stimulants according to the indications of the blood-pressure chart.

Conclusion: "Although it must not be inferred that blood-pressure observations are considered the only measure of a patient's condition, or that any single observation necessarily gives an absolute indication for treatment, still, in general, it would seem that blood-pressure observations which constitute a numerical index for the mechanism most affected by stimulation would be the best single guide to the choice and administration of stimulants."

THE BLOOD OF HEALTHY CHILDREN.

Karnizki² examined the blood of 20 infants and 42 older children, all absolutely healthy and selected

¹ Cook: Johns Hopkins Hosp. Bull., 1903, vol. xiv, p. 37.

² Archiv. f. Kinderh., 1903, vol. xxxvi, p. 42.

with great care. At least two examinations were made in each case.

The average number of red corpuscles in infancy (under one year) was 5,583,744, and for the whole of childhood 5,892,000. There was no difference between the sexes either in infancy or later. There were no great variations in the number of red corpuscles.

The greatest number of white corpuscles was found in infancy, the average being 12,628. The average from one to eight months was 13,125 and from eight to twelve months, 11,930. The number of white corpuscles diminished slowly with age. The average from one to six years was 9,415 and from six to fifteen years, 7,900.

In infancy the amount of hemoglobin was approximately constant, about 12.7 gm. to 100 gm. of blood. Sex had no influence. In childhood there was a gradual but evident increase in hemoglobin, the adult figures being reached at about ten years. The average amount of hemoglobin in childhood was 13.5 gm., and was the same in both boys and girls.

The average specific gravity for infancy was 1.0566. The average figures for boys in infancy were 1.2 per thousand greater than in girls. The average for children was 1.060, the average for boys being 2.3 per thousand greater than for girls.

He found nucleated red corpuscles in the blood of healthy children only up to the age of seven and one-half months, and then but rarely.

The lymphocytes in the blood of healthy children were in general larger than in adults. Up to the fourth year the lymphocytes predominated and on the average exceeded the neutrophiles by about 14%, the lymphocytes being 52.1% and the neutrophiles 35.4%. Beginning with the fourth year the neutrophiles began to increase. At eight years there were 46.6% of neutrophiles and 43.6% of lymphocytes. From the eighth to the fifteenth year the neutrophiles always predominated. At this time the lymphocytes varied between 30% and 34% and the neutrophiles between 52% and 55%.

THE SHIGA BACILLUS AND THE DIARRHEAS OF CHILDREN.

Duval and Bassett,³ two of Flexner's pupils, working in the Thomas Wilson Sanatorium for Children near Baltimore last summer, found Shiga's bacillus of dysentery in the stools of forty-two typical cases of "summer diarrhea." They also secured the organism from scrapings of the intestinal mucosa at autopsy, and in one case from the mesenteric glands and liver. They did not find this bacillus in the stools of twenty-five healthy children nor of those suffering with "simple diarrhea," "marasmus" and "malnutrition," nor did their blood serum agglutinate the bacillus of dysentery. They believe that their findings justify the conclusion that the summer diarrheas of infancy are caused by intestinal infection with Shiga's bacillus, and therefore are etiologically identical with the acute bacillary dysentery of adults. The cases studied from which the dysentery bacillus was isolated included examples of so-called "dyspeptic

diarrhea," of entero-colitis and of malnutrition and marasmus with superimposed infection.

It is not evident from their report whether they studied simply cases of ileo-colitis or cases of fermental diarrhea and simple diarrhea as well. They promise a full report of their investigations in the *Journal of Experimental Medicine*. This report has not yet appeared.

Zahorsky studied an epidemic of summer diarrhea at the Bethesda Foundlings' Home in St. Louis. The epidemic involved most of twenty-five cases in one ward. The character of the diarrhea varied. In three of the worst cases the characteristic agglutination of Shiga's bacillus was present. The blood from other babies in the Foundlings' Home did not give the reaction. Shiga's bacillus was isolated from the stools of one case. He thinks that Shiga's bacillus is the primary etiological micro-organism of summer diarrhea.

Park has found this bacillus in a considerable percentage of cases of dysentery in both adults and children, occurring in local outbreaks in the neighborhood of New York. It has been found by other investigators in isolated cases in the hospitals of New York. It has also been found in isolated cases in various other cities, including Boston, where Dr. Hunter Dunn isolated it, according to Dr. Flexner's opinion, although agglutination did not take place.

Flexner, in an address before the Medical Association of Greater New York, held out the hope that in the Shiga bacillus would be found the etiological factor of a large part of the summer diarrheas of children, and that it might be possible to develop a serum which would be of service in treatment. He evidently expected that the bacillus would be found to be the cause of intestinal lesions of various anatomical types, just as the diphtheria bacillus is the cause of varied lesions in the throat, and that there would result a marked simplification of the classification of the diarrheal diseases of children.

He did not state the type of diarrheas in which the bacillus had been found.

Investigations by other bacteriologists have seemed to show that this problem of the etiology of the diarrheal diseases is not so simple as Flexner believes. Hiss, from the laboratory of the College of Physicians and Surgeons of New York, found in a case of fatal diarrhea in a child a bacillus which in nearly all respects agreed with that isolated by Flexner, but showed certain differential points by other tests. Park has also reported most confusing results in testing the agglutinating reactions of various strains of bacilli which have been identified as corresponding to the Shiga bacillus.

The significance of all these observations is not at present quite clear. It is important at first to determine the class of cases in which the Shiga bacillus occurs. It hardly seems probable that it causes the ordinary fermental diarrheas of infancy. It is most likely, however, that it, or allied bacilli, cause the ileo-colitides of infancy. In the light of the various observations which have been made in this country on the Shiga bacillus and allied organisms in the diarrheas of infancy, it is evident that much careful work is necessary before we can

³ *Am. Med.*, 1902, vol. iv, p. 417; Zahorsky: *St. Louis Cour. of Med.*, 1902, vol. xxvii, p. 418; Flexner: *Bost. Med. and Surg. Journ.*, 1902, vol. cxlvii, p. 593; editorial: *Arch. of Pediat.*, 1903, vol. xx, p. 112.

safely hope to make any practical use of the results of the discoveries of Duval, Bassett and others.

OBSERVATIONS ON BREAST FEEDING, WITH ESPECIAL REFERENCE TO HEUBNER'S QUOTIENT OF ENERGY.

Beuthner⁴ takes 650 calories as the average worth of a liter of human milk and 670 calories for a liter of cows' milk. He studied three breast-fed infants. They were weighed before and after each feeding. All gained steadily and satisfactorily.

The first infant was six or seven weeks premature. He was breast-fed entirely for seventeen weeks, and then given cows' milk diluted with a cereal decoction in addition, to the end of the twenty-fifth week. The observation was discontinued at this time. He weighed 2,400 gm. at birth and 6,870 gm. at the end of the twenty-fifth week. During the first quarter he averaged 113.1 calories per kilo, and during the second quarter 92.2 calories per kilo.

The second child was born at full term and was studied from the second to the end of the twenty-eighth week. He had breast milk only for twenty-two weeks and then breast milk with a milk mixture. His weight increased from 3,810 gm. to 8,855 gm. During the first quarter the average was 104 calories per kilo, and during the second quarter 76.9 calories per kilo.

The third child was born at full term and was studied from the fourth to the fourteenth weeks inclusive. He had breast milk only and gained from 3,100 gm. to 4,790 gm. During the first quarter of the year he took on an average 103 calories per kilo.

He gives a summary of the cases hitherto studied. The average quotient of energy in these cases was as follows: 1 week, 59 calories; 2 weeks, 100 calories; 4 weeks, 106 calories; 7 weeks, 114 calories; 10 weeks, 104 calories; 14 weeks, 96 calories; 17 weeks, 91 calories; 20 weeks, 85 calories.

(To be continued.)

Reports of Societies.

EIGHTEENTH ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN PHYSICIANS.

(Concluded from No. 24, page 646.)

WEDNESDAY MORNING, MAY 13.

ACUTE LYMPHATIC LEUKEMIA. DR. A. O. J. KELLY, PHILADELPHIA.

The author reported four cases of acute lymphatic leukemia with necropsies, and gave a description of the blood findings and the anatomic changes. He discussed the alterations in the bone marrow, with particular reference to the nature of acute lymphatic leukemia, and its relationship to myelogenous leukemia.

REPORT OF AN AUTOPSY AND THE MICROSCOPIC FINDINGS IN A CASE OF ACUTE LYMPHATIC LEUKEMIA. DR. F. P. KINNICUTT, NEW YORK.

⁴ Beuthner: *Jahrb. f. Kinderh.*, 1902, vol. lvi, 446.

A CLINICAL AND PATHOLOGICAL STUDY OF TWO CASES OF SPLENIC LEUKEMIA, PRESENTING EARLY AND LATE STAGES OF CIRRHOSIS (EARLY AND LATE STAGES OF BANTI'S DISEASE). DRS. GEORGE DOCK AND ALDRED S. WARTHIN, ANN ARBOR.

Both cases presented a typical picture of splenic anemia; namely, splenic fibrosis, etc., stenosis of the portal vein with calcification of the vein wall in both cases. The most interesting feature was an extensive new formation of lymphoid tissue throughout the root of the mesentery and the prevertebral adipose tissue. In the one case (early stage of cirrhosis) the new lymphoid tissue resembled splenic pulp in structure, the larger nodes having the character of accessory spleens. In the second case (advanced cirrhosis) the lymphoid tissue presented the characteristics of hyperplastic hemolymph nodes. All of these showed in their blood sinuses the presence of great numbers of phagocytes containing disintegrating red-cells and blood pigment, the degree of hemolysis apparently being much greater than that occurring in pernicious anemia. No hemosiderin, however, was found in liver, spleen or kidneys. No evidences of red blood cell destruction could be discovered in the spleen. The bone marrow showed great numbers of red cell and pigment phagocytes, as in the hemolymph nodes. Similar changes were found in the hemolymph nodes of the case showing early stage of cirrhosis, but were less marked; in this case some evidence of hemolysis in the spleen was also found. There was remarkable tendency to the deposit of lime salts throughout the portal system, fibrosis of the portal branches, interstitial changes in the pancreas and presence in the blood vessels of numbers of bone marrow giant cells. There would seem to have been early loss of the splenic function and partial compensation by a new formation and hyperplasia of lymphoid and hemolymphoid structures. It was probable that the hemolysis is only compensatory for the lost splenic function, and not the direct result of an intoxication, as in pernicious anemia.

In discussion of these papers Dr. R. C. CABOT said that out of seventy-six cases he had no reason to believe that the two types were fused or mixed; all were clearly myelogenous or lymphatic. He considered that in the cases where a mixed condition had been reported the examination had not been satisfactory.

DR. PEABODY referred to a case without enlargement of the lymphatic glands, except that of one axillary gland which was hardly larger than a grain of wheat. Blood examination showed 150,000 white cells; 91% mononuclear.

DR. HERRICK had seen nine cases which were typical; in two cases there were large numbers of nucleated red blood cells. Clinically they had resembled the acute infections; four had angina with exudate upon the tonsils; the anemia was rapid and progressive.

DR. FUSSELL had reported a case some three years ago that began with the ordinary symptoms of typhoid; only a moderate enlargement of the spleen; no enlargement of the lymphatic glands. One not having made an examination of the blood would have called it typhoid fever.

DR. WELCH thought the cases were of peculiar interest in reference to the theory of the origin of the lymphocytes, and that the study constituted the principal attack upon Ehrlich's theory as to their origin. He referred to the question of ameboid movement of the lymphocytes, and said he had always held that the evidence in support of their movement was conclusive. He thought in the majority of instances there was terminal infection. Dr. Welch recalled a similar case to that reported by Dr. Dock of calcareous degeneration of the portal vein, where there was marked sclerosis of the walls of the vessel and calcareous degeneration, with well-marked changes in the spleen and a moderate degree of cirrhosis of the liver.

DR. OSLER thought we should recognize two distinct groups with different clinical pictures; one group running its course in ten or twelve weeks; the other lasting for as many years, and that the acute cases resembled the cases of acute septicemia, with hemorrhages, fever, swollen tonsils, angina, etc. The cases presented by Drs. Dock and Warthin illustrated well the difficulty of differentiating. They might bear a striking resemblance to chronic cirrhosis with secondary involvement, and calcification of the portal vessels might occur in chronic cirrhosis.

DR. DOCK, referring to the clinical resemblance to typhoid fever, said they had had an interesting case in which a diagnosis of appendicitis had been made and the patient operated upon. The leucocytes numbered 95,000, but no differential count was made. He thought the differential count should always be made, although many surgeons were inclined to look upon it as a waste of time.

THE RELATION OF CHRONIC ENLARGEMENT OF THE SPLEEN TO ANEMIA IN INFANCY.² DR. JOHN LOVETT MORSE, BOSTON.

The writer considered the peculiarities of the blood in infancy and the conditions under which chronic enlargement of the spleen occurs at this age, and referred to the "anemia infantum pseudoleukemia." He gave the histories and blood examinations in twenty-two cases of anemia with splenic tumor in infancy, with an analysis of these cases. He considered that the enlargement of the spleen, liver and lymph nodes develop independently of each other, and are not directly connected, either as to cause or effect, with changes in the blood. All were manifestations of a common cause — disturbance of nutrition. The anemia was secondary, not primary. He thought there was no justification for the terms "anemia infantum pseudoleukemia" or "splenic anemia of infancy." The prognosis depended on the condition of the blood, the size of the spleen having no influence, and the largest may return to normal in a short time.

DR. OSLER said in discussion that it was very interesting that Dr. Morse had gone over these cases and brought out the point that many had been convinced of for some time — that of the great frequency of enlargement of the spleen in the malnutrition of children. It was also of interest to note the frequency of cirrhosis of the liver in conditions of malnutrition.

CHRONIC CYANOSIS WITH POLYCYTHEMIA AND ENLARGED SPLEEN, A NEW CLINICAL ENTITY. DR. WILLIAM OSLER, BALTIMORE.

The author considered chronic cyanosis and the conditions under which it occurs with special reference to cyanosis and polycythemia and the conditions under which polycythemia is met with clinically, and reported a group of cases of obscure etiology in which the symptoms were chronic cyanosis, polycythemia, constipation, enlarged spleen, with a trace of albumin in the urine, and without signs of heart, lung or renal trouble, and with no emphysema.

In discussion, DR. CABOT referred to two cases of polycythemia which he had previously reported, one with and one without splenic enlargement, and gave further details of the first of these.

DR. F. C. SHATTUCK: I have seen several cases of this kind. One was a curious case, a man in Pawtucket, whose physician thought he had Bright's disease. He came under the observation of my colleague, Dr. Wood, who referred him to me. His urine showed the characteristics of interstitial nephritis. He was not nearly as cyanotic then as he became later; he afterward became enormously cyanotic. The mucous membranes and face were striking. He used to spit up blood every morning, so congested was the mucous membrane of the throat. I was called to see him one Sunday, when he had in the middle of the night before been taken with gastric hemorrhage and vomited at least a gallon of blood, his physician said. His pulse was, however, very good, and there was not the slightest suggestion of cardiac disturbance. After the vomiting he felt very much relieved.

Dr. Cabot examined his blood for me, comparing the ear and foot count, which showed, respectively, ten and twelve million. He finally died of gangrene of the foot, following occlusion of an artery. He had an enlarged liver and spleen and there was congestion of the kidneys. What the origin of the trouble was seemed a mystery.

In another case, recalling the relief afforded this patient by vomiting, we tried venesection, and it gave distinct relief.

DR. STOCKTON desired to place on record a similar case which had been followed for two successive years. The patient was a native of Turkey, or Armenia, but there was never a question of the very striking cyanosis. There was a trace of albumin, and the red-blood count was 10,000,000. He vomited large quantities of blood, and his apprehension and distress were pitiable.

DR. MCPHEURAN had had a patient of forty with this extreme cyanosis and in addition a bronzing or pigmentation of the skin. There was enlarged spleen, and the blood examination showed about what was described by the other speakers. He referred to cases of marasmus with cyanosis, in which the blood count was always high, although the patient was emaciated. He also spoke of the cases of anemia with high color, and considered these cases more frequent in northern countries and high altitudes.

DR. HARE had had a case in the ward which corresponded to those described by Dr. Osler, a coal-miner, with polycythemia, enlargement of the spleen,

² See JOURNAL, p. 573.

albuminuria and constant cyanosis. He did not consider the point as to the polycythemia of high altitudes as universally accepted. The experiments in connection with that question had been very contradictory. After the first few weeks of high altitude the polycythemia diminished.

Dr. BRIDGE had a patient under his observation in which the man was deeply cyanotic constantly, and had protrusion of the eyes to the extent of suggesting Grave's disease. Blood count was 8,000,000. There was albuminuria and urea reduction. He recalled also another case in a woman with cyanosis existing for a number of years, with no enlargement of the spleen or liver and no primary disease of the kidneys; she was a sufferer from malnutrition and neuralgia.

Dr. STENGEL had had a similar case under observation for some time. There was nephritis and the condition of the eyes that had been referred to. The general condition of the patient had improved and she had gained 50% in weight, but the blood count had not changed, nor the condition of the eyes.

Dr. EDSON reported a case identical with Dr. Osler's description: a middle-aged man who came into his office blue in color; there was no emphysema nor cardiac difficulty on examination, but a blood count of between ten and eleven million.

Dr. JOSLIN had recently reported a case of chronic cyanosis due to taking acetanilid for a long time. A second case he had reason to believe was suffering from the same cause; had been taking a proprietary medicine for some time; a polycythemia of not over 7,000,000, but persistent. In the first case venesection had been of benefit.

Dr. COHEN thought that cyanosis and large hemoglobin count were in a measure contradictory, and asked if the hemoglobin count of the blood taken from the vein corresponded with that taken from the peripheral circulation. He related a case of polycythemia where the blood count varied from eight to eleven million, with hemoglobin usually below 80%, in the person of a physician who had made a diagnosis of his own case.

Dr. OSLER said in closing that when he had first seen the case the protrusion of the eyes had suggested exophthalmic goiter, but the condition had existed for many years and there was no enlargement of the gland. Headache had been a frequent symptom, and in one case it had been relieved by the use of sodium nitrate.

Dr. CABOT said in one case the spectroscope had been used and the ordinary oxyhemoglobin bands found. The hemoglobin was in excess.

Nominations of officers were announced as follows: President, Dr. W. T. Councilman; vice-president, Dr. Edward L. Trudeau; secretary, Dr. Henry Hun; recorder, Dr. S. Solis Cohen; treasurer, Dr. J. P. Crozer Griffith; councilors, Dr. Victor C. Vaughn and George M. Kober.

THURSDAY MORNING, MAY 14.

GONOCOCCAL PERITONITIS IN CHILDREN SIMULATING APPENDICITIS. DR. W. P. NORTHRUP, NEW YORK.

This was a report of several cases occurring in the practice of the writer where gonococcal peri-

tonitis had produced symptoms like those of appendicitis; one of these cases had been operated upon.

Dr. KINNICUTT said in discussion he thought a sufficient number of cases had now been published to demonstrate that the prognosis is decidedly favorable without operation.

Dr. JACOB thought the cases were not so infrequent; that every one saw a good many of them, more or less severe in character, and that the prognosis was good, if one had the patience to wait. In answer to a question by Dr. Northrup, as to the prognosis as to the condition of the genital organs of girls afflicted with the trouble before the age of puberty, he said he thought there was a good chance for the development of chronic salpingitis.

A PRELIMINARY REPORT ON THE INFLUENCE OF ALCOHOL IN INFECTIOUS DISEASES. DR. H. A. HARE, PHILADELPHIA.

The author had carried out a series of experiments to determine whether it was possible for alcohol to act favorably in infectious diseases by increasing the bacteriolytic power of the blood. It would seem that the administration of alcohol increased the bacteriolytic power of the blood very materially. In certain diseases the bacteriolytic power of the blood was greatly increased. On stopping the administration of the alcohol the micro-organisms would become innumerable; each time the alcohol was given the bacteriolytic power of the blood was markedly increased. In typhoid fever the result was marked. The essayist concludes that the use of alcohol seems to have the power of combating infectious disease by increasing the bacteria-destroying power of the blood: that while the experiments so far made were too few to determine the question, they indicated, so far as they had gone, that the effect is produced by an increase in complement.

INFANTILE SCORBUTUS. DR. T. M. ROTCH, BOSTON.

The writer reported cases of a peculiarly grave type, illustrating the necessity of a very careful differential diagnosis from osteo-sarcoma and osteomyelitis. In one of the cases the sub-periosteal hemorrhage especially occurred throughout the entire length of the right tibia, the case closely simulating osteomyelitis. Surgical operation, however, showed it to be hemorrhage. Large sequestrae were removed, and rapid improvement followed the administration of orange juice. New bone was rapidly forming, and complete recovery was expected. Another case was that of a baby nine months old. Extreme swelling and hardness of both femora were found, making a differential diagnosis from osteo-sarcoma somewhat difficult. Complete recovery had followed the administration of orange juice.

SUDDEN DEATH AND UNEXPECTED DEATH IN INFANCY AND CHILDHOOD, WITH SPECIAL REFERENCE TO THE SO-CALLED THYMUS DEATH. DR. J. P. CROZER GRIFFITH, PHILADELPHIA.

The writer referred to death in earliest infancy due to coryza, to that from asphyxia from over-lying, and then to instances of "thymus death." Two cases were reported in detail illustrating the

condition, autopsies being given, and a third was mentioned as possibly belonging to this category. He reviewed the investigations of other writers, and referred to their reported cases. The much-disputed question appeared to be whether the so-called thymus death is due to pressure of an enlarged thymus gland upon the trachea, heart or vessels, or whether the death is syncopal, dependent upon a disturbance of the nervous centers of which the enlarged thymus, together with other lymphatic enlargement, is but the anatomical manifestation. The writer's conclusions were that, although death can undoubtedly occur from actual pressure by the thymus gland, yet in the great majority of cases it is dependent upon the diseased nervous system, but whether the term "status lymphaticus" properly expressed the nature of the state was open to question. He shared the views of others, who believe that the many deaths attributed to laryngo-spasm are to be classed in this category, and are really the result of syncope. As other causes of sudden death the writer referred to pertussis, paralytic involvement of the respiratory centers, heart disease, as-thenia, convulsions and internal hemorrhage.

In discussion DR. BLUMER had seen nine cases of the so-called thymus death in the last four or five years, and thought the cases could be divided into two classes,—those in which the organs were practically sterile at autopsy; and those in which there was infection. Some cases simply predisposed the individual to death by infection.

DR. JACOB thought that undoubtedly a number of sudden deaths in infancy were caused by thymus pressure. In other cases it might be due to a general disintegration, or atrophic disorder. The deaths might occur in the first stage of laryngismus stridulous, the child not living long enough to develop the second stage. It was a condition of apnea. He thought forty-nine out of fifty of these children had cranial tabes.

STUDIES ON THE ACTION OF ALCOHOL UPON THE CIRCULATION IN FEVERS. DR. R. C. CABOT, BOSTON.

The writer gave a résumé of the work that had been done and the methods of study employed, and then referred to his own experiments. Two instruments had been used for measuring blood-pressure—the Oliver and the Riva-Rocci. Charts were exhibited showing the blood pressure before, during and after the administration of alcohol. In 41 patients, mostly cases of typhoid, 1,105 measurements were made; the blood pressure showed no variations that could reasonably be referred to the action of the alcohol; its action upon the circulation was *nil*. The same neutrality and inertness in relation to the temperature, pulse-rate, respiration rate in 309 patients suffering from a great variety of diseases was the impression derived from 2,160 observations in these cases. The observations were not interpreted as proving that alcohol is useless or useful in disease. As a narcotic and vasomotor dilator it might be of use.

In discussion DR. WELCH said there had been a great diversity in the results of experimenters upon animals, but there was one point that all had agreed upon,—that alcohol administered to the point of intoxication increased the susceptibility to infectious disease. There had been only two observations fa-

vorable to alcohol in this respect; one by Gruber and one by a Frenchman, who found that the administration of alcohol did not influence the susceptibility. He considered it unfortunate that Dr. Hare should have used the colon bacillus in his experiments, as it was an organism so readily killed by human blood. He thought there was no relationship between susceptibility to infection and the bacteriolytic power of the blood as determined in this manner, as with highly bacteriacidal blood there might be great susceptibility and with low bacteriacidal power there might be great resistance. The experiments, too, were made with much larger doses per body weight than one would think of giving to human beings. He thought there should be great caution in applying to the treatment of disease the results of these experiments.

DR. JACOB looked upon the results of Dr. Hare's experiments as very conclusive. They taught much about the effects that had been observed clinically for so long. He had always believed and taught that alcohol should be given in large doses in infectious diseases. He had observed for a long time the decidedly beneficial effect of large doses of alcohol in the infections.

DR. ARNOTT did not feel very hopeful in the matter. He had found that the administration of alcohol to rabbits diminished the hemoglobin complement; while later they had found an increase. Wherever there was such increase there was found an inflammatory condition in some part of the body suggestive of a compensatory action.

DR. F. C. SHATTUCK's experience had been uniformly that alcohol did good in many cases, and was certainly capable of saving the lives of some of the septic cases. He thought that the clinical proof was so striking that it was a duty to use it until stronger evidence against its value should be produced.

It is all right to investigate; he did not want to discourage that, but the onus of proof is on the investigator. The clinical proof is so striking that it is a duty to use it until stronger evidence against its value has been produced.

DR. MUSSER did not think its routine use in typhoid fever justifiable. In a series of eighty cases in which no death occurred he had not employed it at all. He did not hesitate to use it in septicemia.

DR. DOCK said that often the most desperate cases of sepsis would pull through without the use of alcohol. For a good many years he had not used it at all.

DR. CABOT thought that those who used alcohol on the ground that it produced changes in the protective power of the blood were increasing, and that if its use was advocated on the principles referred to by Dr. Jacob and Dr. Hare, then it should be used in a routine way, and not only in selected cases. If we believe it increases the bacteriolytic power of the blood it should be given in large doses in every case.

THE MORBID CHANGES IN HEREDITARY ATAXIA. DR. L. F. BARKER, CHICAGO.

This paper described the brain and spinal cord in each of two brothers dead of hereditary ataxia.

The morphology of the gyri and sulci was described, including a microscopic study of the spinal cord, cerebellum, brain stem and cerebral cortex. The principal changes were extensive atrophy of the direct cerebellar tract and of Clarke's nucleus on both sides; and an elective degeneration of the dorsal funiculi involving the fibers which correspond more or less closely in distribution to the so-called third fetal system of Trepinski. The lesions were illustrated.

In discussion Dr. STARR thought the paper threw a great deal of light upon the physiology of the muscular centers, and established conclusively that there were two independent and separate systems controlling the muscular centers.

AUTOLYSIS IN LOBAR PNEUMONIA. DR. SIMON FLEXNER, PHILADELPHIA.

The writer said that recent studies upon autolysis had necessitated a revision of views upon the absorption of exudates. On account of the different manner in which the lung in lobar pneumonia behaves as regards resolution, the rapidity and capacity to undergo autolysis were studied in a number of instances. The especial purpose of the study was to throw some light upon unresolved pneumonia, of which several examples were found to undergo autolysis but slightly or not at all.

In discussion — Dr. JACOB said there was a rapid absorption in lobar pneumonia when uncomplicated; it was a surface affection. Those not absorbed were complicated with interstitial connective tissue.

THE ADRENAL GLAND AND ITS ACTIVE PRINCIPLE IN THEIR RELATIONS TO CYTOLYSIS AND ANTITOXIN PRODUCTION. DR. A. C. ABBOTT, PHILADELPHIA.

An experimental investigation was made to determine if the serum of rabbits immune from guinea pig's adrenal glands possessed destructive affinity for the guinea pig's adrenal *in situ*, and if the tolerance of rabbits to repeated injections of the active principle of the adrenal glands is or is not to be regarded as immunity, in the sense of there being an antitoxin in their circulating blood. The writer concluded that it is doubtful if the repeated intra-peritoneal injection of rabbits with macerations of fresh guinea pig's adrenals results in the elaboration of a substance in the rabbit's serum that is destructive to the guinea pig's adrenals *in situ*; that the most marked effect of the injection of guinea pigs with the serum of rabbits after such treatment is blood destruction. The hemolytic activity of the rabbit's serum for guinea pig's erythrocytes is, as a rule, very much increased; that in no case were the adrenal glands of the guinea pig demonstrably affected, beyond more or less congestion, by the intra-peritoneal injection of the serum of rabbits that had received repeated injections of guinea pig's adrenals; that the serum of rabbits treated with guinea pig's adrenals was *in vitro* not only actively hemolytic for guinea pig's erythrocytes, but caused more or less pronounced agglutination of fresh macerations of the adrenal glands; that the serum of rabbits immune from guinea pig's adrenals differs from that of rabbits immune from guinea pig's blood in being less toxic; that the remarkable variations in the susceptibility of rabbits to the toxic action of the

active principle of the adrenal gland made it impossible to determine the minimum lethal dose of this substance by the method employed, that is, by intra-peritoneal injection of the substance in solution; that the repeated injection of rabbits with increasing doses of the active principle of the adrenal results in more or less of tolerance, but the serum of such animals has neither more nor less neutralizing effect upon solutions of the active principle than has the serum of normal rabbits. The condition is perhaps not one of immunity, and it is questionable if antitoxins are elaborated as a result of such injections.

AN EXPERIMENTAL STUDY OF THE NEPHROTOXINS. DR. R. M. PEARCE, PHILADELPHIA.

The writer dealt with the effects of the injection of nephrotoxins in the dog, rabbit, guinea pig and rat. The so-called nephrotoxins were obtained by causing the degeneration of the kidney *in loco*, and by introducing kidney tissue, under sterile conditions, into animals of the same and different species. The blood sera from the inoculated animals was supposed to contain specific toxins for kidney cells — denominated auto-, iso- and hetero-nephrotoxins. The effects of these sera were studied by observing the urine, examining microscopically sections of the kidney, and by means of kymographic tracings. So far as the blood pressure was concerned, the results were negative.

STUDIES UPON THE CAPSULE OF THE KIDNEY. DR. S. J. MELTZER, FOR HAVEN EMERSON, NEW YORK.

This was a report on observations of changes following decapsulation of kidneys of dogs and rabbits, with a study of the capsule of the kidney of the dog in its relation to absorption.

REPORT OF A SUCCESSFUL DECAPSULATION OF THE KIDNEY. DRs. JAMES TYSON AND CHARLES H. FRAZIER, PHILADELPHIA.

The patient was a girl of ten, the subject of a high grade of chronic parenchymatous nephritis of long standing, and succeeding upon scarlet fever. There was large albuminuria, with ascites and general dropsy. Tapping the abdomen a number of times was followed by refilling, and all efforts to relieve the patient by medical measures had failed. Dr. Frazier gave a brief résumé of the surgical report, which consisted of operation upon the right kidney, microscopic findings, results of the operation and its effect upon the anasarca, quantity of urine and quality of urine, all of which were favorable; then operation upon the left kidney two months later with microscopic appearance: immediate results, as before, the child being at least temporarily saved and apparently in good health.

In discussion — Dr. McPHEE reported a case occurring at the Children's Hospital of Toronto: a boy aged ten, with anasarca and ascites, who had been tapped several times. The result was highly satisfactory and the boy was apparently well after, decapsulation having been performed first on the right and then on the left kidney.

Dr. CUTLER had had three cases, two in adults and one in a child, the results of the decapsulation being very satisfactory in all three.

PARYXOSMAL HEMATINURIA. DR. W. G. THOMPSON,
NEW YORK.

The writer said that in most of the cases there was slight albuminuria. Many of the cases had been produced solely by muscular fatigue, and not by exposure to cold or wet. Mental emotion was also a factor in some cases. A large proportion of cases had been in those having hereditary syphilis. The author concluded that it is a profound neurosis. He referred to the necessity of diagnosis from malarial hematuria, and gave some practical suggestions as to the treatment.

OBSERVATIONS ON SOME POINTS IN THE PATHOLOGY OF THYROID AND PARATHYROID. DR. W. G. MACCALLUM, BALTIMORE.

The writer referred to the development of the conception of the independent nature of the parathyroids and the studies of their function as contrasted with that of the thyroid; the production of a specific cytolytic serum for thyroid and for parathyroid separately and the effects of the sera. He studied the effect upon the thyroid of extirpation of the parathyroids and the changes in the remaining parathyroids after partial parathyroidectomy together with the nature of the symptoms resulting from complete parathyroidectomy. The results of the author were discouraging so far as the production of a cytotoxin was concerned.

THE INFLUENCE OF DIFFERENT VARIETIES OF FAT ON THE FORMATION AND EXCRETION OF ACETONE. DR. E. P. JOSLIN, BOSTON.

The acetone in the urine and breath of a healthy individual was estimated during two days of starvation to serve as a control. The acetone was then estimated in the same individual during a similar period and under similar conditions, except that he ate 104 gm. tripalmitin, or tristearin, or triolein in successive experiments. Before starvation only 10 mgm. a day; during the first day of starvation it increased to 100 mgm; on the second day, 300 mgm. On being fed with oleic acid the acetone increased to 900 mgm. With palmitic and stearic acids there was no increase in acetone. On sodium carbonate it was increased as much as with oleic acid. With triolin or tristearin the amount of acetone was less in one case, and in the other the same as in the control experiment of starvation. If fats are increased in diabetics, it should be done slowly on account of the increase of acetone.

PULSATING EMPYEMA NECESSITATIS. DR. F. P. HENRY, PHILADELPHIA.

This was a case observed in 1880, but never before reported in full. It had been referred to in the course of a discussion at a meeting of the Philadelphia County Medical Society in 1881. There were three strongly pulsating tumors. The only other case in which there was an equal number of pulsating tumors was that of Chevostek, which figures as Case 28 in Wilson's series. There was coincident pneumothorax. The cause of pulsation in these cases was discussed, the writer considering the most important factors, after careful study of

many cases, left-sided and large effusion, paresis of intercostal muscles and a somewhat forcible heart beat.

PULSATING SEROUS PLEURISY. DR. A. MCPHEDRAN, TORONTO.

The condition reported occurred in a woman aged fifty years, the symptoms recurring with the accumulation of serous fluid after three aspirations. She was taken ill with chills and fever, and her physician discovered pleural effusion, and pulsation on the left side was noticed. The effusion aspirated was at first a blood-stained serum, and later purely serous. The heart was found to be in the normal position, and the pulsation in the axillary region was very marked. Turning on the right side the pulsation disappeared from the left side and appeared in the back; on turning on the back the pulsation reappeared in the axillary region. The pleural cavity was only slightly distended. The thoracic wall was not what you would call parietic.

In discussion, DR. HENRY said thoracic aneurism with rupture into the pleural cavity without causing death of the patient was the one thing that most resembled this condition.

A CASE OF EXTENSIVE PULMONARY INFARCTION. DRS. A. MCPHEDRAN AND J. J. MACKENZIE, TORONTO.

The case reported was that of a man aged fifty-five years, with extensive infarction of the right lung. The paper included the history of the case together with full details of the changes in the lung and other parts.

THE THIRD AND FINAL REPORT OF A CASE OF PRE-SYSTOLIC MITRAL MURMUR, COMPLICATING PREGNANCY, ETC., WITH EXHIBITION OF A SPECIMEN, SHOWING TRIPLE VALVULAR LESION. DR. JAMES TYSON, PHILADELPHIA.

This case was first reported in May, 1899, again in May, 1901, and this constituted the concluding report, with exhibition of the heart which showed a triple lesion, namely, of the mitral, the aortic and tricuspid valves.

Recent Literature.

The Prevention of Infection in Public Vehicles.
By ALFRED GREENWOOD, M.D., Medical Officer of Health. London, 1902.

The author has published this pamphlet of 65 pages for the purpose of calling public attention to the necessity of legislation providing for systematic cleansing and disinfection of the interior of public vehicles.

The different chapters treat of infection from public vehicles, of existing legislation upon the subject and of the recommendations for future measures. These recommendations are briefly as follows: (1) Increased educational measures. (2) The fixing of notices forbidding expectoration in public vehicles. (3) The imposition of penalties for violation of rules. (4) Improvement in the construction of the interiors of all public vehicles,

respecting the cushions and flooring. (5) Disinfection of the interiors of public vehicles frequently and regularly, and the thorough washing of interiors still more frequently. (6) Removal and disinfection of the upholstery periodically. (7) These processes to be carried out under the supervision of government officials; neglect or default thereof to be punishable by law. (8) Prevention of overcrowding in all public vehicles. (9) Investigation of the whole question by a parliamentary committee.

Surgical Anatomy. A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By JOHN B. DEEVER, M.D., Surgeon-in-Chief to the German Hospital, Philadelphia. In three volumes. Illustrated by 499 plates, nearly all drawn for this work from original directions. Vol. III: Abdomen; Pelvic Cavity; Lymphatics of the Abdomen and Pelvis; Thorax; Lower Extremity. Philadelphia: P. Blakiston's Son & Co. 1903.

This volume sustains the high quality shown in the two preceding, and, like them, is especially notable for the beauty and accuracy of its illustrations. The important anatomy of the peritoneal cavity is illustrated with a thoroughness and detail which will make the work extremely valuable to surgeons who may wish to refresh their memory of special regions with reference to operative interference.

The illustrations, taken as they are from actual dissections, are notable for their accuracy and for the skill with which the special points in each region are brought out.

A considerable number of the remarks in surgery, with which the book is replete, would better have been left out, as it is unnecessary to encumber a work on surgical anatomy with descriptions of surgical operations which are too incomplete to be of value as guides to the surgeon, and certainly throw no light on the anatomy.

Pyloroplasty, for instance, is described in six lines, and the statement is made that "gastrotony is performed for the removal of a foreign body or for digital dilatation of the pylorus," which the author goes on to state is but seldom done at present. Such statements, while eminently true, hardly enlarge our knowledge either of anatomy or surgery.

As a reference book on surgical anatomy, however, the book is one of great value, and the excellence of the work of the illustrators and publishers has made it one of the handsomest examples of its class.

The author is to be congratulated upon the consummation of so comprehensive a work, and the publishers and all concerned upon the handsome appearance of the book.

Hygiene and Public Health. By LOUIS PARKES, M.D., and HENRY KENWOOD, M.B. With illustrations. Philadelphia: P. Blakiston's Sons & Co. 1902.

This excellent manual, which has now passed through several editions, has been entirely revised, and much new matter has been added. For students in medicine as well as for the medical profes-

sion generally, and for sanitary authorities, it will prove a very handy guide in matters pertaining to sanitary science.

The following topics are treated in as many different chapters: Water; The Collection, Removal and Disposal of Excretal and Other Refuse; Air and Ventilation; Warming and Lighting; Soils and Building Sites; Climate and Meteorology; Exercise and Clothing; Food, Beverages and Condiments; the Contagia, Communicable Diseases and Hospitals; Disinfection; Statistics and Sanitary Law.

The important as well as progressive topic of the prevention of infectious diseases is very fully treated in a separate chapter. The author takes issue with Klein, whose views relating to the derivation of the infection of scarlet fever from an eruptive disease among cows do not appear to have gained much support outside of England.

The chapter upon sanitary law relates entirely to the laws of England, and might as well have been substituted in an American edition by a brief digest of the sanitary laws of some of the older states of the union.

Diseases of Women. A Manual of Gynecology, Designed especially for the Use of Students and General Practitioners. By F. H. DAVENPORT, A.B., M.D., Assistant Professor in Gynecology, Harvard Medical School. Fourth Edition. Revised and Enlarged. With 154 illustrations. Lea Brothers & Co.: Philadelphia and New York. 1902.

The fourth edition of this standard manual corresponds closely to the third, which was amplified and enriched by the addition of the surgical features of gynecological diseases. The rapid exhaustion of the third edition testified to the usefulness of the enlarged manual. The fourth edition has been brought up to date by the addition of the latest advances in the subject. As an outline and epitome of gynecology it fills a very useful place.

A Textbook of Practical Medicine. By WILLIAM GILMAN THOMPSON, M.D., Professor of Medicine in Cornell University Medical College, Physician to the Presbyterian Hospital, Bellevue Hospital, etc., New York. Second edition, revised and enlarged. Illustrated with 62 engravings. Philadelphia and New York: Lea Brothers & Co. 1903.

This second edition of Professor Thompson's "Practice of Medicine" follows the first at an interval of two years. It has been somewhat enlarged to meet the requirements of the changes and developments of the time, and now consists of about 1,100 octavo pages. The articles on yellow fever, dysentery and malaria have been rewritten in accordance with the latest views in regard to these diseases induced by the investigations of the last few years. The articles on immunization, preventive inoculation and serum-therapy have been brought up to date; articles on diseases of the blood and of the heart, and those on diseases of the digestive system, have been revised or recast, and special attention has been given to functional nervous disorders. Dr. Thompson is not a therapeutic nihilist, and the treatment of disease receives particular consideration in his "Practice of Medicine."

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THE MASSACHUSETTS MEDICAL SOCIETY.

THE 122d anniversary of the Massachusetts Medical Society was held Tuesday and Wednesday of last week, in Boston, as is the established custom. The general arrangement of the meeting was not essentially different from that of the past few years, characterized by relatively few medical papers, and by a very considerable possibility afforded the members to visit and see the work of our various prominent hospitals. Experience has shown that the pleasure of the large number of medical men comprising the society is best subserved by a reduction in the number of scientific communications, and by a greater opportunity thereby afforded for social intercourse.

The Shattuck Lecture was this year delivered by Dr. Theobald Smith of Boston, on the subject, "The Sources, Favoring Conditions and Prophylaxis of Malaria in Temperate Climates, with Special Reference to Massachusetts," a topic which few men are more fitted to discuss. The annual discourse on "Surgical Tuberculosis" was delivered by Dr. Herbert L. Burrell to a large and appreciative audience. The full text of this address appears in the next issue of the JOURNAL.

Following the annual discourse the fellows of the society proceeded to Symphony Hall for the annual dinner. The choice of Symphony Hall for this popular function of the annual meeting is certainly to be commended as a very great improvement over the former place of meeting in Mechanics Hall.

The postprandial speaking was this year of the same general character as heretofore, and brought out the deepening fellowship which other professions, if the words of the speakers are to be taken seriously, have towards the medical profession. In the absence of the Governor, the president of the

society, Dr. George E. Francis, introduced Attorney-General Parker to represent the Commonwealth. If not altogether original, Mr. Parker was certainly felicitous in his attempt to demonstrate the close interrelationship between law and medicine. He gave the assembled physicians a certain amount of sound advice regarding their attitude in the court room, and insisted that physicians and lawyers should work along a common line in the attempt to ascertain the truth, but that doctors should be warned not to forget that they are stepping outside their province in attempting, under any circumstances, to argue a case, and that, although the doctor may have frequent cause for irritation in the sharp cross-examination to which he is subjected, it must not be forgotten that the lawyer, also, occasionally has cause for irritation. From this he went on to a more general statement of the relationship of the physician to the community, and dwelt upon the fact that the physician renders service not only to the individual, but also to society at large, referring to the importance of the legislation inspired by physicians, and to the high motive with which such legislation is inevitably inaugurated.

Rev. Edward H. Hall of Cambridge, speaking for the ministry, paid a tribute to the medical profession in its successful struggle to escape from priestly influences, and to stand on its own feet. He said that ministers may look with envy upon those whose work permits them to discuss concrete topics, and that nothing is more perilous than for clergymen to go outside their province and infringe on subjects not their own. Freed from the misunderstandings which the curious association of medicine and theology in times past had occasioned, Mr. Hall thought that the two professions might now face each other with far greater equanimity than ever before, and recognizing each its own limitations, might work together in harmony. It is extraordinary, he said, that the message of a scientific age should still be received with protest, and that nature is bound to have the last word when all quackeries have had their day. What we need is a gospel of reverence for nature, an escape from the crudities of half science to more and better science, with full, undeviating faith in the veracity of the universe.

Mr. F. J. Stimson, who was to have spoken on privileged communications, was through illness unable to be present. His place was taken by Mr. Walter Soren of Brookline, who discussed the relation of the patient to the physician in the art of healing, and concluded that the patient's part in the process was as important, if not more important, than the physician's. We have no means of know-

ing how complete the agreement of those present was in this point of view, but it is no doubt well for us to recognize that the patient is of vast importance in the working of our cures. Many no doubt had already suspected this fact.

The last speech of the afternoon was from Dr. W. T. Councilman. He was received with much enthusiasm; we append the detailed report of his remarks, which were read from manuscript.

In reference to smallpox, on which the president has called upon me to speak, I will only say that in the course of an investigation on the disease, opportunity for which was given by the recent epidemic in this city, we have found certain structures enclosed in the epithelial cells of the skin, which can only be interpreted as micellular organisms belonging to the protozoa. It is characteristic of these organisms that they pass through a complicated developmental cycle, the form changing in the various stages, so that one stage may have no morphological similarity to the stage which precedes and follows it. It is only within the last years that the detailed study of these organisms has engaged the attention of a great number of investigators, and the complete life history of a number of individual organisms been definitely determined. Those best known belong to the class of coccidia, and are found in a number of diseases of animals and in a few human diseases. Malaria is due to a coccidium which passes through stages of development in man and in the mosquito. Two stages of development of an organism which probably embraces the entire life history are found in smallpox,—a simple stage which takes place in the protoplasm of the cells and a more complicated and probably sexual stage, which is passed within the nuclei and which leads to the formation of spores, which are the infecting principle. Our experimental work leads us to conclude that the entire life cycle of the organism only takes place in man and in an animal susceptible to smallpox such as the monkey. In other animals an incomplete cycle of development which corresponds to vaccinia is produced. Previous investigators have seen bodies enclosed in epithelial cells in both vaccinia and in smallpox, and most observers have regarded them as parasites. We have been able to follow the development of the intracellular body much further, and the description of the intranuclear body and its further development is wholly new.

We do not believe that the work will have an important effect in the treatment of smallpox, and it can hardly lead to the production of an antitoxic serum, but it may have an important result in enabling us to more perfectly control the production of vaccine lymph. It may also lead to the determination of the causes of other contagious diseases, and may give in these such a means, not of cure, but of prevention, such as we have in smallpox through vaccination. We have also been able to make a more thorough study of the pathological anatomy of the disease than has been made before, and the results of the investigations of the skin lesions, the blood and the lesions in internal organs will throw light not only on smallpox but on pathological processes in other diseases. One of the most interesting facts which has come from our study of the disease is the importance in it of what are known as secondary infections. In the fatal cases, even in the rapid hemorrhagic forms, we

have never found an uncomplicated case of smallpox. In every lesion of the disease, and in most cases in the blood, such organisms as streptococci are found. These cannot be regarded as standing in any etiological relation to the disease, but they probably are the chief influence in producing the fatal termination, the way being prepared for them by the specific infection. There is a very strong analogy here with such contagious diseases as measles and scarlet fever. In these, also in all fatal cases, we find streptococcus infection, although there is no reason to believe that this organism has any etiological relation. Here, as in smallpox, it is merely a secondary invader.

That our investigation of the disease has led to results much in advance of all previous investigations has been due to the operation of a number of favorable conditions. In the first place, the laboratory had the assistance of a number of trained investigators who were able, some of them, to devote their entire time to the investigation of certain definite problems of the disease, others the greater portion of their time. The previous training of these men had taught them the technique which was necessary, and their previous research the manner in which the work of previous investigators was to be studied and its value estimated. These men had the self-sacrifice which enabled them to isolate themselves from their fellows and live in the hospitals, where they had the opportunity for the continuous study of the disease. In these hospitals they fitted up small working laboratories, where the conditions for work were not all that could be desired, but where, nevertheless, it was possible to do accurate work. We should have said in the first place, that much is due to the fact that we live in an enlightened community, and that the health authorities, recognizing the importance of research work of this character, did all in their power to facilitate it. The work is not completed; indeed, it seems in a way to be only begun, for there is the obligation of thoroughly testing every theory formed in the study of the disease in man.

The most important question which concerns us now is the financial one—How shall this work be continued, and how may it be possible to do similar work? It must be remembered that some years of preparation for the investigation are requisite. The knowledge of the fine microscopic technique necessary is not acquired in a week or in a month. The investigator must know not only laboratory methods of work, but must acquire that far more difficult thing, the scientific habit of thinking, which will enable him to make the proper deductions from his observations. What compensation shall the investigator receive for his work? In certain lines of investigation the reputation which a man obtains brings him compensation in the way of patients and consultations. But there must be investigators in the medical sciences just as there are in chemistry and astronomy, in which there is no possibility of compensation coming through the work itself. The work can only lead to a teaching position, and investigation and too continuous teaching do not go well together. It will not do to leave the work to be done by men of independent means who will take up research as a pastime. It has been my experience, and I think that of others, that the possession of money and a desire to devote oneself to scientific research, rarely go together. The best men in research have been country-bred lads, who have been taught to observe things correctly by a necessary

close study of nature, and who not being acquainted with wealth have not learned to regard its possession as the chief end in life. The average sum which has been paid an investigator after an education which takes him at least to his twenty-fifth year is \$500 per annum, and the title of fellow. When such positions were first established in this country it was possible for a man to live on this.

Now it is no longer possible, for his work does not allow him time enough to cook his own meals even in an Atkinson cooker. With the enormous increase in the cost of living which has come about in the past few years, there has been no increase in the compensation of the teacher or investigator. It is out of the question for the resources of the medical school to provide for the salaries of men whose chief work is in investigation. The chief work of the medical school is teaching, and the greater efficiency of modern medical teaching has brought about an increase of expense by compelling the employment of more teachers and better appliances. The laboratories of the medical school can provide for the training of the men, give a locus and facilities for work. All this will be abundantly provided for in the new medical school buildings. What the pathological department is most in need of is a sum of money from which men engaged in investigation can be paid an amount which will enable them to live and possibly raise a family, but which will not familiarize them with extreme wealth. Such a sum should be \$1,000 a year. We wish at least two of these positions. I do not appeal to you as physicians to give this out of your own abundance, but simply place our necessities before you. Massachusetts has abundant reason to be proud of her traditions of medical accomplishment; she should see to it that the present and the future do not suffer by comparison with the past.

The Glee Club, under the leadership of Dr. R. C. Cabot, gave its usual highly creditable performance, and the meeting was adjourned.

MALARIA IN ITALY.

WITHIN the past few years the governments of different countries and municipalities have adopted the plan of notification of infectious diseases as one of the most efficient means for controlling them and preventing their spread. It also furnishes the means of determining the fatality of diseases, the number of deaths from the same causes being already known.

In the case of malarial fever, the fatality in the United States is usually slight, and hence the reports of the number of deaths from this cause in a given locality convey but little information as to its actual prevalence. In Italy, however, the disease plays a conspicuous part in the mortality tables, and much more in the reports of the notification of infectious diseases. The deaths in Italy from malarial fevers in 1899 were 10,811 in a total mortality of 703,393 from all causes.¹ There had been, how-

ever, a gradual diminution in the deaths from this cause year by year since 1887, when they numbered 21,033, or about 2.5% of all deaths in that year.

The real significance of this disease as a prevalent pest among the people is best shown by the monthly government reports of Italy, giving information as to the notification of prevalence of infectious diseases.² In the following statistics the figures are given for the two months of September and October, 1902, with the names of the notifiable diseases, by which it appears that the cases of malarial fever constituted 64% of all the cases reported during those months: Estimated population 32,475,253. Measles, 10,295; scarlet fever, 1,811; smallpox, 1,870; typhoid fever, 13,444; typhus fever, 94; diphtheria, 2,472; puerperal fever, 529; tuberculosis: in schools, 48; in hotels, 35; in foundling asylums, 6; in hospitals, 867; in almshouses, 46; in convents, 26; in prisons, 32; in dairy farms, 6; in lodging houses, 215; total, 1,281. *Malarial fever*, 58,787; syphilis in infants, 103; rabies, 31; malignant pustule, 1,322; glanders, 14. Total, 92,053.

The southern provinces of Italy and the Islands of Sardinia and Sicily suffered the most from this disease, the deaths amounting, in Sardinia, to 276 per 100,000 inhabitants, in Basilicata 111, in Sicily 78, in Rome 44, while in the northern provinces the deaths from this cause were comparatively few in number.

By ages the greatest number of deaths from this cause occurred between one and five years, and by sexes the ratio of deaths was 1,000 females to each 1,238 males. By occupations the highest mortality from this cause appears to have occurred among shepherds and herdsmen, next among farmers, miners and ordinary laborers in the order stated.

These statistics in regard to malaria in Italy are of more than ordinary interest to us in this country on account of the large number of Italian emigrants, and especially of the laboring class, constantly coming to the United States.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 10, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 38, scarlatina 24, typhoid fever 32, measles 40, smallpox 0.

OFFICERS OF THE MASSACHUSETTS MEDICAL SOCIETY. — At the recent meeting of the Massachusetts Medi-

¹ Statistica delle Cause di Morte, nell' Anno 1899. Rome, 1901.

² Ministero dell' Interno, Bollettino Sanitario, Gazzetta Ufficiale del Regno d'Italia. Roma, 1903.

cal Society, the following officers were elected for its ensuing year: President, George E. Francis, Worcester; vice-president, J. F. A. Adams, Pittsfield; treasurer, Edward M. Buckingham, Boston; corresponding secretary, Charles W. Swan, Brookline; recording secretary, Francis W. Goss, Roxbury; librarian, Edwin H. Brigham, Brookline.

NURSES' GRADUATION AT THE LONG ISLAND HOSPITAL.—The graduating exercises of this year's class of nurses from the Long Island Hospital Training School will be held Saturday afternoon, June 20. Addresses are expected from the chairman of the Board of Trustees, Dr. G. H. M. Rowe of the Boston City Hospital and Dr. R. C. Cabot.

ANNUAL CONVENTION OF THE NURSES' ASSOCIATED ALUMNÆ OF THE UNITED STATES.—The meeting of this convention was held at Boston last week, occupying a period of several days. Many topics regarding nurses and nursing were discussed, and papers read bearing upon matters of interest primarily to nurses and secondarily to the medical profession at large.

CENTENARIANS.—It is reported that Mrs. Margaret Murray died in Northampton, June 8, at the age of 101 years. The total number of her descendants is said to be 72. Mr. Hiram C. Burlingame of Westfield, Mass., has also died recently at the reputed age of 103.

SUFFOLK DISTRICT MEDICAL SOCIETY.—At the annual meeting of the Suffolk District Medical Society, held April 25, 1903, the following papers were read: A Preliminary Report on Five Cases of Decapsulation of the Kidneys, by Dr. J. B. Blake; The Blood in the Typhoid of Children, by Dr. Frank Spooner Churchill, Instructor in Pediatrics, Rush Medical College, Chicago; The Formation of Loose Cartilages in the Knee-joint (with demonstration of specimens), by Dr. E. A. Codman. Reports were presented and accepted from the librarian and treasurer. The following list of officers were elected for the ensuing year: President, Dr. A. T. Cabot; vice-president, Dr. Abner Post; secretary, Dr. L. R. G. Crandon; treasurer, Dr. W. H. Prescott.

NEW YORK.

THE LEGAL STATUS OF WEAK-MINDEDNESS.—The Court of Appeals has reversed the orders of two courts below,—the Appellate Division of the Supreme Court and the County Court,—affirming the finding of a jury in the Ontario County Court on an inquisition to inquire into the mental competency of one Eugene P. Clark. The jury found "that the said Eugene P. Clark is an incompetent person and unfit to manage his affairs; that such infirmity

manifests itself in weakness of mind." It is provided in the Code of Civil Procedure that the incompetency alleged must be one "by reason of lunacy, idiocy, or habitual drunkenness." By Section 7 of the statutory construction law the term lunacy is defined to include every kind of unsoundness of mind except idiocy. The Court of Appeals holds that while the evidence was sufficient to have justified the jury in declaring Clark, in the words of the statute, to be a lunatic, yet they could not so declare him merely on the ground of a weakness of mind. In the opinion it was stated: "A person may be of weak mind, and, by reason thereof, easily influenced or dominated by others, so that, in the judgment of men, he ought not to be allowed to manage his own affairs; but he would not necessarily be of unsound mind. The Courts of Chancery in England and in this State regarded unsoundness of mind as meaning a mental incapacity, and, under the provisions of our present statutes, unsoundness of mind must amount to that; for it is regarded as equivalent to a condition of lunacy. We think that such a proceeding has too weighty consequences for courts to sustain it, when it is not brought, as the result of the inquisition, so far within the precise terms of the statute as to leave no doubt that the person has been found to be a lunatic, or of so unsound a mind as to be capable of such classification."

REQUESTS TO HOSPITALS.—By the will of the late Charles M. Chittendon his residuary estate, estimated at about \$50,000, is bequeathed to the Presbyterian Hospital and the Home for Incurables at Forham, in the Borough of the Bronx.

DIPHTHERIA AT STATE NORMAL AND TRAINING SCHOOL.—Eighteen cases of diphtheria having developed among the children in the practice department of the State Normal and Training School at Oswego, Tioga County, Health Officer James K. Stockwell has filed a report with the local board of directors in which he states that the bad sanitary condition of the school is responsible for the spread of the disease, and that this is directly chargeable to the gross negligence of the State Department of Education.

COLUMBIA COMMENCEMENT.—At the 149th annual commencement of Columbia University, which was held on June 10, 867 degrees in course were conferred. Of these, 167 were on graduates of the medical department, the College of Physicians and Surgeons. Among the medical prizes awarded were the following: Alonzo Clark Fellowship, \$700, to Dr. Charles Norris; Cartwright Prize, \$500, to Dr. George W. Crile; First Harsen Prize, for proficiency in examination, \$500, to Alfred Jerome Brown of

the graduating class; Fellowships of the Alumni Association, \$500 each: Fellow in Anatomy, Dr. Edward A. Spitzka; Fellow in Pathology, Dr. Augustus B. Wadsworth; Fellow in Pathology and Physiological Chemistry, Dr. Edward R. Posner. In the course of an address made at the alumni luncheon, after the commencement exercises, President Butler spoke as follows in reference to the medical department: "During the year that has closed both the medical faculty and the trustees have given long and anxious thought to the pressing needs of the College of Physicians and Surgeons. The faculty, after careful thought and consideration, have adopted and put in operation a new and thoroughly revised curriculum, which uses much of the time heretofore devoted to didactic lecture for: (1) increased amounts of laboratory work in the sciences ancillary to medicine and surgery, and for (2) additional practical instruction in the diagnosis and treatment of disease in dispensaries and hospitals. So long as the university is without a hospital of its own, our medical school must depend on the good will of the trustees of other institutions. We are fortunate in commanding for our students certain valuable privileges in the leading hospitals of New York, but the time is not far distant when, to equip the university properly, the medical school must build and control a hospital of its own. In foreign universities the greatest medical schools command their own hospitals, and the striking success of the medical school of the Johns Hopkins University has been due, in large part, to the fact that a modern hospital was under its own immediate control."

CRIMINAL CHARGES AGAINST PHYSICIANS.—The president of the Board of Health has discovered what he believes to be a series of swindles perpetrated on the city by certain physicians, and after consulting the corporation counsel he requested the district attorney to take criminal action against those concerned. On June 9 Assistant District Attorney Kressel went before Justice Mayer in the Court of Special Sessions, and asked for thirty-five warrants. Up to June 13, thirteen physicians had been arrested and held in \$500 bail. The charge against them is that they obtained from the city on false pretences antitoxin put up by the Health Department, and sent to various depots in different parts of the city. Such antitoxin can be obtained by any physician on his affidavit that he needs it in his practice and that the family in which it is required is too poor to pay for it. An investigation recently set on foot by the department, it is asserted, showed that antitoxin had been obtained by physicians on statements of this nature, and afterwards sold by them to patients who could afford to pay the price asked, often being as high as \$5 and

\$10 a bottle. It is also stated that in the course of the investigation many cases were discovered where poor patients who should have obtained the antitoxin free were compelled to pay. The complainant in these cases is Frederick D. Bell, chief clerk of the Health Department, and according to the district attorney, the offence may be construed as petty larceny.

PROTEST AGAINST ACTION OF HEALTH COMMISSIONER.—More than two hundred medical men of the lower east side held a meeting on June 12 to protest against the action of health commissioner in causing the arrest of members of the profession. The meeting was in charge of the East Side Physicians' Club, which has taken up the cases of the physicians against whom warrants have been issued on the charge of selling antitoxin obtained free from the city. Dr. Julius Solow, the president of the club, presided, and all the speakers asserted that any charges made were for professional services, and not for the antitoxin used. The action of the health commissioner was denounced, and a committee was appointed to draft resolutions setting forth the physicians' side of the case, to be sent to the mayor, the health commissioner and the press. A fund was also started to defend the accused physicians. Aside from the merits of the case, the chief cause of indignation was the summary way in which Commissioner Lederle had proceeded. It is always customary, it was asserted, when a physician commits an infraction of the rules of the Board of Health to give him a chance to explain matters before his case goes to court. In this instance the first the accused knew of the matter was when they were arrested on charges of petty larceny.

A CENTENARIAN.—Eliza Bates, a negress, recently died at the alleged age of one hundred and four years at the Colored Home and Hospital in the Borough of the Bronx. She was born in Flushing, L. I., and is said to have been married three times and to have borne fifteen children.

NOTES FROM THE PHILIPPINES.

HIGH MORTALITY RATE FROM CHOLERA.—The mortality from cholera during its recent slight recrudescence in Manila has been extraordinarily high. Out of the thirty cases which have occurred during the past ten days, twenty-eight have died, and at the present time the two remaining are not expected to survive. The type of the disease is not only deadly but fulminant. Of ten consecutive cases, four were already dead when discovered, two died in the ambulance *en route* to the hospital, two died within two hours after admission, and the remaining two died within four hours after entrance.

In cases like these, medical treatment seems absolutely powerless, for the disease frequently carries the patient off so rapidly that there is not even time to establish proper medication.

In one case, lately, a Filipino was cooking some rice, when he suddenly fell over dead. He had complained somewhat of feeling a little sick, but there had been no vomiting and purging. The postmortem examination showed cholera, and this was confirmed by bacteriological examination. The explanation in such cases would seem to be the sudden absorption into the system of such a large amount of cholera toxine as to produce cardiac paralysis.

A SANITARY CORPS FOR THE PHILIPPINES.—The commission has recently passed a regulation, at the request of the commissioner of health, making all provincial and municipal health officers liable to transfer to other posts of duty as may be necessary. This changes their status from that of local officials to one of officers of the general government, and practically establishes a sanitary corps for the Philippines. While many of those affected will not like it, inasmuch as they will now have no security in establishing themselves in an outside practice, the change will undoubtedly be for the public welfare, since it will enable the selection of the best men for duty in emergency. Nearly all the municipal and some of the provincial health officers are Filipino physicians.

Correspondence.

PRIVILEGED MEDICAL COMMUNICATIONS.

Boston, June 15, 1903.

TO THE EDITOR: France is one of the few countries of Europe which has enacted a law prohibiting the disclosure in court of communications made by a patient to his physician, and in no other country has this law been invoked more disastrously to circumvent the elucidation of truth, to stimulate and facilitate fraudulent claims, and in general to obstruct and vitiate the administration of justice. Instances of the mischief thus inflicted upon a community do not often find admittance to medical journals; hence, dazzled by the term "privileged," many physicians have acquired the notion that this enactment confers in some way benefit or immunity to the profession. Experience has, however, demonstrated that such a law, though based upon a specious abstract proposition, is in the main not only detrimental to public policy, but especially harmful to physicians, in that it deprives them of valuable rights and tends to involve them in vexatious and costly suits for damages.

In corroboration of this view I beg to call attention to the following illustrative, and by no means extreme, case condensed from a more detailed report contained in the *Journal de Médecine de Paris*:¹ Dr. A., a prominent physician of Marseilles, and for more than twenty years the official examiner of insane persons, signed a certificate authorizing the restraint of a man suffering from acute homicidal mania in its pronounced form. This certificate was given at the solicitation of the wife of the patient only after thorough investigation, personal examination and consultation with another physician of good repute. In accordance with the law, the patient was therefore committed to an authorized sanitarium; but after some days, the crisis having passed, he man-

aged to escape from the institution, and at once proceeded to secure certificates from two physicians that he was of sound mind. Armed with these documents, he entered suit for divorce on the plea of conspiracy and unlawful restraint. The sole defence of the wife at the trial rested on the testimony of the official examiner, who, acting in full knowledge of the penal code (378, C. P.) as to the revelation of professional secrets, trusted, nevertheless, that he would be held harmless in disclosing the opinion rendered in an official certificate, especially as this paper had by this time passed through so many hands that its contents had become a matter of general notoriety. Foiled in this attack upon an unoffending wife, the litigious husband now turned upon the physician, claiming in his suit an *ad damnum* of \$4,000, on the charge of violation of an article of the penal code. At the first trial of this claim before the civil tribunal the physician was fully exonerated, his behavior being even commended by the court, which held that the temporary confinement of the plaintiff was for his own benefit and in the interest of public order; and being known to many persons, and indeed proclaimed in the declaration itself of the plaintiff, it could not be regarded as a secret. Furthermore, the action maintained for divorce virtually attacked the probity of the physician himself, who when thus assailed should not be condemned for uttering in his own defence the truth, especially in a controversy initiated not by him, but by the plaintiff.

Notwithstanding this unqualified endorsement of the conduct of the physician, representing what would seem to be an equitable interpretation of the intent of the framers of the code, an appeal to a higher court at Aix resulted in the reversal of the former judgment, the decision being that, according to the strict letter of the law, the physician, whose motives were unquestionably honorable, must be held delinquent.

At a subsequent meeting of the medical society of "Les Bouches du Rhone" it was voted, after lengthy discussion, to sustain the course of Dr. A., and the matter was then referred to the Medico-Legal Society.

To advert briefly to the proposed change in the law of this State, the able advocate of this proposition seems a little tender of coming to particulars. Unsupported declarations of sentiment can hardly be expected to outweigh the plain evidence of facts. He makes no attempt to show that our present statutes have ever tended to pervert the ends of justice, as in the case of Dr. A. above quoted; and I venture the prediction that no such instance will be produced. The question is, Does not our present law best contribute to the administration of justice, and would not its abrogation certainly result in multiple material evils?

Very truly yours,
ARTHUR H. NICHOLS, M.D.

METEOROLOGICAL RECORD.

For the week ending June 6, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barom-eter. | Ther-mometer. | | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. | |
|------|-------------|---------------|----------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|----|---------------------|----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. | 31.30.26 | 52 | 58 | 47 | 53 | 71 | 62 | N | E | 6 | 3 | C. | C. | O. |
| M. | 1.30.28 | 60 | 71 | 49 | 55 | 56 | 56 | N | E | 7 | 12 | C. | C. | O. |
| T. | 2.30.24 | 60 | 68 | 52 | 43 | 40 | 42 | N | E | 10 | 12 | C. | C. | O. |
| W. | 3.30.00 | 70 | 85 | 54 | 49 | 34 | 42 | W | N | 14 | 11 | C. | C. | O. |
| T. | 4.30.26 | 60 | 67 | 54 | 38 | 61 | 50 | N | E | 10 | 10 | F. | C. | O. |
| F. | 5.30.38 | 62 | 73 | 50 | 70 | 57 | 64 | W | W | 12 | 12 | F. | C. | O. |
| S. | 6.30.38 | 64 | 75 | 54 | 74 | 71 | 72 | S | W | 12 | 12 | F. | C. | O. |
| Σ | 30.26 | | 71 | 51 | | 55 | | | | | | | | O. |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Σ— Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 6, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,206 | 392 | 30.44 | 14.57 | 4.48 | 5.35 | 2.50 | |
| Chicago . . . | 1,885,000 | 461 | 122 | 28.41 | 12.15 | 3.03 | 3.03 | 2.17 | |
| Philadelphia . | 1,378,527 | 427 | 104 | 25.50 | 10.53 | 1.87 | 1.63 | .46 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 165 | 43 | 20.60 | 12.72 | 1.21 | 3.03 | — | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 124 | — | 29.84 | 12.10 | 3.22 | 4.84 | 4.03 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 70 | 34 | 39.98 | 8.57 | 4.28 | 10.00 | 2.84 | |
| Boston . . . | 603,163 | 168 | 44 | 29.16 | 12.50 | 2.38 | 5.36 | 1.78 | |
| Worcester . . | 132,044 | 30 | 11 | 3.33 | 23.33 | — | — | — | |
| Fall River . . | 115,549 | 21 | 7 | 23.81 | 14.28 | — | — | — | |
| Lowell . . . | 101,959 | 27 | 5 | 14.81 | 25.92 | — | — | — | |
| Cambridge . . | 98,639 | 18 | 5 | 11.11 | 11.11 | — | — | — | |
| Lynn | 72,497 | 16 | 4 | 6.25 | — | — | — | — | |
| Lawrence . . | 69,766 | 15 | 4 | 20.00 | — | — | 6.67 | — | |
| Springfield . | 69,889 | 19 | 7 | 20.69 | 6.89 | — | 3.45 | 3.45 | |
| Somerville . . | 68,110 | 24 | 4 | 14.28 | 35.70 | — | 14.28 | — | |
| New Bedford . | 67,198 | 27 | 11 | 37.03 | 7.40 | 3.70 | 3.70 | 25.92 | |
| Holyoke . . . | 49,286 | 11 | 6 | 11.18 | 9.09 | — | 9.09 | 9.09 | |
| Brockton . . | 44,873 | 9 | 4 | 22.22 | — | — | — | 11.11 | |
| Haverhill . . | 42,104 | 9 | 2 | 11.11 | 11.11 | — | — | — | |
| Newton . . . | 37,794 | 6 | — | — | — | — | — | — | |
| Salem | 36,876 | 10 | 2 | — | — | — | — | — | |
| Malden . . . | 36,286 | 7 | 1 | 14.30 | 14.30 | — | — | — | |
| Chelsea . . . | 35,876 | 8 | 0 | 12.50 | — | — | — | — | |
| Fitchburg . . | 35,069 | 6 | 1 | 16.67 | 16.67 | — | — | — | |
| Taunton . . . | 33,656 | 16 | — | 12.50 | 25.00 | — | — | — | |
| Everett . . . | 28,620 | 5 | 1 | 20.00 | — | — | — | — | |
| North Adams . | 27,862 | 7 | 1 | 42.90 | — | — | 14.30 | — | |
| Gloucester . . | 26,121 | 5 | — | 40.00 | — | 40.00 | — | — | |
| Quincy . . . | 26,042 | 4 | — | 25.00 | — | — | — | — | |
| Waltham . . . | 25,198 | 5 | 1 | 20.00 | — | — | — | — | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 7 | — | 42.90 | 14.30 | — | — | — | |
| Chicopee . . . | 21,031 | 14 | 6 | 35.70 | — | — | — | 21.42 | |
| Medford . . . | 20,962 | 2 | — | 50.00 | — | — | — | — | |
| Northampton . | 19,883 | 5 | 4 | 80.00 | — | 40.00 | — | — | |
| Beverly . . . | 15,302 | 3 | 1 | — | — | — | — | — | |
| Clinton . . . | 15,161 | 4 | 0 | — | — | — | — | — | |
| Leominster . . | 14,806 | 0 | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 7 | 3 | 28.60 | — | 14.30 | — | — | |
| Woburn . . . | 14,300 | 4 | 2 | 50.00 | 25.00 | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | 1 | 1 | 100.00 | — | — | — | — | |
| Marlboro . . | 13,609 | 3 | 0 | 66.67 | — | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 2 | 2 | 50.00 | — | — | 50.00 | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 3 | — | 33.33 | — | — | — | — | |
| Framingham . | 12,534 | 1 | — | 100.00 | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 2 | 1 | — | 50.00 | — | — | — | |
| Weymouth . . | 11,344 | 5 | 1 | 40.00 | 20.00 | 20.00 | — | — | |
| Southbridge . | 11,268 | 2 | — | 50.00 | — | — | — | — | |
| Watertown . . | 11,077 | 0 | — | — | — | — | — | — | |
| Plymouth . . | 10,730 | 1 | — | — | — | — | — | — | |

Deaths reported, 2,922; under five years of age, 877; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 816, acute lung diseases 374, consumption 367, scarlet fever 65, whooping cough 22, cerebrospinal meningitis 15, smallpox 10, erysipelas 11, measles 40, typhoid fever 52, diarrheal diseases 132, diphtheria and croup 94.

From whooping cough, New York 5, Chicago 3, Philadelphia 6, Pittsburg 2, Boston 2, and Worcester, Fall River, Newburyport and Attleboro 1 each. From erysipelas, New York 4, Chicago 2, Philadelphia 2, Boston, Lynn and Chicopee 1 each. From smallpox, Philadelphia 4, Pittsburg 6.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending May 23, the death-rate was 15.5. Deaths reported, 4,490; acute diseases of the respiratory organs (London) 182, whooping cough 102, diphtheria 46, measles 146, smallpox 12, scarlet fever 57.

The death-rate ranged from 3.2 in Hastings to 24.7 in Huddersfield; London 14.8, West Ham 12.4, Brighton 17.5, Portsmouth 13.4, Southampton 10.4, Plymouth 16.3, Bristol 14.9, Birmingham 16.6, Leicester 14.0, Nottingham 17.6, Bolton 16.5, Manchester 20.3, Salford 20.3, Bradford 16.4, Leeds 17.4, Hull 16.9, Newcastle-on-Tyne 15.5, Cardiff 10.9, Rhondda 11.8, Liverpool 18.3, Hornsey 8.6, Middlesbrough 15.9.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JUNE 11, 1903.

CARMICHAEL, D. A., surgeon. Leave of absence for seventeen days from May 19, 1903, granted by bureau letter of May 9, amended so that it shall be for thirteen days only. June 8, 1903.

EAGER, J. M., passed assistant surgeon. Granted leave of absence for two months from August 1. June 9, 1903.

GARDNER, C. H., passed assistant surgeon. Granted leave of absence for seven days. June 5, 1903.

PARKER, H. B., passed assistant surgeon. Directed to report at Washington, D. C., for temporary duty. June 8, 1903.

VOGEL, C. W., assistant surgeon. Granted leave of absence for one month from June 8. June 5, 1903.

LLOYD, B. J., assistant surgeon. To report to Passed Assistant Surgeon R. Blue, Plague Laboratory, San Francisco, Cal., for temporary duty. June 9, 1903.

BREADY, J. E., acting assistant surgeon. Granted leave of absence for three days. June 6, 1903.

MCCONNELL, A. P., acting assistant surgeon. Granted leave of absence for two days from June 10. June 8, 1903.

MASON, W. C., acting assistant surgeon. Granted leave of absence for ten days from June 17. June 9, 1903.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for thirty days from June 20. June 9, 1903.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence for seven days from June 11. June 9, 1903.

ALLEN, G. C., pharmacist. Granted extension of leave of absence for twenty-three days from June 5. June 8, 1903.

BOARDS CONVENED.

Board convened to meet at San Francisco, Cal., June 8, 1903, for the physical re-examination of an officer of the Revenue Cutter Service. Detail for the board: Assistant Surgeon Carl Ramus, chairman; Assistant Surgeon C. W. Vogel, recorder.

Board convened to meet at Washington, D. C., June 10, 1903, to review testimony and make recommendation in case of Assistant Surgeon F. J. Thornbury. Detail for the board: Assistant Surgeon-General W. J. Pettus, chairman; Surgeon H. W. Sawtelle; Surgeon D. A. Carmichael, recorder.

APPOINTMENTS.

Lynn Hospital. — DRs. ISIDORE H. CHICOINE, WILLIAM T. HOPKINS, ALLSTON F. HUNT and ALFRED T. HAWES, have recently been appointed on the regular visiting staff of physicians and surgeons of the Lynn, Mass., Hospital.

RECENT DEATHS.

JOHN F. GOLDING, M.D., of Brooklyn, N. Y., who was a professor in the Brooklyn College of Pharmacy, died on June 7. He was born in Brooklyn in 1854, and was graduated from the College of Physicians and Surgeons, New York, in 1875.

Died in London, England, May 18, 1903, JOSIAH STICKNEY LOMBARD, M.D.

BOOKS AND PAMPHLETS RECEIVED.

Syphilis in Dentistry. By L. Blake Baldwin, M.D., and Ezra Read Larned, M.D. Illustrated. Chicago: E. H. Colegrove. 1903.

Physiological Aspects of the Liquor Problem. Investigations made by and under the direction of W. O. Atwater, John S. Billings, H. P. Bowditch, R. H. Chittenden and W. H. Welch, sub-committee of the committee of fifty to investigate the Liquor Problem. Two volumes. Boston and New York: Houghton, Mifflin & Co. 1903.

Die Gallensteinkrankheit, ihre Häufigkeit, ihre Entstehung, Verhütung und Heilung durch innere Behandlung. Von Dr. Walther Nic. Clemm, of Darmstadt. Berlin. 1903.

Iodized Catgut. By Nicholas Senn, M.D., Ph.D., LL.D., of Chicago. Reprint. 1903.

The Therapeutical Value of Röntgen Ray in the Treatment of Pseudoleucæmia. By Nicholas Senn, M.D., Ph.D., LL.D., of Chicago. Reprint. 1903.

Address.

SURGICAL TUBERCULOSIS.¹

BY HERBERT L. BURRELL, M.D., BOSTON.²

MR. PRESIDENT AND FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY: The treatment of tuberculosis is a subject that concerns every one. All citizens, particularly members of the medical profession, should recognize that tuberculosis is the greatest scourge of mankind, and is an enemy that all should strive to conquer. We are apt, in these days of individualism, of unbounded opportunity for personal development, of expert knowledge on special subjects, to consider that the great questions of citizenship, such as concern public health, should be left to the care of the state.

Physicians have recognized, in a somewhat limited manner, that tuberculous patients should be under conditions in which they may avoid a re-infection from the tubercle bacillus, and their processes of repair and powers of resistance may be increased to the highest degree.

Surgeons have not been as keen to appreciate these principles in the treatment of tuberculosis as physicians. Their attention has been concentrated on the treatment of the local lesion. Many surgeons consider that a tuberculous area must be removed; some surgeons regard the area as little less than malignant, and feel that a tuberculous lesion must be attacked as if it were a cancer. Relatively few surgeons consider that to increase the patient's power of resistance to fresh invasions of the tubercle bacillus is of as great importance as to operate and remove a local area of tuberculosis.

A few orthopedic surgeons and genito-urinary surgeons recognize the importance of outdoor treatment. General surgeons, however, are too apt to consider that an operation on a local tuberculous area ends their duty. They fail to appreciate that probably in many instances an area of tuberculosis is simply a local manifestation of a more or less general infection by the tubercle bacillus, in an individual whose power of resistance is lowered.

When the attention of a general surgeon is called to the importance of increasing the powers of resistance in an individual patient, as a rule, he acquiesces to the plan that out-of-door treatment should be given patients with surgical tuberculosis, and in an individual case he may adopt this line of treatment. He does not insist, however, on this treatment being given all patients having surgical tuberculosis.

I, therefore, beg your consideration of the means by which tuberculosis can be treated and what modifications in our methods are desirable. The consideration of the subject divides itself as follows: (1) Prevalence; (2) diminution; (3) pathological consideration; (4) sanatoriums; (5) construction of sanatoriums; (6) hospitals; (7) outdoor treatment of tuberculosis; (8) tent treatment; (9) home treatment; (10) effects of sunlight and electric light; (11) defects of hospital construction.

¹Annual Discourse before The Massachusetts Medical Society, June 10, 1903.

²I am indebted to Dr. William H. Davis for valuable assistance in collecting the literature of this subject.

PREVALENCE.

Tuberculosis in its various manifestations undoubtedly kills more people than any other disease. From one tenth to one seventh of the total death-rate of the world is dependent upon tuberculosis. Craig³ states that "it has been recently estimated that there are one million cases of active tuberculosis in the United States, and the latest authentic statistics show that 14% of the deaths recorded for ten years are due to some form of tuberculosis."

Cuzner⁴ states that "Schlenker made 100 consecutive postmortems on adults and children. He carefully examined every part of their bodies, and in 65% found tuberculosis. In over 4,000 successive postmortems made in Breslau, in 1893, one third of the bodies contained gross tuberculous lesions. If the microscope had been used, probably enough lesions could have been discovered to make 2,500 infections. Babes found lesions of the bronchial glands in more than one half of his post-mortems on children. Biggs could demonstrate characteristic lesions in the lungs alone in 60% of his postmortems. Grawitz found primary tuberculous deposits in the lungs in 152 out of 221 cases, this being nearly 70% of all infections.

The most remarkable statistics as to the existence of tuberculosis are those of Naegeli,⁵ drawn from 508 consecutive autopsies done at the Pathological Institute at Zurich. Naegeli did 500 consecutive autopsies, and found that 97% of all adults over eighteen years of age who died in the Cantonian Hospital were tuberculous. He states that every organ must be carefully examined, grossly and microscopically, for tuberculosis. When this was done, it was found that 97% of adults, in a series of 164 cases, had tuberculosis. The first two series of autopsies are appended in Table I.

TABLE I.

| | | Sections. | No T. B. | T. B. | % T. B. | Fatal T. B. | T. B. %. | Not fatal T. B. | Not fatal %. |
|---|-----------|-----------|----------|-------|---------|-------------|----------|-----------------|--------------|
| 67 autopsies from Nov. 4-Dec. 3, 1896 | Under 18. | 7 | 5 | 2 | 28 | 1 | 50 | 1 | 50 |
| | Adult . . | 60 | 15 | 45 | 75 | 21 | 46½ | 24 | 53½ |
| 95 autopsies from Jan. to March, 1897 | Under 18. | 19 | 18 | 1 | 5 | 4 | 100 | | |
| | Adult . . | 76 | 8 | 68 | 90 | 26 | 38 | 52 | 62 |

Amount of tuberculosis in consecutive autopsies. Naegeli.

Naegeli found that the constitution of the individual had no influence as to the presence of tuberculosis. The most powerful gymnast, in the prime of his twenty years, was no more immune than the feeble, slender shop-girl with flat thorax and so-called phthisical habit. He found that latent tuberculosis was to be found not alone in those who suffered from chronic affections, but in those who died suddenly from wounds of all kinds.

The next two series of autopsies, 346, were even more carefully performed, and showed from 97% to 98% of tuberculosis in adults.

³Journ. of Am. Med. Assoc., 1902, p. 229.

⁴Journ. of Am. Med. Assoc., Chicago, 1898, vol. xxxi, 1458-63.

⁵Ueber Häufigkeit, Localisation und Anheilung der Tuberculose, nach 500 Sectionen des Züricherischen Pathologischen Instituts, von Dr. Med. Otto Naegeli, Arch. Path. Anat., vol. 160.

TABLE II.

| | | Sec- tions. | No. T. B. | T. B. | % T. B. | Fatal T. B. | T. B. % | Not fatal | Not fatal % |
|--|----------|----------------|-----------|-------|---------|----------------|---------|--------------|-------------------|
| 110 autopsies April-July, 1897. | Under 18 | 15 | 12 | 3 | 25 | 3 | 100 | | |
| | Adults | 95 | 3 | 92 | 97 | 21 | 23 | 71 | 77.5 |
| 236 autopsies July, 1897- March, 1898. | Under 18 | 47 | 38 | 9 | 24 | 6 | 66.7 | 3 | 33 |
| | Adults | 189 | 3 | 186 | 98 | 42 | 22 | 146 | 78 |

Amount of tuberculosis in consecutive autopsies. Naegeli.

He found that in the first year tuberculosis is exceedingly rare; from one to five years it is still rare but is nearly always fatal; from five to fourteen years it is found in one third of all bodies examined and causes the death of three fourths of those it attacks. Reasoning from these statistics, between fourteen and eighteen years, one half of the population has been infected with tuberculosis, and the process is then always active and but rarely arrested. One third of all deaths that occur at this period of life are due to tuberculosis.

DIMINUTION.

That there has been a great diminution in the number of cases of tuberculosis is readily shown by statistics. Dr. Samuel W. Abbott, secretary of the State Board of Health of Massachusetts, states⁶ that in New England, with a population of 5,103,187, for the five years 1893-1897 there were 50,027 deaths, a rate of 19.70 per 10,000. The decrease in the last half century is remarkable. In 1853 the death-rate from pulmonary tuberculosis in Massachusetts was 42 per 10,000 inhabitants; in 1895 the death-rate was 21.8 per 10,000 inhabitants.

The following table, taken from Nothnagel,⁷ showing the mortality from tuberculosis and phthisis in Continental countries from 1876 to 1897, shows the diminishing prevalence.

TABLE III.

For every 10,000 living, there died in the following years:

| TUBERCULOSIS. | | | PHTHISIS. | | | | | |
|---------------|---------|---------|-----------|-------|--------|---------|-----------------|---------|
| | Prussia | Bavaria | Saxony | Baden | Hessen | Hamburg | Alsace-Lorraine | Austria |
| 1876 | 31. | | 23.6 | 31.6 | | 31.2 | | |
| 1877 | 32. | | 25. | 30.4 | | 33. | | |
| 1878 | 32.5 | | 26. | 29.4 | | 33.7 | | |
| 1879 | 32.5 | | 25.8 | 31.5 | | 33.5 | | |
| 1880 | 31.1 | | 25.8 | 28.3 | | 31.5 | | |
| 1881 | 30.9 | | 23.8 | 28.6 | | 31.5 | | |
| 1882 | 30.9 | | 23.6 | 30.7 | | 30.9 | | 38.5 |
| 1883 | 31.8 | | 24.6 | 31.2 | | 34.1 | | 38.1 |
| 1884 | 31. | | 25.1 | 29.9 | | 34.7 | | 40.4 |
| 1885 | 30.8 | | 25. | 32.2 | | 32.6 | | 39.4 |
| 1886 | 31.1 | | 24.9 | 30.5 | | 30.8 | 30.4 | 40.7 |
| 1887 | 29.3 | 33.4 | 25. | 27.8 | | 30.9 | 29.8 | 40.1 |
| 1888 | 28.9 | 31.5 | 24.5 | 29.6 | | 30.9 | 30.9 | 37.2 |
| 1889 | 28. | 33.5 | 23.8 | 27.7 | 28.3 | 26.8 | 28.7 | 38.6 |
| 1890 | 28.1 | | 24.2 | 29.2 | 30.1 | 26.2 | 28.9 | 36.2 |
| 1891 | 26.7 | 32.9 | 21.6 | 27.1 | 27.1 | 26.5 | 27.9 | 39.7 |
| 1892 | 25. | 31.3 | 20.8 | 26. | 24.1 | 25.3 | 25.4 | 36.6 |
| 1893 | 25. | 31.5 | 21.5 | 27.1 | 27. | 24. | 24.8 | 36.9 |
| 1894 | 23.9 | 31.6 | 21.4 | 28.2 | 26. | 20.8 | 25.7 | 35.4 |
| 1895 | 23.3 | 31.1 | 21.0 | 26.7 | 25.8 | 21. | 23.4 | 37.3 |
| 1896 | 22.1 | 29.4 | 20.1 | 26.5 | 24.3 | 20.4 | 22.3 | |
| 1897 | 21.8 | 30. | 19.8 | 25.5 | | 20.1 | | |

⁶ The Past and Present Condition of Public Hygiene, p. 67.

⁷ Special Pathology, vol. xiv, p. 472.

It is naturally interesting to consider the causes that have diminished the frequency of tuberculosis. Dr. Alfred Hiller, in a paper on the "Extinction of Tuberculosis,"⁸ gives a striking chart showing that at the present rate of decrease in the deaths from pulmonary tuberculosis, Prussia will reach the zero point about the year 1927, whereas in England at that time there will be about eight deaths per 10,000, and the total extinction will take place only about twenty years later. The rapid fall in the Prussian rate is ascribed to (1) the precautions against infectious diseases, due to the discovery of the tubercle bacillus; (2) the improved conditions of the working classes caused by the Workmen's State Insurance Laws; (3) the establishment of sanatoriums.

Table IV⁹ gives the mortality of 662 villages in France from phthisis and other forms of tuberculosis in 1891. This presents a general idea of the relative frequency of phthisis to other tuberculous affections, and it demonstrates the large number of cases of tuberculosis that occur in a large city like Paris, when compared with a village of 5,000 inhabitants. The number of cases to the thousand inhabitants in Paris that occurred was 4.9%. The number of cases to the thousand inhabitants in places less than 5,000 inhabitants was 1.81%.

TABLE IV.

| | Popu- lation. | EXACT FIGURES. | | | NUMBER PROPORTIONAL TO 1,000 INHABITANTS. | | |
|--|------------------|----------------|----------------------------|--------|--|----------------------------|--------|
| | | Phthisis. | Other T. B. affections. | Total. | Phthisis. | Other T. B. affections. | Total. |
| Paris | 2,424,705 | 10,287 | 1,608 | 11,895 | 4.24 | 0.66 | 4.9 |
| 11 cities having from 430,000 to 100,000 inhabi- tants | 2,143,380 | 6,262 | 1,535 | 7,797 | 2.92 | .71 | 3.63 |
| 46 cities having from 100,000 to 30,000 inhabi- tants | 2,361,244 | 5,471 | 1,764 | 7,238 | 2.31 | .74 | 3.05 |
| 50 villages having from 30,000 to 20,000 inhabi- tants | 1,220,019 | 2,595 | 935 | 3,530 | 2.12 | .76 | 2.8 |
| 127 villages having from 20,000 to 10,000 inhabi- tants | 1,799,443 | 3,682 | 1,219 | 4,901 | 2.04 | .67 | 2.72 |
| 332 villages having from 10,000 to 5,000 inhabitants | 2,274,757 | 3,773 | 1,164 | 4,937 | 1.65 | .51 | 2.16 |
| 95 places having less than 50,000 | 330,802 | 493 | 107 | 600 | 1.49 | .32 | 1.81 |
| | 12,554,350 | 32,566 | 8,332 | 40,898 | 2.59 | .66 | 3.25 |

Mortality from phthisis and other forms of tuberculosis. Strauss.

The greater danger of urban life is exemplified by this statement of Dr. H. M. Biggs of the New York Health Board, that "one block on Cherry Street was inspected on Jan. 1, 1895, and contained 1,000 tenants. One hundred and four cases of tuberculosis have been reported in that block in four

⁸ Eng. Journ. of Public Health, of March, 1903.

⁹ La Tuberculose et son Bacille, par I. Strauss, Paris, Rueff et Cie, 1895, p. 482.

years nine months. In a block on Pell and Mott streets, containing a population of 2,000, 318 cases occurred in four and a half years.

The relative frequency of surgical tuberculosis is difficult to determine, because the mortality statistics do not, as a rule, record surgical tuberculosis. Table V gives one an impression as to the relative frequency of tuberculous affections other than phthisis. The tables show the mortality at Hamburg¹⁰ in 1872-1898.

TABLE V.

MORTALITY IN HAMBURG FROM PHTHISIS FROM 1872-1898.

| Age. | Less than 1 yr. | 1 to 5 | 5 to 15 | 15 to 20 | 20 to 25 | 25 to 35 | 35 to 50 | 50 to 70 | Over 70 yrs. | Total |
|--------|-----------------|--------|---------|----------|----------|----------|----------|----------|--------------|--------|
| Male | 534 | 1,240 | 791 | 1,113 | 2,081 | 5,922 | 7,968 | 4,278 | 350 | 21,277 |
| Female | 385 | 1,169 | 1,230 | 1,071 | 1,518 | 3,956 | 4,160 | 2,255 | 345 | 16,089 |

MORTALITY IN HAMBURG FROM TUBERCULOSIS OF OTHER ORGANS, 1872-1898.

| Age. | Less than 1 yr. | 1 to 5 | 5 to 15 | 15 to 20 | 20 to 25 | 25 to 35 | 35 to 50 | 50 to 70 | Over 70 yrs. | Total |
|--------|-----------------|--------|---------|----------|----------|----------|----------|----------|--------------|-------|
| Male | 1,033 | 1,764 | 696 | 131 | 116 | 221 | 301 | 243 | 42 | 4,517 |
| Female | 788 | 1,427 | 659 | 123 | 87 | 157 | 180 | 177 | 43 | 3,641 |

Leonte¹¹ states that surgical tuberculosis is most prevalent from ten to thirty years of age.

His conclusions are drawn from the following series of cases: From 1896 to 1899 there were 1,393 cases treated in the hospitals of Roumania; from 1895 to 1899, 2,949 cases were treated in the hospitals of Ephorie; from 1898 to 1900 there were 149 cases treated in Leonte's hospital service at Brâncoveassu. A large number of these cases of surgical tuberculosis were of the bones and joints.

Summary.—From the above statistics I think it is fair to state that from 80% to 90% of men and women who reach the age of forty years have had some form of tuberculosis. This statement, if true, is significant and illuminating. It should give us the point of view that in dealing with tuberculosis we have a universal enemy, but that, after all, the majority of us are going to conquer this enemy. Tuberculosis is often spoken of as malignant in character, yet this can hardly be true, for if it were malignant in the majority of individuals the human race would be swept from the face of the earth.

PATHOLOGICAL CONSIDERATIONS.

The knowledge of the behavior of the tissues when infected with tubercle bacilli will be of assistance in defining the treatment that should be given an individual case.

The following brief account of the pathology of the disease is abstracted from the syllabus of pathology by Drs. Councilman and Mallory: The organism enters through the respiratory tract or alimentary canal. It may enter also through the skin, through wounds, in which case a local lesion

is produced. The extent and character of the lesion depends upon the number of bacilli, their virulence, the susceptibility of the individual, and upon the mode of infection and the anatomical character of the organ infected. The usual effect produced by tubercle bacilli is proliferation of cells, leading to the production of large epithelioid cells. The tubercle bacilli lie in and between the cells. Later

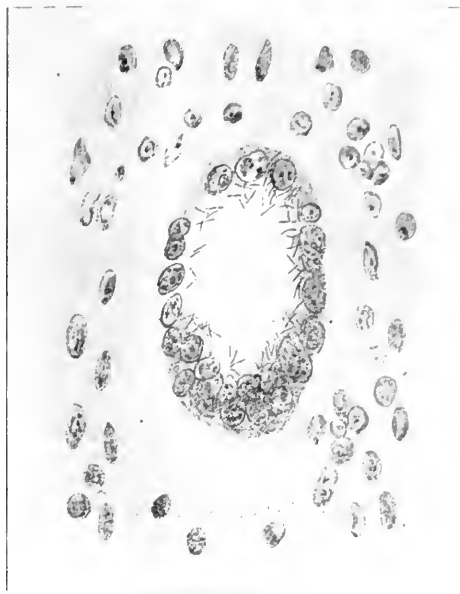


FIG. 1.—A typical giant cell showing tubercle bacilli between the nuclei in the periphery of the cell.

R. KOCH: Die Aetiologie der Tuberculose. Mitt. aus dem Kaiserl. Gesund. Berlin, 1884, Band ii. [Courtesy of Dr. F. B. Mallory.]

other cells appear, the most conspicuous of which are the giant cells. Miliary tubercles are formed of epithelioid and giant cells with or without a reticulum and are small circumscribed masses varying from .1 mm. to 1 mm. in size. Miliary tubercles undergo degenerative changes, but they do not tend to increase in size by peripheral growth. A nodule is formed by the continuous formation of miliary tubercles in the periphery. With the cell proliferation, which is dependent upon the presence of tubercle bacilli, there is more or less exudation, and this forms a part of the tuberculous area. A miliary tubercle does not tend to enlarge indefinitely, chiefly because there is gradually formed around it a tissue which is relatively resistant to the action of the bacilli. Such a tissue is also formed around the large conglomerate tubercles. This tissue is converted into dense, cicatricial tissue resistant to the action of bacilli and containing few blood vessels or spaces by means of which the bacilli can pass through the encircling wall. This is peculiarly interesting, for it may plainly be seen that a great effort is made by nature to encompass and control the attack of the bacillus. It is not known how long tubercle bacilli can live enclosed in such a mass. Occasionally the barrier may be penetrated and the old focus form the starting point of a fresh infection. The most rapidly fatal forms of tuberculosis are those in which the exudative processes are the chief lesions. The mass

¹⁰ Zeitschr. f. Tuberc., 1900, p. 329.

¹¹ Ueber die Chirurgische Tuberculose. Bul. Ass. Med., 1901, p. 212. Zeit. f. Tuber. u. Heilstätt., p. 169, March, 1902.

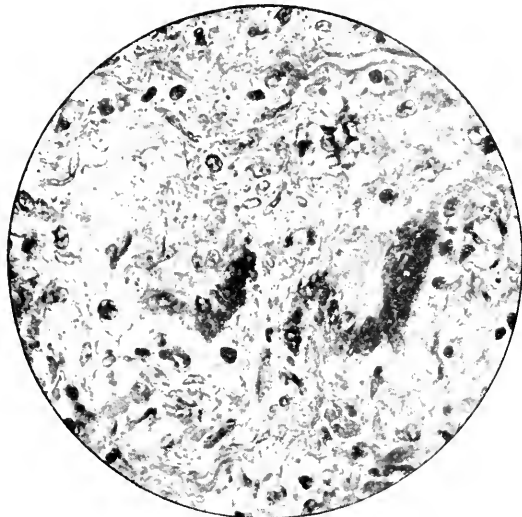


FIG. II.—Extensive unchecked tuberculous process: diffuse exudative type, with giant cells. [Courtesy of Dr. F. B. Mallory.]

formed by the caseation of tuberculous tissue and exudation may remain in an unchanged condition. If composed chiefly of cells it is soft and easily broken up. It is firmer if connective tissue has entered into its formation. It finally may become calcified. A much more important process is that

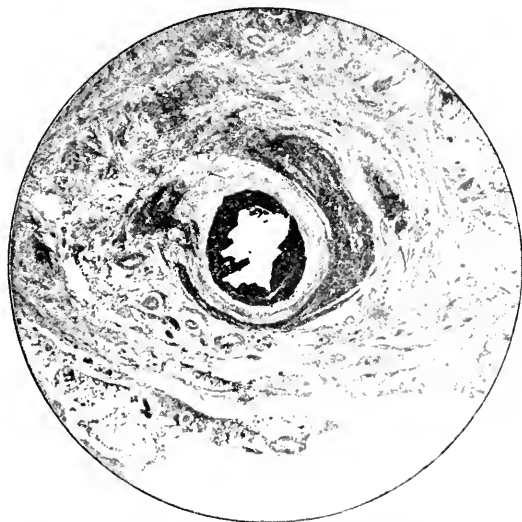


FIG. III.—Healing tuberculous process in an advanced stage, with calcification. [Courtesy of Dr. F. B. Mallory.]

of softening. By this the comparatively firm caseous mass becomes changed into a soft or semi-fluid material. This softened material may be carried into the surrounding tissues, and general infection may occur. Accepting that this is the general behavior of a tuberculous infection, whether it be in the lung or in the intestine, it is apparent that nature is doing all she can to combat the infection, and that we should simply supplement nature in her efforts. A tuberculous process in a lung and in a joint differ largely because of the anatomical differences in the tissues invaded, but the same general principles of infection and repair maintain.

How can we assist nature in her effort to cure the ravages of the tubercle bacillus? She herself surrounds the infection as soon as may be by a wall of dense fibrous tissue. It seems to me that physiological rest to the involved structure, and improving the powers of resistance of the individual, are clearly the lines along which we should render assistance. This leads naturally to the treatment of tuberculosis in sanatoriums, out of doors and in hospitals.

SANATORIUMS.

The great value of sanatoriums is not alone the control of the infectious patient, but their educational influence on the tuberculous patient. Patients are taught a proper conduct of life, taught to protect their fellow-beings from infection, and they are placed, in many instances, on the road to permanent recovery.

The principles of sanatorium treatment in general are well laid down by Dr. T. N. Kelynack.¹² He states that in selecting a suitable case for sanatorium treatment it is well to remember what hygienic management seeks to secure: (1) The removal of the patient from fresh invasion by the tubercle bacillus, and separation, as far as possible, from all influences aiding in its introduction. (2) The establishment in the patient of processes of repair and the development of the highest power of resistance. To this end the instruments employed are: (1) Continuous exposure to fresh air. (2) Free access to sunlight. (3) Regulated rest. (4) Controlled exercise. (5) Abundant feeding. (6) Obedience to hygienic requirements. (7) Strict medical supervision. The life in a sanatorium is well described in an article by John H. Lowman ("The Conflict with Tuberculosis," *Cleveland Medical Journal*, October and November, 1902). He states that the food in a private hospital is such as one would find in a good, well-managed hotel. The patients are allowed to eat as much as they please, but are not forced. As the patient gets stronger he is allowed more exercise. Patients, as a rule, sleep well. The windows are widely opened at night, except in the coldest weather, when the transom is opened. The life in a sanatorium is monotonous, but not necessarily irksome. Amusements are discouraged; cards and casino life are not permitted. Even chapel exercises and church-going are not approved. A visit to the neighboring village is apt to be followed by a cold, which is in reality an infection caught from association with outside people.

In England, sanatoriums have existed for many years and they are regarded as places for the cure of tuberculosis, not as the home of incurable cases. In France, there are a few sanatoriums, principally devoted to the care of children. Germany one finds to be the home of the sanatorium.

The greatest credit is due to such men as Brehmer, who first started the sanatorium at Goerbersdorf in 1856. In this country we owe a debt of gratitude to Trudeau, of Saranac Lake, who has demonstrated in such a public-spirited manner the value of sanatoriums.

The Imperial Health Office at Berlin¹³ states

¹² *Med. Rec.*, Nov. 18, 1902, p. 736.

¹³ *Amer. Med.*, March 21, 1903, p. 410.

there are at present fifty-seven public sanatoriums for the tuberculous in Germany, of which thirty-four are located in Prussia. The Imperial German Government, the governments of the different states, the executive authorities, the national insurance institutions and the municipal governments are seriously and actively participating in the work of combating tuberculosis.

Germany is the best equipped country in the world for the treatment of tuberculosis, and its statistics show correspondingly favorable results. Hammer¹⁴ states that in Germany 20,000 people can be given yearly a three-months' treatment in her institutions.

The relation of the insurance companies in Germany to the control of tuberculosis is very interesting, and it is hoped that action may be taken by some of the insurance companies in this country towards controlling tuberculosis. The Old Age and Invalid pension laws of Germany (Lowman, *ibid.*), which were formulated by Bismarck are very suggestive in their scope of action. Under this law every workman and domestic must be insured by his employer against incapacity for work from old age or invalidism and against sickness and accident. Under this law are a number of sick benefit insurance societies, and their reserved fund is \$175,000-000. From this fund the sanatoriums are sustained. By an amendment to this law, passed by the Reichstag and called Paragraph 45, the insurance societies are permitted to withhold the weekly money benefit from a beneficiary and give it to a sanatorium, and compel the patient to go there to reap the advantage of his insurance.

Frank Warner¹⁵ states that the United States as a government operates but two sanatoriums, one the Army Hospital and Sanatorium for the treatment of pulmonary tuberculosis at Fort Bayard, New Mexico, and the other the United States Marine Hospital Service Sanatorium at Fort Stanton, New Mexico. One has only to read the reports of these sanatoriums to become convinced that the amount of good accomplished is very great. The New Jersey Legislature has appropriated \$300,000 for a sanatorium in which the tuberculous poor may be treated.

Massachusetts has established a State sanatorium at Rutland, but Boston has been singularly negligent in this important public duty. Freudenthal¹⁶ states that there are 25,000 tuberculous patients in the Borough of Manhattan and recommends the establishing of "farming colonies." He states: "We can acquire land enough in this State and in many places near by at a very reasonable price for the purpose of establishing farming colonies. This should be laid out in large farms, and these will fulfill several requirements. Part of the ground should be used for the erection of dwellings for the consumptive colonists and the rest cultivated. While a large handsome hospital building with all modern improvements looks imposing, it is entirely too expensive for the purpose. I therefore propose to erect tents instead. You can erect many tents for the amount of money that would have to be expended on one building alone. That all hygienic

demands can be fulfilled in the best and cheapest way in tent life, every one who has had some experience on that subject will admit." Directly in line of this statement is the statement that there is proposed a sanatorium for the treatment of tuberculosis in New York City with an estimated cost of buildings of \$530,000, 480 beds.¹⁷ This plan provides for a group of structures, the general arrangement of which will be fan-shaped, with the administrative building in the center and the pavilions projecting like the sticks of a fan, thus giving each pavilion a maximum of light and air. The pavilions are to be two stories in height and connect with each other and the administrative building by covered corridors. Here are two definite plans, one for a sanatorium outside a great city, the other for treatment in tents. The proposed sanatorium to cost \$530,000 with 480 beds is too expensive to meet the problem that is presented in the control of tuberculosis.

There is a definite drift of opinion that a change of climate is of less importance in the treatment of tuberculous patients than was supposed, and that it is far more important that the tuberculous should have open air life and a maximum of sunshine, wherever they may live. Kime very sensibly states¹⁸ that in treating tuberculosis "it is not a question of climate, of elevation, of heat and cold, of dryness or of moisture. Wherever an abundance of God's pure air and sunshine may be had, there may this disease be successfully treated."

I give some illustrations showing one of the



FIG. IV. — Barracks at Magdeburg.

barracks (Fig. IV) and one of the resting-places (Fig. V) at the sanatorium at Magdeburg. Figs. VI and VII are views of Trudeau's sanatorium at Saranac. Figs. IV, V, VI and VII are taken from *Zeitschrift für Tuberkulose und Heilstättenwesen*, Band I, 1900.

In France there are over 20 seaside and mountain sanatoriums, with between 2,000 and 3,000 beds, mostly for children with tuberculosis. At Ormesau and Villiers the sanatoriums are on a breezy and somewhat unprotected high plateau. The treatment of tuberculous children at the sanatorium at Cap-Breton and at Bercy-sur-mer is of a good deal of interest.

¹⁴ Münch. Med. Woch., 1902, 49, 1081-85.

¹⁵ Amer. Med., March 28, 1903.

¹⁶ N. Y. Med. Journ., 1902, p. 146.

¹⁷ Amer. Med., March 21, 1903, p. 414.

¹⁸ Phila. Med. Journ., 1900, v1, p. 1057.

Lalanne has charge of the sanatorium at Cap-Breton for the treatment of serofulous lesions.¹⁹

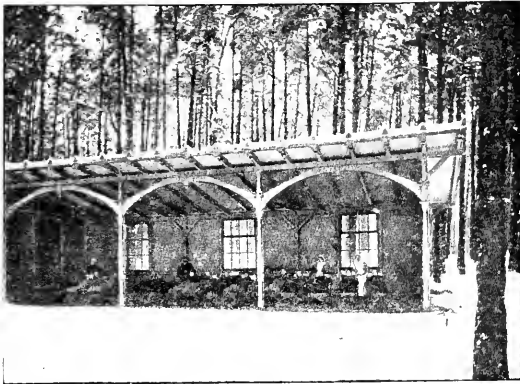


FIG. V.—Resting-place or out-of-door shelter at Madgeburg.

Cap-Breton is not really a village, but a multitude of little Swiss cottages scattered over the sand near pine forests and close to the ocean. The sanatorium

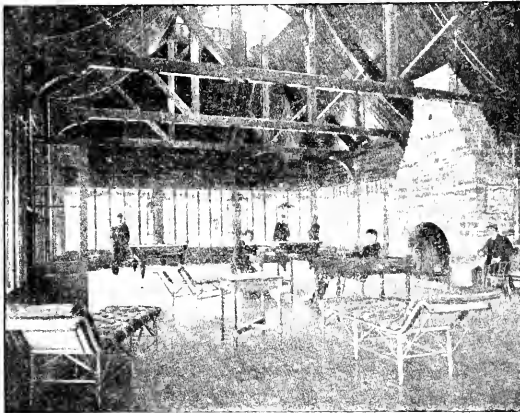


FIG. VI.—Large, well-lighted, airy recreation hall at Trudeau's Sanatorium at Saranac.

of Cap-Breton is situated upon a dune twenty meters above sea level and one hundred meters from

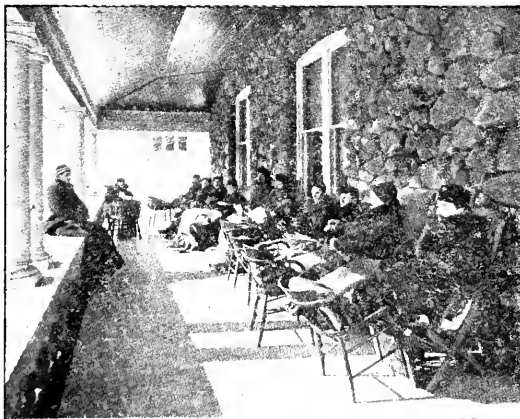


FIG. VII.—The piazza at Saranac in the winter.

the shore. This sanatorium was founded by Widow Desjobert, who left 1,200,000 francs to establish a hospital for poor serofulous children. In this sanatorium there is an abundance of air and light. The climate of Cap-Breton is influenced by the following factors: (1) The nearness of the ocean, (2) the passage of the Gulf Stream some kilometers from the shore, (3) the proximity of the pine forests. The mean temperatures at Cap-Breton are 13° C. in the spring, 22° C. in the summer, 14° C. in the autumn and 9° C. in the winter. In the coldest weather the temperature at Cap-Breton has never fallen below 1° C. Here also there is an abundance of sunlight. The pine forests are far enough away so that they do not affect the action of the sun's rays. There are about 250 sunny days in the year. The water is warm enough for bathing from July 1 to October. At other seasons house baths of warmed sea water are used. The windows of the sanatorium are kept open during the winter nights, to permit plenty of fresh air. During the winter days the patients can be out the entire day upon the beach, warming themselves in the sun. Seventy-one per cent of patients received at Cap-Breton are cured. Lalanne gives the following typical picture of the improvement of a child: Upon his arrival at the seashore the child is pale, indolent, sad and morose. He is weak and sickly, owing to the bad air of the large cities and the lack of hygienic surroundings. He dislikes to move, and nothing interests him. The appetite (though sometimes good) is often poor, capricious and irregular. A few days after his arrival his appetite improves, but the greatest improvement is to be seen only after some weeks or even months. Then there is a veritable transformation: his condition is stronger, he has the color of health, his muscular powers are doubled, he no longer has that torpor and indolence, he is full of that animation which characterizes children with strong constitutions, he is gay, active, expansive and turbulent. Surgical treatment at Cap-Breton is eminently conservative. They seek to improve the debilitated constitutions, and only intervene surgically when it is absolutely necessary. Prolonged treatment at the seashore often suffices to cure many tuberculous manifestations without surgical intervention.

At the sanatorium at Berek-sur-mer, Calot²⁰ treats many forms of external tuberculosis. The general treatment of these cases consists of the use of some medicines, cod liver oil, etc., wholesome, abundant food, the observance of good hygiene, the choice of a proper climate and a proper place. Calot believes that sea air is preferable to the air of the country. This probably is a detail. Calot has children even in bed who are taken out daily during the whole winter; the hood of their little carriages protects them from the rain and snow, and large coverings protect them from the cold. The face is uncovered or is half protected with a veil. The cold weather stimulates the appetite and all the tissues of the organism. The temperature rarely becomes so severe as to prevent patients going out. One of the hospitals at Berek was temporarily located 500 meters from the sea for one year and then was moved to the shore. Calot and his assistants noticed that after exposure of the sick to the

¹⁹ Bordeaux Theses.

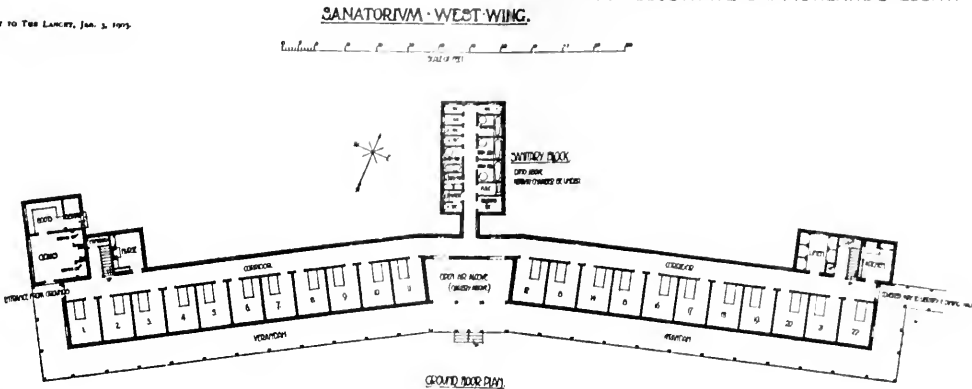
²⁰ Bordeaux Theses.

sea air, the cures of the worst cases became more numerous, more rapid and more complete.
Lannelongue,²¹ Gibney²² and Sprengel²³ all recognize the importance of general and outdoor treatment of tuberculous children.

CONSTRUCTION OF SANATORIUMS.
It is interesting to see the different supplementary plans that are advocated for the treatment of tuberculosis. Let me mention that of Dr. Lederle²⁴ of the New York Health Department, who has sent a

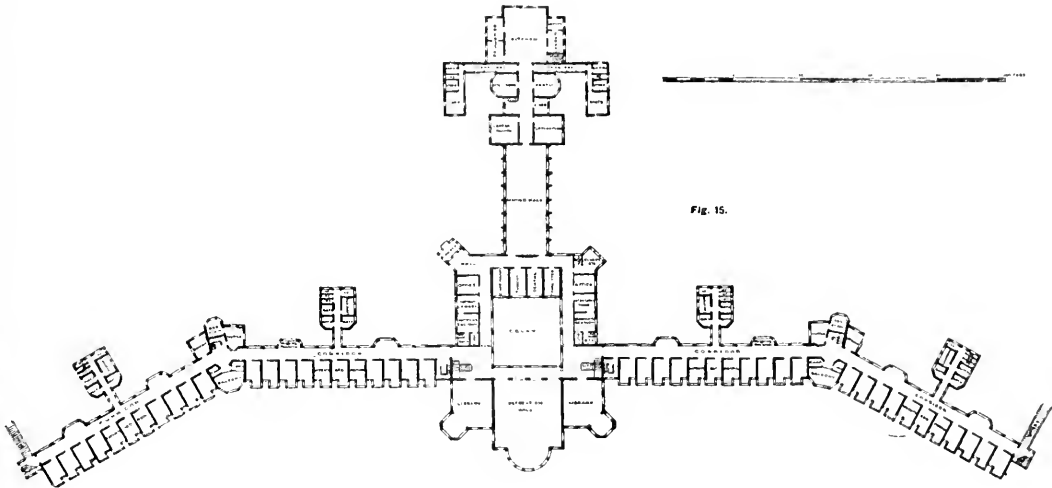
TO ILLUSTRATE DR. MORLAND'S ESSAY.

Supplement to The Lancet, Jan. 2, 1903.



TO ILLUSTRATE DR. LATHAM'S ESSAY.
BLOCK FOR 88 MALE AND FEMALE PATIENTS.

Fig. 15.



GROUND FLOOR PLAN.

Formilant²⁴ reports excellent results obtained in the sanatorium on the shores of the Baltic Sea near Windau. Marcon-Mutzner²⁵ refers to a sanatorium at Hendaye of 200 beds, where they receive children from two to fifteen years of age. The sojourn is from six to nine months. The classes of cases include rickets and anemia, but especially cases of initial visceral tuberculosis. The therapeutic agents are the sea air and climate, not extra alimentation and not rest. In one sanatorium it costs but ninety centimes per day to support a patient.

letter to Mayor Low urging the appropriation of \$35,000 for the establishment of a sanatorium for the treatment of tuberculosis on the tent plan. It is proposed to erect this camp on a tract of twenty acres in Orange County, which has been offered to the city for two years, rent free. Dr. Lederle states that with the \$35,000 he could provide a camp for sixty patients from May 1 to Dec. 31 next. In Germany the following plan has been advocated: Several physicians and a number of associations in Berlin propose to build a large floating sanatorium with roomy, open-air wards, medical supervision, and a complete equipment for scientifically testing the effects of sea air on tuberculosis.

²⁴ Amer. Med., April 11, 1903, p. 563.

²¹ Gaz. d. Hop. d. Paris, 1899, lxxii, p. 145.
²² Virginia Med. Semi-monthly, Richmond, 1898, p. 375.
²³ Berl. klin. Woch., Dec. 23, 1901.
²⁴ Zeit. für Tuberculose und Heilstätt, July, 1902, p. 366.
²⁵ Ibid, p. 369.

The cruising ground is to be the northeastern Atlantic, in the neighborhood of the Canary Islands. Should success attend the effort, other floating sanatoriums will be built. The voyages will last about six weeks.

A most valuable competition occurred recently in England, where King Edward VII offered prizes for the best essay with plans for a sanatorium for tuberculosis in England. One hundred and eighty essays were submitted in competition, and the three prize essays were published in the *Lancet* of Jan. 3, 1903.

The plans of Dr. Latham's essay, Fig. VIII, and Dr. Morland's essay, Fig. IX, appeal to me, in that they offer a maximum of sunshine and fresh air.

(To be continued.)

Original Articles.

THE BLOOD IN THE TYPHOID OF CHILDREN;
A CLINICAL STUDY.*

BY FRANK SPOONER CHURCHILL, M.D., CHICAGO, ILL.,
Instructor in Diseases of Children, Rush Medical College (in Affiliation with the University of Chicago).

THE recent epidemic of typhoid fever in Chicago has offered opportunity for the study of the disease in its various manifestations and at different periods of life; for children as well as adults have been attacked. It has not been uncommon to see in the crowded districts several members of a family sick with typhoid and a little later to find the family transferred to the hospital wards. A curious feature of the epidemic has been an apparent tendency to family rather than individual degrees of severity. Thus I observed one family where the mother, fifteen-year-old daughter and a sixteen-year-old cousin living with them, all died, two younger children, though severely ill, surviving. Again, two brothers, Italians, seven and nine years respectively, were more critically ill than any cases I have seen at that age. Both recovered. Two other groups on the other hand consisting respectively of a brother and two sisters, and two brothers, ran mild courses.

Observation of a considerable number of cases during the past fall and winter has impressed me anew with the irregular atypical picture of the infection as it occurs in children. The onset may be sudden, epistaxis, enlarged spleen, rose spots, all may be absent and thus the diagnosis be difficult, even impossible without the aid of laboratory methods, chief among which is Widal's serum reaction. The value of this reaction in early life has already been emphasized by Morse¹ and again by the writer.^{1a} In not a few cases it is our only means of demonstrating the presence of typhoid.

Study of the blood in other directions, however, has also shown certain characteristic features, at least in adults; for example, the leucopenia, the diminution in the polymorphonuclear elements and relative increase in the mononuclears.

This subject has been exhaustively treated by Thayer,² Naegeli,³ Grawitz,⁴ Turk⁵ and others. Comparatively little work in this direction, however, has been done among children. Stengel and White⁶ report a series of nine cases. Five were uncomplicated and showed a leucopenia. The other four

were complicated, with either bronchitis, bronchopneumonia, varicella, or chicken-pox, and showed a leucocytosis. Their differential counts are few in number, the week of illness not given and hardly warrant their statement that "the polymorphonuclear elements are the ones actually deficient, the mononuclear cells large and small being present in about the normal number." Naegeli,³ studying twenty-five children between nine and fifteen years in his epidemic, reports substantially the same condition found in my own series. Other authors writing on the general subject of typhoid fever speak only vaguely of the anemia and diminution of leucocytes.

The cases constituting my own series were with but two exceptions children in either the Presbyterian or Cook County Hospital. This study was made with the object of determining the degree of anemia suffered, the course of the leucocytes, both *in toto* and differentially, and finally how the blood of typhoid children differs from that of typhoid adults. There have been investigated in all 47 children, 27 boys and 20 girls, ranging in age from 22 months to 12 years, as follows:

| | |
|----------------|----------|
| 22 months..... | 2 cases. |
| 3 years..... | 3 " |
| 4 "..... | 4 " |
| 5 "..... | 6 " |
| 6 "..... | 5 " |
| 7 "..... | 3 " |
| 8 "..... | 7 " |
| 9 "..... | 4 " |
| 10 "..... | 8 " |
| 11 "..... | 3 " |
| 12 "..... | 2 " |
| Total..... | 47 " |

Thirty-nine of the cases were uncomplicated, and it is upon these only that the averages and charts are based. Estimations have been made upon the hemoglobin, erythrocytes and leucocytes, the results tabulated and averaged by weeks, and charts constructed upon the averages. This is the arrangement adopted by Thayer in his admirable article, and I wish to acknowledge to him my great appreciation of his thorough study, and my indebtedness for general plan of work. There have been made in all 43 tests of the hemoglobin, 48 counts of the red corpuscles, 69 counts of the leucocytes and 38 differential counts. The hemoglobin has been estimated by Tallquist's hemoglobin scale, except in a few instances where Fleishle hemoglobinometer was used. The red and white corpuscles have been counted with the Thoma-Zeiss instrument, the white counter having been used in almost all the counts of the leucocytes. A dilution of 1:200 was used in counting the erythrocytes, as a rule, 200 squares each being counted in two, sometimes in three drops. A dilution of 1:20 or 1:40 has been used in counting the whites, 2 or 3 different drops being used. The dried specimens have been stained with the Wright stain.

Care has been taken to avoid the causes of a physiological leucocytosis such as cold baths, and the possible effects of digestion. In no case has the blood been taken within four hours of a bath. I know of no data upon the subject of digestion leucocytosis in typhoid fever. Cabot⁷ states that "any disease of the gastro-intestinal

* Read at the annual meeting of the Suffolk District Medical Society, April 25, 1903.

tract whether functional or organic may prevent the appearance of the digestion leucocytosis." Typhoid is not of course a disease of the gastro-intestinal tract, but there is such an interference with the normal digestive functions that it probably can be included under the above statement and the possibility of a digestion leucocytosis be ignored in examination of the blood. Thayer has evidently done this, as have also Ewing, Turk and others. The researches of these authors have proved so conclusively a diminution of the white corpuscles that undoubtedly digestion leucocytosis does not occur at all. So frequent are the feedings in typhoid that such a leucocytosis, if it occurred, would be a continuous process and would have been detected. In my own work I have taken the blood from one to two hours after food, which was always liquid and contained comparatively little proteid material. None of the cases studied suffered from sweating or diarrhea severely enough to cause concentration of the blood.

Analysis of the cases by years would of course have been the ideal method to pursue in this work, at least in the differential counts. This was attempted but abandoned, the number of cases for each year was so small. Even grouping the cases all together the total is comparatively small, and the results are offered only as a contribution to the subject, not as absolute and final conclusions. I would emphasize again the irregular, atypical picture of typhoid in children, with its marked variations in symptoms and physical signs. We should expect the blood also to display great variations, and such we find to be the case on studying the tables in detail. Hence the necessity, greater even than among the more typical adult cases, of examinations in large numbers of children before final conclusions can be drawn.

Following are the reports:

HEMOGLOBIN.

The results of the tests for hemoglobin are as follows:

| Counts. | Week. | Average. | Lowest. | Highest. |
|---------|-------|----------|---------|----------|
| 7..... | 1st | 97% | 90 | 100 |
| 15..... | 2d | 80% | 50 | 100 |
| 17..... | 3d | 73% | 60 | 95 |
| 9..... | 4th | 66% | 60 | 100 |
| 6..... | 5th | 75% | 40 | 95 |
| 4..... | 6th | 55% | 40 | 70 |

We note the high percentage of hemoglobin in the first week, higher than in Thayer's adult cases, its rapid decline during the second, and more gradual decline during the third and fourth weeks, its beginning recovery during the fifth week. The drop during the sixth week is undoubtedly due to the fact that the cases were severe ones. They are so few in number, however (four), that the average is of little value.

ERYTHROCYTES.

The results of the counts are as follows:

| Counts. | Week. | Average. | Lowest. | Highest. |
|---------|-------|-----------|-----------|-----------|
| 5..... | 1st | 4,191,600 | 3,346,000 | 4,610,000 |
| 13..... | 2d | 4,224,000 | 3,432,000 | 4,816,000 |
| 14..... | 3d | 4,260,000 | 2,824,000 | 6,520,000 |
| 7..... | 4th | 4,746,857 | 4,164,000 | 5,328,000 |
| 4..... | 5th | 5,569,500 | 4,656,000 | 5,760,000 |
| 3..... | 6th | 4,198,666 | 3,052,000 | 6,008,000 |
| 2..... | 7th | 5,884,000 | 5,576,000 | 6,192,000 |

A chart, based on these figures, shows the course of the erythrocytes. Speaking generally, the curve emphasizes the mild short nature of the disease. The average count never falls below 4,000,000, certainly not an extreme point, and a normal count is regained by the middle of the fifth week. According to these tables we find the lowest count is already reached by the end of the first week, these counts, with but one exception, being made during the latter half of the week. It is improbable that this result will be verified when a sufficiently large number of cases have been analyzed. It is due to two factors: The small number of cases (five) and the occurrence of an extremely low count in a seven-year-old child already anemic from improper general hygiene, poor food and chronic intestinal trouble. This child's count on his fifth day was 3,346,000, and this low figure among so few cases necessarily lowers the average unduly. I believe that my average for this first week, the lowest point reached by the erythrocytes throughout the disease, does not represent the general course of these corpuscles, but that future investigations will show the average to be higher at this early period and the lowest point not reached until later. The general course of the disease as indicated, for example, by the temperature warrants this belief. Analysis of the temperature charts in the uncomplicated cases shows that on the average, defervescence begins from the fifteenth to the seventeenth days. It is improbable that we should see a beginning regeneration of the blood with a rising or stationary high temperature. Moreover, we first note a decided increase in the erythrocytes in the middle of the third week, the seventeenth day it so happens, coinciding remarkably with the beginning fall of temperature. The turning-point of the disease is marked both by a gradual falling off of the temperature and beginning increase of erythrocytes. The return to normal is more rapid on the part of the temperature than on the part of the blood corpuscles, the former averaging normal on the twenty-fifth day, the latter attaining a normal count in the middle of the fifth week. The drop during the sixth week is due to the severity of two of the three cases, the counts being 3,536,000, 6,000,000 and 3,052,000 respectively.

The discrepancy between the hemoglobin and erythrocyte curves is striking, at least in the first week. Later, the hemoglobin curve is more in accordance with the general rule that in most secondary anemias, the Hb. suffers more than do the red corpuscles. But in many individual instances such great differences were obtained in the Hb. and erythrocyte estimations that I cannot help suspecting that my unfortunately poor eye for color is partly responsible for results. I attach little importance to the Hb. curve.

The curve of the erythrocytes in these children is in striking contrast to that of adults as obtained by Thayer. His cases start with an initial higher count, decline more gradually and for a longer time, eventually reaching a much lower point. The children, on the other hand, go down more quickly and recover more rapidly. It must be remembered, however, that the cases are hospital children, already anemic from unhygienic surroundings and poor food. The stage of incubation may also exert

some influence. The duration of this period, of course, it is impossible to determine in most cases; the one case in which it was definitely known was the youngest one of the series, a twenty-two-months-old boy. Here it was exactly nineteen days after his last exposure with infected milk that his illness suddenly began; during this time he was carefully watched for symptoms of typhoid. His red count on his second day was 4,640,000, his whites being 6,000 and Hb. 95%. He had been living in the country with excellent hygienic surroundings barring his milk, and had always been a strong, healthy infant, yet on his second day of illness was nearly a million minus in his erythrocytes. No conclusions of course can be drawn from this one case, but it seems worthy of special mention in view of a prolonged stage of incubation positively known and the low count both of red and white corpuscles on the second day of actual illness. It certainly suggests the possibility that already during the stage of incubation the typhoid toxin is exerting its effect on the blood.

LEUCOCYTES.

The chief interest in the blood in typhoid of course centers in the white corpuscles. The following results have been obtained:

| Counts. | Weeks. | Average. | Highest. | Lowest. |
|---------|--------|----------|----------|---------|
| 11..... | 1st | 6,900 | 9,800 | 4,000 |
| 19..... | 2d | 6,467 | 10,800 | 3,000 |
| 21..... | 3d | 7,477 | 15,800 | 2,000 |
| 10..... | 4th | 7,180 | 12,000 | 5,200 |
| 5..... | 5th | 8,056 | 12,130 | 6,000 |
| 3..... | 6th | 6,566 | 7,600 | 4,500 |

We note throughout the first four and a half weeks a diminished count; but here again the curve emphasizes the mild character of the disease, the lowest average being 6,467, reached early in the course during the second week. Thus the leucopenia, in contrast with that of adult life, is less marked and of shorter duration. The count rises to normal by the fifth week, at which time Thayer's adults have only 538, and require several more weeks in which to regain their normal. The range of individual counts, however, is wide, the limits being 2,000 and 15,800, both obtained during the third week. As a rule, the more severe the infection, the lower the count.

We find a comparatively sharp rise during the third week to an average of 7,477. Among the twenty-one counts made for this week are found five counts of 15,800, 13,800, 10,800, 10,000 and 10,000 respectively, which explains the high average. These counts may of course have been due to undetected complications, but none were found. The increase at this time and the subsequent drop during the fourth week certainly suggest this possibility. Following the course of the reds in the fifth week we find a normal count of 8,056; as with the reds also we see a low count during the sixth week.

The diagnostic value of the white count is evident from the above figures. Remembering the ease and frequency with which a leucocytosis is produced in childhood, a leucopenia found in a febrile affection of obscure origin and irregular type is of even more value than in adults. While not as conclusive evidence as a positive serum reaction, I

believe it to be second in importance in such affections only to the Widal test—excepting of course bacteriological examination of the blood. This gives positive information early in the disease.

Is the leucopenia developed before a positive reaction? Unfortunately I have no data to offer on this point. My earliest counts were made on the second and fourth days on the twenty-two-months-old child already mentioned, and showed white counts of 6,000 and 6,400 respectively. His serum reaction was negative on both these days, "incomplete" on his sixth and eighth days. No further tests were made, and in the absence of a "positive" reaction it may be urged that the case was not typhoid. But the presence in the neighborhood of twenty-seven other cases of genuine typhoid, many proved to be such by a positive reaction, and all traced to one milkman; the sixteen days' duration of his temperature without a definite, well-defined cause; his serum reaction, at first negative, subsequently incomplete; above all, his leucopenia, leave no doubt of the diagnosis, even in the absence of epistaxis, enlarged spleen and rose spots. The case is recorded as showing that a leucopenia *may* antedate a positive serum reaction. Whether or not this will prove to be the general rule, study of a large number of cases in the early stage only can determine. Opportunity for study, however, is comparatively rare. On the one hand, hospital cases seek medical aid late in the disease. "Walking typhoid" is relatively more common among children than in later life, owing to the lighter nature of the malady. On the other hand, typhoid, being a "filth disease," is comparatively rare among the more intelligent part of the community, among those who call a physician at the first sign of illness on the part of their children. Few as are the latter class of cases, however, I believe that systematic daily study of the blood in such by many observers will give us more reliable information as to the priority of serum reaction or leucopenia than study of the hospital cases with their indefinite date of onset and late first appearance.

DRIED SPECIMENS.

Study of the stained dried specimens has shown but little change in the erythrocytes. There has been little poikilocytosis, only an occasional normoblast and as a rule good staining qualities. Some of the more severe cases, chiefly among the older children, showed poor staining, and such generally registered a low percentage of Hh. Only an occasional myelocyte was observed.

The differential study of the whites has been of great interest. The following results have been obtained:

| Wk. | Cases. | Lymphoc's. | Large Mono. | Polym'h. | Eosin. |
|----------|--------|------------|-------------|----------|--------|
| 1st | 3 | 18.5% | 9.25% | 71.8% | 0.3% |
| 2d | 9 | 14.2% | 5.7% | 79.8% | 0.2% |
| 3d | 13 | 32.2% | 5.2% | 62.2% | 0.3% |
| 4th | 5 | 34.9% | 12.05% | 52.65% | 0.2% |
| 5th | 4 | 37.1% | 3.4% | 58.9% | 0.5% |
| 6th | 2 | 49% | 3.5% | 47.5% | 0.6% |
| 7th | 2 | 28% | 5% | 61% | 0.8% |

The general curve based on these figures shows two points of interest, the comparatively high neutrophilic count of the first two weeks and the marked

fall of polymorphonuclears and equally marked rise of the mononuclears during the subsequent weeks. To facilitate comparison I have followed Thayer in basing the mononuclear curve on the combined counts of small and large cells. The increase in my series is in the lymphocytes. In this respect my observations are in accord with those of Grawitz, Naegeli and Turk, but differ from those of Thayer, who finds the increase chiefly in the large cells. Undoubtedly these differences of opinion are partly due to the impossibility of drawing a sharp line between "large" and "small" cells. I can only say that in my own cases there was a marked pre-dominance of the smaller cells.

Few as are my observations during the first two weeks, they coincide with those of Naegeli and Grawitz. They report a neutrophilic leucocytosis and a diminution of the lymphocytes during the early stage of the disease and state that the latter begin to increase about the tenth or fourteenth day, while the neutrophiles begin to diminish. The same writers also state that these two processes, rising lymphocytes and falling neutrophiles, often go on to such an extent that we see a crossing of the curves during lysis, and that they persist into convalescence. Thayer's cases, however, apparently do not show such marked changes in the relationship of these two varieties, nor are they as abrupt as in the children. The curves in the latter rapidly approach each other during the third and fourth weeks, begin to recover themselves during the fifth, but during the sixth, based on (only) two cases of unusual severity, resembling the adult type, they again rise and fall rapidly and excessively and cross each other. Finally normal relations are resumed in the seventh week. As compared with the adult curve, the children's illustrates the greater tendency of the blood in the latter to revert more closely to the infantile type under the influence of disease affecting the blood-making organs.

The eosinophiles pursue an even tenor throughout the infection. They never entirely disappear, yet we observe no marked increase during convalescence.

Turk⁵ has advanced an interesting theory to account for the course of the different varieties of leucocytes. He believes that the typhoid toxin exerts an inhibitory effect both on the blood-making organs and on the corpuscles once in circulation. The result in the former is a diminished total count, in the latter a prevention of growth or development on the part of the lymphocytes or "young" cells, with a consequent increase in their number and a corresponding diminution in the polymorphonuclear or "old" cells. These effects are not obtained until considerable toxin has accumulated in the system; hence, at first we get but little reduction in the total production of leucocytes and little or no effect upon the development of the lymphocytes. As the disease progresses, however, and the toxin increases (presumably) in amount, we observe more marked effects upon both production and growth, the more severe the case the greater being these effects. Finally, Turk is of the opinion that the inhibitory effect upon growth lasts longer than that upon production, and he explains the persistence of the high lymphocyte count into convalescence upon this basis.

According to Turk's theory, the toxin is rather slow in exerting its influence on growth in my series, and would explain in a general way the counts in the first two weeks. It would also explain the curves of the next three weeks, for while the total production of leucocytes has begun to increase during the third week the lymphocytes fail to grow up for two weeks more, and consequently increase in number at the expense of the polymorphonuclears.

COMPLICATIONS.

Examination more or less complete of only eight cases are recorded. These complications are as

| Name. | Age. | Day. | Hb. | Red. | White. | Lym- pho. | Mono. | Poly. | Eosin. | Complication. |
|----------------|-----------|--------------------------------|-----------------------------------|--|---|----------------------------------|--------------------------------|----------------------------------|-------------------------------|---|
| I. Albert R. | 22 months | 15 20 6 weeks | 40 50 | 3,912,000 3,824,000 | 12,000 13,500 10,800 | — — 47.4 | — — 13. | — — 39. | — — 1. | Pneumonia. Otitis media for 1 week. |
| II. Helen W. | 4 years | 28 30 | 95 — | 3,840,000 — | 15,800 21,000 | 7. — | 17. — | 75. — | 0.5 — | Furunculosis. Mycology test 72%. |
| III. Agnes C. | 5 years | 21 | 75 | 3,950,000 | 20,400 | 25. | 3. | 72. | 0.2 | Furunculosis. |
| IV. Alice S. | 6 years | 12 23 | 80 75 | 4,944,000 4,560,000 | 11,570 12,700 | 11.5 21.5 | 2. 1. | 84.5 76.5 | 0.8 0.8 | Measles. |
| V. Theresia I. | 6 years | 5 weeks | — | — | 15,000 | — | — | — | — | Neuritis? |
| VI. Weston B. | 8 years | 5 7 13 14 20 27 | 100 — 100 — 90 100 | 5,500,000 — 5,176,000 — 5,408,000 6,036,000 | 8,100 12,100 12,800 — 18,000 5,000 | — 19. 12. — — 39. | — 3. 4.5 — — 8. | — 78. 82. — — 53. | — — 1.5 — — 0. | Widal negative. Bronchitis, B. influenza in throat culture. Widal incom- plete. Widal incomplete Bronchitis continues. Chest clear. |
| VII. Willie B. | 9 years | 7 weeks | — | — | 8,900 | — | — | — | — | Orange peel. Perforation, peritonitis, operation, death. |
| VIII. Lena P. | 11 years. | 14 32 34 40 44 | — — — 40 — | — — — 3,052,000 — | 5,200 7,000—11 A.M. 8,400—4 P.M. 8,400—8 P.M. 7,900—12 P.M. 6,800 4,600 | — — — — 16. — | — — — — 3.5 — | — — — — 81.5 — | — — — — 0. — | Abdomen, tender and distend- ed. Hemorrhages. Death. |

follows: Otitis media, 1 case; furunculosis, 2 cases; measles, 1 case; neuritis (?), 1 case; influenza, 1 case; peritonitis, 2 cases.

Their ages, counts, day of disease, etc., are given in the table. All with one exception showed a leucocytosis, the highest count being 24,000 in a four-year-old girl with furunculosis. As a rule, in the cases where a differential count was made the increase was in the polymorphonuclears. The exception to this was Case 1, twenty-two months old, who developed his otitis during his fifth week. Yet even here the neutrophiles are at the maximum and the lymphocytes at about the minimum for this age.

Case 6 presented many points of interest. His illness started apparently as a plain case of influenza, and not until his sixth day were suspicions of typhoid especially aroused. At this time his comfortable condition and prolonged fever first suggested this possibility, even though his blood on the fifth day showed 8,100 whites and a negative serum reaction. The subsequent course of the temperature and "incomplete" reactions on the seventh and fourteenth days made a diagnosis of typhoid extremely probable, even though no rose spots were ever seen nor enlarged spleen detected, nor diazo reaction obtained. His temperature reached normal on the nineteenth day.

His leucocyte count during his first three weeks, I attributed to the extensive bronchitis, which developed during the latter part of the first week. It is interesting to note that with the disappearance of his bronchitis his total white count drops to 5,000 on his twenty-seventh day, his lymphocytes go up and his neutrophiles come down (refer to table), the clinical picture of the blood in uncomplicated typhoid. The occurrence of leucocytosis, in this case due to an influenzal bronchitis, does not accord with the view that in influenza we do not get a leucocytosis. It of course may be urged that the bronchitis was not due to the b. of influenza, but to the b. typhosus or to both. It seems reasonable to suppose, however, that it was due to the b. of influenza, and that the leucocytosis was due to the same cause, namely, invasion of the system by this organism.

Three weeks after the first day of normal temperature this boy had an attack of appendicitis. The white counts at this time were 23,000, 23,600, 18,000 and 13,200 at 6 P.M., 9 P.M., 1 A.M. and 8 A.M. respectively. Notwithstanding this falling count, it was decided to operate, Dr. Bayard Holmes being the consulting surgeon. A thickened appendix was found containing a small amount of pus. Cultures showed only the b. coli communis.

It was suggested at this time that his recent illness had been due to his appendix. This seemed to me improbable, but to settle the question definitely, if possible, the urine was examined. No typhoid bacilli were found, but the para-colon bacillus was isolated. It is to be regretted that this case was not more thoroughly studied during his three weeks of fever, especially as to his urine. Was the case one of para-colon or para-typhoid infection? Does this organism, like its "first cousin," the typhoid bacillus, persist a long time in the urine? What is the significance of an "incomplete" serum reaction in cases resembling ty-

phoid? This is not the time to discuss these questions, even were I competent to do so. But in view of all the facts obtained in this case, it seems to me a reasonable doubt as to its exact nature must be entertained. I have, however, included it among the typhoids with complications, as showing an interesting behavior of the blood, whatever the cause.

Case 8, the only complicated case failing to show a leucocytosis, was severe from the start. She had hemorrhages throughout the course, and during her fifth week developed peritonitis. The typhoid infection was so severe, however, that her white count never rose above 8,400. It subsequently dropped to 4,600 on her fortieth day, death taking place four days later.

CONCLUSIONS.

The following conclusions are offered:

- (1) The blood in the typhoid fever of childhood differs from that of adult typhoid only in degree.
- (2) The erythrocytes are reduced in number, especially during the first three weeks, after which they begin to increase rapidly, reaching normal in the fifth week.
- (3) The hemoglobin suffers more proportionately than the erythrocytes.
- (4) The leucocytes are reduced throughout the first four weeks, the lowest average being reached during the second week, except in severe and tedious cases.
- (5) The leucopenia is of diagnostic value, especially in children, in whom most febrile affections produce a leucocytosis. More data are needed to determine the priority of appearance of a "positive" serum reaction or a leucopenia.
- (6) The relative proportion of the different varieties of leucocytes varies at different periods of the disease, the greatest variations being found in the polymorphonuclears and mononuclear elements, the former diminish and the latter increase as the disease advances. The increase in the mononuclears is chiefly in the lymphocytes. Analysis of large numbers of cases grouped by age and week is desirable.

I wish to express to my colleagues on the staffs of the Presbyterian and Cook County Hospitals my appreciation of their courtesy in allowing me to examine their patients.

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THE CURE OF CANCER BY THE USE OF THE X-RAY.¹

BY H. W. VAN ALLEN, M.D., SPRINGFIELD, MASS.,
Electro-therapeutist, Mercy Hospital.

MR. PRESIDENT AND FELLOWS OF THE HAMPDEN DISTRICT MEDICAL SOCIETY: My apology for bring-

¹ Read before the Hampden District Medical Society, April 29, 1903.

ing to your attention a subject that has hardly outgrown the experimental stage is the unique field of usefulness and the vastness of possibilities it opens up to us in conquering conditions which formerly seemed hopeless.

While much has been done and more prophesied, the writings upon this subject by the various operators are very contradictory, not only as to technique but as to results. I hope in the few moments allowed me to give you a résumé of these writings, tempered with my personal experience, in the use of this new force in the past six months.

Historically you remember how, in 1895, Roentgen discovered the effect the peculiar light from a Crookes' tube had upon an ordinary photographic plate, and later the platinum-barium-cyanide screen was made, which may be fastened in the end of a boxlike affair called the fluoroscope. Much was prophesied to surgery, especially to bone surgery, and it has been all fulfilled. Even in those early days when the light at best was a flickering, uneven affair, we had something with a definite story to tell; but now with as steady a light as the sun, and one that can pierce the partitions of a building as easily as the sun enters through the glass in the window, we have evidence of the most stable kind.

What the x-ray actually is, is still an unsolved problem, but the method of control and regulation has been put quite in our power. The essentials of an x-ray outfit are: a something to furnish an electrical current at an extremely high potential, and a tube very nearly but not entirely exhausted of air, in which two plates are fastened at more or less of a distance apart.

It is in the varying conditions of these tubes that the different effects desired for different pathological conditions are found. The light from these tubes seems to be composite. It varies from a tube of high exhaustion with a bright apple-green light of great penetration, and but little irritating effect, to one of low exhaustion with a purple light with little penetration, but with a burning effect to be treated with circumspection. It is here that some have been disappointed in their work; the proper tube has not been selected. In a superficial cancer it is ineffective to put on a high or penetrating tube; and it is still more foolish to attempt to treat a deep-seated tumor with a soft violet tube, as if the treatments are long enough to be effective upon the deep tissue the ultra-violet ray present in such a quantity will severely burn the skin and underlying parts. As tubes vary with each time of excitement, it is necessary to watch them carefully. Some do this by watching the bones in the operator's own hands, but I find I have the matter more safely under my control by giving treatments in a special room for the purpose, with black walls and only artificial light, which may be entirely turned off, leaving the varying conditions of the tube very apparent. This together with the aid of the ear to one accustomed to the work makes it quite possible to measure the dose and avoid accidents.

Two methods of securing high potential electricity are in use. The one most generally used until recently was the static machine, with many large revolving plates. There were many drawbacks, such as, inability to use in humid weather, liability to breakage, amount of space occupied, etc. More

recently the Ruhmkolf induction coil has been modified so it is not only safe for the ordinary operator to use, but free from the difficulties of the static machines. Zeisler of the Northwestern University concludes that "static machines are hardly fit for dermatological purposes. A good induction coil only is to be considered." The static machine makers claim it is more liable to burn; and it certainly is, because there is more power at our command. However, there is no use in using the full current simply because it is so easy to obtain it. But it is very comforting to feel that one has reserve to use in especially resisting cases or in fluoroscopic examination of the chest, or more particularly of the pelvis. I began this work with a static machine, and saw patients get so far and then not improve. Afterwards I began to use a coil, and the results with it proved to my satisfaction there is no comparison between the coil and static machine. For all x-ray work now I use a coil which adopts the 110 volt alternating street current to its uses. Of course it is regulated and controlled by a suitable rheostat, switches, fuses, etc.

As to tube—here is the most essential part of all. The vacuum must be adapted to the case, or more or less of a failure will result. I use a chemical self-regulating tube. By this I mean one with a chemical bulb attached through which the current will pass automatically when the internal resistance of the tube becomes too great, thereby liberating in the tube a gas and thus reducing the partial vacuum. An operator must have a number of tubes on hand, as at any time, especially when the tube is high, a spark will pass through the glass walls, leaving no visible mark, but allowing air to enter and spoiling the tube. The life of a tube is variable; I presume I have excited a single tube more than a hundred times and I have broken three in a single week. Another form of tube well worth mentioning was devised by Caldwell of New York for vaginal work. It is spindle-shaped, and the cathode or target from which the rays are reflected is placed in the extreme end so that it may be introduced through a fenestrated speculum directly against the cancer. A similar device can be used in cancer of the tongue.

As to how x-ray cures, much has been said and nothing been absolutely proved. Some claim that the whole effect comes from the electrical discharges near the tube, producing chemical changes in the tissues. It is more reasonable to think that it is the Roentgen ray itself. It seems to me it is a cauterant action with a special selective action for certain pathological tissues, and which intervening tissues fail to retard to any amount; the essential features being distance between the tube and the part, whether superficial or deep-seated, and character of the tube. There is a degree of mild radiation which has no destructive action on the cancer, and possibly may be a stimulant. As we increase the power of the ray it acts as a destroyer of pathological tissue, which is eliminated as non-malignant waste product. We know how easily cancer cells break down. If the ray is still increased in force, the cauterant action is felt on the healthy structures, and death of the part results, known as an x-ray burn. These burns vary in degree in the slightest cases with simply a tanning of the skin to severe

cases in which deep sloughs occur. A peculiarity, and a distressing one, is that it takes from one to two weeks for the burn of an over-radiation to make its first appearance, and does not reach its full height for a week or so later. When the burn has reached its limit the part heals rapidly, but I have found the resulting tissue breaks down with less radiation than before. Many operators have burns upon themselves from over-exposure, and one should be careful not to expose himself to the direct action of the ray in giving treatment. I



RECURRENT CARCINOMA.—Operation eight years ago. Thirty treatments every second day.

make it a rule never to be in front of a tube longer than is needful, and in using the hand to judge of the intensity of the ray, use first one hand and then the other. With all this precaution I find the skin of my hands unduly dry and my nails exceedingly brittle.

With the proper tubes selected, and the growth exposed, the patient should be first placed in a comfortable position. Otherwise there will be a tendency to move and either get near enough to get a disagreeable shock, or disarrange the metal coverings for the healthy tissue. This covering of the healthy surrounding parts is done in several ways: block tin is used; rubber dam covered with tin foil, etc. I use ordinary tea lead lined with cloth, by

preference, silk. It is made in pads of all sizes from six inches to two feet square. The diseased part can be readily outlined with these pads, spring clothes-pins being used to hold them to the patient's clothing and to each other.

The distance of the tube from the diseased part is a very essential item. From three to twenty-four inches is the custom with an average of eight inches.

As to the immediate sensation to the patient—burn or no burn—it is nothing, except in some cases where some of the current escapes and causes slight tingling. However, when malignant tissue



RECURRENT CARCINOMA.—Operation two years ago. Return of growth one year ago. Thirty-five treatments every second day.

is being rapidly disintegrated, I have found my patients complaining of slight malaise, and in a few instances they have had a degree of fever. In one case especially, where a recurrence of carcinomatous growth of the breast was under rapid disintegration, did the patient look and feel so badly

that I feared she had another center of infection in some of the internal organs. However, this condition passed off even before the growth disappeared. It is now six weeks since I considered the cancer cured, and she has more than regained her normal condition.

As to the frequency of the treatments. At first it is best to go slowly, to see what the resistance of the patient is. On the face, from five to seven days should intervene between the treatments, gradually increasing to three or two days. On the covered parts of the body, where an accidental burn would not be so deplorable, three to five days, increasing to every second day, is the rule.

The length of exposure varies from three to twelve minutes.

The number of exposures varies, of course, with the case. My shortest case of cancer was in a breast in which the tumor was as large as a large hen's egg, and was cured in twenty treatments every second day. Another I have had under treatment for four months; at first the ulcer was four by five inches, now about the size of a silver dollar. The first case was in a person in good general health; the second was in very bad general condition, and a non-believer in drugs, so was unable to give tonics or apply proper dressings. I cite these two cases to show how much other elements enter in the time of the final result. A case may be so poorly nourished that the tissues break down easily in a burn, leaving the margin between a ray that will cure and one that will burn very small, and a man must have experience or the case will be made worse rather than better.

In regard to the comparative value of the two methods of removing cancerous growths, I do not intend to argue. If is enough to say there is a place for each. Many cases can be easier excised, while in others it is difficult to do so, or perhaps impossible. It is this latter class that have been chiefly offered for x-ray treatment—cases that for one reason or another have been allowed to go beyond the stage in which the surgeon hopes to cure.

This has been a severe test, and the results are pushing the ray from the experimental stage to one of definite therapeutical value.

However, I believe in many cases a combination of removal by cutting and radiation is the best course to pursue. In fact, in many centers of medical learning, it is the custom subsequently to removal of cancers, after an interval of ten to twenty days, to subject the patient to a number of treatments by x-ray, to eradicate any trace of cancer that may have been overlooked. No one knows better than the surgeon how difficult it is, say in a breast, to remove absolutely all the cells that may have been infected and may become a seat of infection. In this connection I quote from a paper by the surgeon Carl Beck of New York: "The Roentgen rays should be considered in the after-treatment. From the observation of Heidenhain that carcinoma cells are found below the facia, even in apparently light cases of carcinomamammæ, we surgeons saw the necessity of removing the pectoralis major muscle, or at least its superficial stratum. In fact, no surgeon expects perfect recovery from the simple removal of carcinomatous portions, but always tries to extirpate as much of the surrounding tissues as

surgical technique permits. It is too well known that if the carcinoma cells have disseminated themselves so far that they are not accessible to the scalpel, a speedy relapse is to be expected. Now if we have a means which would, after a thorough operation, penetrate the deeper strata, so that those carcinoma cells which were situated beyond the reach of the knife would be still attacked by it, and perhaps destroyed, or at least arrested in its further development, the question of cancer would be solved."

While in this paper I only intended to speak of cancer, there are a number of other diseases from which relief may be obtained by similar use of the x-ray. Well authenticated cases of cures are recorded of favus, eczema, psoriasis, rosacea, acne vulgaris, lupus vulgaris and erythematosis, superfluous hairs, wine marks, etc. I believe the beneficial effect arises in these cases from the fact that the ray is a strong stimulant or cauterant, which, unlike any local application, has an action deep in as well as on the surface.

I will take your time to cite three cases illustrating the above:

Lupus erythematosus of the face, duration about seven years. Various methods of treatment by capable men seemed to scarcely produce even temporary improvement. Been under my care about two months, but on account of distance from my office able to come for treatment only twice a week. When first seen the ulcer or diseased area, which was triangular and about one by three inches, was covered with yellowish, slightly greasy scales, which when removed showed ulcerated bases. The diseased tissue was surrounded by many large comedones. The scales have come off in several crops, and each time they became thinner and more delicate, until at this time they are nearly gone, and the discoloration is fast disappearing. She is still under treatment.

Removal of hair.—My experience in this regard was accidental but none the less valuable. A patient with cancer of the urethra was exposed for a number of treatments to a strong ray, which reacted rather markedly on the skin over the pubes, with the result that all the hair on the side where the ray fell strongest came out and up to this time (two months) has showed no tendency to return.

Pustular eczema of the lip, duration about five years, being much worse during the winter and for a short time in the summer, so nearly well that it was not noticeable to ordinary inspection. He had received capable treatment with little or no benefit during this entire period. After I had used the ordinary ointments, etc., for a month with no decrease in the disease, I sent him to Dr. James C. White of Boston, who confirmed my diagnosis and recommended a line of treatment so nearly like that I had already used I determined instead to try the x-ray. After about eight treatments, covering a period of two weeks, quite a decided reaction was present, as seen by the darkening of the skin, swelling, heat, etc. The ray was discontinued, with the result that in ten days the part was entirely well and has remained so all winter. As he has been under the same hygienic and weather conditions as before, it is fair to assume a permanent cure, after such a period.

Almost one of the first questions we are asked,

after the curative properties of the ray have been proved to an inquirer is, Will it return? And the answer is: We do not know. Cases are on record of several years' standing, with no return. Thus far the percentage of returns is not as great as with the knife for the same period. What the final result will be only after years can tell. This I do know, that all the cases I have treated, with two exceptions, have been cases that have returned, having been cut out previously. One writer states the percentage of recurrences after operation as fifty-two. The prospect is that in thoroughly treated cases by x-ray nothing like this percentage will return. While this is the great item in judging the advantage in method, we should not forget the lack of disfiguring scar, the ease of application, not removing the patient from ordinary occupation, fear of the knife, etc.

Such facts present an argument too strong to be put aside by even the most radical operating surgeon.

Clinical Department.

A CASE OF STRANGULATION OF THE TESTIS DUE TO TORSION OF THE CORD.

BY ARTHUR TRACY CABOT, A.M., M.D., BOSTON,
Surgeon to the Massachusetts General Hospital.

CASES of recognized torsion of the cord causing strangulation of the testicle are extremely rare.

Dr. Scudder was able to find but thirty-two cases of this condition in medical literature.

The following report presents a well-marked instance of this mishap, and the clinical symptoms were in some respects so peculiar that the case is worthy of record:

X, twenty-six years of age, vigorous and well developed, was seen by me in April, 1903. He had never had any venereal disease, nor any trouble with his testes, which were normally developed in every way.

At 10 A.M., of a Sunday, without previous injury, or other disturbing cause, he had suddenly been seized with a severe paroxysmal pain in the center of the lower abdomen, close above the pubes. He was pallid, nauseated, and was covered with sweat.

This pain was serious enough to cause him to go to bed. At 2 P.M. he vomited, after which the pain subsided so entirely that he got up at 4 P.M.

On the following morning he went down to business as usual, but soon began to suffer pain in the region of the right spermatic cord. This pain increased and extended to the testis, but he continued his occupations that day, not returning home until 7 P.M.

On Tuesday the testis was swollen, and presented all the appearance of an ordinary epididymitis, and was so regarded by his physician. The temperature, however, was at no time above 99-4° F.

On Thursday there was a decided increase of swelling and the skin over the front of the scrotum became adherent to the deeper parts. The pain

became trifling. I saw the patient for the first time that afternoon.

The right side of the scrotum was tensely swollen and indistinct fluctuation could be felt. The contour of the testis could not be accurately made out. An antiseptic fomentation was applied, and on the following morning, there being no improvement in the condition, it was decided to operate.

On cutting down, the tissues were thick and edematous. When the tunica vaginalis was opened, a very little blood-stained serum escaped. The testicle was black, mottled with plum color. The cord was tightly twisted, the rotation being from within outward. One complete turn of the testis untwisted it.

The mesorchium was not long; in fact, it was so short that it seemed rather surprising that it should have permitted so complete a rotation. The cord was wrapped tightly around it. The testicle was so evidently in a gangrenous condition that its removal was necessary. The tunica was pushed back far enough to permit access to a healthy part of the cord, which was tied in two parts and divided. The testicle was then removed. A drainage tube was placed in the tunica and the wound was closed.

Convalescence was uninterrupted, the drainage being removed on the third day.

According to Dr. Scudder's investigations, torsion of the cord produces such immediately destructive changes in the testicle that after it has existed for more than one hour, hope of saving the testis must be abandoned.

This may be true of the extreme cases of torsion where the circulation is at once and totally shut off.

If it is so, it is an exception to the rule holding in other parts of the body, for we know that the circulation may be cut off from limbs for a considerably longer time than this without endangering their life.

It seems reasonable to suppose that torsion of the cord may sometimes exist in a less serious degree than this, and it is not improbable that some of the unexplained swellings of the testicle that are recovered from may be instances of a torsion not causing complete strangulation.

A sudden attack of pain in the testicle without evident cause and without fever should arouse suspicions of this condition. Especially is this to be suspected when atrophy of the organ follows.

It would seem possible in some of these cases to undo the twist if suspected early. Unfortunately the twist is not always in the same direction. Sometimes it is from within outward, and sometimes from without inward. One can only try, therefore, by rotating the testis gently first in one direction and then in the other.

If the rotation in one direction is difficult and aggravates the pain, while twisting in the other direction is easy and relieves the pain, we may rightly presume the case to be one of torsion.

In the case just reported there were no adhesions, and it seemed as if rotation would have been possible without opening the scrotum had the condition been recognized at the outset.

Dr. Van der Poel has reported a case in which the patient had recurrent attacks of this condition, and learned how to rectify the displacement himself.

Medical Progress.

REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.,
BOSTON.

(Concluded from No. 25, page 671.)

THE ACTION OF THE CHILD'S STOMACH IN DISEASES CONNECTED WITH DIGESTION.

Hecker⁵ has carefully examined 54 cases and has been over the literature on the subject very carefully. The references are most complete. Some of his conclusions are as follows: Absorption occurs more rapidly from the child's stomach before the fourth year than later. In older children the condition is essentially the same as in adults.

The absorptive power of the child's stomach is most involved in acute gastro-enteritis, next in the dyspepsias. The absorptive power also suffers, but to a less extent in acute enteritis and acute colitis. Improvement in the absorptive power occurs rapidly with the subsidence of the acute symptoms of the disease. In the chronic diseases of the gastro-enteric tract the absorptive power is more or less diminished according to the severity of the disease. In mild cases it may remain within normal limits.

The stomach digestion is involved in all the diseases of the gastro-enteric tract in childhood, least in the acute dyspepsias, and in the acute enteritides of short duration; proportionately the most in acute gastro-enteritis and in the chronic diseases of the intestinal tract. In acute colitis the digestive power of the stomach is greatly diminished, while the absorptive power is satisfactory.

Disturbance of the stomach digestion is shown by the absence of free hydrochloric acid, by the presence of organic acids, by a feebly acid or neutral reaction of the stomach contents, by diminution in the amount of total and combined chlorides and by a relatively great amount of organic acids.

THE GASTRIC SECRETIONS IN INFANCY.

Meyer⁶ examined the gastric contents of 17 normal infants, 12 suffering from acute gastro-intestinal disturbances and 18 suffering from sub-acute and chronic disturbances of digestion. Their ages varied from three weeks to ten months. Nine of the cases were included in more than one class. In many cases repeated examinations were made. For various chemical reasons he found milk unsuitable for the test meal. He found, however, that barley-water stimulated the secretion of lab and pepsin to the same degree as milk and that the relation of the hydrochloric acid to the total acidity was the same at various periods of digestion as when milk was used. Consequently he chose barley-water for his test meal. In a few cases water, physiological salt solution, Nestlé's Food and milk mixtures were used.

He was unable to demonstrate any constant differences between the stomach contents of artificially-fed healthy infants and those suffering from diseases of the stomach and bowels.

The percentages of the various constituents of

the gastric juice during the first hour of digestion lay within the same bounds whether water, barley-water, physiological salt solution, Nestlé's Food or milk mixtures were given.

He found that the acidity and the amount of pepsin were markedly lower in infants than in children and adults. In certain cases of diarrhea he found sub-acidity or an acidity, but without relation to the fever, and, in a certain form of chronic gastro-intestinal catarrh, hyperacidity.

He was unable to determine any normal acidity or normal amount of lab or pepsin for healthy infants.

He was unable by the investigation of the stomach contents to obtain any data of use as a basis for either a clinical or an anatomical diagnosis of gastro-intestinal catarrh in infancy or for its prognosis and treatment.

He concluded that the investigation of the stomach contents of infants at present plays no rôle of clinical importance, because under abnormal conditions no greater variations are found than those which, dependent upon unknown nervous influences, occur from day to day under normal conditions.

PNEUMOCOCCUS-PERITONITIS IN CHILDHOOD.

Stooss⁷ has collected the literature on the subject and also reports four cases of his own. He divides pneumococcus-peritonitis into two forms,—encapsulated purulent peritonitis and diffuse purulent peritonitis.

Encapsulated peritonitis is the much more common form. The onset is that of a very acute disease. Pain in the lower abdomen is never absent, initial vomiting and diarrhea are almost constant, and the temperature is high. As the disease goes on the pains persist and are accompanied by tenesmus, and the abdomen becomes distended and tender. The vomiting usually ceases, but the diarrhea continues. The temperature is moderate. After about two weeks fluid begins to accumulate in the abdomen, usually in the lower portion. Palpation shows an elastic resistance and often fluctuation. The abdominal veins are enlarged. If the abscess is not opened the fever becomes hectic, the navel becomes distended with pus, and often spontaneous rupture through the navel occurs; if not, the patient dies with septic symptoms.

He divides the general purulent pneumococcus-peritonitis into two forms—a rapidly fatal septic form and a general purulent form. The onset is acute, as in the encapsulated form, but while in that the symptoms diminish after a few days and the general condition improves, in this form the general condition grows steadily worse. The signs in the abdomen are those of a severe general peritonitis. The general symptoms vary according to the degree of the intoxication, but are always severe.

It is often possible to make a diagnosis of the encapsulated form of pneumococcus-peritonitis. It may be confused with appendicitis, typhoid fever, tubercular peritonitis and peritonitis due to streptococci and gonococci. He gives the differential diagnoses.

He thinks that the peritonitis may be due to

⁵ Jahrb. f. Kinderh., 1902, vol. lvi., pp. 657, 826.

⁶ Arch. f. Kinderh., 1902, vol. xxxv, pp. 79, 177.

⁷ Jahrb. f. Kinderh., 1902, vol. lvi, p. 573.

direct infection from neighboring parts, as the intestine, pleura and female genitals, or that the pneumococci may reach the peritoneum through the blood.

The prognosis of the encapsulated form is favorable if the abscess cavity is opened at the proper time. The prognosis of the general purulent form is very grave, even if an operation is performed. Without operation the prognosis is almost hopeless.

VOMITING WITH ACETONEMIA IN INFANCY.

Marfan⁸ has had about twenty-five cases in children from one to ten years of an acute illness, characterized entirely by vomiting and acetoneuria. This symptom complex attacks infants in perfect health. After a few hours of lassitude and malaise vomiting begins, and the breath smells strongly of acetone. This odor is present at the first vomiting, proving that the acetoneuria is not due to inanition resulting from the vomiting. The vomiting continues until the close of the illness, and is the predominating symptom. The fresh urine also has the odor of acetone. It is much feebler than in the breath, and disappears after the urine has stood for a time. The urine gives a positive reaction for acetone, but does not contain albumin or sugar. There is never diarrhea. Slight constipation is the rule. The rectal temperature seldom exceeds 38° C. The pulse is usually normal, but after some days may become feeble. Nutrition is much involved if the disease lasts more than three or four days. The average duration is five or six days; the shortest, three; the longest, fourteen days. Recovery is usually sudden, almost instantaneous. The odor of acetone in the breath usually disappears at the same time, but sometimes persists a day or two after the crisis. The acetoneuria disappears more slowly. In children subject to relapses it may persist for two months. A favorable termination is the rule. Recurrences are the rule.

As regards etiology Marfan has noted that the parents of these children are neuro-arthritis, and that vomiting with acetoneuria has no connection with improper diet. As already noted, acetoneuria is perceived with the first vomiting. Everything goes to show that vomiting with acetoneuria is not an affection of the stomach, but an intoxication of unknown nature and cause. Some disturbance of nutrition sets free acetone in excess. This disturbance may be either the cause or the effect of the intoxication. The acetone is only the witness or the companion of the true pathogenic toxic products.

Marfan thinks that vomiting with acetoneuria belongs to the same class of cases as periodic vomiting, and that a great many cases described by this name are really vomiting with acetoneuria.

As the acetoneuria is associated with an acid intoxication, he gives magnesia in small doses, 20 cg. five times in twenty-four hours. This medication, alkaline and slightly laxative, has given good results. He opens the bowels daily with enemata. If the condition continues more than four days he gives saline injections morning and evening. He has often seen a sudden cessation of the symptoms after the first injection.

⁸ Arch. de méd. des Enfants, 1901, vol. iv, p. 611. Abstracted in Revue Mens. des Mal. de l'Enfance, 1902, vol. xx, p. 178.

NATURE AND TREATMENT OF RECURRENT VOMITING IN CHILDREN.

Edsall⁹ states that in the usual type of acid intoxication the characteristic evidences of its existence are the odor of acetone in the breath, and particularly the presence of acetone, diacetic acid, and oxybutyric acid in the urine.

The symptoms are not due to the specific effects of acetone. There is no specific toxic agent at work. The symptoms are due merely to the presence of an excessive amount of acids, and are produced by the reduction of the alkalinity of the tissues and body fluids. The rational treatment is, therefore, to administer alkalis in extremely large doses.

He reports several cases and refers to a number of others in which, at the time of the attacks, but not in the intervals, there was a severe acid intoxication. Treatment directed toward this acid intoxication was in all but one strikingly successful. He considers that these facts indicate that a cryptogenic acid intoxication is probably, in many cases, an important, perhaps the most important, element in producing the exhausting and occasionally fatal vomiting.

He recommends extremely large doses of some readily diffusible alkali to be given as soon as the first suggestion of an attack is observed. One hundred grains of bicarbonate of soda given as rapidly as possible is a low limit. It is best to keep up the rapid administration of large doses until the urine is decidedly alkaline, and to then keep the urine alkaline until the symptoms have disappeared. Frequent moderately large doses are better than the occasional use of extremely large doses. During the interval enough alkali should be given to keep the urine about neutral.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-FOURTH ANNUAL MEETING, WASHINGTON, D. C.

FIRST DAY, MAY 12, 1903.

DR. MAURICE H. RICHARDSON, Boston, in his presidential address, spoke of the great opportunities exploratory operation offered for the study of internal diseases, especially in their earliest stages, in many instances being the only method which afforded an opportunity for exact observation. The laparotomy should demonstrate not only the exact cause of the previously existing symptoms, but so far as possible it should explain the symptoms developing after convalescence, depending upon abnormal conditions of the viscera other than those operated upon. He felt that surgery had given extraordinary opportunities to physicians for the study of the internal processes, both normal and abnormal, so that his deductions may now be based upon observations rather than upon theories. In conclusion Dr. Richardson said: "The surgeon, then, in his opportunities for observation and study, has contributed vastly to our knowledge of internal

⁹ Am. Journ. of the Med. Sci., 1903, vol. cxxv, p. 620.

disease, especially in its early stages. His explorations demonstrate truth and control opinions; they perfect observations, and, in showing the value of deductions, teach their weight; they prove the interdependence of symptoms upon lesions, and of lesions upon symptoms; they demonstrate the fallacy of some inferences and the truth of others. Accumulated experience will show these things so clearly that in time the diagnosis of the clinician will approach the accuracy of scientific demonstration. In therapeutics surgery has shown what surgery can do and what it cannot do, as well as what medicine can and cannot do. Surgery will show still more clearly its own limitations, as well as the limitations of clinical medicine. Working together it seems not impossible that in the near future there will be no borderland between them. It will then have been demonstrated that internal diseases, even some of those now regarded as hopeless, will, by surgical or by medical therapeutics, or by both, be relegated to that class of brilliant achievement to which now belong appendicitis, gallstones and internal hemorrhage."

DR. GEORGE R. FOWLER, Brooklyn, New York, read a paper entitled

THE TOILETTE OF THE PERITONEUM IN APPENDICITIS,

in which he considered the cases under five classifications: (1) Cases in which no peritonitis is present. (2) Cases in which infection of the peritoneum is present, but confined to the immediate neighborhood of the appendix. (3) Cases in which the appendix is the seat of a seropurulent collection. (4) Cases in which the peritoneum and enteronic areas are the seat of infection (more or less generalized septic peritonitis). (5) Cases in which the entire peritoneum is involved (diffuse septic peritonitis). He laid especial stress upon the importance of avoiding infecting any areas that were not infected, and when drainage is instituted, of using glass or smooth rubber tubes.

DR. A. VAN DER VEER, Albany, N. Y., read a paper entitled

OPERATIONS UPON THE STOMACH, WITH SPECIAL REFERENCE TO THE TOILETTE OF THE PERITONEUM.

He felt that much of the success in operations in this region was due to the care exercised in this direction. The abdominal contents should be handled as little as possible; traumatism should be avoided, and the peritoneum should not be soiled with secretions from the mucous surfaces, which are fruitful sources of infection. The importance of drainage, especially in operations on the posterior portion of the stomach, was emphasized.

DR. A. OSCHNER, Chicago, Ill., read a paper entitled

TOILETTE OF THE PERITONEUM IN TUBERCULAR PERITONITIS,

which, after giving a careful résumé of the literature and his personal experience upon the subject, he summed up as follows: (1) In the absence of ascitic fluid in the peritoneal cavity, the diseased tissues may be removed with safety if the section is made entirely in healthy tissue. (2) In the pres-

ence of ascitic fluid, the latter should be evacuated and the abdominal cavity drained. (3) Great care should be exercised, in making the intra-abdominal examination, not to cause any abrasions. (4) Adhesions should not be disturbed. (5) The less the tissues are manipulated, the better will be the results. (6) Manipulations of the infected pelvic organs — uterus, ovaries, Fallopian tubes — is less harmful than manipulation of the infected intestines.

DR. ARPAD A. GERSTER, New York, read a paper entitled

ON SEPTIC PHLEBITIS OF THE ROOTS OF THE PORTAL VEIN, AND ON PYLEPHLEBITIS, TOGETHER WITH SOME REMARKS ON THE SO-CALLED "PERITONEAL SENSIS,"

in which he went very fully into the literature on the subject and reported several cases. He believed the important points in diagnosis were: (1) The presence or precedence of an infectious process involving the abdominal contents. (2) The presence of pyemia. (3) The implication of the liver. The prognosis, while very bad, is not always absolutely hopeless, but early diagnosis and prompt operation are the only safeguards.

DR. R. H. HARTE, Philadelphia, read a paper entitled

TOILETTE OF THE PERITONEUM IN TYPHOID OPERATIONS,

in which he stated that owing to the desperate condition of the patient, it is necessary that the operation be rapid and thorough, both as to the complete elimination of the septic and extraneous matter and the closure of the wound. He laid particular stress upon the advantages of thorough irrigation and drainage, preferably by means of a large piece of gauze carried well down in the pelvis, over which is placed a liberal gauze dressing. The operation should be followed by douching with normal salt solution, and excision of the ulcer is not advisable in most cases on account of the prolongation of the operation.

DR. S. H. WEEKS, Portland, Me., read a paper on

THE TOILETTE OF THE PERITONEUM IN APPENDICITIS,

in which he stated that the method pursued must be according to the individual case; if no pus is present drainage need not be established. Where there is a circumscribed abscess, care should be taken not to infect the general peritoneal cavity by forcible irrigation. The pus cavities should be thoroughly cleansed with gauze pads wet with sterile salt solution and peroxide of hydrogen, and packed with sterile gauze. In that class of cases where the infection has permeated the whole abdominal cavity, the contents must be thoroughly cleansed and drainage established.

DR. GEORGE TULLY VAUGHAN, Washington, D. C., read a paper entitled

TOILETTE OF THE PERITONEUM IN GUNSHOT WOUNDS OF THE STOMACH AND INTESTINES,

in which he emphasized the absolute necessity for drainage and thorough cleansing of the abdominal contents. He divided the cases into two classes: (1) Those without peritonitis. (a) Without extra-

sation of visceral contents. (b) With extravasation of visceral contents. (c) With considerable blood in the peritoneal cavity, or incomplete hemostasis. (2) Those with peritonitis. (a) Local peritonitis. (b) General peritonitis.

DR. JOSEPH A. BLAKE, New York City, read a paper entitled

THE TREATMENT OF THE PERITONEUM IN SPREADING AND DIFFUSE PERITONITIS,

in which he considered the purulent form of the disease under the following classifications: (1) Cases of abscess in which there is a localized collection of pus with limiting adhesions. (2) Cases with spreading peritonitis, in which there is no limitation of the process by adhesions or gravitation, but in which the limits are ascertainable. (3) Cases of general peritonitis, in which no parts of the peritoneum, possibly excepting the lesser sac, can be demonstrated as free from the invasion. The treatment which has given the best results in his experience is as follows: (1) Early operation. (2) Lavage of the peritoneum with large quantities of saline solution. (3) Closing of the peritoneal cavity without drainage, unless the latter is absolutely indicated by the presence of non-absorbable amounts of necrotic material.

Appended to the paper was the report of a large number of cases.

DR. JOHN C. MUNRO of Boston in his discussion referred particularly to Dr. Gerster's paper, and laid stress upon the chill as being a very important symptom. The uniform enlargement of the liver was dwelt upon, and also the tendency of the condition to become chronic. He claimed that the appetite is ravenous in most cases and the emaciation tremendous, although the sensorium is rarely clouded. Irregular jaundice was looked upon as an important symptom, and one very often overlooked by the average practitioner. Lymphangitis, it was claimed, is often associated with other symptoms, although frequently is present by itself. In the author's opinion sub-phrenic abscesses are more apt to be secondary to liver abscesses, although they may come from retro-peritoneal lymphangitis, and sometimes by direct extension from the liver.

DR. GERSTER, in closing, referred to two cases which were mentioned in his paper, in each of which the phlebitis was particularly demonstrated. They were cases of appendicitis, and in each case he searched for the veins and turned out the thrombi. The veins containing the cylindrical masses are the thrombosed veins, and are frequently present in places that are not being explored. He looked upon this procedure as a part of the peritoneal toilette in appendicitis, and considered that it should be attended to whenever possible.

DR. ROBERT ABBE of New York read a paper on

A SIMPLIFIED AND IMPROVED OPERATION FOR TRIGEMINAL NEURALGIA BY INTRACRANIAL NEURECTOMY, WITH INTERPOSITION OF RUBBER TISSUE, AND WITHOUT RESECTION OF THE GASSERIAN GANGLION.

After noting the well-recognized dangers of ganglion resection, namely, hemorrhage, prolonged operation, damage to brain substance by retractors, secondary abscesses and meningitis, he quoted

Lexer's statistics of thirty-three deaths from two hundred and one cases collected from the entire literature, of which seventeen died from the operative procedure and the others from the above-mentioned causes, in several of which the cerebral damage was shown postmortem.

After having operated for many years by the usual intracranial method, with one death from shock, he had adopted a modified method in eight cases during the past seven years, which he regarded as a distinct improvement. Satisfied, from study of the nerves removed extensively anterior to the base of the skull, that the disease is in almost all cases an inflammation of the nerves affected in the bony channels adjacent to the antrum and teeth, he regards the temporary cure by nerve resection within the skull as proving that ganglion resection is uncalled for. The recurrence being unquestionably due to reunion, he prevents that by interposing a small piece of sterile rubber tissue between the ganglion and the outlets of the second and third branches, which are all he ever resets. He has used this method in eight cases with the same excellent results as in ganglion resection.

Numerous experiments on rubber tissue implanted on the brain of rabbits, as well as outside the dura mater and in various other places, showed that it always remains sterile, and is never changed in texture. Therefore it remains as a permanent barrier to reunion of the nerves in man; in all the cases it has remained for varying periods up to seven years, the first patient being still absolutely free from pain, and having been formerly one of the most inveterate cases of "tic." The operation was further simplified by preliminary ligation of the external carotid artery in the last three cases, with resulting freedom from hemorrhage and reduction in time of operation fully one half.

The complete operation consists in ligation of the external carotid in the neck; a straight incision from just behind the middle of the zygomatic arch, upward and slightly forward in the temporal fossa; splitting the temporal muscle and scraping it widely from the bone; enlarging to one and a half inches a small trephine opening, and lifting the brain and dura mater from the middle fossa; exposing and resecting a half inch of the second and third branches in front of the Gasserian ganglion; spreading a rubber tissue strip an inch and a half over the openings and pressing it down on the bone till all bleeding stops; letting the ganglion settle down on the tissue, and closing the wound.

DR. GEO. R. FOWLER of Brooklyn, referring to the preliminary hemostasis, mentioned a method introduced by himself some years ago, of ligation of the external carotid which materially lessened hemorrhage in operations for intra-cranial work. He spoke favorably of the Abbe method, although out of two cases in which he had employed it, only one did remarkably well and the other just the opposite. However, he was able to account satisfactorily for the failure in the second case, as the tapes around the carotid artery were allowed to press upon the jugular vein.

DR. GEORGE E. BREWER of New York mentioned one case in which he employed the Abbe method, with only a fair degree of success so far as hemostasis was concerned, but the intolerable neuralgia

from which the patient had suffered for years was completely cured. His experience in ligation of the external carotid has been that the hemorrhage was venous and very hard to control. He believes that in nearly every case it is due to some tributary of the cavernous sinus, and it has not seemed to him that external ligation would control such a hemorrhage as easily as it would from a meningeal artery.

Dr. ABBE, in closing, stated that as some of the most inveterate cases had been cured by his method, he was satisfied that the disease was not in the ganglion. He laid stress upon the fact that an examination of the nerve before it has been handled at all will often show spots of inflammation along the sheath, and it has seemed to him that these were the original sites of the neuralgia, from which the disease worked its way back to the ganglion.

Dr. GEORGE E. ARMSTRONG, Montreal, Canada, read a paper entitled

SINGLE ULCER OF THE URINARY BLADDER NON-TUBERCULOUS AND NON-MALIGNANT, WITH REPORT OF CASES,

in which he reported the case of a man twenty-one years of age, without venereal history and of temperate habits, in whom the attack came on suddenly without known cause, accompanied by the following symptoms: (1) Pain at the end of the penis about the corona and on the dorsum, just before micturition, and generally so severe as to necessitate the administration of morphia; (2) frequent micturition, and (3) loss of expulsive power. The patient died eight months after the onset, operation having been performed in the meantime, and the autopsy showed acute miliary tuberculosis of both lungs, the left adrenal, spleen, kidneys, left ureter, kidneys and bladder. The second case occurred in a boy twelve years of age, and was cured by injections of silver nitrate. He went fully into the literature on the subject, and stated that he believed the three chief causes of single ulcer of the bladder to be infection, thrombosis and syphilis. The chief symptoms are pain, frequency of micturition and presence of small quantities of blood in the urine. The prognosis is good if recognized early, and he believed operation gave as good chances of relief as in ulcer of the stomach.

Dr. WILLIAM L. ESTES desired to add another case to those reported by Dr. Armstrong. The patient was a man fifty years old, who was operated upon with the idea that he was suffering from septic peritonitis, but instead an ulcer of the bladder was found closely resembling an ulcer of the stomach. The result of the operation was that the man made a good recovery.

Dr. H. R. WHARTON, Philadelphia, read a paper entitled

A CASE OF ENCHONDROMA OF THE SPINAL COLUMN,

in which he reported the case of a man who suddenly felt something give way while lifting a casting, necessitating stopping work for several months, and a year after the injury a tumor developed at the junction of the vertebrae with the sacrum, gradually increasing in size and involving several of the lumbar vertebrae. The tumor was excised, and two

weeks after the operation the patient left the hospital and made a good recovery. He gave the pathologist's report upon the tumor and a careful résumé of the literature upon the subject.

(To be continued.)

Recent Literature.

Bacteria in Daily Life. By MRS. PERCY FRANKLAND, Fellow of the Royal Microscopical Society. 12 mo. 216 pages. London, New York and Bombay: Longmans, Green and Co. 1903.

This is a collection of seven essays upon subjects of general interest. The author has a singularly attractive style and a good first-hand knowledge of the literature of bacteriology.

The first paper sketches the wonderful development of bacteriology during the Victorian era, dealing chiefly with the industrial side of the subject. The importance of fresh air and sunlight are discussed under the titles, "What we Breathe" and "Sunshine and Life." Other articles are devoted to the spread of disease by bacteria in water, milk dangers and remedies, and bacteria in ice. Possibly the most interesting paper is that which describes the investigations of Calmette upon snake venom and its antitoxic serum.

Many valuable facts are found between the covers of this little volume which are not contained in the large treatises on bacteriology. Full credit is given to this State for the enlightened policy which has usually prevailed in regard to matters of public health. "Massachusetts," the author says, "has, by creating a Board of Health and affording the same every facility for the prosecution of hygienic investigations of the greatest importance, laid the whole scientific world under a deep obligation."

We heartily commend this book, and hope it may be widely read by physicians and laymen.

Zapffe's Bacteriology. A Manual of Bacteriology for Students and Physicians. By FRED. C. ZAPFFE, M.D., Professor of Histology in the College of Physicians and Surgeons, and Professor of Pathology, Bacteriology and Hygiene in the Illinois Medical College, Chicago. Lea's Series of Pocket Text-Books, edited by Bern B. Gallaudet, M.D.

This work deals chiefly with the clinical aspects of the subject. The general properties of bacteria and bacteriological technique are briefly considered. Short chapters treat of infection, immunity, antiseptics and disinfectants. One half of the volume is devoted to the pathogenic bacteria.

Not only has all unnecessary discussion been omitted, as is stated in the preface, but many important facts are not included, so that the author's aim to give the student a full and comprehensive view of the subject cannot be regarded as accomplished. The book is written in an interesting style, but it contains not a few misstatements, and hence cannot be recommended as wholly trustworthy.

The illustrations have been selected from standard works. The book is well printed and attractively bound.

Bacteria in Milk and its Products. Designed for the use of students in dairying and for all others concerned in the handling of milk, butter or cheese. By H. W. COXN, Ph.D., Professor of Biology, Wesleyan University. 306 pages. With 43 illustrations. Philadelphia: P. Blakiston's Son & Co. 1903.

Although intended primarily for students in scientific dairying, this work will be of decided value to physicians and sanitarians, and the explanations of the relation of bacteria to butter and cheese-making, and the practical importance of this recently acquired knowledge will interest the general reader.

The author is well known, not only as a writer, but as an investigator in industrial bacteriology. This volume is entertainingly written, not burdened with technicalities, yet thoroughly trustworthy and scientific.

The nature and general properties of bacteria are first considered, and then the sources and types of milk bacteria are taken up. The chapters devoted to the transmission of disease by milk, and to the protection of the consumer, are those most closely connected with practical medicine, and can be read with profit by all interested in dietetics and a pure milk supply. The distribution of tuberculosis, scarlet fever, diphtheria, typhoid fever and diarrheal diseases is considered in some detail.

A very simple method of pasteurization is described. It is stated to be sufficiently accurate, and is within the reach of every household. The milk should be poured into quart bottles and these placed in a pail which is filled with boiling water. The milk will be raised to about the proper temperature by the time the milk has cooled to the same temperature. At the end of half an hour the bottles should be taken out and cooled in cold water.

Theobald Smith and not Koch should be given the credit for first demonstrating that the bovine and tubercle bacilli are not identical.

The technical methods for the bacteriological analysis of milk are given in the final chapter. There is appended a list of 294 references to the recent literature arranged topically.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By PROF. DR. CARL VON NOORDEN, Physician to the Frankfurt a. M. City Hospital. Authorized American edition. Translated under the direction of BOARDMAN REED, M.D. Philadelphia, New York: E. B. Treat & Co. 1903.

These monographs forming a proposed series under the general title of "Diseases of Metabolism and Nutrition," are separate brochures of about sixty small octavo pages each, and represent the results of many years' work of Dr. Van Noorden, his assistants and pupils.

We have before us Part I on Obesity and the Indications for Reduction Cures, and Part III on Membranous Catarrh of the Intestines (colica mucosa). It is proposed to follow these with other similar brochures on kindred subjects, giving always the personal views and observations of the writers.

These two parts are concise, readable and suggestive. The translation is good.

Huntington's Abdominal Anatomy. The Anatomy of the Human Peritoneum and Abdominal Cavity considered from the standpoint of Development and Comparative Anatomy. By GEORGE S. HUNTINGTON, M.D., Professor of Anatomy in the College of Physicians and Surgeons, Columbia University, New York City. In one quarto volume of 590 pages, including 300 full-page plates in colors and monochrome, containing 582 figures. De Luxe Edition. Philadelphia and New York: Lea Brothers & Co. 1903.

Professor Huntington's work begins with a short introduction briefly outlining the general scheme of development. Then follows the comparative anatomy of the stomach and the development of the intestines, with a consideration of the peritoneal relations in the lower part of the abdominal cavity. He next deals with the peritoneal relations in the upper part of the abdomen, the development and comparative anatomy of the spleen and pancreas, and also of the liver with its relations to neighboring organs. Then follows a general review of the morphology and physiology of the vertebrate intestine, a serial review of the ileo-colic junction and connected structures in vertebrates, and an elaborate consideration of the anatomy and morphology of the cecum and appendix. The book is profusely illustrated by specimens of various forms from the comparative anatomical collection in the Columbia University Museum, and by a number of schemes and diagrams to illustrate certain steps in development. The work is intended to consider the peritoneum and abdominal organs from the developmental as well as from the comparative anatomical point of view. The latter, however, is considered much more elaborately than the former, as most of the embryology is contained in the introduction and is but briefly illustrated by simple diagrams. What follows in the rest of the book is chiefly illustrated by plates of comparative anatomical specimens, and there is a marked absence of any serial sections to show the process of development at different stages. The names of several of those investigators who have done the best work on the development of this part of the body are noticeably absent. For a book which pretends to cover thoroughly the whole question of the anatomy of this region the embryological considerations are but scantily treated. The plates of the various specimens are very handsome, but are somewhat difficult to follow in detail, and there is an inordinate number, which takes up much space and makes the volume unnecessarily bulky. Each part of the alimentary canal in the abdomen is taken up in minute detail, in fact, in far too much to obtain a clear idea of the subject without very careful study. This minute consideration may be well fitted for the expert, but for the beginner it would be very puzzling. A very pertinent question is, To whom will this book be of use? To the average practitioner of medicine or surgery such a book can be of little use. For the anatomist and embryologist the book can be at best but a book of reference for this special subject, and its complexity of detail would not make it a book of ready reference. Practically its use seems limited to the comparative anatomist who has a special interest in this region.

THE BOSTON

Medical and Surgical Journal

THURSDAY, JUNE 25, 1903.

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.***SUBSCRIPTION TERMS:** \$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; \$6.56 per year for all foreign countries belonging to the Postal Union.*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 283 Washington Street, Boston.**All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal, should be addressed to the undersigned.**Remittance should be made by money-order, draft or registered letter, payable to*THE OLD CORNER BOOK STORE (INCORPORATED),
283 WASHINGTON STREET, BOSTON, MASS.THE ANNUAL REPORT OF THE BOSTON CITY
HOSPITAL.

THE thirty-ninth annual report of this hospital has appeared in a pamphlet of 190 pages for the year Feb. 1, 1902, to Jan. 31, 1903, inclusive. We have come to look forward to this report as an expression of the work which a modern municipal hospital is called upon to accomplish. In this hope we are certainly not disappointed this year. The report indicates continued progress in medical and surgical lines, and remains an example which institutions of a similar character may well emulate.

In the report of the trustees reference is made to the fact that a year ago a special appropriation was considered for a building to be devoted to the development of an x-ray department. On further consideration it has appeared to them better to defer the proposed enlargement and to continue as heretofore with the facilities now at the disposal of the hospital. This appears both a wise and conservative policy in view of the fact that x-ray diagnosis certainly has definite limitations, and after all is to be regarded as but one of many means of medical investigation. We have sometimes felt that the enthusiasm over the x-ray has led to expenditures which are beyond the value of the results likely to be attained.

The South Department has continued the excellent work which has characterized it from the beginning. In the eight years of its existence 19,188 patients have been admitted, and 505 patients were rejected during the past year for various satisfactory reasons; of these, 31 were rejected for want of room at the time of application. It has long been recognized that the difficulties of isolation in the types of infectious disease treated at this hospital are extremely great, and the trustees have again put in a plea for a special ward for measles.

They desire an additional building for the treatment of this disease alone, which was originally intended but never carried out for want of a sufficient appropriation.

The work of the Relief Station, opened about a year ago, has fulfilled the expectation of those interested in the establishment of this branch of the hospital's work. In all, 20,150 persons were treated, many cases naturally being emergencies and accidents demanding immediate skilled attention.

The publication of yearly medical and surgical reports is not the least part of the enlightened policy of this institution. The trustees put themselves on record as saying that they are cordially in sympathy with that policy of the hospital work which assists in the development of medical science, and that it is highly desirable that the work done in the hospital should have permanent form in these yearly publications.

As is natural in a hospital which has grown very materially in the past few years, a considerable number of changes may be noted in the personnel of the medical and surgical staff; among others, we note that Dr. A. L. Mason, long associated with the hospital as visiting physician, has resigned that position and been appointed senior physician.

A tribute to the memory of Mr. Lamont G. Burnham, a former member of the Board of Trustees, who died Sept. 25, 1902, is appended to the trustees' report. In this memorial it is noted that at his death he left by will \$150,000 for the construction and equipment upon the hospital grounds of a building to be known by his name for such uses as the trustees may determine. This sum of money is, however, not immediately available.

The medical and surgical statistics of the hospital are arranged as they have been for several years past, in most elaborate and detailed form, and we are glad to note that the out-patient department is included in this classification.

THE PASSING OF THE PHILADELPHIA
MEDICAL JOURNAL.

In the issue of the *Philadelphia Medical Journal* for June 13, 1903, it is announced that with the appearance of that number the management of the journal passes out of the hands of the present editorial staff. It is also announced that the *Philadelphia Medical Journal* will be consolidated with the long-established *New York Medical Journal*, under the editorial management of the latter journal. The publication offices will naturally, therefore, hereafter be in New York, but offices will

also be maintained both in Philadelphia and in Chicago.

It will be remembered that the *Philadelphia Medical Journal* was established some years ago under the editorial management of Dr. George M. Gould, who later, for reasons which were fully exploited at the time, resigned the management and established the journal *American Medicine*. The *Philadelphia Medical Journal* then came under the able editorship of Dr. James Hendrie Lloyd and a large corps of assistant editors, who have from that time to this conducted the journal, with certain minor changes, on very much the same plan as inaugurated by Dr. Gould.

In announcing the amalgamation of the *Philadelphia Medical Journal* and the *New York Medical Journal*, the editor of the New York journal, in the issue of June 20, draws attention to the identity of aim of the two journals and of the desirability under the circumstances of united effort. He hopes further that the identity of the *Philadelphia Medical Journal* will not by this change be completely merged in that of the New York journal. In regard to this the following statements are worthy of quotation :

If New York is the larger of the two towns, and therefore presumably the scene of more events, we do not for a moment forget that Philadelphia is conspicuously glorious in the annals of medicine or that she is destined to be forever a leader in the progress of our profession. We shall see to it that she is fittingly represented in our columns. We have a few words in particular to say to the readers of the *Philadelphia Medical Journal*—a host of cultured and progressive physicians. They have done well to subscribe to such an excellent journal. Let us assure them that their favorite periodical is not to be merely absorbed—snuffed out, so to speak. Though it loses its distinctive title, it will perpetuate itself as an integral part of our united publication, even as a woman, when she marries, does indeed lose her father's name, but parts with not one whit of her individuality or of her influence.

We shall await with sympathy and interest the ultimate outcome of this amalgamation. We trust the two journals may be maintained in their union as independent as the editor of the *New York Medical Journal* hopes. We cannot but suspect, however, in this instance, as occasionally happens in married life, following out the simile, that the *Philadelphia* journal will inevitably lose something of her individuality and also something of her influence.

MANILA MEDICAL SOCIETY. A REPORT ON SURRA.

THE question of the character of the disease "surra," which we discussed editorially in our issue of June 4, has received further discussion at the

regular monthly meeting of the Manila Medical Society, which was held at the Government Laboratory on April 7. Papers were read by Dr. John R. McDill and Dr. W. E. Musgrave on "Some Observations on Medical Subjects in China," and "A Preliminary Report on Trypanosomiasis (surra) in Horses in the Philippine Islands," respectively. Recent experiments show that surra can be transmitted by direct inoculation of the blood from a diseased animal, and by the bite of a horse fly which has previously bitten a surra horse. To determine whether food could convey the disease, grass and hay was smeared with surra blood and discharges, and fed to healthy animals without effect, none contracting the disease. A different result was obtained, however, after lesions were produced in the horses' mouths and they were then fed on grass infected with the surra micro-organisms, as the disease is frequently acquired under such circumstances. Sore-mouthed horses are thus liable to contract the disease from infected fodder, and it may possibly be that the mastication of rough, coarse *sacate* grass may induce minute lesions through which infection may occur. It is not probable that the surra parasite could long maintain an extra-corporeal existence on such grass, as sunlight seems soon to destroy its vitality. The biting fly, which has been found to transmit the disease, has been shown to be closely allied to the "tsetse fly" of South Africa. So far, experiments have not demonstrated an intra-corporeal existence of the surra parasite in the fly as an intermediate host. The life history of this fly has not been worked out as yet. It is known that animals may be protected against surra infection by removing them to the hills during the rainy season, and the existence of "surra districts" is recognized. Some believe that the disease is dependent upon the use of water and grass from these districts, but animals fed on dry hay or fodder from other districts and given only pure water contract the disease while passing through the "surra district." The disease is fatal in horses, but it is said that in India camels recover from the infection if they are able to survive for three years. Opinion in the Philippines is divided with respect to the disease being indigenous. Many believe that it was introduced by some race-horses brought in about four years ago; others think it has been in the Philippines always. As the Filipinos and Spaniards pay little attention to veterinary medicine, this point cannot be decided. So far, no treatment has been found which has any effect in curing or staying the progress of the disease, and for this reason once an animal has been shown to be infected, it should be promptly destroyed and the carcass cremated.

MEDICAL NOTES.

THE LATE THOMAS G. MORTON, M.D.—The following minute has been adopted by the Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine: The Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine desires to place on record its sense of deep loss in the death of Dr. Thomas George Morton, one of the founders of the institution and throughout the period of its existence successively professor and emeritus professor of orthopedic surgery. Dr. Morton was an original and progressive surgeon, a bold yet conservative operator, and he possessed and exercised the qualities of the highest type of physician. Refined and gentle in manner, courteous and considerate in bearing, positive and forceful in act, he was esteemed by colleagues, respected by pupils and beloved by patients.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, June 24, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 32, typhoid fever 20, measles 64, smallpox 0.

NEW YORK.

BITE OF A RATTLESNAKE.—A performer at the Bostock Animal Show at Sea Beach Palace, Coney Island, was recently bitten by a diamond-back rattlesnake, and came very near dying. It is stated that among the physicians summoned to his aid were Drs. Simon Flexner and Charles Wilson of Philadelphia. Antivenom serum was presumably used in the case, and the latest reports indicate the patient's recovery.

COMPLAINTS AGAINST PHYSICIANS DISMISSED.—In the Supreme Court on June 18 Justice Truax dismissed a writ of habeas corpus in the case of Dr. A. M. Lacina, one of the physicians charged with having obtained antitoxin from the city on false pretenses, who had been held in \$500 bail for trial. In the argument for his discharge it was contended that though he had charged for the administration of the serum he had not charged for the serum itself, and therefore did not violate the regulations made by the board of health for its free distribution. Assistant District Attorney Kressel, representing the city, maintained that the regulations called for its administration free of charge. The complaints lodged against four of the physicians charged with petit larceny, under allegations that they received antitoxin free of charge for use among the poor and sold it to those who could afford to pay, were dismissed when the hearing was resumed be-

fore Justice Mayer in the Court of Special Sessions on June 20. All the other cases were adjourned until June 30.

Miscellany.

RABIES IN IRELAND.¹

THE practicability of entirely eradicating an infectious disease from an insular community appears to have been successfully demonstrated in Ireland, according to recent reports received from the Department of Agriculture of that country.

The secretary of the department makes the following statement in his last annual report: "There is good ground for hoping that rabies has been eradicated from Ireland, no outbreak of that disease having been confirmed since April, 1901. An attitude of vigilance in regard to this disease is, however, felt to be still advisable, especially as it has been shown by the experience in Great Britain that some fresh cases of rabies occurred a very considerable time after the suppression of the disease in that country was reasonably regarded as an accomplished fact. . . .

"Immunity from the disease having, as it is hoped, been now attained so far as Ireland is concerned, it has been deemed desirable to strengthen the safeguards against a possible reintroduction of the malady through the medium of dogs imported from foreign countries, in many of which rabies is very prevalent. Regulations in respect to such dogs have been in force for some time, both in Great Britain and in Ireland, but these regulations have now been made more stringent. Under the revised British regulations, such dogs, if permitted to be landed, must be detained in quarantine for a period of six months on approved premises in the occupation of a veterinary surgeon."

The effect of carrying out these careful regulations is plainly shown in the following figures from the secretary's last report:

| Years. | Number of counties reported from. | DISEASED ANIMALS. | | | Animals destroyed as suspected or exposed to infection. |
|------------|-----------------------------------|------------------------|---------|-------|---|
| | | Attacked in each year. | Killed. | Died. | |
| 1896 | 32 | 687 | 577 | 110 | 1,022 |
| 1897 | 32 | 497 | 438 | 59 | 1,137 |
| 1898 | 25 | 132 | 115 | 17 | 624 |
| 1899 | 25 | 92 | 86 | 6 | 313 |
| 1900 | 8 | 15 | 15 | | 91 |
| 1901 | 2 | 2 | 2 | | 26 |
| 1902 | 0 | 0 | 0 | 0 | 0 |

In the report of the secretary for England, Scotland and Wales it also appears that the number of

¹ Report of the proceedings under the Diseases of Animals Acts for the year 1902. Dublin, 1903.

cases of rabies had decreased in these countries from 438 in 1896 to 13 in 1902.

Correspondence.

MANILA LETTER.

SPECIAL CORRESPONDENCE.

SIMULTANEOUS CHOLERA AND SMALLPOX. — OPPOSITION TO SANITARY CONTROL. — WATER SUPPLIES. — DESTRUCTION OF RATS AND VERMIN.

MANILA, May, 1903.

During the last cholera epidemic, cholera was several times seen in smallpox cases, and in a considerable number of instances developed in persons affected with beriberi. In fact, cholera seems to be able to co-exist with practically any other disease. Its predilection for attacking cases of dysentery is well known and widely recognized, and any disease lowering the vital resistance and interfering with the digestive processes assists greatly in the invasion of the system by the cholera infection. On the other hand, there is equally no question but that persons of sound digestion and robust health are often able to bear exposure to the cholera infection without acquiring the disease, only to fall victims in a later outbreak when their vital forces had been impaired. The epidemics of the last two years in the Philippines furnish many striking examples of this fact. Persons who are known to have been exposed to cholera repeatedly have escaped the disease, only to die during a later outbreak and after they had come to regard themselves as immune to the disease.

An evidence of the opposition by many of the natives to sanitary control is seen in the number of "floaters" removed from the river — three bodies of persons dead of cholera being thus removed in a single twenty-four hours lately. Much the greater proportion of cholera cases are occurring on water craft and along the water front, and the natives are disposing of some of the bodies by throwing them into the river — in spite of the fact that one of the principles of the Catholic Church requires the burial of the dead, where possible, in consecrated soil. That the Filipinos are willing to dispose of the bodies of their dead without religious rites shows how opposed they are to the quarantine and disinfection which results when such cases are reported to the sanitary authorities. Of course it is impossible to determine the boats or places from which the bodies of the "floaters" come, and thus the board of health can take no measures to destroy the infections which the deceased undoubtedly left behind them. This difficulty of tracing up cases and determining the source of infection is one of the most serious obstacles which the authorities meet in combating cholera. Many of the cases are dead when found, and the mental condition of others is not such as renders them capable of giving any information on this point. In advanced cholera there is a cerebral anemia, which seems to render the sufferer incapable of independent thought, and such usually assent to the first suggestion. This fact seems to be as true of the cases occurring in whites as among the natives. Where the case is less advanced, the native will usually prevaricate and attempt to lead the inspector off on a false scent for the purpose of protecting his friends, and much valuable time is thus lost in the investigation of false information. Rarely can the friends or family of the patient be induced to give any information which would enable the inspector to trace out the source of the infection. This was even more the case during the epidemic of 1902, when an effort was unsuccessfully made to enforce more stringent and scientific sanitary regulations. In that epidemic as many as ten cholera corpses have been removed from the river in a single day; and the regulations had to be relaxed in order to prevent the widespread concealment of cases and surreptitious disposal of the dead, which were doing more harm than the regulations were accomplishing good.

So far, the present outbreak has been largely confined to those whose business keeps them on the river, waterfront and estuaries, as fishermen, sailors, boatmen and

laundresses. There is no question but that the river and its tributaries at Manila are infected, and it is also certain that infected foods are finding their way into the markets, from time to time, from the surrounding country districts. How infection from the river can be prevented, and infected foods may be detected and excluded, is a problem which, because of the customs and characteristics of the natives, is most difficult if not impossible of solution. Much good work is, however, being done along these lines, and the prevalence of the disease is unquestionably held down by the sanitary measures in force. While several cases of cholera are now occurring daily, these are sporadic and widely scattered, and the disease has not as yet acquired an epidemic character. Fortunately the municipal water supply has not as yet become infected, and every effort is being made to prevent it from becoming so. The water supply of Manila is at present unsafe, and from its environment offers great possibilities in the way of a severe epidemic of cholera in the city. The water supply is still the same as it was in the old Spanish times, though surveys have lately been completed, and plans are now being prepared for a new supply which will not be exposed to the danger of contamination.

At present about 20,000 people live on the watershed from which the municipal supply is drawn, and the sanitary situation with respect to this watershed has lately been seriously affected by the burning of a large part of the town of Mariquina, located on the river banks only about a couple of miles above the intake for the Manila pumping station. About 5,000 persons were thus rendered homeless, and these flocked to the fringe of bamboo which borders the river, where they erected improvised shelters and started to live in a most unsanitary manner. Their excrement and refuse was deposited on the bank of the river, into which it was washed by the rains. Had a case of cholera occurred among these refugees, the river would unquestionably have become infected and the cholera mortality in Manila, which at this season utilizes more than half the water flowing in the river, would have been very great. The health authorities promptly visited the scene, however, and as a result the natives are being moved back from the river, and assisted to rebuild their homes, the pail system for the disposal of excrement has been installed and put in operation, a strong force of sanitary police has been organized, and a large number of American cavalry soldiers have been sent into the valley to preserve the quarantine of the river, which latter the fire refugees were using for all sorts of purposes.

The conditions on the Mariquina watershed are not at all satisfactory, but the health authorities appear to have done everything practicable under present circumstances. Until the new water supply can be put in, work on which it is expected will be begun at an early date, the inhabitants of Manila will have to take some dangerous risks, especially with the present great liability of having cholera infection introduced on the watershed of the Mariquina.

As already mentioned, the insufficiency and dangerous quality of the Manila water supply is fully appreciated by the authorities, and every effort is being made to install a new system of waterworks from an uncontaminated source as soon as possible. Within the past few days the engineers in charge of the project have finished their preliminary surveys, and report that their work has been very successful. By damming a mountain cañon some fourteen miles from Manila, a water supply draining from an absolutely uninhabited area, and not liable to contamination, can be secured. By the erection of a dam a reservoir capable of holding 40,000,000 gallons can be created. The walls of the gorge, where the location of the dam is recommended, are only about one hundred feet apart at the base, and so nearly are they perpendicular that at a height of one hundred feet they are only about one hundred and twenty-five feet apart. This dam will be one hundred and sixty feet above the level of Manila, and the water can readily be run in by gravity, and no serious engineering difficulties will be encountered in laying the pipe. The installation of the system is to be hastened, but unfortunately it cannot be completed in time to be of value during the present cholera outbreak.

Although Manila is not as yet badly infected with cholera, the Marine Hospital surgeons have decided to be on the safe side and prevent any possibility of outbreaks on returning transports, by re-establishing a five days' quarantine on homeward-bound vessels. A considerable number of discharged soldiers and other steerage passengers entitled to transportation are given return passage on transports; and it is in this class, which has more closely associated with the natives, that the elements of a cholera outbreak are found. The troops themselves are carefully watched, and are usually quarantined in barracks for several days before going aboard ship as an additional precaution. Of course all the soldiers' effects taken aboard ship are disinfected with formaldehyde.

In this connection, it may be mentioned that the quarantine officials here have lately conducted some experiments with reference to the destruction of rats and insect vermin aboard ship by the use of formaldehyde, and they have satisfied themselves of the inutility of formaldehyde for this purpose, even when used in quantities larger than required for ordinary disinfection.

In one test a number of rats were confined in a space of three hundred cubic feet, into which the formaldehyde from a pint of formalin was passed by an autoclave generator. The rats were not only not destroyed by an exposure of several hours under such conditions, but they were not apparently seriously inconvenienced thereby. Roaches, beetles and other insects which swarm on the vessels here were not destroyed. For the destruction of rats and insects, sulphur fumes will hereafter be used. These, however, have a bad effect upon the plated metal mountings found in the saloons of many vessels, and tests are to be made as to the practicability of destroying vermin in such places by generating carbon monoxide from pots of burning charcoal. One serious drawback to the use of this gas would seem to be its highly dangerous qualities which are accentuated by the fact that it is odorless and the individual may be overcome before he is aware of its presence. Its use will thus have to be accompanied by unusual vigilance by the disinfecting officials.

The quarantine officials are killing many rats in their disinfection of ships in the warfare against plague, and the rat-catching gangs of the Board of Health of Manila received bounties on more than 11,000 rats captured by them during the past month. Besides this, numbers of rats were destroyed by poison or were captured by householders. Only a very small number of these rats were found to be affected with plague, but this fact is only what might be expected. The plague rat is a sick rat, which has little desire to eat, and is not liable to be attracted into traps by bait or to partake of poisoned foods. Further, the prevalence of plague in the rat population bears a relation, in a continued epidemic, to the number of cases among the human population. The sick rats are constantly dying off, and their numbers diminish from this cause as they are increased through the infection of previously healthy rats. At no time in the present outbreak have there been more than ten cases of plague in a total human population of 300,000, or one to each 30,000.

Bearing these facts in mind, together with the fact that the sick plague rat usually seeks some inaccessible place in which to die, it is seen that the small proportion of plague rats captured is readily to be explained. The health authorities go on the principle that a rat which is healthy to-day may contract plague to-morrow, and that the destruction of every rat, whether sick or well, is like removing so much combustible material from the fire. In its efforts to stamp out plague, the board of health has lately issued a circular to the public, in English, Spanish, Tagalo and Chinese, signed by an American, Filipino and Chinese physician. The circular called attention to the nature of the disease, and the importance of rat destruction in stamping out plague, and urged the co-operation of the public in this work. The necessity for plenty of light and fresh air, cleanliness, the making of houses rat-proof, personal hygiene and the prompt reporting of suspicious cases was dwelt upon, and a bounty was offered to the general public for all rats brought to a station of the board of health.

EARLY REGULATION OF MEDICAL PRACTICE IN MASSACHUSETTS.

OFFICE OF THE COMMISSIONER OF PUBLIC RECORDS
STATE HOUSE.

BOSTON, June 12, 1903.

MR. EDITOR: I enclose a copy of an order that was found in the early records of Massachusetts under date of May 2, 1649, which I think may be of interest to the medical fraternity. It would seem to imply that the regular school of medicine was being encroached upon at that early day. The note in the margin, which I also quote, shows that some deputies, whose names are familiar, were among the dissenters to the passage of the order, among them being Edward Rawson, who as clerk of the deputies seems to have had a vote.

Truly yours,

ROBERT T. SWAN,
Commissioner.

May 3, 1649. Mass. Rec., Vol. III., p. 153.

“ Forasmuch as the laws of God, Exod. : 20: 13 allows no man to touch the life or limme of any person except in a judieyall way, bee it hereby ordered and decreed, that no person or persons whatsoever that are employed about the bodies of men, woemen, and children for preservation of life or health, as phisitions, chirurgians, midwives, or others, shall presume to exercise or putt forth any act contrary to the knowne rules of arte, nor exercise any force, violence, or cruelty upon or towards the bodies of any, whether young or old,—no, not in the most difficult and desperate cases without the advice and consent of such as are skilful in the same arte, if such may be had, or at least of the wisest and gravest then present, and consent of the patient or patients, (if they be mentis compotes) much lesse contrary to such advice and consent, upon such punishment as the nature of the fact may deserve; which lawe is not intended to discourage any from a lawfull use of their skill, but rather to encourage and direct them in the right use thereof, and to inhibit and restrayne the presumptuous arrogance of such as through prefidence of their owne skill, or any other sinister respects, dare be bold to attempt to exercise any violence upon or towards the bodies of young or old, to the prejudice or hazard of the life or limme of men, woemen, or children.”

The margin of the records says, "Contradicentes to this order: Edward Rawson, Ephraim Child, Robt. Keayne, Simon Willard, Robt. Cleoments, James Penn, Rich: Broune." Edward Rawson was deputy from Newbury, Ephraim Child and Richard Broune were from Watertown, Captain Robert Keayne and James Penn from Boston, Captain Simon Willard from Concord, and Robert Cleoments from Hull.

METEOROLOGICAL RECORD.

For the week ending June 13, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Ba- rom- eter. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|--------------|----------------------|-------------------|-----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|--------------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 1 | 30.13 | 64 | 70 | 56 | 52 | 57 | 90 | W | 5 | O. | F. | 0. |
| M. 2 | 29.99 | 67 | 75 | 59 | 59 | 100 | 94 | W | 5 | O. | R. | 0. |
| T. 3 | 29.99 | 65 | 70 | 63 | 60 | 92 | 91 | W | 5 | O. | R. | 0. |
| W. 4 | 30.03 | 64 | 67 | 60 | 57 | 94 | 96 | W | 5 | O. | O. | 0. |
| T. 5 | 29.99 | 60 | 62 | 57 | 53 | 97 | 92 | E | 11 | G. | G. | T. |
| F. 6 | 29.75 | 60 | 64 | 57 | 59 | 92 | 98 | E | 11 | R. | R. | 39 |
| S. 7 | 29.76 | 64 | 73 | 54 | 100 | 73 | 86 | E | 10 | G. | C. | 38 |
| 29.94 | | 69 | 58 | | | 93 | | | | | | 1.21 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ‡ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 13, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Scarlet fever. | |
| New York . . . | 3,785,156 | 1,174 | 580 | 25.64 | 14.82 | 3.75 | 6.22 | 1.28 | |
| Chicago . . . | 1,885,000 | 472 | 130 | 26.26 | 12.28 | 3.96 | 5.72 | 2.12 | |
| Philadelphia . . | 1,378,527 | 430 | 103 | 29.06 | 6.97 | 3.02 | 3.49 | .46 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 150 | 46 | 26.00 | 10.00 | .67 | 4.00 | 1.33 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 137 | 61 | 32.12 | 7.30 | 1.46 | 14.60 | 1.46 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 64 | 28 | 40.60 | 10.93 | — | 10.53 | 3.12 | |
| Boston . . . | 603,163 | 189 | 38 | 19.34 | 12.03 | 1.04 | 1.04 | .52 | |
| Worcester . . . | 132,044 | 38 | 15 | 13.15 | 13.15 | — | 7.89 | — | |
| Fall River . . . | 115,549 | 34 | 12 | 19.53 | 20.59 | — | 8.82 | — | |
| Lowell . . . | 101,959 | 25 | 7 | 8.00 | 8.00 | 4.00 | — | — | |
| Cambridge . . . | 98,639 | 15 | 3 | 26.67 | 13.33 | — | — | — | |
| Lynn . . . | 72,497 | 18 | 2 | 5.55 | — | — | — | — | |
| Lawrence . . . | 69,766 | 20 | 9 | 30.00 | 20.00 | 10.00 | 5.00 | — | |
| Springfield . . . | 69,389 | 18 | 4 | 21.22 | — | — | 5.55 | 5.55 | |
| Somerville . . . | 68,110 | 12 | 2 | 16.67 | 50.00 | — | — | — | |
| New Bedford . . . | 67,198 | 30 | 11 | 30.00 | 26.67 | — | 3.33 | 13.33 | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brockton . . . | 44,873 | 6 | 0 | — | — | — | — | — | |
| Haverhill . . . | 42,104 | 14 | — | 14.28 | 7.14 | — | — | — | |
| Newton . . . | 37,794 | 8 | 1 | — | — | — | — | — | |
| Salem . . . | 36,876 | 10 | 2 | 30.00 | 10.00 | 20.00 | — | — | |
| Malden . . . | 36,286 | 8 | 1 | 12.50 | — | — | — | — | |
| Chelsea . . . | 35,876 | 8 | 2 | 25.00 | — | — | — | — | |
| Fitchburg . . . | 35,069 | 3 | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | 11 | 4 | 45.45 | — | 9.09 | — | — | |
| Everett . . . | 28,620 | 8 | 2 | 25.00 | — | — | — | — | |
| North Adams . . . | 27,862 | 4 | 1 | — | 25.00 | — | — | — | |
| Gloucester . . . | 26,121 | 2 | 1 | 50.00 | — | 50.00 | — | — | |
| Quincy . . . | 26,042 | 1 | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 10 | 3 | 30.00 | — | 10.00 | — | — | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . . | 22,589 | 9 | 1 | — | 11.11 | — | — | — | |
| Chicopee . . . | 21,031 | 5 | 3 | — | — | — | — | — | |
| Medford . . . | 20,962 | 3 | — | — | 33.33 | — | — | — | |
| Northampton . . . | 19,883 | 6 | 2 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 8 | 2 | 25.00 | — | — | — | — | |
| Canton . . . | 15,161 | 3 | 0 | 33.33 | — | 33.33 | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . . | 14,478 | — | — | — | — | — | — | — | |
| Woburn . . . | 14,300 | 6 | — | 33.33 | — | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | 2 | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 3 | 0 | 33.33 | — | — | — | — | |
| Melrose . . . | 13,600 | 4 | — | 25.00 | — | — | — | — | |
| Westfield . . . | 13,418 | 5 | 1 | 20.00 | — | — | 20.00 | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 1 | 1 | — | — | — | — | — | |
| Framingham . . . | 12,534 | 2 | 1 | — | 50.00 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 1 | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 2 | 1 | 50.00 | — | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 1 | 1 | — | 100.00 | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 2,980; under five years of age, 1,081; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 764, acute lung diseases 358, consumption 358, scarlet fever 39, whooping cough 14, cerebrospinal meningitis 10, smallpox 7, erysipelas 6, measles 34, typhoid fever 45, diarrheal diseases 160, diphtheria and croup 85.

From whooping cough, Chicago 5, Philadelphia 4, Baltimore, Pittsburg and Providence 1 each, Boston 2. From erysipelas, Philadelphia 1, Baltimore 1, Pittsburg 2, Providence 1, Boston 1. From smallpox, Chicago 1, Philadelphia 4, Pittsburg 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending May 30, the death-rate was 14.9. Deaths reported, 4,307; acute diseases of the respiratory organs (London) 186, whooping cough 101, diphtheria 50, measles 136, smallpox 19, scarlet fever 33.

The death-rate ranged from 7.2 in Wallasey to 26.9 in Middlesbrough; London 13.9, West Ham 12.4, Brighton 18.3, Portsmouth 12.6, Southampton 12.8, Plymouth 14.9, Bristol 10.6, Birmingham 15.7, Leicester 14.2, Nottingham 17.4, Bolton 12.9, Manchester 23.0, Salford 15.9, Bradford 12.7, Leeds 15.3, Hull 14.0, Newcastle-on-Tyne 17.6, Cardiff 13.3, Rhondda 15.3, Liverpool 19.8, Hornsey 8.0.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JUNE 18, 1903.

GLENNAN, A. H., assistant surgeon-general. Detailed as assistant surgeon-general in charge of the Domestic Quarantine Division in the Bureau of Public Health and Marine Hospital Service. June 10, 1903.

STONER, J. B., surgeon. Granted leave of absence for one month from June 30. June 18, 1903.

ROSENAU, M. J., passed assistant surgeon. To proceed to Greenpoint, N. Y., for special temporary duty. June 18, 1903.

HEGGER, J. A., passed assistant surgeon. Relieved from duty at Cincinnati, Ohio, and directed to proceed to Sault Ste. Marie, Mich., as inspector of immigrants. June 13, 1903.

SPRAGUE, E. K., passed assistant surgeon. Granted leave of absence for seven days from June 4, 1903, under paragraph 191 of the regulations.

GRUBBS, S. B., passed assistant surgeon. Bureau telegram of May 13, 1903, granting Past Assistant Surgeon Grubbs leave of absence for one month, amended so that said leave shall be for one month from May 23. June 13, 1903.

DECKER, C. E., assistant surgeon. Granted extension of leave of absence on account of sickness, for twenty-two days from June 9. June 17, 1903.

LORD, C. E. D., assistant surgeon. Relieved from duty at Galveston, Texas, and directed to report to medical officer in command at San Francisco Quarantine for assignment to special duty. June 18, 1903.

SIBREE, H. C., acting assistant surgeon. Granted leave of absence for six days from June 16. June 15, 1903.

CARLTON, C. G., pharmacist. Granted leave of absence for thirty days from June 1. June 6, 1903.

BOARDS CONVENED.

Board convened for the examination of Assistant Surgeon M. K. Gwyn to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Assistant Surgeon-General L. L. Williams, chairman; Assistant Surgeon-General W. J. Pettus; Assistant Surgeon V. G. Heiser, recorder.

Board convened for the examination of Assistant Surgeon W. C. Hobdy to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Assistant Surgeon-General L. L. Williams, chairman; Assistant Surgeon-General W. J. Pettus; Passed Assistant Surgeon L. E. Cofer, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JUNE 13, 1903.

J. B. PARKER, medical director. Retired from active service from June 20, 1903, under provisions of Sec. 1454, R. S.

F. ANDERSON, medical inspector. Commissioned medical inspector, from Jan. 31, 1903.

J. S. TAYLOR, passed assistant surgeon. Commissioned a passed assistant surgeon, from Nov. 8, 1902.

DRS. J. D. MANCHESTER, P. T. DESSEZ and J. S. WOODWARD, appointed assistant surgeons from June 10, 1903.

S. H. DICKSON, medical inspector. Ordered home and to wait orders.

L. MORRIS, passed assistant surgeon. Detached from the "Puritan" and ordered to the "Florida."

RECENT DEATHS.

ISAAC NEWTON LOVE, M.D., of New York, died suddenly of cerebral apoplexy on June 18. He had been abroad for a few weeks with a patient, and it was at the breakfast table in the dining saloon of the Cunard steamer "Aurania," which had just got in from Liverpool, that he was stricken. Dr. Love, who was widely known throughout the country as a medical writer, was born in Barry, Ill., in 1848, and his education was directed by Dr. John T. Hodgen, an eminent surgeon of St. Louis, of whose family he became a member at the age of thirteen. He was graduated from the old St. Louis Medical College, and after two years became associated with Dr. Hodgen in practice. He devoted himself more particularly to the diseases of children, upon which he published considerably, and later was appointed professor of pediatrics in the College of Physicians and Surgeons. He had a great fondness for medical journalism, and in 1890 started *The Medical Mirror*, the publication office of which was afterwards changed to New York. For a number of years he was president of the Association of American Editors, and in 1895 he was elected a vice-president of the American Medical Association. Four years ago, Dr. Love removed from St. Louis to New York, where he took a prominent part in the work of the medical societies.

JOHN C. HALSTEAD, M.D., of New York, a graduate of the medical department of the University of the City of New York in 1883, died on June 17, at the age of forty-five.

EDWARD P. LUCE, M.D., of Bayonne, N. J., died recently at the age of seventy-five. During the Civil War he served as a surgeon in the army. Only a few months ago Dr. Luce and his wife celebrated their golden wedding.

THE BOSTON
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JOURNAL

GEORGE B. SHATTUCK, M.D., EDITOR
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VOLUME CXLIX

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Address.

SURGICAL TUBERCULOSIS.

BY HERBERT L. BURRELL, M.D., BOSTON.

(Concluded from No. 26, page 692.)

HOSPITALS.

HOSPITALS have not, as a rule, recognized the necessity for providing for the out-door treatment of tuberculosis. Dr. F. Rufenacht²⁷ states that "in several of the general hospitals and infirmaries in England, such as St. Thomas' Hospital in London, the North Staffordshire Infirmary at Stoke upon Trent, the Sheffield Royal Infirmary, etc., consumptive patients have been treated with more or less success by open-air methods. In the new infirmary for Camberwell the top story in each wing is to be set apart for the open-air treatment of consumptives, and is to have nearly all its wall space occupied by windows."

Burdett²⁸ states that "the Bethany Hospital in Berlin has had broad balconies added to the wards, where many of the patients are kept in bed, not only in the daytime, but at night." He gives plans and descriptions of the new University Hospital at Halle, which has wide verandas on the south side of the four surgical wards only, the windows being casements, opening down to the floor, so that a bed can be rolled or carried out. He states that the new hospital at Saint-Denis also has verandas on the south side of the wards. The story of the doctors who kept their patients out on the balcony until nine o'clock at night, and finally tried leaving them out all night, at the Bethanien Hospital in Berlin, is interesting. They were entirely convinced by practical experience, by patients sleeping out of doors, of the benefit of this treatment.

OUT-DOOR TREATMENT OF TUBERCULOSIS.

All of the foregoing leads me to believe that the necessity for out-door treatment of surgical tuberculosis is not sufficiently well recognized by general surgeons.

The improvement that occurs in tuberculous nodes of the neck, without operation, has for years attracted my attention, and in many instances where an operation was inexpedient I have advised the patient to live and sleep out of doors. In the majority of these cases there has been marked improvement, and in some cases apparently permanent recovery.

One of the first instances that attracted my attention to the importance of the out-door treatment of surgical tuberculosis was a patient upon whom I had operated for tuberculous peritonitis. The patient, a woman, aged thirty-eight, had a typical condition of the peritoneal cavity. She was operated upon, a large amount of fluid was removed, the peritoneal cavity was drained for a fortnight, and the abdominal wound then healed; yet for months the patient did not improve in the way we expect following an operation for tuberculosis of the peritoneum. During the summer she lived in a tent, and from the time that she lived and slept out of

doors her improvement was very marked. During the summer she gained eighteen pounds, all evidence of tuberculosis disappeared, and three years later she was apparently in perfect health. At the time this occurred I considered that her improvement was simply a delayed one following operation.

A most striking instance of improvement occurred three years ago. A man, thirty-seven years of age, who was married, came to me for tuberculous epididymitis. The vas deferens on the affected side was corded and knotty. A careful examination of the urine was made, and tubercle bacilli were eventually found. Naturally an unfavorable prognosis seemed inevitable. An operation was done, and the tuberculous testis and cord were removed. After waiting three or four weeks, the patient having cystitis with tenesmus, a suprapubic cystotomy was done. Two small tuberculous areas, one the size of the little finger-nail, were found at the base of the bladder. Suprapubic drainage was established, and I finally advised the patient to go to his home and make himself as comfortable as possible, as a fatal ending was more than probable. The patient was of more than ordinary intelligence, and, turning to me, asked if there were nothing else that could be done in the way of general treatment for the disease. He himself suggested to me that if people with pulmonary tuberculosis were benefited by living out of doors, he might be made better by living and sleeping out of doors. I, of course, acquiesced, and he had a tent constructed on his lawn and slept there from April 15 until into December—out of doors practically every night during the summer. He gained during this time thirty-four pounds, or from 118 pounds to 152 pounds. At the end of three years apparently the tuberculous process has been arrested, he is engaged in his ordinary occupation, that of a book-keeper, and I believe his life has been saved, not by my operation; but by a recognition of the value of out-door treatment of tuberculosis.

In spite of the warnings and protests of experts in the treatment of pulmonary tuberculosis, two errors with regard to the out-door treatment of pulmonary tuberculosis remain deep-rooted and widespread in the profession. The first is the sending of patients in advanced stages of tuberculosis to sanatoriums. The second is the failure to recognize the need of absolute rest, literally sitting still out of doors all day long, on every day, so long as there is evidence that the tuberculous process is still active.

Trudeau has intelligently insisted upon the need of absolute rest during the active period of tuberculosis.

The natural cure of tuberculous areas, it seems to me, demands three things: (1) Physiological rest to the part; (2) pure air and sunlight; (3) ample nutrition to the tissues to check the progress of the process. At the best, the tuberculous area in a lung must "throw out of commission" that part of the lung for the time being. There are not many principles in medicine or surgery, but if there is one in which I thoroughly believe, it is that of physiological rest,²⁹ and this principle is just as applicable to the treatment of pulmonary tubercu-

²⁷ London Zelt. for Tuberculose, 1901, p. 297.

²⁸ Hospitals and Asylums of the World, vol. iv, p. 60.

²⁹ Hilton's Rest and Pain.

losis as it is to the treatment of a tuberculous area in the hip- or knee-joint.

TENT TREATMENT.

Occasionally, here and there, within the past few years have appeared suggestions as to the out-door treatment of surgical tuberculosis. Dr. H. P. H. Galloway in 1902,³⁰ before the American Orthopedic Association, brought forward and advocated strongly the use of tents for the treatment of tuberculous joint-disease (Fig. X). Dr. Galloway claims that while out-door life is of great assistance



FIG. X. — Tents used by Dr. H. P. H. Galloway, at the Toronto Orthopedic Hospital.

in the treatment of all tuberculous bone and joint affections, it is particularly useful in that class of patients whose recuperative power seems to have been exhausted and are being slowly worn out by discharging sinuses which other means of treatment have failed to heal. He does not claim that tents offer the best solution of the problem of securing the nearest approach to continuous out-door life, but that properly designed tents suitably located are much better than the average hospital ward, and that they are an efficient and inexpensive supplement to the regular wards. He thinks that with private patients an effort should be made to secure the benefit of sunshine and fresh air, when for any reason residence in a sanatorium is impracticable or undesirable. Many patients who have a lawn in connection with their homes can be induced to fit up a private tent and occupy it even during the winter months.

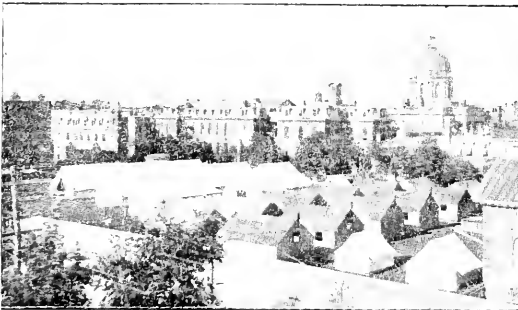


FIG. XI. — Tent wards at the Boston City Hospital.

For many years the Boston City Hospital, under the administration of Dr. Rowe, has had a tent serv-

³⁰The General Management and Constitutional Treatment of Tuberculosis of Bones and Joints. Special ref. to Use of Tents.

ice in summer, in which, at times, surgical patients have been treated. The advantages of this service have been very marked. Figs. XI and XII show



FIG. XII. — Interior of a tent ward at the Boston City Hospital.

the perspective of this outdoor camp and an interior view of one of the tent wards.

The means to gain this outdoor life for patients are many. An excellent type of tent is described by A. Mansfield Holmes. Figs. XIII, XIV and XV show the construction of the tent pavilion.

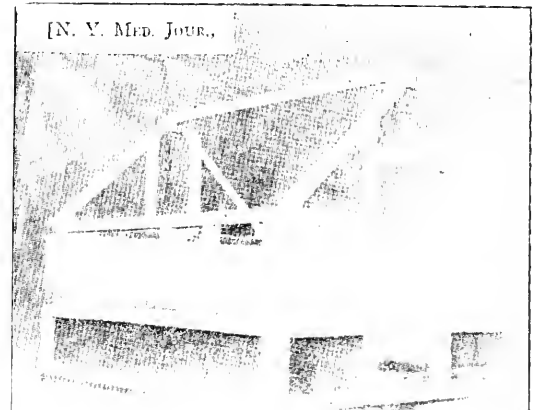


FIG. XIII. — Frame of "tent cottage," wainscoting in position. The inner wall of heavy canvas is in position on the front and rear end and the right side. The two-inch opening above the wainscoting is clearly shown.

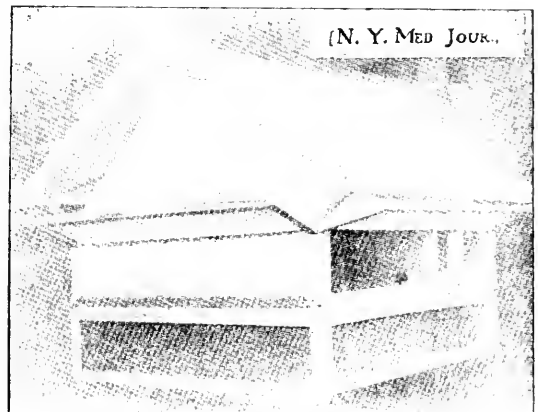


FIG. XIV. — "Tent cottage" as used in summer. The upper sections of the outer walls are converted into awnings. The rear end shows the inner wall intact. Side shows the upper half of the inner wall lowered, which practically removes the side of the "tent cottage," converting it into a "tent-pavilion." When thus converted the sun can penetrate to any portion of the interior.

The approximate cost of constructing these tent cottages is \$60.

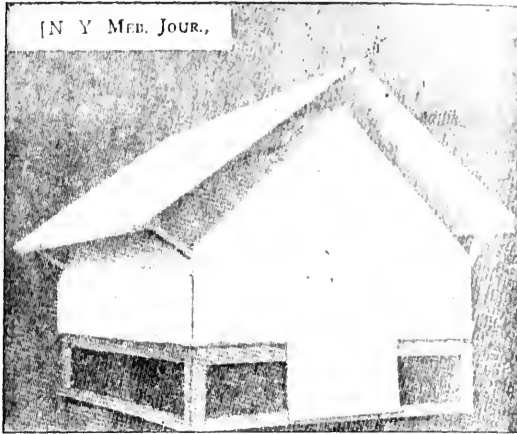
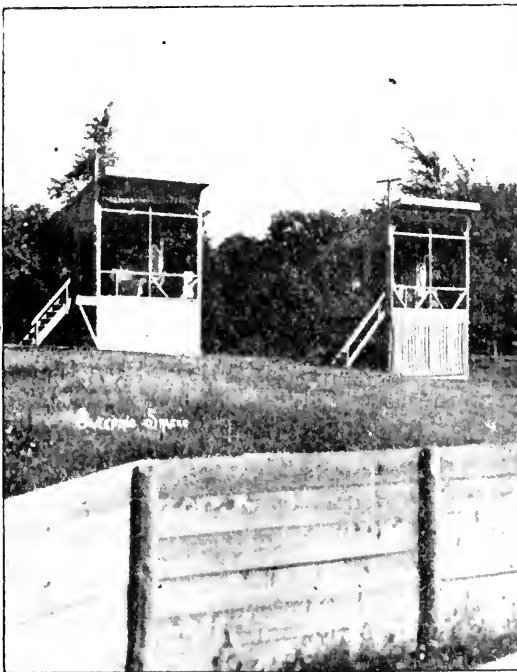


FIG. XV.—The "tent cottage" as used in winter; the fly intact, the sides and door closed, the "roof window" open. The opening between the two sections of the outer wall is plainly shown.

HOME TREATMENT.

Dr. Millet, of East Bridgewater, has recognized the necessity for caring for his patients by out-door life, and his article on "The Night-Air of New England in the Treatment of Consumption"³¹ is extremely suggestive and very valuable. Dr. Millet has been good enough to let me have illustrations of the "shacks" that he has had built for the treatment of tuberculous patients (Figs. XVI and XVII), also of the balconies or verandas where



FIGS. XVI AND XVII.—Two of Dr. Millet's "shacks." Note the extreme simplicity and consequent cheapness of construction.

patients sleep, that have been "built out" in connection with many cottages. Figs. XVIII, XIX,

XX, XXI and XXII are balconies built out from buildings in Brockton and Bridgewater, and here



FIG. XVIII.—Sleeping balcony.

the patients sleep, from May until November or December, only the rainy nights driving them in.



FIG. XIX.—Roof used as a sleeping balcony.

The improvement in these cases, I am told by Dr. Millet, is very great indeed.



FIG. XX.—Sleeping balcony.

The public are quite aware of the benefits of out-of-door treatment, and Phil May has expressed in

³¹ Md. Med. Journ., January, 1900.

Punch, March 4, 1903, the length to which this fad may be carried (Fig. XXIII).

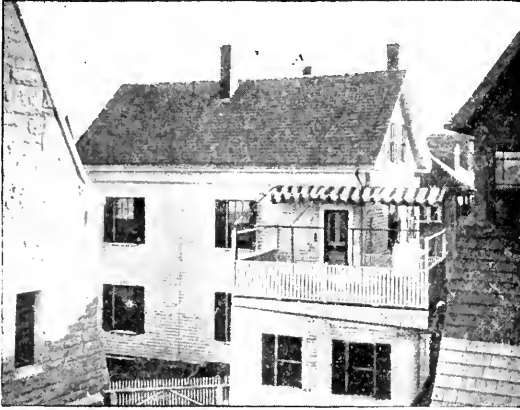


FIG. XXI. — More pretentious sleeping balcony.

A. A. Babrow³² believes that surgical or local tuberculosis is simply a manifestation of a general infection and may be grouped under two forms, showing certain dissimilarities in their course; the one is a chronic process characterized by infiltration and formation of new connective tissue; the other is also chronic at times, though oftener sub-acute, and consists in a cellular infiltration which forms tubercles and through their necrosis leads to cheesy degeneration. In either instance the advent of pus cocci transforms the sluggish process into an acute inflammation. In the absence of a specific remedy our therapeutic efforts must aim at increasing the patient's resisting powers, thus aiding him to overcome the microbial invaders. All hope of salvation by removing the diseased part is distinctly illusory, since surgical tuberculosis must be considered as the local manifestation of a general infection. We combat the chronic non-suppurating variety with local rest and counter-irritating measures, like hot applications, iodine or the cautery, which all act beneficially by attracting leucocytes and phagocytes to the affected tissues, as well as by stimulating the local circulation. A similar result is obtained by incising and packing with gauze strips, in order to direct the current of tissue fluids outward. These measures, however, are inadequate when we come to deal with necrotic and suppurating forms of local tuberculosis. Here active interference is called for, and operative removal of dead or diseased tissue is advisable. It is to be recognized that such operations are merely palliative measures, as the complete removal of affected areas is impossible in view of the persistent general source of infection. When this truth is recognized, surgeons will no longer be so anxious to operate, but will seek rather to increase the strength of the patient and pave the way for nature's own cure. In this connection climatic influences deserve all recognition. Prolonged stay (one to one and one-half years) at the seashore exerts a marked salutary effect, especially in the case of children; the sea air, the bathing and, not least, the sunlight, contribute their respective share to the final result. Solar

rays play a highly important rôle in the treatment of local tuberculosis, and patients should be instructed to expose the diseased parts to the sunlight.

EFFECTS OF SUNLIGHT AND ELECTRIC LIGHT.

In connection with the exposure of wounds to sunlight, it is interesting to consider the use of the Finsen light. Dr. Valdemar Bie,³³ who is associ-



FIG. XXII.

(Overheard during one of our recent stormy days.) "What cheer, matey! Doin' any business?"
"Garn! Wot yer gettin' at? I ain't 'ere to do business. I'm takin' the hopen hair treatment!" — *Punch*.

ated with Finsen at Copenhagen, as his assistant, states that Finsen has discovered that sunlight or arc electric light produces a widening of the skin capillaries which may last for five or six months.

"Finsen has demonstrated a widening of the capillaries of the skin which lasts for a long time, as a result of light. Finsen exposed the skin of his arm to an electric arc light; upon the arm were various glass plates and also two letters of the alphabet drawn with India ink; where these covered the skin, the skin retained its white color; the lighted part of the skin, on the contrary, became red, swollen and later pigmented. After a period of four months the skin was still so pigmented that the white areas were still visible where the glass plates had been; but after five or six months the entire skin was white. If one now rubbed the skin, the marks again became visible, in that the portions of the skin which had been covered with the glass plates did not become so red as the surrounding skin. The dilatation of the vessels of the skin which results from exposure to light can, therefore, last five to six months."

³² Russki Vrach, Jan. 18, 1903.

³³ Light Therapy. Deutsche Aerzt. Ztg., Berl., 1902, Aug. 15, ii, pp. 361-5.

The effect upon the capillaries is only produced where the ultra-violet rays strike the skin. Light produces a stimulating effect upon all the lower animals, and Finsen has proven this upon the embryos of salamanders and upon worms. He has also shown that the stimulating influence is due to the actinic rays. These rays penetrate cartilage and skin, but are absorbed by the blood. This was interestingly proven by Finsen, who found that by rendering the ear bloodless the light would pass through the cartilage and would not pass through the ear when it was filled with blood. The ultra-violet rays have ten times as much bactericidal power as all the rest of the spectrum taken together, but they have very little power of passing through the skin. The chemical rays of light do not reach the deeper parts of the body at all, or at most in a

hardly to be denied that the nourishment of the limb may possibly be improved by the rich blood supply which results from the light bath."

Robinson³⁴ states that the importance of sunlight in tuberculous patients is becoming more and more generally recognized. Abrams³⁵ has done some interesting experimentation on the penetrability of the solar rays. He finds that a dry skin is very resistant to the penetration of the solar rays; that the penetrability of the skin is increased by using lanolin externally and subcutaneous injections of distilled water. A very interesting experiment was done, which should be verified. Subcutaneous inoculations with a virulent culture growth of tubercle bacilli were made upon rabbits. The animals were then subjected to the action of the solar rays concentrated at the point of inocu-

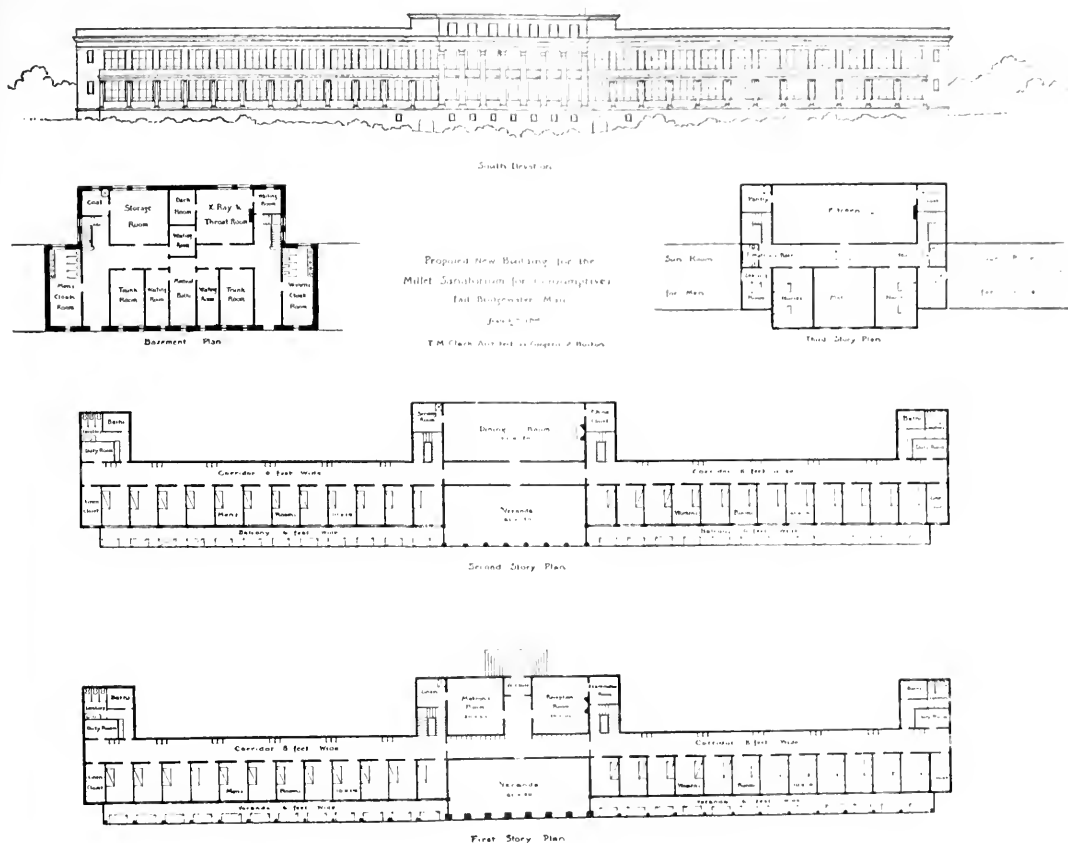


FIG. XXIII.

very limited degree. The literature on the use of Finsen's rays is becoming very interesting, and one of the best articles is that called "Phototherapy," by Prof. Niels R. Finsen, Copenhagen, "translated by James H. Sequeira, M.D., Lond., M.R.C.P., 1901. There can be little doubt but that the use of Finsen's rays is of definite value in certain cases. Its exact value and limitations have not been determined, but the use of sunlight, it is clear, has been demonstrated from time immemorial. Professor Poucet allows the sunlight to fall upon a diseased joint two or three hours daily, and Milliez has written a thesis on this subject. Poucet states: "I cannot criticise the results that Milliez describes as good; but a direct influence upon the tubercle bacilli in this way is not possible; it is

lation on ten consecutive days. No tuberculous process resulted, while in other rabbits similarly inoculated, but not subjected to sun, there resulted tubercles (in which tubercle bacilli were found).

"Other experiments were conducted to determine whether the solar rays in greater concentration could be employed by interposing colored glass, which, in a measure, excluded the heat rays and allowed unimpeded passage to the chemic rays. The result was an unequivocal demonstration of the fact that when such media were interposed it was always at the expense of the actinic action on solio-paper." Abrams has used the solar ray in the treatment of a tuberculous ulcer of leg which had

³⁴ Phila. Med. Journ., 1899, iii, pp. 54-6.

³⁵ Ibid, 1899, i, pp. 173-8.

resisted the conventional treatment, including rest and curetting, for over a year. The ulcer healed in less than three weeks under treatment with the solar rays. He has also used solar rays quite extensively in aborting furuncles and in the treatment of cervical lymph noditis of presumable tuberculous origin.

My colleague, Dr. F. S. Watson, has written me a letter, of which the following is an abstract. The letter shows clearly that the out-of-door treatment of surgical tuberculosis is not properly recognized.

DEAR DR. BURRELL: It is a remarkable fact that, with the constantly present object lesson afforded by the results of climatic and hygienic treatment of pulmonary tuberculosis, when properly and conscientiously carried out, as it is in the best sanatoriums and elsewhere in the hands of some experts individually, so little effort should have been made to apply the same principles to those forms of disease usually classed as surgical. That this is true is indicated by such facts as the following:—

(1) No paper has been presented before the American Surgical Association urging the adoption of that method of treatment for surgical cases, whether in conjunction with or without surgical treatment.

(2) Physicians connected with sanatoriums for the treatment of tuberculous disease, and those practicing in the health resorts frequented by persons with phthisis, see but very few patients having surgical forms of the malady. This is illustrated by an inquiry recently undertaken by the writer as to the results of the climatic treatment in that class of cases, in the course of which he addressed a circular letter to every member of the American Climatological Association, which almost all of them were kind enough to answer. The questions were put with regard to tuberculosis of the genito-urinary organs only, and asked the personal experience of those gentlemen as to the results of its climatic treatment. There were just four out of the whole number who did not say that they had no experience in the care of such cases. Of the four, there was one who had had twelve patients of the sort, and the other three reported their observations with regard to from one to four cases, and had not seen more than that number. Some years ago a similar request for information was sent to twenty representative general practitioners, and none of them had knowledge of more than three cases at the most, and there were but two or three patients whose history was known definitely for long enough periods to give them any value.

The replies of the members of the American Climatological Association furnished the following information with regard to sixteen cases: In five there was complete arrest of the disease. Seven showed great improvement, but still had evidence of the disease. Two were not improved. Two died.

The reply of Dr. Henry Loomis is of interest, though it does not supply details. He says, "A number of cases have been sent to the Loomis Sanatorium by genito-urinary specialists for climatic treatment. The results have surprised everybody" in their favorable character. He refers specifically to one case considered as hopelessly ill by Dr. Keyes, who sent him for that form of treatment, in which the patient was "perfectly well at the end of a year."

It is not necessary to quote from the other letters. I will refer briefly to six cases under my own observation for periods of eighteen years in the longest to ten years in the shortest, in which the patients, though not having been under systematic climatic treatment, have all led out-door lives and been in very favorable conditions. Three of them were subjects of renal and three of testicular tuberculosis. In all there has apparently been an entire arrest of the process. In one the disease began in the testes and the seminal vesicles were invaded. Here it has remained without further extension for five years, the patient being in robust health all the while.

This year at the meeting of the American Association of Genito-Urinary Surgeons in Washington, one of the best and most experienced observers among the surgeons of this country, Dr. Chismore of San Francisco, made

the first definite and strong plea that has been presented to the Association for a more extended trial of climatic treatment for cases of genito-urinary tuberculosis, as opposed to the surgical treatment.

We are fairly familiar with the results of surgical treatment of some forms of tuberculosis, notably those in which the disease is seated in the bones, which is the most favorable form of tuberculosis which comes under the surgeon's care, and those which involve the genito-urinary tract, in some of which the radical surgical treatment is far from encouraging, to say the least,—nephrectomy for renal tuberculosis, for example, despite the few brilliant successes that have attended it.

What we lack is knowledge of what can be accomplished by the climatic and hygienic treatment of these cases, either in conjunction with surgical treatment or without it, according to circumstances. We can get no information from general practitioners, specialists or surgeons, for they none of them have had any important experience in the matter, nor shall we have this knowledge supplied until sanatoriums for the treatment of surgical tuberculosis, or else special provision in the present ones, is made for the reception of such cases, and are put in the hands of competent surgeons. The medical specialists do not feel competent to assume the care of cases of a surgical character, therefore surgeons cannot send such cases as need surgical care as well as climatic treatment to resorts which are appropriate otherwise. There are signs of awakening interest, however, in this matter and it is fairly safe to predict that the pendulum will begin to swing in that direction before long, go to the inevitable too great extreme and then settle down to its proper excursion.

Very truly yours,

F. S. WATSON.

From the foregoing it may be seen that orthopedists and occasionally genito-urinary surgeons have recognized that surgical tuberculosis requires something besides operation. The treatment of tuberculous areas should include not alone active operative measures, when necessary, but the surgeon should always consider the expediency of exposing them to the sun's rays. General surgeons have not recognized its importance.

DEFECTS OF HOSPITAL CONSTRUCTION.

A ward for the treatment of surgical tuberculosis should have as its prime essentials a maximum of sunlight and the ability to move the beds out on a veranda, where the patients may sleep, if expedient, day and night. It is perfectly obvious that it is impracticable to construct a hospital at practically \$1,000 per bed for the treatment of such a universal scourge as tuberculosis, and I now wish to speak of some of the defects that I believe exist in modern hospitals. The failure to recognize that a hospital must have the maximum of air and light is lamentable.

Recently I had occasion to visit a modern hospital which had been constructed by eminent architects in one of the most intelligent communities in New England. It seemed to me defective in many points. The hospital was beautifully situated, but it was winged forwards at the east and west so that much of the south sunlight was shut off. Many of the administration rooms of the hospital were on the south side, which should be devoted entirely to wards and bedrooms. The best part of the hospital building, the top, was occupied by a laundry. The most central part of the buildings, where there is the maximum of sunlight, was used as a reception room for visitors. The doors were smooth and made of jointed boards, but the butts projected. The

angles and corners of the room were rounded off, but it would require hours each day for a diligent housemaid to clean the carved mantels. The windows were not flush with the wall but were dust-traps. In one small room the best sunlight was excluded by a tree. The conventional shade, lace curtains and picture-molding existed in many of the rooms, but the beds were provided with an aseptic, smooth, painted, steel temperature chart. The windows in the building were small and of such a height that if opened slightly at the bottom the wind would blow directly upon the beds. The walls were not built of hollow brick, and already the water of condensation was forming on the walls. The operating room was elaborately fitted with a chandelier directly over the operating table, so arranged that the dust could be readily shaken into an open abdominal cavity. There were gratings over the ventilating shafts instead of cheese cloth. Expensive foot water-taps, which were complex in construction, afforded lodgment for dirt. The wall area in one ward had about one fifth of the total possible window space. There were no piazzas. Convalescent patients could be placed on a roof garden which was reached by a ladder. The kitchen was in the northwest top corner of the hospital and the ward maids had the most sunny rooms in the hospital. The engineer of the building slept in a room in the cellar, with a 2 x 4 window. The operating room had tiled floor, glazed brick and a marble dado, but the steam pipes were so close to the wall that the room could not be mechanically cleaned.

This construction is going on at the present time in many of our modern hospitals; and it is very natural that it should occur. The Board of Managers tell their superintendent that they want a building to cost a certain amount of money; they employ the best architect they know, a man who may or may not have made a study of hospital construction. The architect and the superintendent of the hospital are placed practically in charge. Rarely is the staff of the hospital more than allowed to look at the plans of the building. The architect naturally turns to the superintendent as the one representing the Board of Managers, and what the superintendent wishes is put into effect. Superintendents of hospitals, as a class, are not aware of the advances that are being made in medicine, and of the necessity for air and sunlight in the wards of a hospital. They feel and believe that a monumental structure is necessary, but in consequence of their environment and isolated position, so far as the medical profession is concerned, they do not realize that a new order of hospital construction is or will be imperative. The economies of hospital construction have never, so far as I know, been deliberately studied as have those, for example, of mill construction.

If the state is to deal with the great problem of controlling an almost universal scourge, tuberculosis, a more economical construction of hospital buildings is imperative. This can be done only by architects who are willing and anxious to meet the demand of a minimum cost of construction combined with superintendents who are familiar with, and appreciate the necessity for, the maximum amount of air and sunlight in their buildings.

Prof. T. M. Clark, architect, of Boston, has

given me the plans for the building of a proposed sanatorium for Dr. Millet of Brockton, Mass. (Fig. XXIV). I find that he has carefully considered the essentials in construction of a hospital for tuberculosis: (1) He has made provision for the maximum of sunlight and air. (2) He has arranged the rooms so that a bed may be wheeled out of doors on a piazza or balcony. (3) He has provided a sun parlor at the top of the building. (4) He has studied the economy of construction. We should recognize that all the south side of a hospital should be devoted entirely to the treatment of patients, and that the north side should be reserved for hospital administration.

Conclusions. — The prime essentials for the treatment of tuberculosis are physiological rest, outdoor treatment and ample nutrition to the patient. Whether the tuberculous area is in the lung, in a joint, in a lymph node or in the intestines is a detail. Where it is possible, the tuberculous area should be excised, especially if it threatens to invade vital structures; combined with the removal of the tuberculous foci, patients should be treated by physiological rest, fresh air and sunlight. The excision of a small area from the hip-joint, while it may give a brilliant immediate surgical result as to first intention and a cure, mutilates the patient. On the other hand, by the recognition of physiological rest and outdoor treatment, such patients may be efficiently treated, and life and limb saved.

In the modern construction of hospitals we do not sufficiently recognize the necessity for a maximum of sunlight and air; provision is not made to allow patients in their beds to be moved out on to verandas, that they may be in the air and properly protected.

There is perhaps no community that is so well supplied with cottage hospitals as New England, and yet how little are they used for the outdoor treatment of tuberculous patients!

If the physicians and surgeons of the cottage hospitals in New England will utilize their hospitals for the treatment of tuberculous patients, on the lines of physiological rest and outdoor treatment, and will do less major surgery, — for example, brain tumors, — they will do more good in the community than they do at present. The health of this Commonwealth is largely in the hands of the members of this society, and if I can impress upon you the necessity, in dealing with this problem of tuberculosis, first to advocate the establishment of an adequate number of sanatoriums for the treatment of tuberculosis, either by the State, cities or towns, a step will have been taken towards its control. Again, as members of the Massachusetts Medical Society, you should recognize that it is not necessary that your patients suffering from tuberculosis should be sent far from their homes, but that by erecting bed platforms, as Dr. Millet has done at the patients' homes, they may be satisfactorily treated in their own homes. The work which is being carried out by Dr. Bowditch at the Sharon Sanatorium is worthy of the highest commendation, but that is for a specially selected class of patients. The work which is done at Rutland must command our admiration, but it is to you, as the practitioners of this Commonwealth, who visit from time to time the homes of the people, that I turn and beg that

you will consider the necessity, in tuberculosis both medical and surgical, of treating patients by physiological rest, and giving them the maximum of air and sunlight.

Original Articles.

THE CLINICAL ASSOCIATIONS AND SIGNIFICANCE OF THE CARDIO-PULMONARY MURMUR.¹

BY JAMES J. PUTNAM, M.D., BOSTON.

THE cardio-pulmonary murmur has been regarded by most physicians as of somewhat accidental occurrence, indicating perhaps some unusual relationship of the heart and lungs, and almost certainly due to compression or aspiration of a piece of lung by the contracting heart, but as of no clinical significance except in so far as it was liable to be mistaken for a sign of valvular lesion. Such was my own supposition until—a good many years ago—I became impressed with the relative frequency of its occurrence among certain classes of patients, namely, young and middle-aged male neuropathics and asthenics, who were often spare in build, long-chested, and usually with rather weak muscular systems and (I should now add) elastic chest walls. Subsequent investigations have fully confirmed this impression, while, meantime, the finding of corroborative statements published by various other observers has increased my confidence in its substantial correctness. When anything is said at all, by those who have written upon the subject, about the general nutrition and characteristics of the persons among whom this murmur has been found, some such description as that just indicated is usually given, or—as is often the case—it is noted that the patient has signs of pulmonary tuberculosis.

For the past two or three years I have paid closer attention to this clinical relationship between the cardio-pulmonary murmur and the neuropathic and asthenic tendencies, and offer my experience thereon in a preliminary form, together with certain other facts which may help to broaden our conception of the possible significance of the sign.

Potain, who, after Laennec, was the pioneer in the clinical study of these sounds, groups together as cardio-pulmonary or exo-cardial, all the so-called “functional” heart murmurs, including those usually classed as hemic. Recent studies² have, however, made it clear that this is an incorrect classification, and that the major part of the “functional” murmurs are due to defective co-ordination, defective action, impaired nutrition and relaxation of the cardiac muscles and of the arterial walls.

The cardio-pulmonary murmurs are of different origin, and yet they, too, are heard pre-eminently under some of the conditions which favor the occurrence of the “muscular relaxation” sounds, namely, during disturbed innervation. Not infrequently they disappear during the course of a somewhat prolonged examination.

They are not especially characteristic of acute anemia and the excessive fatigue following athletic exercise,³ but they are temporarily accentuated by the nervous excitement attending an examination of the heart, as in the case of the men offering themselves as candidates for positions on the police force.⁴ Both sorts of murmurs may disappear before the examination is over and it is, indeed, not certain that it is always possible to distinguish between them, though the fact that the cardio-pulmonary sound ceases at the end of a forced expiration is probably decisive under ordinary circumstances. There is, however, another relationship of the cardio-pulmonary murmur which is of especial interest, namely, that to the interrupted or cog-wheel respiration, or “heart-breath,” that form of respiration, namely, where the inspiratory sound, instead of being continuous, is rhythmically broken by accentuated puffs corresponding with the contractions of the heart.

Although it is true that tubercular consolidation favors the conduction and perhaps the occurrence of these respiratory sounds, yet careful physiological studies have shown that the phenomenon is, in its main features, to be detected under normal conditions, and these studies acquire a special interest when it is admitted that there can be no radical difference between the interrupted respiration and the cardio-pulmonary murmur. Both sounds are due to displacement of air through the heart's action or the blood-current, and both are heard, not infrequently, on the same subject. When this is the case, it is my experience that to the ear (or stethoscope) placed near the apex or over the body of the heart it is the cardiac element which makes the strongest impression, while at the base, or, as sometimes, in the axillary line, the sound which is heard is of such a kind that one is no longer tempted to classify it as a cardiac murmur at all, but as an interrupted inspiration. Yet the differences must be of degree, essentially or alone.

The physiological studies which have been alluded to as establishing the fact that the respiration of normal individuals is modified, directly or indirectly, by the heart's action, have been discussed by Dr. S. J. Meltzer, and the conclusion reached by him, partly on the basis of original experiments, is in favor of the view that this effect is due, not to the changes in size and position of the heart itself, but to displacement of air attending the propulsion of blood through and out of the chest. Under ordinary conditions the amount of influence exerted on the respiration in this way is but very slight, but I presume there can be no doubt that the “cog-wheel” respiration (or one form of it if there be more than one) is only an exaggeration of this (normal) phenomenon which is discoverable by careful tests.

Although the rules given by Potain and others doubtless serve, generally, to distinguish the cardio-pulmonary murmur, yet, inasmuch as there is not one of them that is not violated, there seems to be some question whether it is always possible to differentiate the cardio-pulmonary murmur with positiveness from that which has been called neuromuscular, and I am free to admit that in my own

¹ Presented by title at the eighteenth annual meeting of the Association of American Physicians, May 14, 1903.

² As those of Prince, Stengel and Arnold in this country.

³ Cf. Stengel, Arnold.

⁴ Cf. Prince, McCollom.

past observations I may have failed, in a few cases, to differentiate between them with sufficient care. It is, indeed, not very uncommon to find a transient murmur of very slight intensity, heard at or near the apex, especially, I think, in men, which disappears before one has the opportunity to fully satisfy himself as to its nature. After allowing for errors of these sorts, however, I feel justified in the statement that the true cardio-pulmonary murmur is very rarely to be detected among vigorous persons of either sex, even where such persons are temporarily ill with what might be called asthenic diseases. On the other hand, it occurs with relative frequency among markedly neuropathic and asthenic males, but again, not nearly so often among females, even when neurotic and poorly nourished. This is especially striking in view of the fact that the murmur of the left base, which is so very common among feeble and anemic women, is very rare among feeble men.

In order to ascertain approximately the actual and relative frequency of the cardio-pulmonary murmur, I have looked over the records of 400 private patients whom I have examined during the year and a half since the beginning of 1902; one half of the 400 cases have been classified in general terms as neurasthenic or neuropathic, and the other half as ill with disorders of other sorts.

The cardio-pulmonary murmur was heard in about 30 of these 400 cases, there being of course a few that were doubtful. Of these 30 cases, at least 26 belonged in the neurasthenic group, and only 4 in the non-neurasthenic. Even as regards these there was some question as to the group in which they should be placed. As regards sex, 26 of the 30 patients were men and 4 women. These figures recall a tabulation by Matthews,⁵ of Providence, R. I., who reports 32 patients, of whom 23 were men and 9 women, though saying, at the same time, "I am not aware that sex has any influence in the production of this sound." On the other hand, Squire, of London, reported 23 cases in 1898, of which 13 were the cases of men and 10 of women. Fourteen of these patients, however, 9 men and 5 women, had pulmonary tuberculosis.

As a check to my own observations I have recently asked several gentlemen who have occasion to examine large numbers of patients in the out-patient department of the Massachusetts General Hospital to listen to this murmur with especial care, and their investigations confirm my own. In the men's room the cardio-pulmonary murmur is of rare occurrence — at least in a pronounced form; not more than three or four examples having been found in the examination of four hundred or more persons. In the women's room it is somewhat more common, perhaps occurring in 2% of the cases. In the neurological department, however, in the special class of patients to which I have referred, namely, the pronounced neuropathic and asthenic, it has been found in 8 or 10%.

As regards the diagnostic characters of the cardio-pulmonary murmur, I can corroborate the statements of those who have noted its occasional presence as well during the diastole as during the systole of the heart, and the fact that it may be heard in the axillary line and even at the back. On

the other hand, I cannot find that the murmur depends to any obvious extent upon the rapidity or turbulence of the heart's action, or that it is at all necessarily influenced by changes in the position of the patient. Further studies may correct this view.

The fact that the murmur is made to disappear by forced expiration has been repeatedly made use of as affording a hint as to its origin. The difficulty in the way of explaining this expiratory disappearance seems to me, however, to be considerable, and to be still greater when regarded in the light of another fact which I have observed, namely, that a similar disappearance can sometimes be brought about by the strong compression of the chest wall by an assistant while auscultation is going on. Furthermore, it is noteworthy that after being banished through the procedure the murmur does not always return at once, or perhaps even during the remainder of the examination.

The fact, now abundantly substantiated, that the cardio-pulmonary murmur, if not heard exclusively among neuropathic, constitutional asthenics and tuberculous patients, is heard far oftener in them than in any others, still demands an explanation. If this is found it may throw much light upon the origin of the sign. In fact, the patients belonging to these groups present several interesting peculiarities which may be more or less important in this connection.

In the first place, the heart muscles in these cases are liable to be weak, their innervation defective and the beat tumultuous, irregular, rapid or of changing rhythm. In the next place, the chest wall may be unduly yielding, more or less collapsed from early rickets or other nutritive disorders or otherwise deformed. The thorax has, indeed, been repeatedly noted as unusually long, and slenderly provided with muscles. Finally, the lung may contain tuberculous deposits or cavities, or may be abnormally placed with relation to the heart. On the other hand, there is no single one of these peculiarities which is universally present. The neuropathic patients do not always have deformed or feeble chests; the poorly nourished persons are not always markedly neurasthenic or neuropathic. Again, it must be admitted that the cardio-pulmonary murmur itself is not heard with such frequency, even among that class of patients who have it relatively often, as to imply a necessary concomitance with any particular signs or symptoms of other sorts.

There is, however, one possible way of regarding the sign under discussion which clothes it with special interest, and at the same time makes the task of explaining its genesis slightly easier. The cardio-pulmonary murmur may, namely, be classed with the numerous peculiarities or stigmata which are met with so often among neuropathic persons, and yet neither always present nor always implying, of necessity, a neuropathic constitution.

If the ranging of this murmur under such a head as this does not yield a true account of its pathogenesis, it does provide a new point of departure for which an explanation may be sought.

The researches of later years have shown, with increasing clearness, that it is not only alone in connection with such toxic affections as myxedema that changes of bodily type, of definite form, occur. There are many other tendencies as well which are

⁵ Prov. Med. Journ., 1901. II, 116-121.

as far reaching if not so serious in their action. The stigmata of constitutional neurasthenia are multiple, and within certain limits fairly constant; and they include such different states as nutritive disorders of the skin and its appendages, abnormalities in the formation of the thorax, prolapse of the abdominal viscera and, on the other hand, a great variety of peculiarities of the life and functions of the nervous system. It is only to a few of the abnormalities that I wish to call attention in this connection, and these are the changes in the thorax, the enteroptosis of Glenard and the vasomotor disorders; or, in general, the disorders of innervation of the heart and blood vessels.

It is in just the class of cases which I have described as particularly liable to the cardio-pulmonary murmur, namely, among the slender, rather feeble neurasthenics, that the tendency to ptosis of the abdominal viscera is pre-eminently found, but more commonly in women than in men. Stiller, who has had a large experience in abdominal examinations, discussed this point some years ago, and pointed out at the same time another stigma of neurasthenia to which this same group of persons is also liable, namely, a relatively loose attachment of the tenth rib of the right side to the thoracic cage. I have found the cardio-pulmonary murmur to be present in connection with both of these signs, though the association is by no means invariable or necessary. It will be remembered in this connection that it is the right kidney which is especially liable to prolapse. The innervation of the heart and arterial system is peculiarly apt to be affected in neurasthenics. Thus, Erben⁶ finds that slowing of the pulse to the extent of three to six beats is apt to be brought on by bending over once or twice or by throwing the head backwards, and this change is but slowly recovered from. Again, irregularity and rapid beating of the heart are easily brought on by efforts of various sorts. In view of such facts as these, it has seemed to me not impossible that among the causes for the cardio-pulmonary murmur it might be reasonable to think of some abnormality or defect of the innervation by which the action of the heart is brought into relation with that of the lung. It can hardly be doubted that some such mechanism as this exists, for we know that at every expiration and every inspiration the conditions of the cardiac circulation are altered, and it would be a strange anomaly indeed if this change failed to be registered and regulated through the action of the nervous system. Surely a purely mechanical explanation of the cardio-pulmonary murmur is inadequate. For why should an overlying piece of lung be aspirated or compressed by the passage of the blood through the chest of a nervous and feeble person, and not by that of a vigorous and healthy man? The task of explanation becomes much easier if we may assume that the regulatory mechanism governing the tension of the lung, or the tension of the vessels, has been damaged, or that the relation between the two has become defective. One may imagine, for example, some such disturbance to exist as is seen when a swinging pendulum receives a knock which imparts to it a twisting movement, that only gradually passes away. Similarly, perhaps, under the influence of excitement, the co-ordi-

nation of the respiration and the heart's action or the vascular tension may become disturbed, and yet be restored by the compression of the chest or the action of forced expiration. I do not pretend that even this explanation is an adequate one, but only that it may serve as the prototype of some other which is really satisfactory.

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NASAL POLYPI: A STUDY OF ONE HUNDRED AND FORTY-SEVEN CASES.

BY J. PAYSON CLARK, M.D., BOSTON.

ALTHOUGH the existence of nasal polypi was recognized early in the history of medicine, and although more has probably been written about them than about any other affection of the nasal chambers, our knowledge of them is still, in many respects, far from satisfactory. What are the immediate causes of the growth of nasal polypi? What are the predisposing causes? Can all cases be permanently cured, or only certain varieties? Such are some of the questions which continue to puzzle many of us, and to no one of which would any single answer be universally acceptable or satisfactory. It was with the hope of eventually being able to throw a little light on one or more of these unsettled questions that I began, about seven years ago, to get as complete a history and keep as perfect a record as possible of all the cases of nasal polypi which came under my observation. This I kept up with occasional interruptions but with more or less regularity for several years, during which time I collected the records which form the basis for

⁶ *Wien. klin. Woch.*, 1898, No. 24.

¹ Read (by title) before the American Laryngological Association May 14, 1903.

this paper. In order to have the histories as uniform as possible, and not omit any point that might be of importance, I had cards printed, giving brief headings, indicating the various questions to be asked and the symptoms and appearances to be observed, leaving space for a description of the treatment and subsequent history. Although I had taken, as I thought, a good deal of pains in the preparation of these cards, I found, as time went on, that they might have been improved upon in a number of ways in their general arrangement, and that I had omitted some questions which might have been of value, such as the question of previous injury to the nose and the condition of the lower turbinates. As to the two items mentioned, records were obtained in many of the cases but not as a routine. In presenting the result of this clinical experience I shall not advance any new theories, but simply add the support of such evidence as I have been able to collect to statements already made by others, or show where this evidence does not support them.

The greatest hindrance which I experienced in making a study of these cases and noting the result of treatment was the difficulty of sufficiently impressing upon patients the importance of following up treatment and reporting as often as desired for observation. In spite of strict injunctions to the contrary, the majority of patients in my experience cease coming as soon as their nasal respiration is free, and only appear when their noses are again occluded. Strange to say, this statement seems to apply in a great many cases to those who also have a purulent discharge from some sinus as well as to those who have only vasomotor symptoms. The nasal discharge is disregarded if the nose is clear.

PATHOLOGY.

This portion of the subject has been so thoroughly presented by such able observers as Jonathan Wright, Hopmann, Chiari, Hajek, Swain, John McKenzie and others, that I shall pass it over with only a brief statement, which I believe nobody will now dispute, namely, that true myxomatous tissue never occurs in nasal polypi, which must, as a rule, be considered histologically as stretched and edematous mucous membrane. To quote from Wright: "While the amount of fibrous tissue varies between *nil* and a condition which might well be given the name of fibroma, the vast majority of polyps consist simply of the normal amount of loose areolar tissue infiltrated and stretched with serous exudate." As to the site of these growths, Zuckerkandl's researches have shown that the usual situation is in the region of the middle turbinated bone, from some portion of the outer wall of the nose concealed by the middle turbinate, but more commonly from the turbinate itself, either from the lower border or from the outer or (more rarely) the inner surface. In all of my cases the site of the polyps is recorded as being "on the middle turbinate," "under the middle turbinate," "in the region of the middle turbinate," and in a few cases "above the middle turbinate." In several cases I have a note of polyps visible only in the posterior nares, and having their origin distinctly above the middle turbinate. Of 146

cases, 107 had polypi in both nostrils, 19 in the left and 20 in the right only. Seventeen cases in which the polypi were in one nostril only were seen last by me over five years after they had been conscious of unilateral obstruction, and in not one of them was there the slightest evidence of polypoid degeneration of the mucous membrane in the other nostril. This experience leads me to believe that it is not as rare an exception as Bosworth states for these growths to remain unilateral.

ETIOLOGY.

As far as my records go, I can find no evidence of any constitutional diathesis or impairment of the general health standing in any causative relation to this affection; indeed, the large majority of my cases were in excellent health. Heredity appears to play no part in causation. In 102 cases only ten knew of any relative who had polypi, one a mother (doubtful), three a sister, three a brother, one a father and two a grandfather. These cases are so few that one seems to be justified in considering them simply coincidences. Of 146 cases 76 were males and 70 females. These figures lend only a slight support to the statement, generally found in textbooks, that these growths are more common in males. More than half of the cases (78) were between thirty and fifty years of age. There were 29 between twenty and thirty, and the same number between fifty and sixty. The extremes were one at thirteen and one at seventy-eight. In 37 cases there existed a deformity of the septum, causing obstruction, more or less marked, of one nostril. Twenty-one of these are recorded as deviation, 11 as a ridge, and 5 as ridge and deviation. Small spurs and ridges and slight deviations were not considered. Bearing in mind the frequency of the occurrence of septal deformity without nasal polypi and *vice versa*, it seems very doubtful if the former ever stands in any causative relation to the latter. I should rather be inclined to the opinion (which, it seems to me, has some foundation in fact) that any injury to the nose which might result in a deformed septum might also bring about a condition favorable to the growth of polyps. This leads me to speak of the theory, expressed by Macdonald, that polypi begin with a localized inflammation of a mucous surface followed by the formation of edematous granulations, which later become covered with epithelium and form what we recognize as polypi. He states further that they may also begin by the accumulation of small round cells in the muco-periosteum, which gradually project from the surface until covered only by epithelium. It certainly seems most plausible to suppose that some cases of nasal polypi have their origin in granulation tissue. Such a theory would explain the fact just mentioned, which it seems to me has not been given the importance it deserves, that some of these cases trace their origin very directly to an injury to the nose. A neglected injury to the nose, with its attendant nasal obstruction, impairment of the circulation by pressure, and irritating muco-purulent or purulent discharge from the injured portion, might quite conceivably result in the formation of edematous granulations which would eventually develop into full-fledged polyps. Bosworth says

that a case has been reported by Gerdy, in which they occurred as a result of a fracture of the vomer. Downie reports a case of a large polyp in the left nostril of a woman aged seventy-four, which she considered the result of a blow on the head received in early life. Unfortunately, as I have said, the question of injury as a routine one was omitted from my records; nevertheless, I find that five of my cases traced the beginning of nasal obstruction to a blow on the nose. It seems to me that injury to the nose may be a factor in causation oftener than we have been accustomed to think, and that it might be profitable to question patients regularly on this point. This idea of the causative influence of previous injury is especially interesting in the light of the statements of Jonathan Wright regarding the blood supply of the mucosa. Any injury to the canals in which the arteries and veins lie would affect the veins more than the arteries and cause that edematous condition of the mucosa which may develop into polypi.

Another predisposing cause of the growth of nasal polypi is suppurative of one of the accessory sinuses. Again in this condition we undoubtedly have a similar disturbance of the "bony canals" of the blood supply. Macdonald says: "Generally speaking, when we have suppuration we find more or less development of granulation tissue, which tissue may be ultimately indistinguishable histologically from ordinary large polypi." While it is generally accepted that nasal polyps by obstructing the nose may lead to suppuration of one or more of the accessory sinuses, it is also true that a discharge of pus from a sinus may cause a growth of polyp or "edematous granulations histologically indistinguishable," which are not cured until suppuration ceases. Of 49 of my cases in which the purulent discharge was due to a sinus affection, in one the pus came apparently from the antrum only, in 11 from the ethmoid only, in 11 from the ethmoid and antrum and in 26 probably from the ethmoid. In this last group the patients were not seen sufficiently often to make an absolutely positive diagnosis. In those cases in which the discharge was the principal symptom and in which obstruction to breathing was little if at all noticeable, it is probable that the sinus trouble caused the polyps. I have records of several cases which support this view.

In these cases polypoid tissue rapidly disappeared after getting rid of a purulent discharge, leaving a healthy mucous membrane. But in those cases in which the nasal obstruction was the principal symptom, it was generally impossible to determine with any surety which was the underlying condition. In some it was no doubt the ethmoiditis; in others it was equally fair to assume that the ethmoid cells had become infected as a result of the presence of the polypi. In seven of my cases the polyps were bilateral while there was only a unilateral purulent discharge. In these cases the most logical conclusion is that the sinus disease resulted from infection of a nostril already occluded by polypi.

As to the theory of some writers that all nasal polyps owe their origin to ethmoid disease, I will only say one word. As long as many skilled and careful observers see cases in which, after the most painstaking scrutiny, they can find no evidence of

ethmoid disease, and as long as there are other conditions which can just as reasonably be considered causes, it seems to me that the burden of proof lies with those who hold this view to show that ethmoiditis exists in these cases and to show us a satisfactory method of determining its existence.

All but about a fifth of the cases gave a history of frequent head colds. Some of these so-called colds were, no doubt, only symptoms of existing polypi. That frequent colds are a factor in other cases is quite probable. They indicate, among other things, an abnormal sensitiveness of the Schneiderian membrane. This membrane thus kept in a more or less constantly congested condition with increased serous transudation, one can readily see how the "water-soaked" condition, spoken of by Bosworth, might be acquired. It is undoubtedly a fact that a profound local vasomotor disturbance is present in a great many cases, and it is hard to conceive that such a disturbance does not stand in a causative relation to the polypi. Its existence is shown by the presence of sneezing and a watery discharge. Frequent sneezing and a watery discharge were noted in about one third of my cases, and asthma, which also shows the constitutional tendency to vasomotor instability, was present in one sixth of the cases. In the few cases, fifteen in number, in which the polyp is put down as single, the pedicle was small, and only a small area of the mucous membrane was affected.

SYMPTOMS.

In a very large proportion of cases, obstruction to respiration is the first symptom which calls the patient's attention to his nose. Sneezing, as I have already said, was marked in about a third of my cases. While often an early symptom, it was by no means always such, not appearing in some cases until considerable obstruction existed. Of 93 cases questioned as to the sense of smell, in 39 it was lost, in 4 much impaired, and in 27 impaired, leaving 27 in whom the sense of smell was presumably about normal. Undoubtedly if all these patients had been subjected to a practical test, it would have been found that the olfactory sense was lost or impaired in a still larger proportion of cases. Two or three of the patients in whom the polyps were unilateral stated that the sense of smell was wanting on the affected side. In many cases the smell does not return after the removal of the growths, due, as Bosworth puts it, to "a certain disorganization which occurs in the mucous membrane lining the olfactory region." The character of the discharge varies from watery to mucous, muco-purulent and purulent. Of 134 cases in which the character of the discharge was noted, in 39 it was watery, in 18 mucous, in 37 muco-purulent and in 32 purulent. In 8 cases the discharge, first noted as watery, became purulent later, owing to the starting up of an ethmoiditis.

SEQUELÆ.

Bronchitis was noted as present in 21 cases, in all probability as a direct result of the obstruction to nasal respiration. Asthma was associated with 10, asthma and bronchitis with 14 and hay-fever with 4 cases, while there were 2 cases of hay-fever

with asthma and 2 doubtful cases of hay-fever. I am inclined to think that it is extremely rare for a nasal polyp to take on a malignant character. No such case has ever come under my observation.

TREATMENT.

The aim of any treatment must be the complete removal of the polypi and the restoration of the mucous membrane to a healthy condition so that there will be no further growth. In the first place, it goes without saying that the growths should be removed with as little violence to the surrounding structures as possible. No one will dispute, I think, that the cold wire snare is to-day the instrument *par excellence* for their removal. This instrument must be supplemented in most cases by the use of cutting forceps of suitable shapes and sizes for reaching the parts affected. Where the polyp is single and growing from a small pedicle, a simple removal is often all that is necessary, and there may never be a recurrence. But in those cases in which the growths are numerous and diffuse, the middle turbinate will usually be found to be so deeply affected by the process that only its thorough removal will suffice to eradicate the disease. I have never used the galvano-cautery or chromic acid to destroy the base of these growths, because their irritating qualities, especially the galvano-cautery, may tend to excite that condition in the mucous membrane which we are trying to get rid of. It is unnecessary to speak of the possible dangers of using the cautery in the ethmoid region. I have thought that the application of 95% alcohol on pledgets of cotton to the site of the growths has been of assistance in preventing the recurrence of polypi in some cases. I often prescribe also the use of the distilled extract of hamamelis in a spray. Alcohol has been long ago recommended by McBride, Griffin, Cohen and others, and I simply wish to add my endorsement to its apparent value.

PROGNOSIS.

The prognosis is largely affected by the perseverance with which a patient returns for treatment as desired. I have already spoken of the difficulty one experiences in making patients follow up treatment. Eighty-three of my cases were under observation for a year or less, and the majority of them were seen only two or three times. And many cases which were under observation for a longer period did not return until again troubled by nasal obstruction. Twenty-five cases were seen at various intervals for more than one and less than five years, and 26 cases were seen in this way for five years or over. In these last two groups of cases no polyps were present one year after treatment in five cases. In 8 cases none were seen more than one and less than five years after the last treatment, and in 13 there were none five or more years after. In 7 cases there was a recurrence in one side but not in the other, one or more years after the last treatment. I have included in the above list three or four cases in which there were present at the last visit one or two minute polypoid excrescences in the region of the middle turbinate, but as these had remained unchanged without treatment for one to

three or four years, I felt I was justified in including them among the cured cases.

The points which I wish to especially emphasize in closing are: (1) The question of a previous injury to the nose is to be considered in the etiology of polypi. (2) Probably only a small proportion of cases are caused by sinus disease (usually ethmoiditis). (3) A local vasomotor disturbance, which may be of constitutional origin, stands in a causative relation to polypi in a certain proportion of cases. (4) The removal of the whole middle turbinate will be found necessary in many cases where the growths are diffuse. (5) Many cases of nasal polypi can be cured if patients will return for treatment as instructed.

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Clinical Department.

SEPTIC ENDOCARDITIS.

BY A. W. DUDLEY, A.M., M.D., NORTH CAMBRIDGE, MASS.

A REPORT of the following case, which I believe was septic endocarditis, may be of interest. The patient, a girl of twenty-five, well developed and well nourished, though pale, has had albuminuria for three or four years—probably longer. Specific gravity, 1015–1020; albumin, $\frac{1}{4}$ % to $\frac{1}{2}$ %. Sediment shows normal blood, some granular and hyaline casts. Otherwise her organs are normal. With care she leads a fairly comfortable life. For the winter of 1902 she was not as well as usual.

On Sunday, May 11, I was called to see her; temperature, 102°; pulse, 120, rising at night to 104° and 130; some soreness and redness of the throat (tonsillitis?). On Monday, Wednesday and Friday of that week, every other day, she had fever rising to 103° or 105°, while on Tuesday and Thursday she was very much improved. This suggested large doses of quinine, which had no effect on the temperature. The plasmodium malariae was looked for in the blood and not found, and there was a marked leucocytosis (May 23, whites, 36,500).

Beginning in the early part of this week, there was a mixed macular, papular and hemorrhagic eruption mostly on the hands, forearms, feet and legs. This continued to appear in successive crops for two or three weeks, the chills coming so often that it was impossible to say whether or not they bore any relation to the rash. Later she had one large bulla on the left knuckle. This was clear at first but became milky; a culture proved sterile. In the middle of the first week also she had fleeting joint pains with some swelling of the legs. This did not last long, but whether or not because salicylates were used I cannot say.

The urine at this time became very high colored; blood, granular and epithelial casts appeared in abundance; albumin remained about constant.

The condition of the urine, however, seemed to be secondary to the fever, and not the cause of it.

At the end of the first week she was seen by Dr. E. H. Stevens. Malaria could not be excluded, and quinine in large doses was continued. Malignant endocarditis was spoken of. Heart negative. During the second week the fever waves became more frequent, at least one a day, rising at times to 106° . The pulse followed the temperature. The heart showed a slight systolic souffle when in violent action only. Spleen slightly enlarged. During the subsidence of the fever she was bright, gay and felt well. The paroxysm of fever was sometimes preceded by chill, vomiting or restlessness, though generally she was quiet till the temperature reached about 103° , when she became restless, and I began early to give her morphia with quieting effect.

This brings the story up to the end of the second week, when she was seen by Dr. F. C. Shattuck. Malaria at this time could be ruled out. Trichinosis was spoken of to be dismissed (eosinophiles not increased). Pyemia was diagnosed, but the source of the infection was not found. Septic endocarditis seemed possible. Dr. Shattuck found the heart and spleen normal, and did not think the eruption then present due to miliary emboli. He advised a blood culture, and the use of antistreptococcus serum (Parke, Davis & Co., 20 cc. daily) if streptococci were demonstrated, or no organism was found. A blood culture proved negative. The serum was given 210 cc. in nine days, and as no benefit was apparent its use was discontinued.

Beginning with May 22 a three-hourly chart was kept. Up to June 10 (three weeks) the pulse followed the temperature. The interval between the crests of the fever waves varied from twelve to twenty-four hours, with one exception (forty-two hours), and the crest of the wave rose from normal to 105° as the lowest and $106\frac{8}{10}^{\circ}$ as the highest. Physical signs showed nothing new except that on June 9 an extra strong cardiac contraction, every 6 to 33 beats, followed by a slightly prolonged pause, was noted. This was never observed again. The systolic souffle, though still faint, became more distinct, was confined to the apex, not transmitted, and heard only when the heart was in violent action. There were a few short attacks of precordial pain.

June 10 we began using unguentum crecé, about 2 drams daily. The afebrile intervals immediately began to grow longer and the fever to diminish. I must say, however, that I think this was accidental and not cause and effect, as a backward study of the chart shows slight indications of such a change before unguentum crecé was used at all.

From June 10 to July 12 there were fourteen rises of temperature with intervals of from twelve hours to five days—generally two or three days. The pulse was more affected by the attack, and less regular in the intervals; the systolic souffle became more distinct at the end of that time. The depression between attacks was often severe, though never immediately alarming. Unguentum crecé was continued. She seemed to be depending on morphia, for which I could find no substitute.

From July 12 to 28, though often greatly depressed and somewhat exhausted, there was no

fever except for two days, and then not above 101° . July 20 and 21 she had two attacks of delirium, lasting one and two hours respectively, pupils normal and reacting to light. July 28 and 30 she had fever rising to 105° each time. This was the last till August 25, when with sore throat and diarrhoea the temperature rose to 104° .

Her convalescence worried me for a time, among other reasons because I could not entirely omit the morphia, but this was finally accomplished. Her urine is much as it was before the attack. There is no demonstrable lesion of the heart. She has been better this winter than last. She has had, however, what she has never had before, "rheumatism" of the legs, especially on first starting after a rest. Salicylates do no good.

The treatment, aside from what I have mentioned, was entirely symptomatic: alcohol, strychnia, at times digitalis, morphia, good food. Coffee was craved and allowed freely.

As I said in the beginning I believe this was one of the rare cases of septic or malignant endocarditis which get well—more rare because not grafted on to an old endocarditis. I am aware that this diagnosis cannot be absolute, and is arrived at by exclusion fully as much as by positive signs; and while the cardiac signs were not conclusive, autopsies show that frequently physical signs do not betray even very abundant vegetations.

The association between tonsillitis and rheumatism, and rheumatism and endocarditis is recalled by this case starting with a sore throat, showing rheumatic symptoms after a few days and coincident therewith the septic fever curve.

Besides those mentioned I am indebted to Drs. C. M. Hutchinson and H. G. Lazelle for assistance in this case.

Important points are noted on the chart. The chart for the first ten days is not published.

Medical Progress.

PROGRESS IN PHARMACOLOGY AND PHYSIOLOGICAL CHEMISTRY.

BY M. VEJUX-TYRDE, M.D., BOSTON,

Instructor in Pharmacology in Harvard University.

It has been repeatedly shown that the various organs contain some substance or substances which are capable of digesting them—autolysis. These observations are of very great importance, because by the study of such processes we may get a closer insight into normal and pathological metabolism.

Martin Jacoby¹ notes specific properties to the autolytic action in different organs. He makes the interesting observation that the products of autolysis in different organs are quite different. In the products of autolysis of the lungs he finds a great deal of albumoses, while in autolysis of the liver he finds practically no albumoses. If the product of autolysis of the lung containing a great deal of albumose is treated with extracts of liver, practically all the albumoses disappear. He concludes, therefore, that autolysis is carried on by very different ferments in different organs.

¹ Beitr. z. Chem. Physiol. u. Path., No. 3.

Alfred Reh² found as products of autolysis of ox lymph gland, thymine, leucine, tyrosine and ammonia.

O. Shumm³ found as products of autolysis of the spleen at first much albumose, which later disappeared and were replaced by lysine, ammonia, leucine and tyrosine.

Fritz Baum⁴ worked up the constitution of a new aromatic body from pancreatic auto-digestion called skatoline.

Leo Langstein⁵ proved the undoubted presence of albumose in the blood.

Waldemar Stade⁶ confirms Volhard's observation concerning the presence of a fat splitting ferment in the stomach, and even recommends a further study with a view of determining the efficacy of the stomach by a quantitative determination of this ferment.

N. Sieber⁷ found that oxidizing substances, such as hydrogen peroxide and calcium peroxide as well as plant and animal oxidases, as horse fibrin, destroy the efficacy of toxins not only in vitro but in living organisms.

Erich Harnack⁸ found that uranium, mercury and copper are much more toxic to the young salamander than iron; also that arsenic has a relatively very low toxicity.

R. Magnus⁹ showed that ammonia gas was never absorbed by the lungs and that it was not excreted by these organs even when injected in large quantities into the pulmonary arteries.

E. C. van Leersum¹⁰ demonstrated that equimolecular solutions of sodium sulphate, sodium nitrate and sodium acetate have the same reviving influence as normal salt solution after fatal hemorrhage.

Hildreth¹¹ recommended preparations of apocynum cannabinum as superior to digitalis in cases of a dropsical effusion, because they do not cause the cumulative action and the other untoward effects of digitalis.

Tunnicliffe¹² finds phenolphthalein a very efficacious purgative in the dose of 0.1 to 0.25 gm.

Hirsch and Beck¹³ made determinations of the viscosity of the blood in Bright's disease, and found but rarely an increased, usually a decreased or normal one. They concluded therefore that the hypertrophy of the heart accompanying these cases cannot be explained by increased resistance due to increased viscosity.

Fritz Rosenfeld¹⁴ found an increase in the volatile fatty acids in the urine in case of gastric ulcers, with hyperacidity or normal acidity also in cases of carcinoma of the stomach with sub- or anacidity. He found a decrease in cases of retention with subacidity.

Mathes¹⁵ discovered a true proteolytic ferment in the urines of dogs with extirpated stomachs. Like pepsin, it digests proteid in acid solutions.

Zoepffel¹⁶ agrees that the anesthetics containing halogens are as a rule more depressant to the heart than others, but he believes that the degree of depression is not exactly proportional to the amount of halogen in a compound.

K. Wittmack¹⁷ believes that quinine affects the ear not by producing congestion, as was formerly thought, but by producing an ischemia exactly as in the eye.

Otto Cohnheim and Franz Soetbeer¹⁸ experimented on young dogs with a modification of Pawlow's method to see whether young animals have gastric juice, and if so, whether it is also produced by some reflex action analogous to the reflex action in adults. They found that sucking in itself produced a secretion of gastric juice.

Joh. Kropil¹⁹ uses mesotan (methoxy methyl-ester of salicylic acid) in a solution of olive oil. He rubs it into the skin, especially over rheumatic points. He claims that this form of treatment gives the good effect of salicylates without their undesirable ones.

Bromipin, a compound of bromine with sesame oil, was given by A. Rahn in clysters or in milk or tea with good results.

Kullman²¹ made observations on prisoners to see if the food of prisons has any influence on the secretion of the gastric juice, and found that hydrochloric acid is always diminished or absent in 47% of the cases. This is not due to the psychical condition, but mainly to gastritis.

F. Soetbeer and Ibrahim²² found that after ingestion of water the urine purin bases are not increased, but the nitrogen in the feces is increased.

A. Rydygier²³ studied the functions of the kidneys by cryoscopy under chloroform anesthesia, and found no influence on normal kidney but much disturbances when the kidney was diseased; he therefore regards kidney disease as a contraindication to the use of chloroform.

R. Traussig²⁴ observed over 50% decrease in the blood pressure after the administration of iodipin, and ascribed this result to a dilatation of the splanchnic blood vessel. He therefore recommends it in lead colic.

C. L. Klotz²⁵ and Mangel²⁶ both injected colargol into the circulation of patients with septic endocarditis, and obtained no undesirable results. Klotz obtained marked beneficial effects in his case.

J. Danysz²⁷ showed that radium produces destruction of the epidermis and entis when brought in contact with the skin of a guinea pig. It produces tetanic convulsion when brought in contact with the spinal cord.

R. Lepine²⁸ found that if dog's blood to which sugar has been added stands at a temperature of 38° C. with a current of oxygen passing through it, 30% of the sugar disappears in one hour.

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

⁷ Arch. des Sc. Biol. de St. Petersb., 9.

⁸ Arch. f. Exp. Path. u. Pharm., 48.

⁹ Ibid.

¹⁰ Ibid.

¹¹ N. Y. Med. News, 1902.

¹² Brit. Med. Journ., 1901.

¹³ Deutsch. Arch. f. klin. Med., No. 12.

¹⁴ Deutsch. Med. Woch., No. 13.

¹⁵ Arch. f. Exp. Path. u. Pharm., No. 49.

¹⁶ Ibid.

¹⁷ Pflüger's Arch., 95.

¹⁸ Hoppe Seyler's Zeltschr., 37.

¹⁹ Wien. Med. Presse, No. 13, 1903.

²⁰ Ibid.

²¹ Viertel Jahrschr. f. gerichtl. Med., 23, 8., 311

²² Zeltschr. f. Physiol. Chem., 36.

²³ Medycyna, No. 37.

²⁴ Wien. med. Woch.

²⁵ Deutsch. Med. Woch. No. 29.

²⁶ N. Y. Med. Journ., Dec. 12.

²⁷ C. r. d. l'Acad. des Sc., 136.

²⁸ Ibid.

Blood of asphyxiated animals, venous blood or blood of an animal having received a subcutaneous injection of adrenalin all fail to show this glycolysis.

J. Justus,²⁹ by a very sensitive method, was able to demonstrate iodine in the thyroid, thymus, lymph glands, kidneys, spleen, suprarenals and testicles.

J. Haberman³⁰ confirmed the observations of Vogel and Kissling by finding hydrocyanic acid in tobacco smoke. He found from one-three-hundredths to one-one-hundredth as much as nicotine, a quantity which is insignificant compared with nicotine as far as action is concerned. Since he could obtain no trace of hydrocyanic acid by wet distillation of tobacco, it is very probable that this found in smoke was formed by burning.

Inouyer and Saiki³¹ found an excess of lactic acid in the urine after epileptic attacks, which they attributed to insufficient supply of oxygen during the attack and not to disturbance of the liver.

A. M. Luzzato,³² while studying the physiology of oxalic and oxaluric acids, found that the excretion of oxalic acid is increased by the injection of uric acid, and that oxaluric acid is completely transformed to oxalic acid in the living organism.

Fr. Hupfer³³ found that quinic acid exerted no influence upon the excretion of uric acid and therefore advises against the use in gout of such quinic acid preparations as urosin sidonal, urol, chinatropin, ursal, urapherin, uropheninbenzoate and urotropine salicylate.

E. Schütz and N. Castro³⁴ studied the hemicellulose, which forms the cell walls of the seed and cotyledon of *lupinus luteus*. They find this substance susceptible to partial digestion by diastase, taka-diastase, ptyalin and pancreatin. They believe that this substance is dissolved in the plant cells by a ferment action and subsequently used for the nutrition of the plant.

Aristido Kanitz³⁵ obtained maximum trypsin digestion in the presence of the hydrates of barium, calcium and strontium in about the same ionic concentration. He therefore concludes that the influence of the hydrates in digestion is dependent on the concentration of the hydroxylions.

Ernst Darmstaedter³⁶ describes a new method for the quantitative estimation of oxybutyric acid based on its transformation to crotonic acid by 50% sulphuric acid. The results which he obtained are very good, and if confirmed by others the method will be valuable, since no good methods existed before. The best, that of Magnus-Levi, was very far from accurate and tedious in carrying out.

Friedrich Kruger³⁷ found changes in the absorption bands of hemoglobin after treating it with chloroform. He concludes that chloroform does not only precipitate hemoglobin mechanically but also changes it chemically.

Gustav Emblem and Franz Knoop³⁸ could not find during the absorption a transformation of albumoses to coagulable proteids or to crystallizable substances, as respectively Hofmeister and Cohn-

stein, but he finds that albumose is absorbed as such and is present in the blood.

Friedel Pick³⁹ experimented with extracts of liver, kidneys and blood in reference to their diastatic properties. He finds, as others, that the liver does not alone possess this property, but that the kidney does possess it even in a higher degree. He finds that the diastatic ferment in the liver is destroyed by cooling and its activity is decreased by quinine and hydrocyanic acid in great enough concentration.

B. Friedman⁴⁰ finds that creosotal rapidly decreases fever and dullness in pneumonia, and he concludes that this agent acts as an antiseptic to kill or retard the growth of the bacteria causing pneumonia.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-FOURTH ANNUAL MEETING, WASHINGTON, D.C.

The President, DR. MAURICE H. RICHARDSON in the chair.

SECOND DAY, MAY 13, 1903.

PROF. JOH. V. MIKULICZ-RADECKI, Breslau, Germany, read a paper entitled

SOME CONTRIBUTIONS TO THE SURGERY OF THE GASTRO-INTESTINAL TRACT,

in which he divided the subject into the following topics: (1) Cardiospasm and its treatment; (2) peptic ulcer of the jejunum; (3) the operative treatment of severe forms of invagination of the intestine; (4) operation on malignant growths of the large intestine, and discussed each one at some length.¹

MR. B. G. A. MOYNIHAN, Leeds, England, read a paper on

THE SURGERY OF THE SIMPLE DISEASES OF THE STOMACH,

in which he stated that the great majority of such cases susceptible of successful treatment by surgical measures are due to ulceration or to its complications and results. These conditions were considered by the author under the following heads:

- (1) Perforation of gastric or duodenal ulcers.
- (2) Hemorrhage from gastric or duodenal ulcers.
- (3) Chronic ulcer; its various clinical types.
- (4) Hour-glass stomach.

After dealing at considerable length with the symptomatology and treatment of these conditions, and laying especially stress upon the necessity for individualizing the cases, he gave the following résumé of the cases upon which his paper was based²: Perforating gastric or duodenal ulcer, 12 cases, 6 recoveries; gastro-enterostomy for chronic ulcer, etc., 70 cases, 1 death; pyloroplasty, 3 cases, 0 deaths; hour-glass stomach, 15 cases, 3

²⁹ Virchow's Arch., 170.

³⁰ Zeitschr. f. Physiol. Chem., 37.

³¹ Ibid.

³² Ibid.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Beitr. z. Chem. Physiol. u. Path., 3.

³⁸ Zeitschr. f. Physiol. Chem., 37.

³⁹ Beitr. f. Chem. Physiol. u. Path., 3.

⁴⁰ Deutsch. med. Woch., No. 14.

¹ See JOURNAL, cxlviii, p. 608.

² See JOURNAL, cxlviii, p. 611.

deaths; gastroplication, 1 case, recovered; excision of ulcer for hematemesis, 1 case, died.

These two papers were discussed by Drs. W. W. KEEN, Philadelphia; W. J. MAYO, Rochester, Minn.; WM. L. RODMAN, Philadelphia; LEONARD FREEMAN, Denver; J. M. T. FINNEY, Baltimore; L. McLANE TIFFANY, Baltimore; N. B. CARSON, St. Louis; and B. FARQUHAR CURTIS of New York; PROFESSOR TIEMANN of Leipsic, and closed by PROFESSORS MIKULICZ and MOYNIHAN.

PAPERS ON THE THERAPEUTIC VALUE OF THE X-RAYS IN SURGERY.

Dr. ARTHUR DEAN BEVAN of Chicago read a paper entitled

THE THERAPEUTIC VALUE OF THE X-RAY.

Drs. WM. L. RODMAN and G. E. PEABLER read a paper entitled

THE VALUE OF THE X-RAY IN SUPERFICIAL EPITHELIOMATA AND TUBERCULOSIS,

quoting the following advantages of the treatment as given by Pusey:

(1) It is painless; (2) it destroys diseased tissue but leaves healthy tissue in its place; (3) it leaves a minimum scar; (4) it can be used when the surrounding tissue cannot be sacrificed; (5) it relieves pain and induces sleep.

The paper was closed with the following conclusions:

(1) The length of time required for the cure of epitheliomata is longer than by surgical or caustic treatment, while the cosmetic results are better. The dangers are proportionate to the urgency of the treatment as indicated by the degree of malignancy. It should only be recommended in cases that are inoperable either because of the extent of the growth or its location.

(2) It is probably the best means at our command for the treatment of superficial tuberculosis, and gives better cosmetic results.

(3) It should follow all operations for malignant disease or tuberculosis with the twofold object of stimulating the healing process and of preventing a recurrence. In some cases it may be of an advantage to give a short course of treatment before operation, to destroy the outlying portions of the growth and make such operation of a less formidable nature.

Dr. WILLIAM B. COLEY, New York, read a paper entitled

FURTHER OBSERVATIONS ON THE INFLUENCE OF THE ROENTGEN RAY UPON SARCOMA,

in which he stated that from Feb. 1, 1902, to May 11, 1903, he had treated at the General Memorial Hospital 36 cases of inoperable sarcoma, the pathological classification of which was as follows: Round-celled, 21 cases; spindle-celled, 6 cases; mixed-celled, 2 cases; melanotic sarcoma, 1 case; osteosarcoma, round-celled, 1 case; type of cell doubtful, 5 cases.

He stated that in four cases which he had reported to the society last year the tumors had entirely disappeared, but in every case there has since been a recurrence. He then gave a brief

history of the physical condition and treatment of several cases, and expressed the opinion that the x-ray has a much more powerful effect upon sarcoma than carcinoma.

In regard to the relative merits of the toxins and x-rays in inoperable sarcoma, he felt that the time had been too short and experience too limited thus far to definitely decide this question. He had noted, however, in several cases of inoperable round-celled sarcoma, in which the toxins had been tried and failed, the x-ray had caused entire disappearance of the tumors, but there had been a speedy recurrence in every case. On the other hand, in a much larger number of cases of inoperable sarcoma the tumors have entirely disappeared under the toxin treatment, and remained well from three to ten years after the treatment. The dangers from this method of treatment are burns, toxemia, and metastases resulting from the cells being broken down and carried to other parts of the body. He did not believe that the x-ray method should be employed in operable cases of sarcoma, with the possible exception of carcinoma of the extremities, in which operation would necessitate amputation. In such cases he recommended a brief course of the combined x-ray and toxin treatment, reporting a case of sarcoma of the fibula, which had been treated by this method, which had been treated six years ago by the toxin method, and has remained perfectly well ever since.

Dr. ALEX. B. JOHNSON, New York, read a paper entitled

SOME EXPERIENCES IN THE TREATMENT OF INOPERABLE MALIGNANT GROWTHS BY THE X-RAYS,

in which he reported 10 cases, 9 of carcinoma and 1 of sarcoma, 8 died under treatment, and 2 are still alive and have apparently improved, one of them being the case of sarcoma. After a considerable time severe dermatitis was produced in each of these cases, and it was advised the treatment be discontinued at intervals for at least six months. The source of the current was 110 volts direct commercial current. Fifteen-inch spark length Willyoung induction coil. The distance was at first twelve inches, which was gradually diminished to six, as tolerance at that distance became evident on the part of the patient. The surrounding parts were protected by sheets of lead foil weighing 10 oz. per square foot.

These papers were discussed by Drs. WILLIAMS of Boston, W. JOSEPH HEARN of Philadelphia and R. H. HARTE of Philadelphia, and closed by the authors.

Dr. WILLIAM B. COLEY, New York, read a paper entitled

RESULTS OF ONE THOUSAND OPERATIONS FOR THE RADICAL CURE OF INGUINAL AND FEMORAL HERNIA PERFORMED BETWEEN 1891 AND 1902.

Out of the 1,003 cases which the author had operated upon between August, 1891, and December, 1902, there were 937 cases of inguinal hernia, 756 of which occurred in males and 181 in females; and 66 cases of femoral hernia, all males. In the 66 cases of femoral hernia there was no mortality and the primary union was obtained in all but one

case, which formed the only recurrence, the balance having remained well from six months to eleven years. The Bassini method for femoral hernia was employed in 16 cases and the purse-string suture (with kangaroo tendon) in 50 cases. Out of the 181 operations upon the female for inguinal hernia there was no recurrence and no relapse, the method employed being practically Bassini's method for the male. There were no deaths in any of these 1,003 cases. In children operations should seldom be advised under four years, the reason being that many of the cases at this age are cured by a truss, but after that age in cases in which a truss has been tried and failed, or cases in which the presence of reducible hydrocele prevents a truss from holding the rupture, operation is advised. In all adult cases under the age of fifty years operation is advised unless there are strong contraindications. Between the ages of fifty and seventy years operation is advised in patients in good health in cases in which the rupture is held with difficulty by a truss. Six hundred and fifty of these cases were found well in from one to eleven years; 708 cases were found well in from six months to eleven years; and 467 in from two years to eleven years. A careful résumé of the literature on the subject and a comparison of the results obtained by other operators were given.

This paper was discussed by DR. A. H. FERGUSON of Chicago and closed by the author.

DR. N. P. DANDRIDGE, Cincinnati, Ohio, read a paper entitled

REPORT OF A CASE OF GANGRENE OF FIFTEEN INCHES OF CECUM AND ILEUM AFTER AN OPERATION FOR APPENDICITIS. RELIEF OF ARTIFICIAL ANUS AFTER REPEATED OPERATIONS.

On opening the abdominal cavity for the purpose of removing the appendix it was impossible to locate it, but there was discovered a mass on the inner side of the colon, above the ileo-cecal valve, beneath the peritoneum and lying on the psoas muscle and overlapping its inner edge. The tumor was removed after ligating an artery which ran through it, and subsequent examination proved it to be enlarged mesenteric glands. This, together with the appendix, which was found behind the cecum, was removed, and the wound closed without drainage, after which the patient progressed well until the evening of the eighth day, when the dressings suddenly became saturated with a thin fecal fluid, and were changed, and the same condition was found again the next morning, and on opening the wound gangrenous tissue was exposed, which increased in extent until a day or two later a section of the ileum nine inches long was washed out, entirely gangrenous. A complete artificial anus was established, a drainage tube inserted, and with this drainage the pus and fever disappeared. At the end of seven weeks a lateral anastomosis between the small intestine and colon was done, in order to partially relieve the artificial anus, but proved to be a complete failure so far as this was concerned. Some months later an end-to-end anastomosis of the ileum and colon was made by the Murphy button, a small fecal fistula remaining in the side. Two attempts were made to close this fistula, and a colostomy had added much to the patient's comfort and diminished still more the size of the open-

ing, which was finally closed by means of pressure from an elastic sponge held in place by an elastic bandage around the body.

This paper was discussed by DRs. A. J. OCHSNER of Chicago and G. R. FOWLER of Brooklyn, N. Y., and closed by the author.

THIRD DAY—MORNING SESSION.

DR. JOHN C. MUNRO, Boston, Mass., read a paper entitled

THE SIGNIFICANCE OF ALBUMIN AND CASTS IN SURGICAL PATIENTS,

in which he stated that, while he believed that there was no doubt that there was danger in operating on a patient whose kidneys are incapable of sufficient elimination, and where there are secondary organic changes, because a patient exhibits a small amount of albumin, hyaline and fine granular casts, with renal cells, the conclusion should not be hastily reached that he is not a fit subject for operation; on the other hand, the presence of any of these symptoms should be sufficient to cause a thorough investigation. He reported a series of 500 cases showing albumin and casts in the urine, not including those, however, that showed renal degeneration, glycosuria, genito-urinary diseases, burns, erysipelas or similar diseases, most of which were subjected to ether anesthesia, and in none of them was it noticed that any renal damage was inflicted. Out of the series of 500 cases 63 died: 8 from shock, 2 after operation for general peritonitis, 5 from pneumonia, 3 from tuberculosis, 19 from sepsis or severe peritonitis, 4 from senility, and, in addition, there were deaths from embolism, malignant disease, cardiac disease, skull fractures and pancreatitis, where the rôle of the urinary organs must have been insignificant. Of the four cases in which death was ascribed to senility, one with cellulitis of the arm had $\frac{1}{4}$ % of albumin and casts; one with intestinal cancer had profuse diarrhea, one had a strangulated hernia and the fourth died one month after fracture of the femur, showing only the slightest possible trace of albumin with hyaline and granular casts.

This paper was discussed by DRs. JOHN B. ROBERTS of Philadelphia, N. B. CARSON of St. Louis, F. H. GERRISH of Portland, Me., and M. L. HARRIS of Chicago, and closed by the author.

DR. FRANCIS J. SHEPHERD, Montreal, Canada, read a paper entitled

THE TREATMENT OF ANEURISM OF THE EXTERNAL ILIAC ARTERY BY DIGITAL COMPRESSION, WITH REPORT OF A CASE,

in which he referred to the great dangers of surgical interference with the tumor, making amputation of the extremity preferable in many cases to trying to remove the aneurism. He gave a careful résumé of the literature on the subject. The advantages of digital compression are that no apparatus is necessary, the finger being the sole means by which the artery is controlled above the aneurism.

This, of course, requires quite a number of assistants, and does not usually require to be kept up more than twenty-four hours; in the case reported, the pulsation ceased at the end of twelve hours.

This case occurred in a man forty-three years of age, who had strained himself by lifting a heavy weight, and some months afterward a swelling appeared in the left groin, which pulsated; was at first soft and painless, but gradually became harder and seemed to grow upwards into the abdomen. The patient objected to operation, and it was decided to put him on palliative treatment until the session opened, so that relays of students could be secured. He was put on Tuffnell's treatment and ice-bags applied over the tumor, iodide of potassium being given internally, and very little fluid. At the end of twelve hours pulsation had entirely ceased, the pain having been severe after the first four or five hours until the end of twelve hours, being controlled by hypodermic injections of morphine. After twelve hours the patient had no excessive pain, but compression was continued in a moderate degree for twelve hours more, when the leg was wrapped in cotton wool and carefully bandaged, he being kept in bed for a couple of weeks more, and six months after the operation, although the tumor could be easily felt, there was no pulsation and it was very hard.

This paper was discussed by Drs. R. H. HART, of Philadelphia, J. F. BINNIE, of Kansas City, Mo., and JAMES T. BRYANT, of New York, and closed by the author.

Dr. LEONARD FREEMAN, Denver, Col., read a paper entitled

STRANGULATED LEFT DUODENAL HERNIA, IN WHICH
THE SAC CONTAINED THE ENTIRE SMALL INTESTINE,
THE CECUM AND A PORTION OF THE COLON,

in which he referred to the fact that the abdominal viscera and peritoneum are subject to various malformations and malpositions, sometimes acquired and often congenital, and unless the surgeon be familiar with these unusual phenomena his diagnostic ability will be curtailed by confusing conditions for which he can find no adequate explanation. The peritoneal fossæ may be responsible for the most remarkable forms of hernia, and this is especially true of the duodenal fossæ. He carefully reviewed the anatomical formation in this region, and reported a case of strangulated left duodenal hernia in a strong, well-developed man, thirty-nine years of age. He had always enjoyed good health with the exception of occasional indefinite abdominal pains, and five days before the author saw him he developed a severe ileus, with the usual symptoms of acute intestinal obstruction, with a pulse of 120; temperature subnormal and capillary circulation poor. Immediate operation was performed. On opening the abdomen the cavity was found to be occupied by an immense tympanic tumor, resembling an ovarian cyst, which could be outlined on each side by passing the hand between it and the abdominal walls. Upon opening the membranous sac it was found to contain the entire small intestine, together with the cecum and some six or eight inches of the colon. There was considerable foul and bloody serous fluid, no traces of which existed outside the sac, showing how completely the inner cavity was separated from the outer. The cecum, which was distended with fluid feces to the size of an infant's head and largely gangrenous, lay in the left upper quadrant

of the abdomen, just beneath the spleen, in the vicinity of which the swollen appendix was attached by recent inflammatory adhesions.

In attempting to relieve the condition it was necessary to resect the gangrenous cecum together with some six inches of the large intestine and a considerable portion of the small bowel. In doing this the gut was crushed with an angiotribe, the cut ends invaginated, and the opening closed with an over-and-over suture. A side-to-side anastomosis was then made with the Murphy button between the lower end of the ileum and a loop of the colon in the right iliac fossa; but the patient's resisting powers were so poor and the operation so complicated that death resulted.

This paper was discussed by Dr. JOSEPH G. BLOODGOOD of Baltimore, and Dr. ELLSWORTH ELLIOT of New York, and closed by the author.

Dr. B. FARQUHAR CURTIS, New York, read a paper entitled

THYROIDECTOMY AND SYMPATHECTOMY FOR
EXOPTHALMIC GOITER,

in which he referred to the fact that the surgical treatment of this condition has excited much interest of late, owing to the fact that medical treatment failed in many cases, although he believed if the disease had not progressed too far and the patient's circumstances were such as to permit systematic treatment for a sufficient length of time, rest, hygienic measures and proper medication would generally produce a cure, or at least hold the symptoms in check, but there are many cases amenable to surgical treatment that cannot be cured by medicine. However, this treatment is not unattended by dangers, especially acute exacerbations of the symptoms known as thyroïdism, which is just as liable, however, to be produced by operation in any other part of the body.

The various operative measures which have found favor are: (1) Thyroidectomy of one half of the gland. Resection of a smaller portion and enucleation of the situs of the tumor appear to be much more dangerous in these cases on account of the greater danger of hemorrhage (Kocher). (2) Ligation of the arteries. (3) Erythyropepsy. (4) Sympathectomy or partial or total excision of the cervical ganglia.

In conclusion he stated that exophthalmic goiter could be cured by both thyroidectomy and sympathectomy, a perfect result being secured in about 60 % of the cases of thyroidectomy, and an immediately good result appears to be the rule in sympathectomy. Sufficient time has not elapsed to judge of the permanence of the cure, but the immediate results are far superior to those of thyroidectomy. The relative mortality of the two would seem to favor sympathectomy (Kocher 4 deaths in 59 cases of thyroidectomy and ligation only; Jommesco no deaths in 14 cases of bilateral sympathectomy), although in my own cases the result is the opposite. He believed that local anesthesia should be employed, and sympathectomy should be performed only on one side at a time, a sufficient time being allowed to elapse for the patient to recover from the effects of the first operation.

This paper was discussed by Drs. THOMAS W. HUNTINGTON of San Francisco, WILLY MEYER of

New York, BACON, of New Haven, A. J. OCHSNER, of Chicago, GEORGE WOOLSEY, of New York, EMMET RIXFORD, of San Francisco, F. J. SHEPHERD of Montreal, Canada, and JOSEPH C. BLOODGOOD, of Baltimore, and closed by the author.

DR. WILLY MEYER, New York, read a paper entitled

PROSTATECTOMY AND GALVANO-CAUSTIC PROSTATOTOMY (BOTTINI'S OPERATION); THEIR PRESENT STATUS IN THE RADICAL TREATMENT OF THE HYPERTROPHIED PROSTATE GLAND,

which he summed up as follows:

(1) The operations making a direct attack upon the enlarged prostate gland are preferable to those aiming to exert an indirect influence.

(2) We have two useful operative procedures for the direct treatment of the enlarged prostate, that is, prostatectomy and galvano-caustic prostatotomy (Bottini's operation).

(3) In selecting the method indicated in the given case we must individualize and be guided by anatomic, pathologic and social conditions.

(4) Prostatectomy is, of course, the most radical and most surgical procedure; it should be the operation of choice whenever promising success.

(5) Perineal prostatectomy offers advantages over the suprapubic method, since it enables the operator to do the operation under the direct guidance of his eyes.

(6) Debilitated patients who seem unfit subjects for the more radical operation should not be relegated to catheter life, nor should prostatectomy be performed in order "to let them down easy"; they should be advised to have Bottini's operation done.

(7) Surgeons should familiarize themselves with both methods in order to be in a position to do justice to their patients.

(8) It is the duty of those refusing to do Bottini's operation under any circumstances to nevertheless advise patients who ask for more radical relief to have Bottini's operation done, if the operation with the knife seems contraindicated.

(9) Further carefully compiled statistics as to the late results of both operative procedures, preferably in the hands of one man, are desirable in that they will increase our knowledge with reference to the proper selection of the proper method in the individual case.

This paper was discussed by Drs. LEONARD FREEMAN of Denver and A. H. FERGUSON of Chicago, and closed by the author.

DR. CHARLES A. POWERS of Denver reported a case of

DIFFUSE GONOCOCCUS INFECTION OF THE ENTIRE UPPER EXTREMITY.

His patient was a man of twenty-eight years who developed a very extensive phlegmon in the neighborhood of the right elbow joint with concomitant swelling and edema of the entire limb from the pectoral region and shoulder to the ends of the fingers. The gonococcus was recovered from pus liberated by early free incisions, and was also found in a thin serous fluid which escaped at the site of other openings. The course was protracted over many weeks, the patient recovering with stiffened joints.

The author emphasized the fact that systemic gonorrheal infection may invade the tissues in wide variety, the gonococcus having been found in the peritoneum, the pleura, the pericardium, myocardium, endocardium, meninges of the brain and spinal cord, periosteum, perichondrium, muscles and tendon sheaths, bursae, fascia, the skin, the parotid gland, the kidney and the blood current, as well as the joints.

DR. J. F. BINNIE, Kansas City, Mo., read a paper entitled

MYOSITIS OSSIFICANS TRAUMATICA,

in which he called attention to the fact that bone may be formed in muscle or tendons under several distinct conditions: There may be a process of ossification attacking one muscle after another, myositis ossificans progressiva, producing the ossified man of the freak shows. Oftentimes repeated slight traumata give rise to bone growths in muscle or tendon, examples of such growths being "riders' bone," "drill bone," "cavalryman's bone," and "fencers' bone"; and lastly there is the so-called myositis ossificans traumatica, where a mass of bone forms in a muscle after a single injury, which was the condition with which the paper dealt. The author reported a case occurring in a man aged forty-one, who had received a severe blow on the right forearm two weeks previously while boxing. One week later the tumor was removed and eight months thereafter there had been no recurrence and no disability. The paper dealt fully with the literature on the subject and the various theories of the origin of these tumors.

DR. J. C. BLOODGOOD, Baltimore, Md., read a paper entitled

METHOD OF INSTRUCTION IN SURGICAL PATHOLOGY,

in which he referred to the fact that clinical instruction in the hospital wards and in the outpatient departments always has certain defects and limitations as a complete method of instruction, as he felt that during the time the student spends in the wards, many important surgical diseases had not been seen at all, or so rarely that the student did not get a clear conception of the disease, and in addition it is very difficult for the student to follow the patient throughout the progress of the disease and his after-condition. In the Johns Hopkins Hospital the instruction of the third year medical class in the surgical laboratory is divided into two parts: first, the systematic part, in which the instruction is given by pamphlets, museum specimens, microscopic sections and illustrations; and second, the more difficult or routine instruction, which is limited to the fresh material sent to the laboratory from the operating and autopsy rooms. He then described each of these parts in detail.

(To be continued.)

Recent Literature.

Atlas and Epitome of Diseases of the Mouth, Pharynx and Nose. By DR. L. GRUNWALD, of Munich. Second edition, revised and enlarged. Authorized translation from the German. Edited

with additions by JAMES E. NEWCOMB, M.D., Instructor in Laryngology, Cornell University Medical College, etc. With 102 illustrations on 42 lithographic plates, and 41 figures in the text. Philadelphia and London: W. B. Saunders & Co. 1903.

This is a companion volume to the one on the larynx, edited by Dr. C. P. Grayson and published in 1898. The two books combined offer one of the most attractive manuals on the diseases of the upper respiratory tract. This is especially true for the instructor, who can use the excellent plates to the best advantage in place of, or in addition to, his clinical teaching. Stated briefly, this book is about equally divided between lithographic colored plates and text. The former show pathological lesions drawn from actual cases, the histories of which are given in sufficient detail. The drawing and coloring are absolutely first class and the selection of cases typical of the lesions. There are also a few microscopical sections in color.

The second half consists of about two hundred small pages of text, covering the diseases and treatment of this part of the body. It cannot of course be expected to be exhausted in this space. The different pathological conditions are subdivided as little as possible, and general principles emphasized. The work of the author, especially in the subject of accessory sinus disease, is so important that a concise monograph on this and other subjects is of great value. If the reader does not expect to find a complete textbook he can hardly fail to be well pleased by these two volumes.

Manual of Bacteriology. By ROBERT MUIR, M.A., M.D., F.R.C.P., (Ed.), Professor of Pathology, University of Glasgow, and JAMES RITCHIE, M.A., M.D., B.Sc., Reader in Pathology, University of Oxford. American edition (with additions), revised and edited from the third English edition by NORMAN MACLEOD HARRIS, M.B., Associate in Bacteriology, Johns Hopkins University. 965 pages with 170 illustrations. New York and London: The Macmillan Co. 1903.

The appearance of the third edition of this manual will be welcomed both by students and practitioners. It has come to be recognized both in this country and in England as the standard textbook of medical bacteriology.

The scope of the work is restricted to a consideration of the pathogenic micro-organisms. It deals, however, not only with bacteria but the disease producing protozoa and fungi as well. The hemameba of malarial fever, the ameba coli and the blastomyces are carefully described. It is to be regretted that Mallory's admirable method of staining the amebae differentially is not given.

The value of the book is distinctly increased by the additions and alterations of the American editor, and the statements of such an able bacteriologist as Dr. Harris carry with them the stamp of authority. We think, however, that the changes he has incorporated should have been distinguished by brackets, or otherwise, from the original text, in justice both to himself and to the English authors.

A comparison with the second edition issued in 1899 shows that although much new matter has

been added, the work of revision and elimination has been so thorough that the length of the volume remains practically the same. The size of the leaves is increased, and the book is printed from larger and better type. There are 44 more illustrations.

The authors have kept pace with the many advances made during the past three years. A new chapter on the bacteriology of the air, soil and water has been inserted, and the chapter on immunity has been amplified and includes an account of the recent important work and an explanation of Ehrlich's lateral chain theory.

The section devoted to tuberculosis is excellent, and the results of the recent studies of the varieties of tubercle bacilli and other acid-fast bacilli is clearly presented. We wish that Dorset's egg medium had been mentioned, as it is readily prepared and gives luxuriant growths of the tubercle bacilli.

The statement that the blood from paratyphoid patients never clumps *Bacillus typhosus* will have to be modified in view of the recent observations of Hünemann and others.

Atlas and Epitome of Traumatic Fractures and Dislocations. By PROF. DR. H. HELFERICH, Professor of Surgery at the Royal University, Greifswald, Prussia. Authorized translation from the German, edited by JOSEPH C. BLOODGOOD, M.D., Associate in Surgery, Johns Hopkins University, Baltimore, Md. Fifth edition, revised and enlarged. With 216 colored illustrations on 64 lithographic plates, and 190 figures in the text. Philadelphia and London: W. B. Saunders & Company. 1902.

Professor Helferich has written a book to serve as a reference book for the use of physicians in general practice, and as an introduction to the important subject of fractures and dislocations. This is the fifth edition of the book, and many skiagraphs have been added to it. The more common fractures are described at length, the rarer fractures are simply alluded to, and the book is profusely illustrated. The pathology of the various injuries is gone into very thoroughly, but the treatment of injuries is not elaborately dealt with. For reference the book will be very valuable, and it is a very attractive volume. The American editor of the volume has tried to supply the deficiencies that exist in treatment. Many of the methods advocated by Professor Helferich have long since been abandoned by Americans.

Clinical Lectures on Surgical Subjects. Delivered in University College Hospital by CHRISTOPHER HEATH, Past President of the Royal College of Surgeons of England, Emeritus Professor of Clinical Surgery in University College, London, and Consulting Surgeon to University College Hospital. Second series. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1902.

Mr. Heath has placed us under renewed obligations in contributing these clinical lectures, which are upon special subjects in which Mr. Heath is interested. The conversational style of the writer and his distinctly practical way of looking at a subject come out very strongly in these lectures.

Clinical Essays and Lectures. By HOWARD MARSH, F.R.C.S., Surgeon to and late Lecturer on Surgery at St. Bartholomew's Hospital, Consulting Surgeon to the Hospital for Sick Children, President of the Clinical Society of London, Hon. Member of the Medical Society, State of New York. London: J. & A. Churchill, 7 Great Marlborough Street. 1902.

In this little volume Mr. Marsh reprints certain selected essays and lectures that have been published elsewhere. His desire has been to give some of the knowledge that he has acquired during his years of experience in the diagnosis and treatment of disease. Some of the essays are of more than ordinary interest; for example, that on "Growth as an Agent in the Production and in the Removal of Deformity," and that on "The Etiology of Making Mistakes in Diagnosis," have distinctly a "Hunterian" character. The article on "Senile Tuberculosis" is of great value, in that the condition is not commonly recognized by medical men. Mr. Marsh has evidently observed accurately and reasoned carefully and soundly. It is to be regretted that more clinicians do not place their observations in a more permanent form. The whole volume is of great interest, and will well repay careful study.

The Practical Medicine Series of Year-Books, comprising ten volumes on the year's progress in medicine and surgery. Issued monthly. Under the general editorial charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume II. *General Surgery*. Edited by JOHN B. MURPHY, M.D., Professor of Surgery, Northwestern University Medical School. November, 1902. Chicago: The Year-Book Publishers, 40 Dearborn Street.

This year-book on general surgery, edited by Dr. Murphy, is very complete. It covers essentially the advances that have been made in surgery during the preceding year. The editorial comments are of a great deal of value in that they give the practical experience of the editor. We have kept a copy, for a time, as a reference book, to test its value, and we find that as a book of reference it is of positive value.

SEIZURE OF DOGS.

On June 23 the board of aldermen of the city of New York passed an ordinance providing for the seizure of all dogs found in the streets which are not in leash or else so muzzled as to prevent their biting. Owners of licensed dogs captured unmuzzled must be notified, and on payment of \$3 they may redeem the animal within three days. The Society for the Prevention of Cruelty to Animals is charged with the work of gathering in and disposing of unmuzzled dogs, but the aldermen neglected to make any appropriation, and as the society has no funds to use for this purpose, the ordinance is not likely to be carried into practical effect until some provision has been made for the expense. All funds collected through the operation of the ordinance, it is stated, will go to the city chamberlain.

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PRELIMINARY TRAINING OF NURSES.

With the gradual raising of standard in various departments of educational work, it is not unnatural that renewed attention should be directed to the preliminary training of nurses. Apparently nursing has ceased to be a trade, and has become a profession with certain definite standards. The last few years has seen the organization of nurses in various parts of the country, and with this organization must come a definite feeling of the importance of the body to which they belong and of the necessity of forcing this recognition upon people at large. It has been noticeable for the past few years that both nurses themselves and physicians interested in the general problem have been suggesting a certain more definite preliminary training for women intending to take up the profession of nursing.

In the issue of the JOURNAL for Nov. 21, 1901, Dr. R. C. Cabot expressed the hope that in the course of time nursing might be made a "liberal profession." To this end he made various pertinent suggestions regarding the reform of training schools, and came to the following general conclusions: That the instructors of nurses should be paid; that nursing should be taught by nurses; that the preparation for private nursing should be taught in private families and by private nurses; and that the curriculum should contain liberal as well as purely technical studies.

Again in our issue for June 18, 1903, Dr. Francis P. Denny discusses the need of an institution for the education of nurses which shall provide for their training independent of the hospitals, before undertaking the actual work of hospital nursing. Dr. Denny believes that the nurse's diploma should come from this institution rather than from the

hospital, and that its award should represent satisfactory work in the preliminary course, together with service in a hospital in which there was a high standard of nursing.

All this points clearly in the direction we have indicated, that physicians as well as nurses are demanding more completely trained women, and that the educational standard must thereby be definitely and permanently raised. The matter seems to have reached a more or less definite solution in Philadelphia, where there has recently been organized, under the auspices of the Drexel Institute, a preparatory course of instruction for nurses. This movement has been instigated by Dr. S. Weir Mitchell and the superintendents of the leading training schools of the city. After due consideration of the question, members of the American Society of Superintendents of Training Schools for Nurses have reached the conclusion that if a preparatory course of training in scientific branches can be given, it would afford much needed relief for nurses during the first year of their actual technical training. The course of instruction which has been mapped out in the preliminary announcement includes such subjects as anatomy, physiology, medical chemistry, domestic science and economics, English, vocal expression, hygiene, bacteriology, and what is no doubt of equal importance, physical training in the gymnasium. Public lectures on art, science, literature, etc., which are from time to time given at the institute during the winter, are also to be open to the student. It is proposed to give a certificate to those who complete the full course, and the leading training schools of the city are to give preference to candidates who hold a certificate of the preparatory course.

This experiment, if we may call it by that name, is practically sure of success. Whenever standards have been raised, whether in medicine or other lines of work, there have always been students in sufficient numbers to meet the added demands made upon them. That this will also be true of nurses there cannot be the slightest question, and in general we must be in sympathy with a movement which tends to the betterment of what is becoming more and more distinctly professional work.

The consequences, however, of this elevation of standard and consequent extra time demanded will, no doubt, be felt in the increased payment which must be made to such highly-trained women. This we cannot regard as an unmitigated blessing. The standard fee of three dollars a day has long been established, is in general adequate for the work demanded, and we should regret for various obvious reasons to see a definite and permanent increase in the amount demanded by the best nurses. Already

certain obstetrical nurses, and no doubt others, are asking and getting twenty-five dollars a week. We have not the slightest desire to begrudge this or any other amount which may be legitimately earned, but we must distinctly face the fact that a new class of nurses will be developed, inferiorly educated, who will in consequence give their services for smaller amounts. We need nurses for all classes in the community, and particularly for that class of persons whose means are moderate, but whose requirements are the same as with persons of much greater financial resources. In the development of nursing as a profession we certainly do not wish to lose sight of nursing as a humanitarian art, nor do we wish to lose sight of what practical nursing really is. We are somewhat skeptical as to the claim of nursing to be ranked as a "liberal profession," and we shall regret the day, which seems close upon us, when women trained as nurses will find it beneath their dignity to do the hard, menial, disagreeable work, which, after all, constitutes the essence of their calling. Even under existing conditions many nurses are far from being an unmitigated blessing in the household, and if further education is to increase this deplorable tendency we must forthwith call a halt. In the meantime we await with much interest the developments which are sure to come.

THE MORTALITY OF TENEMENT HOUSE POPULATIONS.

IN many of the large cities of Great Britain a very considerable portion of the population lives in single-room tenements under conditions very unfavorable to the occupants. In such cases, isolation of infectious diseases is practically impossible, unless the patient is taken at once to a hospital for treatment.

Dr. J. B. Russell, the former efficient health officer of Glasgow, has vividly described existing conditions in that city, in contrasting the life of the poor with that of the wealthy population: —

"Last of all, when *you* die, you still have one room to yourself, where in decency you may be washed and dressed and laid out for burial. If that one room were your house, what a ghastly intrusion you would be! The bed on which you lie is wanted for the accommodation of the living. The table at which your children ought to sit must bear your coffin, and they must keep your unwelcome company. Day and night you lie there, until with difficulty those who carry you out thread their tortuous way along the dark lobby and down

the narrow stair through a crowd of women and children."¹

Dr. Russell has here graphically described a death among the abodes of the poor, but when the death is from infectious disease, the conditions are still worse, since the added danger of infection to the remaining members of the family only doubles the distress of the household.

Much has been done to alleviate these conditions by the enactment of ordinances regulating the amount of air space for each individual in such apartments and by the provision of hospitals for infectious diseases, but it still remains true that the death-rate of people living under such conditions is not only much greater than what it ought to be, but also very much greater than that of the population living in more spacious apartments. Much of this increased mortality must undoubtedly be charged to the account of poverty and intemperance, both of which are usually concomitants of the narrow and cramped conditions in which such people live.

In a recent paper read before the Royal Philo-sophical Society of Glasgow, by Dr. A. K. Chalmers, the present health officer of the city,² the author states his intention first to eliminate as far as possible the effect of external conditions, and to ask what part the house, considered simply as a place of residence, plays in the life history of its inmates, and to what extent its effect becomes an appreciable factor in the production of the death-rate. For this purpose he takes the population of the city at the last census, and arranges it in groups, distinguishing between the numbers occupying one, two, and three apartment houses, and those of all other sizes, and against each group places the deaths occurring during the census year 1901 and their equivalent rates.

Of the several tables published in this interesting paper, the following is selected as showing the conditions prevailing in Glasgow.

The contrast presented in Column 3 at once arrests attention. In a year in which the death-rate for the city was less than 21 per 1,000, it is scarcely exceeded by that of the two-apartment population (which forms nearly one half of the whole) and not even approached in the population occupying tenements of larger size. Yet in this same year the death-rate among the one-apartment population was 33 per 1,000, and this not in one district only, but calculated over nearly one seventh of the population distributed widely throughout the city.

DEATHS AND DEATH RATES FROM "ALL" AND FROM "CERTAIN" CAUSES IN HOUSES OF SEVERAL SIZES. GLASGOW, 1901.

| 1 | 2 | 3 | | 4 | | 5 | | 6 | |
|-------------------|--------------------|-------------|-----------------------|---------------------|-----------------------|-----------|-----------------------|-----------------------|-----------------------|
| Size of Houses. | Census Population. | All Causes. | | Infectious Diseases | | Phthisis. | | Respiratory Diseases. | |
| | | Deaths. | Death-rate per 1,000. | Deaths. | Death-rate per 1,000. | Deaths. | Death-rate per 1,000. | Deaths. | Death-rate per 1,000. |
| 1 room. | 104,128 | 3,405 | 32.7 | 771 | 7.4 | 247 | 2.4 | 792 | 7.6 |
| 2 rooms. | 348,731 | 7,418 | 21.3 | 1,576 | 4.5 | 620 | 1.8 | 1,600 | 4.6 |
| 3 rooms. | 151,754 | 2,081 | 13.7 | 290 | 1.9 | 178 | 1.2 | 362 | 2.4 |
| 4 and more rooms. | 136,511 | 1,533 | 11.2 | 139 | 1.0 | 99 | 0.7 | 272 | 2.0 |

The general death-rate of the city was 20.6 per 1,000. The best tests of unsanitary conditions are a high infantile mortality, excessive prevalence of infectious and of respiratory diseases and a high diarrheal mortality. These were all to be found in this one-room community. Thirty-one per cent of the total number of deaths under five years occurred in these one-room tenements, and the death-rate from phthisis among them was also high. It is also a significant fact that 42% of the uncertified deaths and 38% of the deaths of illegitimate children occurred in these one-room tenements.

Of the total population of Glasgow, according to the census of 1901, 104,128 lived in one-room and 348,731 in two-room tenements, these altogether constituting about three fifths of the total population of the city.

In interpreting the meaning of the term "one-apartment house" Dr. Chalmers says: "We use the term one apartment for convenience, but does it not represent rather a manner of life than a mode of occupancy? We have many one-roomed tenants in houses of larger size, many also who in our one rooms reach standards, both of hygiene and morality, which guard us against any such arbitrary distinction as the simple question of size entails. But, in the main, the term may be retained to indicate an elementary stage in civic development, a stage in which the Scriptural injunction to wash and be clean has but limited currency."

There is but little information bearing upon this point in the reports of the large cities of the United States. The most suggestive data are to be found in the United States census volumes prepared by Dr. J. S. Billings for the census of 1890.

In the volume containing the figures for Boston it appears that the death-rate of Ward 8 (the Leverett-street District) was 34.6 per 1,000, and that of South Boston (Ward 13) was 33.0, and that of the North End (Ward 6) was 31.7, during the six years embraced in the report, while that of the Back Bay District (Ward 11) was only 15.8, and

¹ Life in One Room, by Dr. J. B. Russell, Glasgow, 1882.

² The Death-rate in One Apartment Houses: An inquiry based upon the census returns of 1901, by A. K. Chalmers, M.D., D.P.H., Glasgow, 1903.

that of the Fen District (Ward 22 A) was only 13.6 per 1,000.

When different diseases were considered the differences were still more striking. In Ward 8, with 180.9 persons to the acre, the death-rate from consumption was 371 per 100,000 living, and in Ward 13 it was 588 per 100,000, while in Ward 9 B, with 89 persons per acre (the Beacon, Chestnut and Pinckney street District), it was only 93.8 per 100,000.

These striking differences, however, appear to be due more to social conditions, such as poverty and intemperance, than to the simple factor of overcrowding in apartments large or small and of a greater or smaller number of rooms to each family.

APPENDICOSTOMY.

For the benefit of those of our readers who are not surgeons, and who have not attempted to keep pace with the somewhat hybrid terminology which has developed within the past few years, we desire to call attention to a unique operation first done by Weir, which is again reported by Willy Meyer of New York in the current number of the *Medical News*. Meyer gives to this operation the name "appendicostomy," which, no doubt, to many minds will at once convey a definite meaning. To those who are less familiar with recent surgical nomenclature, however, we beg leave to state that this operation consists in making use of the normal appendix as a means of gaining entrance to the cecum, for the purpose of irrigating the lower bowel. In a case of ulceration of the large intestine, Meyer succeeded in inserting a drainage tube into the lumen of the appendix, after suturing the organ to the abdominal wall, and thereby affording a channel for flushing the diseased bowel. Under this treatment, repeated daily or every other day, the ulcerations decreased, and the patient gained materially in weight. The technical details of the procedure we will not discuss; our intention is merely to call attention to an unusual operation of great ingenuity, if of somewhat limited applicability. Meyer says of it: "I certainly consider Dr. Weir's proposition a valuable addition to our operative resources, besides presenting the fascinating idea of making use of this otherwise absolutely useless organ." To find a positive use for the appendix, we agree, is certainly a surgical triumph of no mean order.

MEDICAL NOTES.

UNIVERSITY OF CALIFORNIA PUBLICATIONS IN PHYSIOLOGY. — It is reported that a series of publica-

tions on work in physiology at the University of California will be undertaken under the editorship of Prof. Jacques Loeb. Brief preliminary reports of investigations will be issued, followed by full reports as the investigations are completed. Numbers will appear at irregular intervals.

AN ENDOWED MEDICAL JOURNAL. — It is announced that a publication to be known as *The Journal of Infectious Diseases* is to appear in the fall under the editorship of Professors Hektoen and Jordan of the University of Chicago. The enterprise is rendered possible by an endowment provided by Mr. and Mrs. Harold McCormick, in memory of their son.

WOMEN PHYSICIANS IN CHICAGO MEDICAL SOCIETY. — Dr. Frances Dickinson and Dr. Rachel H. Carr have recently been elected members of the Board of Councillors of the Chicago Medical Society. This mark of distinction has not hitherto been accorded women in that organization.

KEROSENE DEBAUCH. — *American Medicine* states that according to the police of Philadelphia it is not an unusual thing for boys to become intoxicated by inhaling the fumes from kerosene. The vicinity where these debauches have been observed is usually in the neighborhood of the railroad yards, where the empty oil cars are stationed. The method of obtaining the fumes is for the boys to climb upon the tank car, place their noses over the manhole and thus inhale the fumes. The effects produced are similar to those produced by alcohol: First, a feeling of exhilaration, then a period of stupor, and following is the period of deep sleep. It is stated that in several instances boys, drunk from these fumes, have been taken to hospitals in the vicinity. From the meager amount of observation in such cases, it is believed that the effects on the system are similar to those produced by alcohol.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 1, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 40, typhoid fever 23, measles 46, smallpox 0.

BOSTON FLOATING HOSPITAL. — The Boston Floating Hospital will make the first trip of the season 1903, July 7. This is a later opening of the work than usual, inasmuch as it is desired to maintain the hospital somewhat later in the fall than has heretofore been done. Fortunately, the weather up to this time has not been such as to demand the care which this hospital provides. It is reported that \$11,000 has been received in cash

and pledges for the needed new boat. In the meantime the old one will be fitted up and used as heretofore, although considerably too small for the growing needs of the hospital. As we have hitherto stated, the Floating Hospital will this year be used to test the antitoxin serum for certain intestinal diseases of children. This work will be under the supervision of the Rockefeller foundation and under the direct charge of Arthur I. Kendall, Ph.D., of the Massachusetts Institute of Technology.

REMODELING OF TENEMENTS.—The opposition at first brought to bear against the Board of Health in its attempt at sanitary reform in the tenement-house districts of Boston has ceased. Vigorous work is now being undertaken in four sections of the city, with the result that buildings previously almost uninhabitable have been made relatively attractive and sanitary. This work, begun under a special act of legislature in 1897, has continued since with decreasing opposition.

NEW YORK.

TETANUS ANTITOXIN AND THE FOURTH OF JULY.—In the latest bulletin of the State Health Department it is announced that the department is prepared to furnish tetanus antitoxin for use in cases resulting from Fourth of July accidents, and the announcement is also made that during the summer the State Antitoxin Laboratory will co-operate with the Rockefeller Institution in an investigation regarding the etiology and treatment of dysentery. Last year, it is stated, there was an outbreak of this disease in the vicinity of Yonkers and Mount Vernon, Westchester County, in which some valuable data were collected by the department.

CONDITION OF ADULT BLIND.—The commission to inquire into the condition of the adult blind in New York State, authorized by the last legislature and appointed by the governor, met in New York on June 25 and effected an organization, with Dr. F. Park Lewis, of Buffalo, as president, and Prof. O. H. Burrill, of Batavia, as secretary.

ANTITOXIN.—The President of the Board of Health has sent to the Mayor, in reply to a communication from the latter, a letter in which he says that the production of diphtheria antitoxin was begun by the department so that physicians might get satisfactory supplies, and also in order that in cases where the family of a patient was too poor to pay for the antitoxin it should be furnished free by the department. Some time after the original arrangement went into effect a provision was inserted in the charter permitting the department to sell its surplus supply. Accordingly the department sold large quantities to persons outside as well

as in the city, such sale being due to the confidence felt in the purity of the antitoxin produced by it. It is the express opinion, however, that there are now on the market other products of antitoxin which are of as high grade as that of the New York health department. Believing that the sale of antitoxin to persons outside the city is contrary to the spirit of the charter, he states that he has informed such persons that they must arrange to make their purchases from other producers after July 1. He then suggests that hereafter the department shall disburse all its laboratory products free, as do other municipal and state laboratories, upon receiving the proper requisitions from department officers or private physicians. Such distribution would of course be confined to residents of the city. Should such an arrangement be carried out, between \$20,000 and \$25,000 annually will have to be furnished by the Board of Estimate and Apportionment, in addition to the present appropriation of about \$50,000 for the maintenance of the laboratories.

VERDICT IN FAVOR OF TENEMENT HOUSE DEPARTMENT.—In the Seventh District Municipal Court a jury has returned a verdict in favor of the Tenement House Department, which sought to oblige the owner of a certain tenement house to remove the water-closet accommodations from the yard and place such accommodations on each floor of the house. The defendant's counsel argued that the act is unconstitutional, because it limits the owner's use of his land and premises, and, further, that the change is unnecessary and unreasonable. In approving the jury's verdict the officiating judge expressed the opinion that a citizen has not absolute right over his property, but holds his right subject to control and regulation for the benefit of the public. The rights of property, he said, like other ordinary rights, are subject to such reasonable limits to their enjoyment as will prevent them from being injurious, and to such reasonable restraint and regulation as is established by law. Sanitary experts and builders who testified at the trial stated that there are 9,000 tenement houses in New York which would require similar alterations if this decision is affirmed by the higher courts, and that the average cost would be more than \$2,000 for each house. The case will be appealed.

Miscellaneous.

HARVARD MEDICAL ALUMNI ASSOCIATION.

The twelfth annual meeting of the Association was held in Boston, on Wednesday, June 24, at 6.30 P.M. There were 151 members present. The following officers were elected:

President, — CHARLES FOLLEN FOLSOM, M.D., 1870, of Boston, Mass.

Ten Vice-Presidents, — JOHN CALVIN WEBSTER, M.D., 1867, of Chicago, Ill.; FREDERICK WILLIAM BORDEN, M.D., 1868, of Ottawa, P. Q.; GEORGE BRUNE SHATTUCK, M.D., 1869, of Boston, Mass.; ERASMUS DARWIN LEAVITT, M.D., 1870, of Butte City, Mont.; BEVERLY MACMONAGLE, M.D., 1876, of San Francisco, Cal.; ISADORE NATHAN BLOOM, M.D., 1881, of Louisville, Ky.; REYNOLD WHEEL WILCOX, M.D., 1881, of New York, N. Y.; JOSIAH NEWHALL HALL, M.D., 1882, of Denver, Col.; PERCIVAL JAMES EATON, M.D., 1888, of Pittsburgh, Pa.; EDWARD FITCH CUSHING, M.D., 1888, of Cleveland, Ohio.

Treasurer, — WILLIAM HERBERT PRESCOTT, M.D., 1888, of Boston.

Secretary, — GEORGE SHATTUCK WHITESIDE, M.D., 1897, of Boston.

Assistant Secretary, — JOHN GREENLEAF WHITTIER KNOWLTON, M.D., 1900, of Boston.

Councillors, — (to serve from 1903 to 1907) CLARENCE JOHN BLAKE, M.D., 1865, of Boston; HENRY JACKSON, M.D., 1884, of Boston; MALCOLM STORER, M.D., 1889, of Boston.

The constitution of the association was changed, making it possible to create the office of assistant secretary.

After the meeting the first triennial dinner was held at Westminster Hotel. Dr. C. J. BLAKE, president of the association for the last three years, officiated as toastmaster, introducing the speakers very happily.

At the outset he took occasion to say that the project of the new medical department for Harvard University and its new buildings would be the subject for consideration. Referring to what he termed the new era of medical education in this country, he deemed it fortunate to have as a guest one who had both foretold and helped to fulfill the coming of the new movement, introducing Dr. Henry P. Bowditch.

Dr. BOWDITCH spoke of the enormous size of the buildings contemplated, due largely to the laboratory method of instruction; he dwelt upon the province of the lecturer, the needs of the elective system, and concluded with the prediction that by the next triennial dinner more definite results may be reported, hoping that in the meantime the buildings would meet with no untoward accidents in the process of their construction.

Dr. JOHN COLLINS WARREN was introduced as not only a generous giver to Harvard University, both of his intellectual power and his earnestness, but also as a "generous inciter of others."

Dr. Warren devoted his remarks to an enumeration of the great gifts to the institution, and to the co-operation of the Brigham and other hospitals in the work that Harvard is doing. He also referred to the gift of \$225,000 which has recently been made to the Harvard Medical School by one who wishes to remain unknown, and to a gift by Robert Bacon, Esq., of \$60,000, to endow a curatorship of the Warren Anatomical Museum, in memory of the late Dr. J. B. S. Jackson.

Dr. ARTHUR T. CABOT, in behalf of the Corporation of Harvard University, detailed the clinical advantages made possible, as well as the scientific work that has been going on for years, making itself felt throughout the country and the world. He alluded to the labors of the bacteriologists, the cancer investigation committee, the work of Dr. Councilman in the etiology of smallpox, drawing the conclusion that such work makes this school a specially favorable place for all medical research, and that money devoted in this direction is well spent.

Mr. CHARLES A. COOLIDGE, architect of the new buildings, spoke concerning the architectural beauty and practical arrangement of the various laboratories, expressing the hope that by the next triennial dinner the members would see the buildings in a shape to speak for themselves.

PRESIDENT BLAKE's yielding of the Chair to his successor was graceful in word and manner.

PRES. CHARLES F. FOLSOM reviewed the history of medical instruction in the School, its progress in the struggle against "that failure to grasp the situation, misnamed conservatism," and traced the growth of what he called the Harvard "spirit." While cherishing pride in her traditions, he still felt that there were problems yet to be solved. He deplored the small representation of medical men in the machinery of government of the university, but hoped the day of better things was coming. He thought a lesson could be learned from the Medical School, and because the public seems to approve its work he believed it was a lesson which the college might be wise not to be too late in learning.

LAY ADVICE TO RECENT GRADUATES IN MEDICINE.

In an editorial in the *Outlook* of June 27 are some timely bits of advice to recent college graduates, one of which is intended for graduates in medicine. It is well worthy of quotation, and we therefore present it in full.

After giving some sound advice to theological students, the writer goes on to say: "Or you are going to practice medicine. If your patients were all reasonable men and women, your task would be easy; but they are not. Even in their best estate they are not all reasonable men and women, and you will have to deal with them when they are not in their best estate, but are morbid. You will have to deal with patients who throw your medicine out of the window, and still expect you to cure them; in one house with a mother busy with other things and careless of the sick child; in another house with a mother whose weak and tearful sympathy does much to negative the influence of your presence and the effect of your medicines. It is not enough for you to know physiology and anatomy and therapeutics; not enough for you to know what your medical school has told you; you must know men and women—their physical constitutions, their mental and moral constitutions. You must understand them—their life, their narrownesses, their prejudices, their unreasonablenesses. You must see into them, that you may minister to them."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 20, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,137 | 431 | 28.75 | 11.51 | 4.66 | 10.02 | 1.67 |
| Chicago . . . | 1,885,000 | 451 | 135 | 25.49 | 12.65 | 2.00 | 6.52 | 1.56 |
| Philadelphia . . | 1,378,527 | 420 | 111 | 32.62 | 10.23 | 2.14 | 5.48 | 1.90 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 135 | 30 | 26.66 | 8.95 | — | 5.18 | .74 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 130 | 58 | 42.35 | 6.16 | 1.54 | 16.17 | 3.85 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 67 | 28 | 34.31 | 11.93 | 1.49 | 17.90 | — |
| Boston . . . | 603,163 | 154 | 45 | 20.78 | 12.33 | 1.29 | 1.95 | 1.29 |
| Worcester . . . | 132,044 | 33 | 15 | 2.24 | 9.09 | — | 6.06 | — |
| Fall River . . . | 115,549 | 41 | 23 | 24.30 | 14.63 | — | 9.75 | — |
| Lowell . . . | 101,959 | 34 | 12 | 17.64 | 11.76 | 2.94 | 2.94 | — |
| Cambridge . . . | 98,639 | 23 | 4 | 26.09 | — | — | 4.35 | 4.35 |
| Lynn . . . | 72,497 | 17 | 4 | 17.65 | — | — | — | — |
| Lawrence . . . | 69,766 | 25 | 12 | 24.00 | 8.00 | 4.00 | — | 4.00 |
| Springfield . . . | 69,389 | 17 | 6 | 23.52 | 5.88 | — | 5.88 | — |
| Somerville . . . | 68,110 | 9 | 3 | 11.11 | — | — | — | — |
| New Bedford . . | 67,198 | 21 | 8 | 51.38 | 9.52 | — | — | 42.86 |
| Holyoke . . . | 49,286 | 16 | 9 | 6.25 | — | 6.25 | — | — |
| Brookton . . . | 44,873 | 7 | 1 | 14.30 | — | — | — | — |
| Haverhill . . . | 42,104 | 12 | 2 | 41.65 | — | 8.33 | — | — |
| Newton . . . | 37,794 | 7 | 1 | — | 14.30 | — | — | — |
| Salem . . . | 36,876 | 9 | 2 | — | 11.11 | — | — | — |
| Malden . . . | 36,286 | 11 | 4 | 18.18 | — | — | — | — |
| Chelsea . . . | 35,876 | 7 | 2 | 14.30 | — | — | — | 14.30 |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 10 | 3 | 30.00 | — | 10.00 | — | — |
| Everett . . . | 28,620 | 4 | — | 25.00 | — | — | — | — |
| North Adams . . | 27,862 | 3 | — | 66.67 | — | 33.33 | — | — |
| Gloucester . . . | 26,121 | 3 | — | 66.67 | — | — | — | — |
| Quincy . . . | 26,042 | 7 | 2 | — | 14.30 | — | — | — |
| Waltham . . . | 25,198 | 3 | 1 | 33.33 | — | — | — | — |
| Brookline . . . | 22,608 | 3 | — | 33.33 | — | — | — | 33.33 |
| Pittsfield . . . | 22,589 | 6 | 3 | — | 33.33 | — | — | — |
| Chicopee . . . | 21,031 | 5 | 2 | — | — | — | — | — |
| Medford . . . | 20,962 | 2 | — | — | — | — | — | — |
| Northampton . . | 19,883 | 4 | 0 | 25.00 | — | — | — | — |
| Beverly . . . | 15,302 | 4 | 1 | 25.00 | — | — | — | — |
| Clinton . . . | 15,161 | 2 | — | — | 100.00 | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 2 | 1 | — | — | — | — | — |
| Woburn . . . | 14,300 | 1 | 1 | — | — | — | — | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — |
| Adams . . . | 13,745 | — | — | — | — | — | — | — |
| Attleboro . . . | 13,677 | 3 | — | — | 33.33 | — | — | — |
| Marlboro . . . | 13,609 | — | — | — | — | — | — | — |
| Melrose . . . | 13,600 | 2 | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 6 | 2 | 16.67 | 16.67 | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | — | — | — | — | — | — | — |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,844 | 2 | 0 | — | — | — | — | — |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 3 | — | — | — | — | — | — |
| Plymouth . . . | 10,730 | 2 | 1 | 50.00 | — | — | — | — |

Deaths reported, 2,860; under five years of age, 963; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 801, acute lung diseases 305, consumption 311, scarlet fever 54, whooping cough 27, cerebrospinal meningitis 3, smallpox 8, erysipelas 5, measles 37, typhoid fever 54, diarrheal diseases 218, diphtheria and croup 82.


From whooping cough, New York 9, Chicago 2, Philadelphia 6, Baltimore 1, Pittsburg 2, Boston 1, Fall River 1, Lowell 1, Lynn 2, Waltham 1, Beverly 1. From erysipelas, Chicago 2, Philadelphia 1, Baltimore 1, Boston 1. From smallpox, Philadelphia 4, Pittsburg 4.


In the seventy-six great towns of England and Wales, with an estimated population of 13,075,011, for the week ending June 6, the death-rate was 14.3. Deaths reported, 4,145; acute diseases of the respiratory organs (London) 171, whooping cough 99, diphtheria 38, measles 136, smallpox 6, scarlet fever 40.

The death-rate ranged from 6.4 in Waltham-stow to 29.1 in Mid-dlesbrough; London 13.8, West Ham 14.1, Brighton 12.1, Portsmouth 10.7, Southampton 9.0, Plymouth 14.4, Bristol 8.8, Birmingham 14.4, Leicester 10.4, Nottingham 14.2, Bolton 17.7, Manchester 17.8, Salford 14.0, Bradford 13.1, Leeds 12.5, Hull 14.0, Newcastle-on-Tyne 13.6, Cardiff 12.1, Rhondda 17.9, Liverpool 19.9, Harnsey 8.0, Sheffield 18.9.

METEOROLOGICAL RECORD.

For the week ending June 20, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar-ometer. | | Ther-mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. |
|---|-------------|----------------|----------------|-----------|--------------------|-------------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily maximum. | Daily minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 14 | 29.86 | 62 | 70 | 54 | 81 | 81 | S | SE | 3 | 8 | F. | O. | O. |
| M. . 15 | 29.69 | 53 | 56 | 50 | 94 | 90 | N | NE | 9 | 25 | R. | O. | 2.45 |
| T. . 16 | 29.84 | 51 | 54 | 48 | 90 | 78 | N | N | 15 | 8 | O. | O. | .11 |
| W. . 17 | 29.94 | 54 | 59 | 50 | 72 | 81 | NE | E | 6 | 8 | O. | F. | O. |
| T. . 18 | 30.00 | 56 | 59 | 52 | 88 | 80 | N | NE | 5 | 5 | O. | O. | T. |
| F. . 19 | 29.92 | 58 | 65 | 51 | 83 | 81 | S | E | 7 | 11 | O. | F. | O. |
| S. . 20 | 29.88 | 58 | 62 | 53 | 83 | 91 | S | E | 4 | 13 | O. | R. | .02 |
|  29.87 | | 61 | 51 | | 84 | | | | | | | | 2.58 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY
FOR THE WEEK ENDING JUNE 27, 1903.

H. E. AMES, medical inspector. Commissioned medical inspector from Jan. 20, 1903.

C. F. STOKES, surgeon. Detached from the Navy Yard League Island, and ordered to the Bureau of Medicine and Surgery, Navy Department.

C. D. BROWNELL, S. G. EVANS, C. E. RIGGS, M. K. JOHNSON, W. B. GROVE, E. O. HUNTINGTON, surgeons. Commissioned surgeons from March 3, 1903.

H. E. ODELL, passed assistant surgeon. Commissioned passed assistant surgeon from Nov. 8, 1902.

J. J. SNYDER, assistant surgeon. Detached from the Naval Hospital, Philadelphia, Pa., and granted sick leave.

W. W. VERNER, assistant surgeon. Ordered to the Naval Hospital, Philadelphia, Pa.

W. M. WHEELER, L. MORRIS, F. T. PLEADWELL, C. P. KINDLEBERGER and F. C. COOK, surgeons. Commissioned surgeons from March 3, 1903.

G. PICKRELL, surgeon. Detached from the "Iowa" and ordered home to wait orders.

BOOKS AND PAMPHLETS RECEIVED.

Surgical Diseases of the Abdomen, with Special Reference to Diagnosis. By Richard Douglas, M.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

A Manual of Surgical Treatment. By B. W. Watson Cheyne, C.B., M.B., F.R.C.S., F.R.S., and F. F. Burghard, M.D. and M.S. (Lond.), F.R.C.S. In seven volumes. Volume VII, illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Le Développement Chirurgical d'une Double Circulation Complémentaire dans le Traitement de Quelques Maladies Hépatospléniques. By B. Schiassi, of Boulogne, France. Reprint. 1903.

The Value of the Roentgen Rays in the Treatment of Carcinoma. By Carl Beck, M.D., of New York. Reprint. 1903.

The Roentgen Rays in Differentiating between Osteomyelitis, Osseous Cyst, Osteosarcoma, and Other Osseous Lesions, with Skiagraphic Demonstrations. By Carl Beck, M.D., of New York. Reprint. 1903.

Explorative Principles and Technik beim secundären Brust-schnitt. By Carl Beck, M.D., of New York. Reprint. Berlin. 1903.

Corrected Neat Union in Fractures of the Radius and Ulna of both Forearms. By Carl Beck, M.D., of New York. Reprint. 1903.

Disease of the Pancreas, its Cause and Nature. By Eugene L. Opie, M.D. Illustrated. Philadelphia and London: J. B. Lippincott & Co. 1903.

Modern Materia Medica and Therapeutics. By A. A. Stevens, A.M., M.D. Third edition. Entirely re-written. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

The Practical Application of the Röntgen Rays in Therapeutics and Diagnosis. By William Allen Pusey, A.M., M.D., and Eugene Wilson Caldwell, B.S. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Vol. II. June, 1903. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Original Articles.

SUBPARIETAL INJURIES OF THE KIDNEY.¹

BY FRANCIS S. WATSON, M.D., BOSTON.

A PERSONAL experience of six cases of subparietal injury of the kidney has recently led me to make a thorough study of the subject, in the course of which I have collected, formulated and analyzed clinical data to the number of 660 cases, which include all previously published series of importance, all but about 78 individual cases scattered through the literature, these being inaccessible to me at this time, and 25 hitherto unreported, amongst which are the 6 treated by the writer personally.

The investigation has served to confirm or strengthen many of the views of previous writers upon this subject, and has brought to notice certain other features, to which but relatively little attention has hitherto been given. The latter will be considered first; they are as follows:

NATURE OF THE ACCIDENT.

Laceration or serious injury of the kidney may be produced by muscular action alone, and in some instances by what seems a very inadequate degree of force. There are eleven examples of this in the series as well as one of the author's cases.

ELEVEN CASES IN WHICH THE KIDNEY WAS INJURED BY MUSCULAR ACTION ALONE.

(1) *Kellermann*. — A man made a sudden spring backward, felt, in so doing, a violent pain in the left renal region. Hematuria appeared at first urination afterward, and continued for four days, then fever, and a few days later a swelling in the left loin, which increased gradually, was incised on the 18th day, and proved to be a large perinephritic abscess. Drainage. Recovery.

(2) *Hensgen-Siegen*. — A man in lifting a sick woman across a bed felt severe pain in the loin. Hematuria followed at once, and persisted for three days well marked, and for three weeks moderately, the urine then became normal. Expectant treatment. Recovery.

(3) *Same author*. — A seventeen-year old boy lifted a heavy weight. Severe pain in the lumbar region, which was very soon followed by hematuria, the latter persisted, the blood in the urine being abundant all the time, for thirteen days, and subsequently recurred as soon as the patient exerted himself. Treatment expectant. Patient still under observation.

(4) *Franz*. — A man bent the body sharply backward, while carrying a heavy weight. Pain in both kidneys, hematuria — profuse — followed three hours later. This continued for fourteen days, the amount of blood being very large. On the eighth day after the accident he had a chill and a rise of temperature; this was repeated several times during the next twenty-four hours. Expectant treatment. Recovery. The patient was in a critical condition for several days.

(5) A man ruptured his kidney by catching in his arms a heavy sack of meal as it fell from the back of his cart, behind which he was walking.

(6) A man ruptured his kidney by sudden bending forward of the body to avoid striking a burden, which he carried on his shoulders, against a low archway.

(7) A man ruptured his kidney, with *fatal result*, by the muscular effort made in delivering a blow at an opponent with whom he was boxing.

(8) *Campbell*. — A young girl of fourteen in jumping over a hedge, and bending her body sharply forward and to one side in so doing, was seized with violent pain in the loin, fainted and hematuria followed, the amount of blood being abundant, though the duration of the hematuria was short.

(9) *Morris*. — A woman of sixty-six was seized with severe pain in the loin, attending the strain made in lifting a heavy box from shelves. On the following day, fever, rigors and pain resembling renal colic ensued, and persisted without abatement eleven days. Six weeks later — the symptoms still being present though less severe, and loss of weight being marked and progressive — the left kidney was exposed in the loin. On incising the fibrous capsule, two or three teaspoonfuls of bright blood issued from beneath it. The capsule was seen to have been lifted from the kidney by the hemorrhage over an area of moderate extent. The patient made a rapid recovery. (Hematuria not mentioned as having been present.)

(10) *Morris*. — Following a muscular effort, a young woman had a severe attack of pain in the loin, succeeded by a sharp rigor, and hematuria of short duration. During the next six weeks every attempt to get up and go about brought on a recurrence of pain and hematuria. For the last three of the six weeks, the pain became frequent or continuous at night. Frequent urination was present throughout.

Nephrotomy was performed through a lumbar incision eight weeks after the injury. The lower end of the kidney presented an area of dark color, which was found to be softened kidney tissue and effused blood. This was removed, and, together with the nephrotomy wound, was sutured. The patient made rapid recovery and was freed from all symptoms.

(11) The most curious case of all is that reported by Voit, of a woman whose kidney was ruptured by her husband's grasping her forcibly about the waist while waltzing. Severe hematuria promptly ensued, and she suffered at the moment of receiving the injury violent pain in one kidney. Hematuria continued for nearly two months, with occasional intermissions. At the end of this time there were chills, fever and the blood in the urine was replaced by pus. A perinephritic abscess formed, the pus was evacuated a week later by a lumbar incision, and the patient made a good recovery. The kidney was seen at the time of the operation to have been lacerated.

LACERATION OF THE KIDNEY OCCURRING AS THE ONLY RESULT OF BLOWS UPON THE FRONT OF THE ABDOMEN.

In twenty cases of the series, blows or falls upon the front of the abdomen are stated to have been the cause of laceration of the kidney. In all but two of them this was the sole result of the accident. In these two other abdominal organs suffered as

¹Read before the American Association of Genito-Urinary Surgeons, May 14, 1903, Washington, D. C.

well as the kidney. This does not take into account a considerable number of other cases in which the renal condition was brought about by a crushing force passing over the front of the abdomen while the patients were lying upon the back.

The practical importance of this observation is to warn the surgeon not to be thrown off his guard with respect to injury of the kidney when the accident has been of this character, which might well happen, especially in cases in which hematuria is delayed or absent.

WHEN A SINGLE INTRAPERITONEAL ORGAN IS INJURED IN ASSOCIATION WITH LACERATED KIDNEY, IT IS ALWAYS ON THE SAME SIDE AS THE INJURED KIDNEY.

There is no case reported in the whole series of which the above statement is not true. For example, if the right kidney be injured, the liver, or ascending colon, may be involved in association with it, if there be but a single intraperitoneal organ that has suffered—but never the spleen or the descending colon. When there are multiple intraperitoneal injuries, this rule, of course, has no application. Inasmuch as the latter cases are of very rare occurrence, while injury of a single intraperitoneal organ in connection with laceration of the kidney is relatively frequent, this fact has a practical bearing in those cases in which associated injury of an intraperitoneal organ being suspected, and a laparotomy having disclosed an abdominal cavity filled with blood, no time need be lost in looking for the source of the hemorrhage elsewhere than upon the same side as that of the injured kidney. It also will lead the surgeon to enter the abdomen by an incision on that side, except in the rare instances in which there is uncertainty as to which kidney has been injured, or whether both of them may not have suffered.

In the great majority of instances it is the spleen which is involved in connection with the left kidney, and the liver with the right one; but intraperitoneal hemorrhage comes from the kidney through a rent in the overlying peritoneum, in an even larger number of cases than from either the liver or spleen. The relative frequency of the injury of the different intraperitoneal structures associated with that of the kidney is as follows:

Laceration of the overlying peritoneum, 24 cases; laceration of the liver, 12 cases; laceration of the spleen, 11 cases; laceration of the spleen and liver, 2 cases; mesentery, 3 cases; omentum, 1 case; intestine, 3 cases; total, 56 cases.

THE OCCURRENCE OF ABDOMINAL SYMPTOMS IN CONNECTION WITH THE RENAL INJURY IN THE ABSENCE OF INTRAPERITONEAL LESION.

Symptoms which are usually associated with peritonitis, or intraperitoneal lesions, such as distention, tympanites, vomiting, muscular rigidity, etc., occurred in 18 cases, in 8 of which operation demonstrated the absence of any intraperitoneal complication, and in the other 10 the symptoms subsided so rapidly as to make it reasonable to assume the absence of any such complication, or, if it were present, that it was of trivial character. Such symptoms as the above are not infrequently

seen in connection with cases of what appear to be abdominal muscular contusions only.

When these symptoms are present in cases of kidney injury complicated by intraperitoneal lesions or laceration of the peritoneum, the following features help to distinguish them from those in which they do not represent such conditions:

In the latter—the *uncomplicated* ones—they usually are most marked immediately or very soon after the accident, are of relatively short duration, and are not progressively severe. In the former, on the contrary, they are progressive, or appear for the first time, or become more marked later in the course of the case. Pain is deeper seated, rigidity and distension are greater, and the former more extended over the whole abdomen when intraperitoneal lesions are present than in the cases in which they are not. The one sure sign by which injury of the peritoneum overlying the kidney, or of intraperitoneal organs when accompanied by hemorrhage, can be recognized, is the presence of free fluid in the peritoneal cavity.

It is to be noted that there is in the series a larger number of cases in which abdominal symptoms *did* represent intraperitoneal complications, than there is in which they did *not*. Furthermore, there are several recorded in which there were *no abdominal symptoms*, although severe, and in a few instances fatal, intraperitoneal lesions were present. The following is an illustrative case of the latter. It is that of a child reported by Wheeler,² who was run over by a cart, the wheel passing across the front of the abdomen. An hour or two later it was brought to the hospital and played about upon the floor without showing any evidence of injury for the next hour, at the end of which time there was sudden collapse, and death followed three hours later. Autopsy showed laceration of the right kidney and liver. There was no blood in the urine, which was passed once soon after admission to the hospital.

The *duration* of abdominal symptoms in eight *uncomplicated* cases, and the time of their appearance, was as follows:

| Case. | Time of Appearance. | Duration. |
|---------|---------------------|-------------|
| 1. | Immediate. | One day. |
| 2. | " | Three days. |
| 3. | " | Five " |
| 4. | End of first day. | Four " |
| 5. | " | Three " |
| 6. | Second day. | Six " |
| 7. | " | Three " |
| 8. | " | Four " |

TUMOR.

There are four points with regard to the presence of tumor in the loin to which the writer wishes to call attention, to wit: (1) The relative proportion of the cases in which it represented different conditions in this series. (2) The time of its first appearance with reference to its nature. (3) The increase in its size. (4) Its duration without becoming infected.

(1) The first is shown as follows: There were 111 instances out of the total number of 486 uncomplicated cases, in which tumor of the loin is noted as present. In 39 of them the tumor was

² Trans. Royal Acad. of Med., Ireland; vol. xvi, p. 365, 1898.

formed by perirenal extravasation of blood, in 1 hematonephrosis, in 28 traumatic hydronephrosis, in 38 perinephritic abscess, in 2 pyonephrosis.

(2) The time of its first appearance, with reference to its nature, is shown in the following tables: *Thirty-five cases of perirenal hematoma, or hematonephrosis; time of first appearance:* 25, immediate; 1, 12 hours; 1, 1 day; 2, 2 days; 1, 3 days; 2, 7 days; 2, 14 days; 1, 21 days; total, 35 cases.

The last three cases were secondary hemorrhages. With them included, the average time of appearance of the tumor is about two days after the receipt of the injury; excluding them, it becomes about sixteen hours.

Seven cases of traumatic hydronephrosis; first appearance: 1 case, 1 day; 2 cases, 7 days; 2 cases, 28 days; 1 case, 42 days; 1 case, 56 days; total, 7 cases; the average time of first appearance was about twenty-four days.

Twelve cases of perinephritic abscess; first appearance: 1 case, 4th day; 1 case, 5th day; 1 case, 7th day; 1 case, 8th day; 1 case, 14th day; 2 cases, 28th day; 1 case, 30th day; 1 case, 35th day; average time of first appearance about fifteen days.

From the above it is seen that the majority of tumors which are perirenal hematomas appear immediately or very soon after the accident.

That the average time of first appearance in those in which the tumor represents hydronephrosis is considerably later than in those in which it is perinephritic abscess. The number of cases of the two latter conditions is, however, too small to be of value for such a comparison.

(3) Increase in size of the tumor does not necessarily imply dangerous hemorrhage, provided it does not take place rapidly or continue too long. This is shown by four cases in which there was gradual increase in size noted as continuing for periods of between six and twenty-four hours, the patients all recovering under expectant treatment. On the other hand, there were six others in which a more rapid increase in size occurred, accompanied by the general signs of progressive hemorrhage, on account of which operations were performed, laceration of the renal blood vessels being disclosed in four of them, and excessive hemorrhage from the parenchyma of the organ in the other two.

In sixteen cases of perinephritic abscess, gradual increase in size of the tumor is reported to have occurred. The same was true in eight of the cases of hydronephrosis.

The nature of the tumor in a considerable number of the instances in which it was perinephritic abscess was indicated by chills and rise of temperature, concurrently with or shortly after its appearance. Chills and fever, however, are mentioned in connection with a number of other cases in which no suppuration took place.

(4) Hydronephrosis and perirenal extravasation may continue to be present for considerable length of time without infection and suppuration occurring. This is seen in four of the former conditions, two of which were present without infection for one month each, and the other two for three months each, while in seven cases of the latter, the duration without infection is reported as fourteen days

in two, three weeks in two, twenty-four days in one, and one month in two.

The features of the subject which have been dealt with thus far are, as has been said, such as have received but little attention. Before passing to an analysis of the clinical data with reference to the question of treatment, further details must be considered, which have been more fully discussed by others. These are the following:

FREQUENCY OF SUBPARIETAL INJURY OF THE KIDNEY.

The frequency of the injury may be judged from the following quotations:

Out of 2,610 autopsies made at the Middlesex Hospital between the years 1873 and 1883, there were but 12 in which this condition existed. Goldstein reports 22 cases as the whole number admitted to the Friederichslain Hospital between 1882 and 1902; Waldvogel, 21 from König's clinic at Göttingen between 1895 and 1900; Wyss, 14 from Krönlein's clinic during the past twenty years. At the Boston City Hospital there have been 25 admitted during the last fourteen years.

The relative frequency of injury of the kidney as compared with that to other abdominal organs caused by abdominal contusions is shown by the following table, published by Makins. Traumatic lesions of various abdominal viscera occurred in 89 out of 292 cases of abdominal contusions, in this order of frequency—

| | No. | Per cent. |
|-----------------|-------|-----------|
| Kidney | 35 or | 39 |
| Intestine | 22 " | 23 |
| Liver | 15 " | 16 |
| Spleen | 10 " | 11 |
| Bladder | 4 " | 5 |
| Mesentery | 3 " | 3 |

SUPPOSED MECHANISM BY WHICH THE INJURY IS PRODUCED.

In a relatively small number of cases the kidney is lacerated by direct impact of the ribs, when the latter are fractured immediately over the organ.

Morris quotes Küster to the following effect: "The only theory which satisfactorily explains lacerations of the kidney after non-penetrating wounds is that of hydraulic pressure acting through the full vessels and pelvis, and causing the organ to burst along lines for the most part radiating from the hilus toward the point of maximum impact of the lower ribs, the opposing resistance being supplied by the vertebral column."

"Experiments performed with flaccid kidneys thrown with some force upon the floor showed that only superficial laceration was thus produced."

"On the other hand, when the pelvis and arteries were injected and ligatured after closure of the vein, and the organ thrown down, there ensued deep laceration of the kidney substance."

The majority of rents found in subparietal renal injuries are in the direction of the transverse axis, and are most marked near the middle of the organ, which is its narrowest and weakest part. A great many different forms of wounds, however, are met with.

The ability of the kidney to maintain a useful

degree of functional capacity, and also a remarkable power of regeneration of its tissues after severe traumatism, has been shown by numerous experiments, as well as clinical and postmortem observations. The readiness with which the healing of wounds of the organ occurs has often been noted.

Among the more recent experiments with reference to some of the above points, those of Dolgoff are appropriate in this connection. "Dolgoff found that severe laceration of the kidneys of dogs, even the tearing of them in halves, did not result fatally. Also that the animals survived the removal of the cortical portion of one kidney, and of half of the cortex of the other, provided it was done gradually and at intervals, but if done simultaneously, death followed speedily.

Wounds of the medullary portion were graver in their consequences than those of the cortex. Simultaneous injury of one half of the medullary portion of both the organs was always fatal.

If one kidney was removed, injury of the medullary portion or cortex of the other killed the animal slowly.

Wounds of the kidney healed more readily and rapidly if the capsule was preserved, and especially if its cut edges were united.

The renal tissue remaining after removal or injury of parts of it showed great regenerative power.

The urine of animals with wounded kidneys showed albumen and an excess of uric acid."

HEMORRHAGE.

Hemorrhage occurs as: (1) Hematuria; (2) perirenal; (3) intrarenal (hematonephrosis, or subcapsular); (4) intraperitoneal.

HEMATURIA.

This is the most constant and, of course, the most characteristic symptom of the renal injury. That it does not alone, if in moderate degree, warrant the diagnosis of laceration of the organ, is shown by such well-known examples as those of individuals who have attacks of it after riding a hard-gaited horse. It has not infrequently been observed as the result of manipulation of the kidney by physicians when examining patients.

In patients having renal calculus or malignant disease of the kidney, and in those who are subject to attacks of paroxysmal hematuria, it would naturally be liable to occur in connection with injuries without necessarily implying that the kidney was lacerated. In the absence of any of the above conditions, hematuria, if the quantity of blood be at all large in the urine, is presumptive evidence of the existence of laceration of greater or less extent, and if a tumor in the loin is present as well, the diagnosis is, practically speaking, certain. Hematuria is present in at least 80% of all cases.

Absence or delay in its appearance occur in a small proportion of instances. In 340 of the cases of this series hematuria was absent in 7; delayed in 11 and intermittent in 6 of them.

The *time of appearance of hematuria* after the accident was noted in 117 cases. In 106 of them it was seen in the first passage of urine; in 11 it was delayed, for varying periods between 12 hours and 5 days.

The *delay* in the appearance of hematuria, if not long, is sometimes referable to thrombus formation, and the subsequent dislodgment thereof, in other instances to obstruction of the ureter. *Absence* of hematuria is due to one of the following causes: Tearing across of the renal pelvis, ureter or blood vessels; disintegration of the kidney, or obstruction of the outlet of the renal pelvis.

DURATION OF HEMATURIA.

The average duration of hematuria in 167 cases in which the time was noted was 8 days. The longest durations were reported in 7, as follows: 56 days, 46 days, 42 days, 28 days, 21 days, 21 days, 18 days.

In none of the instances of long duration was the amount of blood in the urine abundant at any one time.

PERIRENAL HEMORRHAGE.

Perirenal hemorrhage takes place from the renal parenchyma, the fibrous capsule being ruptured and allowing the blood to make its exit through the rent, from the renal blood vessels when they are injured, or from the numerous small vessels of the perirenal fat tissue.

It manifests itself by an area of percussion dullness, or the formation of a tumor in the loin, of greater or less extent according to the amount of blood poured out. If very abundant the constitutional signs of progressive hemorrhage become evident, and the tumor increases rapidly in size. These symptoms are most conspicuous in connection with injury to the renal vessels. *Spontaneous arrest* of such bleeding, even in the latter case, is, however, sometimes seen. In one case — Guinard's,³ — which was operated upon the eighteenth day there had been a laceration of the renal artery, and yet the amount of blood which had been poured out into the perirenal tissues had not been sufficient to endanger the life of the patient.

The spontaneous arrest is due in part to the pressure exercised upon the growing hematoma by the overlying peritoneum when the latter is firmly attached. When, on the contrary, it is relaxed, as it not infrequently is, the only restraint to continued hemorrhage is from thrombus formation. This occurs quickly enough in some instances to avert immediate danger. Occasionally the thrombus becomes dislodged and gives rise to secondary hemorrhage, which is apt to be more serious than the primary one.

The hematoma formed around the kidney and behind the peritoneum pushes the latter forward, and may attain very large size. The writer in one of his cases found a blood clot extending from the diaphragm to the border of the pelvis, pushing the peritoneum far forward into the abdominal cavity. In this case the renal vein had been torn across.

When the capsule is not torn, the blood from the renal parenchyma may coagulate within the pelvis and (or) beneath the capsule, blocking the orifice of the ureter, distending the pelvis enormously, interfering with the urinary function and the circulation of the blood, producing a great enlargement of the organ by the latter, and dissecting the fibrous capsule from its surface. When this occurs, it is

³ Rev. de Chir., 1897.

announced by the sudden cessation of hematuria, appearance or increase in size of a tumor in the loin, and accession of pain.

Hemorrhage may arise from the vessels of the perinephritic fat tissue *alone*, or in connection with intrarenal bleeding, no laceration of the kidney being present. This occurred in one of the writer's cases. When there is no intrarenal bleeding, that which occurs from the perinephritic fat blood vessels, if sufficiently abundant, which it rarely is, shows itself as a tumor in the loin, and hematuria will be absent.

Intraperitoneal hemorrhage arising from the kidney involves the necessary existence of a rent in the peritoneum overlying it.

There were 20 cases in the whole series in which intraperitoneal hemorrhage proceeded from the kidney or its blood vessels, and through a laceration in the peritoneum. In none were there associated intraperitoneal lesions; in 16 of them the renal blood vessels were torn.

RUPTURE OF THE RENAL BLOOD VESSELS.

In addition to these 16 there were 4 others in which the renal blood vessels were injured, but the peritoneum was not torn, the hemorrhage being retroperitoneal. Both vessels were torn in 3 cases; the artery alone in 1, and the vein alone in the remaining 14—altogether 20 cases in which the renal blood vessels were involved.

Aneurysm of the renal vessels may result in these cases (Morris has collected 19 examples of this condition) and give rise to serious or fatal hemorrhage, sometimes at remote periods after the original injury.

SUPPURATION.

Suppuration occurs as perinephritic abscess, pyonephrosis, suppurative nephritis, purulent peritonitis.

Its frequency is variously estimated in the series published by different writers. Grawitz found 22 instances of suppuration in 90 cases. Küster reports it as having been fatal in 27 out of a total of 222 uncomplicated cases. Out of 486 uncomplicated cases of the present series it is noted in 68, in which it appeared in the following forms: Pyonephrosis, 6; suppurative nephritis, 4; purulent peritonitis, 9; perinephritic abscess, 38; not stated, 11; total, 68.

The infection which results in suppuration is invited by the open door afforded by the wounded organ, and may take place through the blood channels, from the bladder or from the intestine. The experiments of Delbet are interesting in this connection. He produced infection of an injured kidney by injecting immediately previous to crushing the organ 1 cc. of a solution containing 1 drop of a virulent culture of the bacillus commune coli to 10 cc. of fluid. The animals—rabbits—died shortly afterward. Rich colonies of the bacillus commune coli were found both in the renal parenchyma and the perirenal tissue. In control animals with sound kidneys this was not the case.

The relative rarity of ascending infection from the bladder in cases of traumatic hydronephrosis, as compared with the more frequent infections that occur in perirenal extravasations, strengthens the

view that the route of bacterial invasion is more often through the blood current or from the intestinal tract, in the case of the latter, than from the bladder.

CAUSES OF DEATH.

It is from the uncomplicated cases alone that an accurate estimate of the mortality can be derived. The complicated cases have been included, however, in the study, but are considered separately. Cases having lacerations of the peritoneum are classed with those having intraperitoneal lesions among the complicated ones.

HEMORRHAGE.

The most fatal factor in subparietal laceration of the kidney is hemorrhage.

It was responsible for 25 deaths out of the total number of 112 *uncomplicated* cases which ended fatally. The nature of the hemorrhage in these 25 fatal cases was as follows: Hematuria in 8 (in 7 of them it was secondary); in 12 perirenal extravasation of blood (4 of them having the renal vessels torn, and in 8 the blood proceeding from the renal parenchyma). In 4 there was secondary hemorrhage, the source of which was not specified; in 1 the hemorrhage is termed intrarenal.

COMPLICATED CASES.

Laceration of the peritoneum or intraperitoneal organs is the most fatal complication of ruptured kidney. Death is due in the larger number of such cases to intraperitoneal hemorrhage, as is seen by the following figures: The total number of cases with these complications was 62; the total number of deaths was 48. Of these 48, intraperitoneal hemorrhage caused death in 36, or a little more than 66% of the deaths in this class of cases.

Altogether, therefore, 61 of the entire number of 190 deaths which occurred in both complicated and uncomplicated cases were due to hemorrhage.

SUPPURATION.

Twenty-five of the 112 deaths of the 486 uncomplicated cases were due to suppuration, as follows: Perinephritic abscess, 21; septic infection and abscess, 1; pyonephrosis, 2; suppurative nephritis, 1; total, 25.

ANURIA.

Anuria caused death in ten of the series, in which but one kidney was injured, and the other was normal. In several others death resulted from laceration of both kidneys, and in four there was but one kidney. Anuria occurred in the latter and in some of the former, but was not the immediate cause of death, shock or hemorrhage being the more direct agents in this respect.

Anuria of twenty-four or forty-eight hours' duration was present in several cases, which ended in recovery, or in which the renal function was restored before death resulted from some other cause. Butler records an instance of anuria lasting thirteen days before the patient died; the other kidney was atrophied, and the ureter of the injured one obstructed by a mass of debris.

Morris quotes an example of intermittent anuria reported by Ceron which was, he thinks, explained

by the formation of an aneurism of a large branch of the renal artery within the capsule of the kidney.

When of short duration, and recovery takes place, anuria is to be referred, so far as we can judge, to reflex inhibitory action upon the other kidney, because of injury to its mate, the latter's function being temporarily suppressed by the traumatism, or by injury to its pelvis or ureter, or by obstruction of the latter by clot or debris. If of longer duration than 36 or 48 hours, anuria is generally of grave significance.

PERITONITIS.

There were nine deaths referable to peritonitis in the *uncomplicated* cases, and five in those having *injuries of the abdominal organs associated with that of the kidney*.

Numerous experiments have been made with animals, and a considerable number of clinical observations are also available for the purpose of determining the effect of the presence of urine, or urine and blood, in the peritoneal cavity. Quervain⁴ has written one of the most recent and useful articles upon this subject, in the course of which he summarizes the opinions and observations of a number of different writers, some of which are of interest in this connection.

Quervain quotes the following authors as holding the opinion that except for such aid as can be derived from surgical intervention, all patients into whose peritoneal cavity urine and blood are extravasated die of septic peritonitis—Küster, König, Albarran, Schede, Petroff, Edler. Grawitz, on the other hand, as far back as 1888, asserted that the danger from laceration of the peritoneum in cases of subcutaneous rupture of the kidney was owing to the free exit afforded for the blood into the peritoneal cavity, and denied that the presence of urine there was necessarily of serious consequence.

Tuffier had already demonstrated by experiments on animals that no urine flows from the surfaces of lacerated renal wounds, and that in order to have urinary extravasation in such circumstances the renal pelvis, or one of the calyces, must stand in communication with the renal surface through the wound. Also from another series of observations that the introduction of urine into the peritoneal cavity, provided it was made gradually once, or even repeatedly, if only intervals of sufficient length were made between the different introductions, did not cause peritonitis, whereas if the flow was continuous, the contrary was the case.

Israel and Grawitz found that urine which flowed into the peritoneal cavity from a divided ureter in the case of dogs did not kill them sooner than four or five weeks.

Quervain's experiments in the same direction yielded similar results, and showed further that the peritoneum very quickly protected itself from the encroachments of the extravasated fluids, by formation of adhesions. When these failed, steady flow of urine into the peritoneal cavity usually resulted in peritonitis.

TREATMENT.

An important influence upon the mortality being

exercised by the method of treatment adopted, the following analysis with reference to this aspect of the subject has been made as a basis for comparison of the various methods and for the study of such other details as are of importance and interest before considering the special features of the treatment.

The largest series of cases hitherto published is that of Delbet of 320. When comparing methods of treatment he divided them into three classes: (1) Cases treated expectantly. (2) Cases treated by operations other than nephrectomy. (3) Cases treated by nephrectomy.

For the sake of convenience the writer has adopted the same classification, but has carried the analysis of the whole number of the series, including Delbet's cases, further than was done by him.

The author has studied the details of all the cases included in this analysis, so far as the reports of them permit, has let the figures tell their own story for what it is worth, and has not changed or transferred any of the data, or made any suppositions of what would probably have shown different results from those which appear, had something happened other than that which did actually occur. Moreover he does not think that a statistical compilation such as that which is about to be presented forms a sufficient basis for making final conclusions, and that the exercise of sound surgical sense, in dealing with individual cases, is more valuable than what may or may not be shown in a general way by the figures of such a statistical calculation, even though it be made with more than twice the number of data hitherto gathered together for purposes of analysis.

ANALYSIS OF CASES WITH REFERENCE TO TREATMENT, CAUSES OF DEATH, ETC.

| | Cases. | Deaths. |
|--|--------|-------------|
| Total number available for this purpose | 603 | 191, or 31% |
| Total number without associated injuries | 487 | 113, or 23% |
| Total number with associated injuries | 116 | 78, or 67% |
| | 603 | 191 |

The 487 *uncomplicated* cases classified with reference to method of treatment are as follows:

| | Cases. | Deaths. | Mortality. |
|--|--------|---------|------------|
| Treated expectantly | 273 | 81 | 27% |
| Treated by operations other than nephrectomy | 99 | 7 | 7% |
| Treated by nephrectomy | 115 | 25 | 25% |
| | 487 | 113 | |

UNCOMPLICATED CASES TREATED EXPECTANTLY.

Causes of death in 56 of the 81 fatal cases treated expectantly.

| | |
|---|----|
| Perinephritic abscess | 17 |
| Pyonephrosis | 1 |
| Hemorrhage (hematuria in 8, perirenal in 7; in 3 of the latter the renal vessels were torn) | 15 |
| Anuria | 10 |
| Peritonitis | 5 |
| Shock | 4 |
| Uremia (absence of other kidney in two of them) .. | 4 |

56

Of the 25 other deaths the cause is not stated.

⁴ Deutsche Zeitschr. f. Chir., vol. 62, 1901-02, p. 58.

NINETY-NINE UNCOMPLICATED CASES TREATED BY OPERATIONS OTHER THAN NEPHRECTOMY.

Treated by lumbar incision, tampon and drainage.

| | Cases. | Deaths. | Mort'ly. |
|----------------------------|--------|---------|----------|
| Perinephritic abscess..... | 21 | 1 | |
| Perirenal hemorrhage | 20 | 2 | |
| Hydronephrosis | 12 | 0 | |
| | 53 | 53 | 3 3 |

Cases treated by aspiration.

| | | | |
|---|----|----|-----|
| Perinephritic abscess. (Death from peritonitis in 1 case.) | 7 | 1 | |
| Pyonephrosis | 1 | | |
| Hydronephrosis | 6 | | |
| | 14 | 14 | 1 1 |

Cases treated by lumbar nephrotomy.

| | | | |
|--|----|----|-----|
| Intrarenal hemorrhage or suppuration. (The two fatal cases had the other kidney injured also.) | 11 | 11 | 2 2 |
| | — | — | — — |

Laceration and hemorrhage.

| | | | |
|--|----|----|------|
| Treated by laparotomy and drainage..... | 11 | 11 | 1 1 |
| Treated by lumbar incision and suture of the renal wound.... | 8 | 8 | 0 0 |
| Treated by partial nephrectomy | 2 | 2 | 0 0 |
| | — | — | — — |
| Totals, | 99 | | 7 7% |

COMPLICATED CASES TREATED EXPECTANTLY.

Total number, 56; deaths, 51; mortality, 91%.

Conditions and causes of death in 46 fatal cases.

| | |
|---|----|
| Anuria (absence of one kidney, 2; both kidneys injured, 2)..... | 9 |
| Injury to lung or other pulmonary complications . | 8 |
| Dislocation of the neck..... | 1 |
| Fractures (3 of skull, 5 multiple) | 8 |
| Rupture of bladder..... | 1 |
| | 27 |

Intraperitoneal.

| | |
|--|----|
| Associated injuries, 24; deaths, 24; mortality, 100%. | |
| Intraperitoneal hemorrhage through torn peritoneum | 9 |
| Laceration of liver (shock and hemorrhage)..... | 5 |
| " " spleen (shock and hemorrhage)..... | 6 |
| " " small intestine (peritonitis) | 2 |
| " " mesocolon (peritonitis)..... | 1 |
| " " mesentery (hemorrhage) | 1 |
| | 24 |
| Total, | 51 |

COMPLICATED CASES TREATED BY OPERATIONS OTHER THAN NEPHRECTOMY.

| | Cases. | Deaths. | Mort'ly. |
|---|--------|---------|----------|
| <i>Laceration of the peritoneum</i> | 5 | 3 | |
| Three treated by lumbar incision and drainage, 1 of these three died from hemorrhage. | | | |
| Two treated by laparotomy, tampon and drainage, and both of them died, one from peritonitis, one from hemorrhage. | | | |
| <i>Laceration of liver and peritoneum</i> | 4 | 1 | |
| Three treated by laparotomy, tampon and drainage, one of these died from hemorrhage. | | | |
| One treated by laparotomy, suture of liver, tampon of renal wound and drainage. This patient lived. | | | |

Laceration of spleen and peritoneum 4 2
Two were treated by laparotomy and splenectomy, the kidney not being touched. Both recovered.

Two treated by laparotomy and tamponing the spleen. Both died, one from hemorrhage, one from peritonitis.

Laceration of mesentery..... 1 1
Treated by laparotomy, ligation of injured vessels of mesentery, tampon of kidney. Death from peritonitis.

Contusion of descending colon.... 1 0
Treated by suture of the injured bowel. 15 7 46%

ANALYSIS OF CASES TREATED BY NEPHRECTOMY.

| | Cases. | Deaths. | Mortality. |
|----------------------|--------|---------|------------|
| Total number..... | 160 | 44 | 27.5— |
| Uncomplicated cases | 115 | 25 | 21— |
| Complicated cases.. | 45 | 19 | 42— |
| Lumbar nephrectomies | 81 | 22 | 27— |
| Abdominal „ | 44 | 14 | 30— |

Lumbar nephrectomies.

| | Cases. | Deaths. | Mortality. |
|---------------------------|--------|---------|------------|
| Primary uncomplicated.... | 42 | 12 | 30— |
| Secondary uncomplicated . | 22 | 3 | 14— |

Causes of death in the 12 fatal cases of primary uncomplicated lumbar operation:

Hemorrhage and shock in 10, peritonitis in 1, infection and sepsis in 1, (the renal vessels were torn in 3 of the 10 fatal cases from hemorrhage.)

Causes of death in the 3 fatal cases of secondary uncomplicated lumbar operation:

One from shock attending operation; 2 from sepsis.

| | Cases. | Deaths. | Mortality. |
|------------------------------|--------|---------|------------|
| Primary lumbar complicated.. | 5 | 3 | |
| Secondary lumbar complicated | 6 | 4 | |
| | 11 | 7 | |

Causes of death in the 3 fatal primary operations:

The peritoneum was torn in all of the 3 fatal cases. In one of them the intestine, which was adherent to the peritoneum overlying the kidney, was torn. Gangrene and septic peritonitis were the causes of death in this case. In the other two the peritoneum was torn also, and intraperitoneal hemorrhage and shock caused death.

Death in the 4 fatal secondary operations was due to:

Peritonitis in 2; in both the peritoneum was torn. In 2 to sepsis, 1 following suppuration in the form of subphrenic abscess and purulent pleurisy, and 1 perinephritic suppuration of long duration.

ABDOMINAL NEPHRECTOMIES.

| | Cases. | Deaths. | Mort'ly. |
|---------------------|--------|---------|----------|
| Total number | 44 | 14 | 30% |
| Uncomplicated | 11 | 2 | 18% |
| Complicated | 33 | 12 | 36% |

Cases. Deaths.

Primary uncomplicated 6 1 (hemorrhage and shock)
Secondary uncomplicated 5 1 (peritonitis)

Cases. Deaths.

Primary complicated..... 30 10
Secondary complicated..... 3 2
33 12

Causes of death in the 10 primary complicated cases were as follows: Hemorrhage from ruptured spleen in 2, intraperitoneal hemorrhage from the kidney in 3, hemorrhage from liver and spleen in 1, shock attending splenectomy and nephrectomy in 2, peritonitis in 1, pneumonia in 1.

Causes of death in the 2 fatal secondary operations were: Hemorrhage and shock attending resection of intestine and nephrectomy in 1, shock and anuria — both kidneys being injured — in 1.

(To be continued.)

A CASE OF ACUTE EPIDIDYMITIS IN AN UNDESCENDED TESTICLE, WITH GONOCOCCI DEMONSTRATED IN THE EXCISED ORGAN.

BY FRED T. MURPHY, M.D., BOSTON.

From the Clinico-Pathological Laboratory of the Massachusetts General Hospital.

An acute inflammation in an undescended testicle demanding operation is not remarkable. The demonstration of gonococci in the organ thus removed is unique, so far as I can learn.

Since 1892, when Eraud¹ published his observations on the etiology of acute epididymitis, and concluded that the toxin obtained by him from a micro-organism cultivated from the urethra was the cause, the bacteriology has been much discussed. Soon after this publication d'Arlhac² substantiated these conclusions by growths on culture media and animal experiments. He isolated this diplococcus, similar in size and staining properties to the gonococcus, but growing freely on ordinary culture media, and called it the orchicoccus. Eraud and Hugouenq³ were able to prove to their own satisfaction that the orchicoccus was distinct from the gonococcus, that it was the cause of epididymitis, but that it might be present in the urethra without exciting such an inflammation. Somewhat later Carpentier⁴ recognized this special organism as an active irritant in epididymitis, and Rollet⁵ believed it to be the sole cause of the inflammation. While these observers uniformly found the growth on culture media to differ from the gonococcus, yet their conclusions have not been received without question, and the orchicoccus as described has not been accepted as a definite organism. Based on the large number of negative and the small number of positive results, a theory of irritation from a gonococcus toxin was advanced, but it lacks experimental proof. When the difficulty of cultivation of the gonococcus is considered, these negative results are not noteworthy. As is illustrated by the case of Collan,⁶ the immediate negative report from cover-glass preparations may prevent further investigation. Here a swelling of the epididymis was aspirated, but only serous fluid withdrawn, which was negative in the stained specimen, but on proper culture media gave an abundant growth of pure gonococci. Also the slight tendency of the gonococcus to cause frank suppuration is well recognized, and without an abscess, or some rare complication, as in the case to be reported, the opportunities of obtaining material for examination are few. Organisms other than the gonococcus have been isolated from an abscess of the epididymis by Jadassohn,⁷ staphylococcus, and Macaigne and Vauverts,⁸ Friedländer's bacillus; so that the possibility of a mixed infection cannot be denied. With our present acceptance of the gonococcus, however, as the cause of acute urethritis, and the not uncommon association of the epididymis with unusual irritation, as in irrigation of the posterior urethra or massage of the seminal vesicles, the probability of its being the etiological factor must be allowed. The increasing number of cases in which the gonococcus has been demonstrated also confirms the opinion that it is the specific organism of acute epididymitis, though inflammation with trauma, circulatory disturbances, as was held by Porosz,⁹

and a mixed infection are possible causes. Rou-tier,¹⁰ in July, 1895, reported gonococci in the pus from an abscess of the epididymis, but gave no data other than a microscopic examination of a Gram decolorizing diplococcus. Grosz,¹¹ in November, 1897, gave the first complete report of a positive growth of gonococci obtained from the pus from an abscess of the epididymis. His observations were complete and the growth on cultures was positive. In the next month Collan reported the case cited above, in which only serous fluid was aspirated from a swelling of the epididymis. Since that time cases have been reported with careful examinations of culture growths by Harttung,¹² Colombi,¹³ Witte,¹⁴ Reach,¹⁵ Pizzini¹⁶ and Karwowski.¹⁷ All cultures were obtained from isolated abscesses in the epididymis except in the case of Colombi, which in addition had a general infection. Laurent¹⁸ notes a case in which the gonococcus was identified by form and color reaction from smears from the epididymis, but no cultures were made.

The case which I have to present entered the Massachusetts General Hospital on August 9, 1901, on the service of Dr. S. J. Mixer. He was seen by Dr. G. W. W. Brewster, and I have these gentlemen to thank for the opportunity of operating on and reporting the case.

J. B., twenty years old: single; clerk. On the afternoon of August 9, patient was admitted to the accident room with the diagnosis of strangulated inguinal hernia.

Previous history unimportant except that the left testicle had never been in the scrotum, and five weeks before he had contracted his first gonorrhea. Treatment had been by internal remedies, and for some days the urethral discharge had been practically absent. No acute symptoms until the morning of the day before entrance, when he noticed a small lump in the left groin which was exceedingly tender and painful. During the last twenty-four hours pain and tenderness increased. Bowels moved on the morning of the 9th. No vomiting. Examination showed a fairly developed and nourished man, who seemed moderately sick. Temperature, 102.4; pulse, 108; respiration, 26; white count, 18,000; heart, no murmurs; pulse, of fair strength; lungs, negative; belly, soft, not distended; right testicle in the scrotum and of normal size; left testicle absent; penis free from scars; no urethral discharge could be expressed. In either groin were slightly enlarged glands. On the left side just above Poupart's ligament and external to the external ring was a tender tumor, the size of the end of the first finger, over which the skin was reddened. It was apparently distinct from the chain of glands, dull on percussion, and gave no impulse on cough. The external inguinal ring was plugged with a mass which seemed to extend on the external oblique fascia to the tumor. Right inguinal canal normal.

Diagnosis made of acute inflammation of an undescended testicle, and the patient sent to the ward with an ice bag on the groin. In the ward he seemed to grow more acutely sick and suffered great pain. No vomiting, and belly unchanged. At 8 p.m. the temperature had risen to 104.2 and the pulse was of poorer quality. Operation was

advised, and the patient consented to the loss of the testicle if necessary.

Operation with general anesthesia. The incision was made over the tumor as for hernia. Carrying the dissection through the skin, the subcutaneous tissue was found very edematous. Lying on the external oblique fascia about one cm. outside of the ring was what appeared to be a small testis. An enlarged and porky cord extended from this, and at the external ring was acutely flexed. The testicle was atrophied to such an extent and the cord so short that no attempt to replace it in the scrotum was made. The external oblique fascia was split to the internal ring. Then the indurated cord was tied off as high as possible with catgut and the fascia caught together with interrupted stitches of the same material, a small gauze drain being left in the inguinal canal. Skin closed in the usual way. Dry dressing. After the operation the patient had a very comfortable night, and by morning the temperature had dropped to normal, with the disappearance of all symptoms. The wick was removed on the second day, and the wound healed practically by first intention. Patient was discharged on the eighteenth day.

The specimen removed at operation was examined by Dr. James H. Wright of the clinicopathological laboratory of the hospital, and his report is as follows:

The specimen sent for examination consists of an epididymis without any apparent testicular substance. It is surrounded by what appears to be a thickened tunica vaginalis. Perhaps 1.5 cm. of spermatic cord is present. On longitudinal sections made through the epididymis, the interstitial tissue appears to be increased in amount and the color of the cut surface is dark red with a number of grayish walled tubules showing, which are filled with a yellowish semi-solid material or with thick opaque white fluid.

Microscopical examination of cover-glass preparations from the material in the tubules, stained by Gram's method and afterwards with Bismarck brown, shows a small number of brown-stained diplococci, like gonococci in size and shape, situated both within and outside of the pus cells, which are numerous. In cultures on hydrocele agar from the contents of the tubules above described there developed a variable number of colonies, grayish white and pearly in appearance, and of rounded outline, the larger of which attained a diameter of about 2 mm. after about forty-eight hours in the incubator. These were composed of Gram decolorizing diplococci, sometimes appearing as tetrads and resembling gonococci. Further study of these cocci in subcultures resulted as follows: They do not grow upon plain agar (reaction + 1.7). In one tube, upon which a considerable quantity of material was sown, two or three colonies developed, but several other plain agar tubes inoculated parallel with the hydrocele agar cultures showed no growth after forty-eight hours. The colonies on the hydrocele agar appear as rounded, translucent, pearly disks attaining the diameter of about 2 mm. in some instances.

On dry hydrocele agar the growth has a viscid consistency, stringing out when touched with a platinum needle. Under a low magnifying power the colonies appear as translucent disks with smooth, rounded outlines, showing in their central portions small brownish granular masses irregularly distributed. The coccus decolorizes by Gram, and shows a tendency to grow in the form of tetrads. In a culture about forty-eight hours old the cocci show marked involution forms and degeneration. The organism in this case is clearly the gonococcus.

Microscopical examination of hardened sections taken from different places in the specimen shows the larger tubules to be filled with pus, while some of the smaller tubules are not so affected. The epithelium of the tub-

ules containing pus is for the most part absent, and there is in some instances purulent infiltration and degeneration of the surrounding tissue. In some tubules diplococci like gonococci are present inside the pus cells. The interstitial tissue shows marked infiltration with fibrin, and moderate infiltration with leucocytes and other inflammatory cells.

The blood vessels are dilated and gorged with red blood cells.

In cross section of the spermatic cord, the lumen of the vas deferens contains pus and the epithelium lining it is absent and disintegrated. In the pus, diplococci like gonococci are observed in small numbers. There is some infiltration of the substance of the cord with inflammatory cells together with fibrin. No proper testicular substance is apparent in the sections.

We have to do, then, with a case of epididymitis without abscess formation, the usual clinical condition. The gonococcus clearly was the infecting agent in this case, and it seems to me that the only reasonable ground to take is that it is the micro-organism concerned in all cases of epididymitis with gonorrheal urethritis, possibly rarely associated with a mixed infection. Why the smaller tubules were not generally involved it is hard to explain unless they represent more distant portions of the vasa efferentia beyond the limits of the process. This specimen must, I think, add materially to the evidence that epididymitis is due to the presence of the gonococcus in the epididymis, and is not due to the absorption of toxin from the urethra or to the primary infection of other micro-organisms. Clinically the differentiation from the other possibilities of acute inflammation, as adenitis, incarcerated or partially strangulated hernia, is not without interest.

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THE NERNST LAMP FOR THE PRODUCTION OF ETHER WAVES FOR USE IN THERAPEUTICS.

BY WILLIAM ROLLINS, BOSTON.

ETHER waves from two forms of electric lamps are now used extensively in therapeutics in Europe and to a less extent in America. Where short ether waves are required the arc is the more suitable, as the temperature is higher, making the proportion of short waves greater; and having no glass covering like the incandescent lamp there is no absorption from this source. Glass absorbs practically all the

waves shorter than 300 un., as does the atmosphere those given out by the sun. During the past year I have made experiments with Prof. Walter Nernst's lamp, in which a rod containing a preparation of zirconia is heated by an electric current. This like the arc requires no glass covering, though it is supplied with one. Loss of short waves is therefore avoided. The light is well suited for use in therapeutic cabinets in which an even distribution of radiant energy is desired and obtained by using many incandescent bulbs — over ninety in one of Dr. Kellogg's. A second advantage over incandescent bulbs is that the consumption of current for the same number of light waves is greater, less of the current being converted into the longer heat waves. I do not expect the Nernst lamp will supersede the older forms for therapeutic purposes, but it is certain to have a place of its own. Ether waves are now so much used in medicine that it seems desirable to have some general term under which all the forms, such as x-light, ultra violet light, actinic light, ordinary white light, red light, heat and electric waves, can be grouped. I am in the habit of using the term "ether therapeutics" for this purpose, and suggest it to others as a broad though definite term.

Clinical Department.

A CASE OF MALIGNANT ENDOCARDITIS WITH MENINGITIS, PNEUMOCOCCUS INFECTION.

BY L. C. MILLER, M. D., WORCESTER, MASS.

In spite of Broadbent's protest against the use of the term "malignant," as applied to endocarditis instead of "infective," I have preferred it in this case for the reason that it illustrates the fact that malignant endocarditis is usually fatal.

REPORT OF CASE.

Mrs. W., sixty-one years old, widow, hospital matron.

Family history. — Father killed in accident; mother died of consumption; brother of Bright's disease.

Previous history. — She has had more or less articular rheumatism for years. Last spring she had what was called "grippe," accompanied by a nasal discharge. She never permitted an examination of the nose, but Dr. Getchell, from her description of the symptoms, considered that she had disease of either the frontal or ethmoidal sinuses, probably the frontal.

During the above illness a soft systolic murmur was found at the apex of the heart, and a mitral lesion diagnosed.

Recently she has complained of trouble in her head. Some time (a week or two) before her present illness she fell on the ice and struck her head a severe blow. At about the same time, whether before or after it is impossible to determine, she had an attack of dizziness, followed by confusion of mind resembling aphasia. This lasted five or six hours. About four weeks before death she nearly fainted in church.

Present illness. — Feb. 6, about midnight, she had a severe chill, with nausea and retching but no vomiting. The remainder of the night she had chills or chilly sensations. The next morning she felt some nausea. The temperature was not taken.

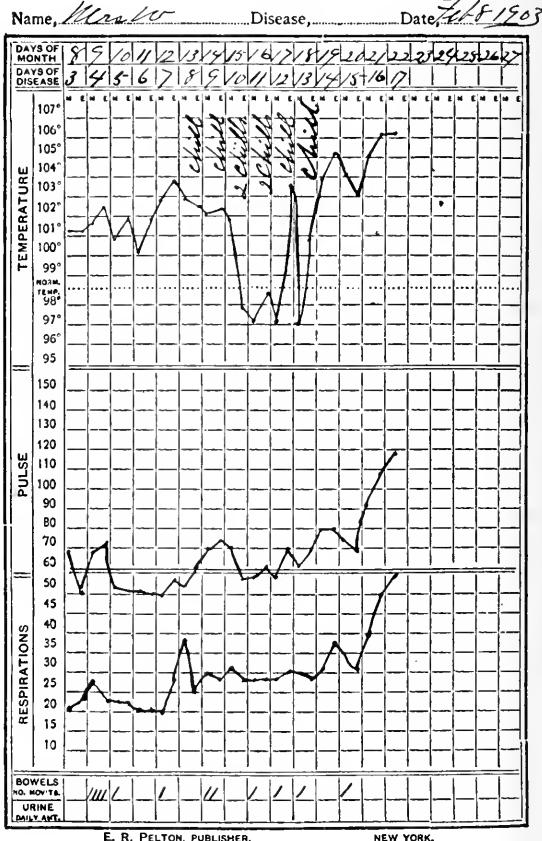
For three days she remained in bed without improvement.

I saw her first Feb. 9. She complained of a cough and of some mental confusion (feeling stupid, and not being able to finish a sentence). She did not complain of pain or refer her illness to any particular part of her body.

She seemed cheerful, laughed and joked as was her wont, but was evidently anxious about herself. She looked whiter than usual.

Physical examination. — The joints of her hands were much enlarged and thickened. Her pulse was 70', full and regular; the radial arteries slightly atheromatous. (Her pulse was normally from 50' to 55'.) Respiration 20', regular and easy.

CLINICAL CHART.



Chest, lungs. — The right side was negative. On left side, below, especially behind, there was a slight dullness with slightly diminished respiratory sounds.

Heart. — The apex beat was felt in the fifth interspace in the mammary line. Percussion showed no enlargement of the cardiac area. There was a soft systolic murmur, most marked at the apex, much less so at the base. Accentuation of the pulmonic second sound was doubtful. The aortic second sound was more accentuated than the patient's age would account for. The systolic mur-

mur was easily heard in the axilla and behind near the angle of the scapula.

Abdomen.—The spleen was not felt. There were no unusual symptoms found in the abdomen. Its walls were very thick and made the palpation of the liver and spleen practically impossible.

There was no edema anywhere. The pupils were equal and responded to light.

The urine examination of the previous day showed: Urine strongly acid; specific gravity, 1.030; albumin trace; sugar 0; urea 3.8%; sediment, a few brown granular casts, a few red blood corpuscles, a moderate number of leucocytes, amorphous urates.

In all, eight examinations of the urine were made. The highest specific gravity was 1.030, lowest 1.018. Only a faint trace of albumin was ever found. The urea never over 3.8%, the lowest being 1.9%. In the sediment were always hyaline casts, leucocytes, uric acid crystals, and epithelium; sometimes granular casts; once a waxy cast.

The blood count showed 15,000 leucocytes at the first count and 16,000 at the second count.

No diagnosis was made after this examination.

The bowels were sluggish, but responded to a compound cathartic pill. Strychnia and small doses of whiskey were ordered. The stomach symptoms had quieted down and milk with plain soda was advised.

The next day, the fifth day of the sickness, the patient seemed much the same. The left lung seemed duller on percussion and the respiratory sounds more diminished. The temperature had fallen to 99.8° in the morning, but went up to 101° by mid-afternoon. The pulse was 54' and 50'. The respirations 22' and 20'.

The sixth day of the illness the patient showed more anxiety about herself. She complained that she could not finish a sentence and felt stupid. The highest temperature was 101.8°, the lowest 99.2°; pulse, highest 54', lowest 50'. The bowels moved after a compound cathartic pill. Examination of the chest showed less dullness and clearer respiratory sounds, and by the eighth day the lungs were negative.

The eighth day she had a chill lasting ten minutes. The temperature went from 98.6° to 103.2°; pulse 80', respirations 40'.

Without going too much into details, it is sufficient to state that the patient had eight chills in the six succeeding days. The highest temperature was 103.8°, pulse 80', respiration 40'. The tenth day we were certain of marked changes in the heart sounds. These had come on so gradually that it was difficult to detect them. The systolic murmur at the apex was rougher and much louder, especially toward the axilla. The sounds were muffled over the base. Three days later we could detect a soft diastolic murmur over the base. The pulse was still regular but with a bounding quality and more easily compressed.

The night of the tenth day she was delirious. Some of the time she perspired very freely.

That day we ventured the diagnosis of malignant endocarditis. Previously we had been expecting pneumonia to develop. But the symptoms of the latter if they existed were very indistinct and soon cleared up.

The eleventh day of her illness there was a purulent discharge from her left ear. This ceased in two days, when the drum was incised without further discharge. At this time she complained of feeling dizzy, but never of pain.

The fourteenth day she was delirious and gradually became unconscious. Urine was passed involuntarily.

During the afternoon of the fourteenth day Drs. Gage and Baker saw the patient in consultation. At the time of the consultation Mrs. W. was unconscious, breathing regularly, pulse regular but bounding. There was no dyspnea, no edema of the legs, or signs of edema of the lungs. The heart sounds were as described above.

After considering all the possible causes for the patient's condition, Drs. Baker and Gage expressed it as their opinion that she was suffering from some septic condition in the brain, probably abscess, possibly meningitis.

Between 6 and 8 o'clock, p.m., of that day her respirations were of the Cheyne Stokes type with some cyanosis. The house officer, Dr. von Sholly, discovered a left-sided hemiplegia affecting the limbs and face but not the eye.

The next day the right side became paralyzed. She died the seventeenth day after the initial chill.

Résumé.—We have a woman past sixty; her family history negative. She has a rheumatic history and an old valvular heart lesion. There are recent evidences of either circulatory or brain disturbance, perhaps both. The onset of her last illness was marked by a chill and gastric disturbance, with a slight dullness and diminished respiratory sounds on one side. These symptoms were followed by a variable temperature for a few days, then by chills every day until unconsciousness came.

There was a marked leucocytosis; moderate renal changes; no diminution in the excretion of urea. There was increasing loss of mental power up to unconsciousness and paralysis. There was marked roughening of the heart sounds after a week's illness. The pulse was full and regular. There was no edema of the extremities or lungs, or other signs of cardiac incompetence.

DR. BAKER'S REPORT OF THE AUTOPSY.

Autopsy held at 4.30 o'clock, Feb. 22, 1903,—two hours after death. The body was that of a large, well-developed, well-nourished woman, 5 feet 11 inches in height; estimated weight, 185 pounds.

There was the usual postmortem mottling in dependent parts, but no rigor mortis. The pupils were equal and dilated about 7 mm. There was no edema. About each phalangeal joint there was marked bony and cartilaginous thickening, with some distortion of the fingers, evidently due to chronic rheumatoid arthritis.

Head.—The scalp showed nothing unusual, but the entire bony skull was found to be at least twice the average thickness, with marked thickening externally of the squamous portions of both temporal bones.

Interior of skull.—There were very extensive exostoses almost like ivory in character. They were situated nearly symmetrically, arising from the

petrous portion of the temporal bone extending into the middle fossæ.

Brain.—There was found a most extensive, yellowish-gray thick exudate in the pia mater, so extensive as to conceal the convolutions of the brain over nearly the entire surface of the convexity of the right hemisphere, and the upper two thirds of the convexity of the left hemisphere. The pia over the base was markedly injected and edematous, and somewhat lazy.

The main arterial trunks showed a moderate degree of atheroma.

The ventricles of the brain were not remarkable. On sectioning the brain no areas of softening were found.

Lungs.—The right lung was completely covered with old adhesions, completely obliterating the pleural cavity. There was also a very slight recent pleurisy about this lung. The lung itself was less elastic than normal, but there were no areas of consolidation. The left lung was fully expanded without adhesions. There were no areas of consolidation in this lung. The pleural cavity contained no excess of fluid.

Pericardium.—The pericardium was free from adhesions, except to the right lung. The sac contained about 30 cc. of a clear serous fluid.

Heart.—The heart weighed 400 gms. There was marked hypertrophy and dilatation of the left auricle, with marked hypertrophy of the wall of the left ventricle, which was nearly twice the normal thickness. The right auricle was not remarkable. The right ventricle was slightly hypertrophied but not dilated. The mitral orifice was somewhat contracted, with the anterior segment of the valve thickened. There was in it a small abscess containing about five drops of a thick yellowish-white pus. Adjacent to this was a large, irregularly shaped dark red thrombus, about the size of the end of a thumb. This was firmly adherent to the valve and projected into the auricle. The aortic valve was of normal appearance; but there was a slight degree of atheroma of the aorta itself just above the valve. The tricuspid and aortic valves showed no changes. The heart muscle showed a very faint degree of cloudy swelling.

Abdomen.—The stomach and intestines were normal. The spleen was about twice the normal size, with its lower half the seat of a recent hemorrhagic infarct. The remaining portion was soft and swollen. The left kidney was lobulate, firm and at least twice the normal size. Its capsule was thickened and adherent, leaving on removal a red granular surface. There were several small cysts scattered over the surface. On section the cortex was irregular in thickness, though measuring more than normal. The right kidney was lobulated, firm and of about one half the normal size. It was similar in structure to the left. The pelvis of the kidneys, ureters and bladder showed no special changes.

The liver was somewhat more fibrous than normal, without other changes.

The uterus was of the infantile type, about two inches in length, nearly round and about three quarters of an inch in diameter. (She had never menstruated.) Both ovaries were exceedingly small

and apparently undeveloped, as were the Fallopian tubes.

ANATOMICAL DIAGNOSIS.

Malignant endocarditis of the mitral valve. Mitral stenosis and regurgitation. Hypertrophy of the left and right ventricles and hypertrophy and dilatation of the left auricle. Acute suppurative leptomeningitis.

Chronic interstitial nephritis, chronic fibrous pleuritis, acute splenic tumor with infarct. Infantile uterus. Thickening of skull. Rheumatoid arthritis of hands.

BACTERIOLOGICAL DIAGNOSIS.

Smear preparations from the brain showed numerous pneumococci, and a pure culture of pneumococcus was obtained from a culture on blood serum. Smears from the abscess in the mitral valve showed the same organisms. Sections of a portion of the mitral valve showed pneumococci.

I shall not attempt to discuss this case in detail, but speak only of a few of its most interesting features. Perhaps the first question that comes to mind is the source of the infection. There were no signs of recent pneumonia found at the autopsy, and we know that, aside from the doubtful respiratory symptoms, there were no other clinical symptoms of pneumonia. The middle ear as a source of infection was ruled out by the autopsy. The frontal or ethmoidal sinuses were not opened, so it cannot be definitely said that they were not diseased. Judging by the great thickening of the skull, it seems quite probable that one or both of them may have been completely filled up.

Cases of endocarditis with pneumococcus infection but without pneumonia, with and without meningitis, have been reported.

In an etiological table of meningitis Osler gives as a cause of primary meningitis, pneumococci—the meninges alone involved or in a general pneumococcal infection—or secondary meningitis due to pneumonia, endocarditis, etc., from pneumococcus infection.

Weichselbaum,¹ in 1888, reported two cases of malignant endocarditis without pneumonia either preceding or accompanying them; one with and the other without meningitis.

The one complicated by meningitis so nearly resembled my case that I consider it worth quoting:

"There was admitted to the hospital a man of thirty-seven years, who two years before had articular rheumatism, since which time he had suffered from heart palpitation. At the apex of the heart systolic and diastolic murmurs were found. During his illness the patient ran a high temperature, and had, besides, two chills. Twelve days after entrance to the hospital the man died.

"The autopsy showed a fibrino-purulent cerebrospinal meningitis; also an insufficiency of the mitral valve with considerable polypoid vegetations on the valve, an eccentric hypertrophy of the left and dilatation of the right heart ventricles. There was an infarct of the spleen. *Pneumonia* was not present. Pneumococci in the exudate of the meninges, as well as in the valve deposit."

¹ Wien. med. Wchnschr., 1888, Bd. xxxviii, S. 1177 and 1209.

In order to complete his investigations into the part the pneumococci played in this case, Weichselbaum, using a pure culture of these pneumococci, injected them into a guinea pig whose aortic valve had been injured artificially. After two days the pig died. The autopsy in this case showed an endocarditis, but not on the aortic valve which had been injured, but on the mitral valve. In addition there was a bilateral pleuro-pneumonia and a greatly swollen spleen. From the heart, spleen and lungs of the pig, cultures showed pneumococci.

Weichselbaum, in discussing these cases, says: "It must be determined which process was primary, the endocarditis or the meningitis. Since such a differentiation cannot be made with certainty, so nothing definite can be said about the point of entrance of the diplococcus pneumoniae in the case described. This applies as well to the other case in which, besides the endocarditis, there was no process whatever to be found caused by the diplococcus pneumoniae. The possibility of the endocarditis in this case arising by way of the respiratory tract cannot be shown offhand."

These last remarks apply to my case. It cannot be shown how the infection entered, nor exactly its course after entry. I have assumed that it extended from the heart to the brain. It may be objected to my opinion that Mrs. W. showed symptoms of cerebral disease of some sort before the onset of the acute illness. In reply I can only say that we do not know how long the malignant endocarditis may have existed prior to our discovery of it. Gibson² says: "This septicemic form of acute endocarditis is sometimes specially characterized by the cerebral symptoms to which Osler has particularly called attention; it is then frequently associated with meningitis, and it may be noted that Netter has detected pneumococci in the meningeal exudation. It cannot be too strongly insisted upon that a great many cases of the affection run a perfectly latent course, and only reveal themselves by a sudden disturbance of the circulatory system, through changes taking place in the heart or embolic processes occurring in other organs."

If for no other reason, this case is interesting because symptoms which were, at the best, but vaguely and partially understood were wholly explained by the pathological and bacteriological findings.

I am under obligations to Dr. F. H. Baker for a careful autopsy report; to Dr. Anna von Sholly for assistance and suggestions in the conduct of the case; to Dr. Merriek Lincoln for German translations.

Medical Progress.

REPORT ON MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

THE SIMPLE DEMENTED FORM OF DEMENTIA PRECOX.

DIEM¹, after a careful study of nineteen cases, concludes that, beside the clinical types of hebe-

phrenia, katatonia, dementia paranoides and paranoid forms, which all end in the peculiar mental weakness of dementia precox, there is another type which leads to the same terminal condition, the same disturbance of intelligence and character, but its beginning is regularly simple, insidious and without special forebodings; it develops without acute exacerbations or remissions, without pronounced maniacal or melancholy states, without hallucinations and delusions, and without the peculiarities characteristic of the other forms of dementia precox above mentioned, catalepsy, ties, affectations, peculiar manners, stereotyped attitudes, negativism and mutism. After some years there is usually a stationary condition. The type is best described by the name of the simple demented form of dementia precox or simple dementia. Pure cases are not very common, although they are much commoner than is supposed, because they often come very late to asylums. Twelve of the nineteen cases lacked all the specific symptoms of hebephrenia. A sharp definition, however, cannot be made and must be only artificial. Variations in the emotional state, katatonic symptoms, and delusions may at first be unnoticed, and yet be transitions to the forms already described. Women suffering from this form are often considered of bad character, and men simply as alcoholic. One symptom of dementia precox has seldom been described, but is specially common in these cases, namely, a fine regular tremor of the hands. It is usually impossible in the early stages to predict the definite course of the disease, and after a number of years the simple demented form may pass into the hebephrenic form. Simple dementia, hebephrenia katatonia and the paranoid forms of dementia precox thus form one clinical unity. This form is of great practical and forensic importance on account of its close relations to alcoholism, vagabondism and acquired anomalies of character.

PSEUDO-HALLUCINATIONS.

Lugaro² believes that there are many insane patients who apparently have hallucinations, yet merely have subjective impressions as of words pronounced mentally, and not actually false hearing. These pseudo-hallucinations or psychical hallucinations consist in pure representations without the objective character of true hallucinations. They consist in mental voices or the mental representations of acts. They assume a character extraneous to the person's personality by the method by which they arise, by their separation from the ordinary processes of association, by their unusual and strange character, and by the contrast which they may present to the patient's own desires. They are always interpreted by the patient as an exceptional phenomenon with explanatory delusions, which vary according to the patient's education or tendencies. The phenomenon of epigastric voices is determined by these hallucinations accompanied by abnormal sensations in the internal organs, which determine the localization of the voices. Many of the cases described as pure verbal psychomotor hallucinations are really due to these pseudo-hallucinations associated with peculiar sensations

¹ Diseases of Heart and Aorta, page 416.

² Archiv f. Psychiatrie, xxxvii, liii, 1903.

² Rivista de Patologia Nerv. & Ment., viii, 1, 72, Jan., Feb., 1903.

in the speech apparatus. The phenomena of thinking aloud and of forced speech may also be due to these pseudo-hallucinations. Certain imperative actions are also usually associated with them, and they all probably depend upon the same causal factor, — an irritation in the brain acting independently of the ordinary mechanism of association. True hallucinations probably have their seat in the sensory centers, and pseudo-hallucinations in the centers of association. They are characteristic of chronic mental states, or at least are more striking in them, and are especially common in dementia paranoides, but they may be observed in every form of dementia precox. They are also seen less frequently in psychoses of the climacteric period, or of old age, and sometimes in general paralysis. The characteristic mental disturbance of dementia precox consists in a disturbance of elaboration of motives for actions of the will and of conduct. All the affective disorders and the disturbance of conduct of such patients are due to this disturbance — the affective insensibility, the motiveless emotions, the impulses, the negativism, katatonia, catalepsy, echoing of words and acts, stereotyped movements and peculiar mannerisms. The pseudo-hallucinations are probably an immediate associative effect of such a disturbance. It is probable that this fundamental disturbance depends upon an elective systemic lesion of special cortical neurones. The system involved cannot be either sensory or motor, because the sensibility and the motor power are intact. It cannot be a system designed for the association of images, because memory and ideation are preserved. It must therefore involve a system of neurones destined for the highest co-ordination between representatives, the corresponding emotions and the execution of acts. From his studies of the structure of the cortex and the findings in patients presenting these phenomena, Lugaro suspects that the diseased system may be contained in the deep layer of the cortex and in the polymorphous cells.

DEMENTIA.

Probst³ reports a case of dementia due to special changes in the cortex. The patient came of a healthy family, and had had no previous diseases or injury, although for six years she had taken considerable alcohol. At the age of twenty-one she began to be negligent and forgetful, confused and despondent. After three years she became restless, excited, irritable and at times violent, and slept poorly. This condition increased for two years, the patient becoming much demented, filthy and maniacal, caring nothing for her family or friends. This condition lasted to the end of her life, a period of eleven years. Four years before her death she had epileptic seizures, and later there was considerable hesitancy of speech and tremor of the hands. At the autopsy the left hemisphere was found much larger, extending beyond the median line, and the convolutions on the right side were small and atrophied. This atrophy was very great and sharply defined. It involved the right upper frontal convolution, the upper part of both right central convolutions, the extremity of the right temporal lobe, the orbital part of the first frontal convolution, the

whole temporal lobe with the operculum and insula, the right supra-marginal convolution, the right gyrus fornicatus, the left upper frontal convolution, the orbital part of the first left frontal convolution, the left operculum and insula, and the left first temporal convolution. The atrophy of the cortex was, therefore, circumscribed and limited to the convolutions mentioned. The other convolutions were normal. The white matter beneath the convolutions was also much atrophied in places and showed secondary degeneration. There were no signs of inflammation or of obstruction of the circulation, but the process was apparently a primary destruction of the layer of the ganglion cells and later of the white substance. The disease came on slowly, and was first manifest in a brief period of confusion followed by three years of depression, negativism, and defective intelligence. This was followed by a maniacal stage, which lasted until the end. The hearing was not materially affected, but speech was limited to brief remarks, which were often repeated.

POLYNEURITIC PSYCHOSIS.

Meyer and Raecke⁴ question whether this special psychosis described by Korsakow is limited to one definite cause, or whether it may occur under different conditions. Of late years it has been described as following infectious diseases of various sorts and also injuries, brain tumors, as one form of senile insanity, and from various poisons, although by far the commonest and most important cause is chronic alcoholism. The characteristics are the loss of the power of attention, disorientation, disturbances of memory and quiet confabulation. Hallucinations are not especially common. In the cases which they report there was often no neuritis. The first case had had delirium tremens, but showed no sign of neuritis or chronic alcoholism. There was great defect in appreciation of time and place; the memory for the past was good, but for later years, bad. The attention was much disturbed, and he had hallucinations of memory and confabulation. The second case was also alcoholic, and had had delirium tremens, but no neuritis. He had no memory for recent events, a tendency to romance, increasing mental weakness, and was untidy. The third case was also alcoholic, had no symptoms of neuritis, was disoriented, had hallucinations of memory, confabulation, disturbance of attention. The fourth case had a questionable neuritis, was much confused, had great failure of memory, especially for recent events. He was also anxious, and had grand ideas, delusions of persecution, and was somewhat depressed. The fifth case had had delirium tremens, disturbances in the pupils, disorientation, great loss of memory, and a tendency to romance. He had no epileptic attacks; there was cloudiness and thickening of the pia and atrophy of the convolutions with changes characteristic of general paralysis. The sixth case had had attacks of dizziness and convulsions in child-bed, with a complete loss of orientation for place and time and of memory for recent events. Alcohol was denied. The autopsy showed nothing remarkable, but suggested the early stages of general paralysis. In two other cases similar symptoms developed with apoplexy and a tumor of

³ Archiv. f. Psychiatrie, xxxvi, F. 62, 1903.

⁴ Archiv f. Psychiatrie, xxxvii, 1, 1903.

the brain. They believe, therefore, that the condition may appear in almost all the deep-seated organic lesions of the central nervous system, and almost always points to an irreparable injury. Other cases show that is not a disease of itself, and above all that it is by no means due exclusively to alcohol, but it may occur in general paralysis and in those diseases which cause severe and irreparable changes in the central nervous system.

PERIODIC INSANITY.

Neisser⁵ calls attention to the fact that organic disease of the brain may give rise to periodical insanity, and cites the case of a woman of fifty-one who had an apoplectic attack with disturbance of speech and hemiplegia. The hemiplegia partly recovered, but within a year and a half she became very much depressed, and was sent to an asylum. Later she became tranquil, then much excited. In the interval certain residual delusions were detected dependent upon uncorrected impressions and defective recollections of the excited period. These periods of depression and excitement recurred, the periods of excitement being ushered in by spontaneous movements in the affected arm. He also calls attention to the fact that periodical insanity may not infrequently develop in patients who have had an attack of hemiplegia in childhood. In other cases where the prognosis is more favorable, a periodic insanity may develop after injury. He calls attention, furthermore, to one symptom of considerable importance, namely, that the pupils in patients between the attacks are abnormally dilated.

ACUTE CONFUSIONAL INSANITY.

Camia⁶ has made a study of the pathological changes in fourteen cases of acute confusional insanity. He has also reviewed seven other cases which he has previously reported, and has reviewed the findings in fifty-three reported cases. He concludes that all the lesions met with in acute confusional insanity, except those due to complications or to changes which may be interpreted as etiological factors, are of an acute type, and due to a state of intoxication. Some present slight alterations of the chromatic substance of the cells in different parts of the nervous system, slight fatty degeneration of the cells of the liver and kidneys and sometimes a slight increase of nuclei in the walls of the vessels. These must be regarded as the minimal lesions attributable to the morbid process causing a mental disease, and common to all. Delirium tremens does not differ in any essential or characteristic trait from the ordinary syndrome of grave mental confusion, but the hallucinations of sight and the motor phenomena, especially the tremor, are more constant and more severe. We are not yet able to recognize the origin of the toxic substances which give rise to these conditions, and we are not justified in assuming a diminished resistance of the nervous system in such individuals, as the hereditary influence is often slight. There must, further, be some other factor still unknown, in regard to which we cannot yet make any hypothesis. In alcoholism we may suppose that the intoxication causes special alterations or organic change, which undergo great

variations in different individuals, and thus be of a different nature in different individuals and produce different results. The same holds true in regard to the psychoses developing during convalescence from infectious diseases, and for the true febrile delirium. We must admit the existence of some intermediate factor to explain why certain cases run their course without any mental symptoms, and other cases develop severe mental symptoms in individuals who show no special indication of a diminished resistance of the nervous system. This factor may consist of a special virulence of the micro-organism, or changes in the organic chemistry from unknown causes. Other cases develop without any evident cause. In these we may argue whether some slight cause still obscure may produce the grave disturbance of the complex processes of the organic chemical changes. Camia recalls the opinion of Phillippen, that shock is nothing but an intoxication due to chemical alterations produced by the nervous system. The pathological anatomy does not explain the pathogenesis of many cases of acute confusional insanity. Among the factors which favor the development of such insanity, there is one which is adapted to the greater number and perhaps to all the cases even of a different origin. This factor consists in a special alteration of the chemical processes which may depend upon causes of a varied nature.

EPILEPTIC MANIA.

Heilbronner⁷ believes that the flight of ideas is occasionally met with in acute epileptic psychoses, contrary to the opinion advanced by Kraepelin and his school; and cites a case with repeated attacks, the first being anxious excitement with great confusion and jactitation; in the second attack there was euphoria, the flight of ideas; the third attack was the same, except there was no disorientation, and the speech was in the main mere repetition. In some of the attacks the memory was retained, in others it was absent. In some of the attacks, furthermore, a depressed period followed the excitement. So he questions whether there may not be a combination of epilepsy with some other functional psychosis, and he believes that conditions may occur as an epileptic psychosis which cannot at first be distinguished from mania, and which especially may show very markedly the symptoms of the flight of ideas. He criticises the theories advanced by Kraepelin, and does not believe that any individual symptom may be regarded as typical or confirmatory of any definite idea that the flight of ideas may be pathognomonic of any special acute condition, but that it may be a symptom of various forms of mental disease.

THE MENTAL CONDITION IN APHASIA.

The question to be determined is how far organic aphasia, on account of the alteration of internal speech, determines mental enfeeblement, tending more or less to dementia. Vigoureux⁸ reviews the various opinions that have been held; for example, that of Trousseau, who thought that in aphasias there was intellectual impairment; that of Charcot and Ballet, who considered that this impairment varied with the type of mind affected, that is, according

⁵ Archiv f. Psychiatrie, xxxvi, 144, 1902.

⁶ Rivista di Patologia nerv. e ment., vii, 289, July, 1902.

⁷ Monatsschr. f. Psychiatrie, xlii, 193, 269, March, April, 1903.

⁸ Vigoureux: Rev. de Psychiat., Jan., 1902.

as the individual condition is visual, auditory, etc. The appreciation of the intellectual ability is often a difficulty. There are a number of observations, for instance, in which sensorial aphasia with paraphasia may simulate dementia. Charpentier believes that among old chronic patients in asylums with apparent incoherence are a certain number of cases of paraphasia not understanding what they say, but well knowing what they wish to say.

The general conclusion of the author, after a study of the question, is that, while it is clear that a certain number of aphasic patients have been in full possession of their intellectual faculties in spite of their disorders of speech, yet the majority show intellectual enfeeblement and easily become demented.

POLYCLONUS IN GENERAL PARALYSIS.

Lambranzi⁹ reports a case of typical general paralysis in a man of fifty-one, which began two years before his admission to the asylum with muscular spasms in the muscles of the lower limbs, especially of the thighs, and most marked in the flexor muscles. These twitchings came on at short intervals, and were sometimes so severe as to flex the thighs on the body and the legs on the thighs. Not long after, some weakness of the mental faculties was noticed; but he was able to continue in business for nearly a year, when other signs of general paralysis appeared. The muscular spasms were thus the first, and for a long time the sole, indication of severe brain disease.

ACUTE GENERAL PARALYSIS.

Buchholz¹⁰ regards as acute general paralysis only those cases in which a previous healthy person was suddenly attacked with an acute form of the disease, and excludes the cases of acute manifestations in a person in whom the disease had begun in the ordinary manner. Out of 326 men paretics admitted to the Marburg asylum in twenty-five years, only 24 died within the first year, and of these 9 died of some intercurrent disease. Of the 15 remaining cases, in 9 the disease ran its course rapidly, but differed from the ordinary cases only in the brevity. In 2 other cases the disease ran its ordinary course, and then suddenly ended in a stage of great excitement. In the remaining 4 the symptoms resembled those of acute delirium, though some symptoms and the pathological appearances showed the true nature of the disease. Out of 50 women admitted during the same period 6 died in the first year, but only 1 from the disease itself. There are thus only 5 cases of the true acute galloping type. Clinically he distinguishes two forms,—the acute general paralysis, in which 11 of these cases might be classed, where the course is much shorter and rather more violent than ordinary general paralysis; and the galloping type, in which the short prodromal stage is followed by symptoms resembling those of acute delirium. The autopsies in these galloping types showed decided congestion of the cerebral vessels and also sub-acute and acute processes in the spinal cord. In one case it was believed that the chronic disease had received im-

petus and had been rendered acute by a course of mercurial inunction.

THE SENSE OF SMELL IN GENERAL PARALYSIS.

It has long been known that there is a tendency to loss of the sense of smell in general paralytics. A. Voisin, indeed, regarded this as one of the earliest signs, and therefore of diagnostic value.

Toulouse and Vaschide¹¹ find that complete loss of smell does not tend to appear at a very early stage (contrary to Voisin's opinion), and that it increases progressively with the course of the disease. Of the twenty-eight subjects, eight, or about one third, were absolutely anosmic, or quite without sense of smell, while among normal subjects only one in thirteen is found to be in this condition. None of the anosmic individuals belonged to those in the early stage of the disease.

It was noted that perception is lost much sooner than sensation, that is to say, that while the subject was vaguely conscious of some olfactory sensation when the camphor was applied, and could distinguish it from water, she was often unable to recognize the nature of the odor, even at an early stage of the disease. It is interesting to remark, the authors observe, that in a disease which is the very type of dementia, of intellectual weakness, the most delicate form of mental activity, perception, should be the first to go.

THE PATHOLOGY OF GENERAL PARALYSIS.

Fürstner¹² agrees in the main with Mendel that the classical form of the disease is becoming less common and that the type characterized by a simple progressive dementia is becoming more common. The disease is probably on the increase, although the statistics of asylums are not wholly trustworthy. He questions furthermore whether there is actually an increase of the disease in childhood. The duration of the disease seems to be shorter, about one half of his cases dying in the course of the second year. In 97 autopsies he found great atrophy only 9 times, hematoma only 6 times, and hydrocephalus 20 times. These gross changes seem much less frequent at the present time than in the autopsies formerly reported. This difference may be due to the prevalence of the demented form of the disease, and he recommends that especial attention be made to the postmortem findings in cases which have been carefully studied clinically. He believes that lesions found to-day are not sufficient to explain the more pronounced symptoms of the classical form of the disease. If the cases with a short initial period of excitement followed by a simple progressive dementia are regarded as belonging to the demented form, this form is much more common. He thinks that the term "tabo" paralysis should be limited to the cases presenting the typical symptoms of tabes, and these cases are decidedly in the minority. Pathologically he has found changes limited to the posterior columns in only 12% of the cases. In the majority of cases changes are found in both the lateral and posterior columns. He recommends that the term "pseudo-paralysis" be limited to the cases which at first show the symptoms of general paralysis, and later get

⁹ Rivista di Patologia nervosa e mentale, vii, 360, Aug., 1902.

¹⁰ Archiv f. Psychiatrie, xxxvi, 427, 1902.

¹¹ Review de Psych., Feb., 1902.

¹² Monatsschr. f. Psychiatrie, xii, 409, Nov., 1902.

well. He cites eight cases which showed an hereditary predisposition combined with mental and physical overwork and sexual excess, and which began with a period of excitement with exalted ideas, tremor of the facial muscles, unequal pupils, exaggerated knee jerks and some aphasia. All have recovered and have remained well for a number of years — from seven to eleven. Such cases can be explained only on the ground that the morbid changes in the brain cells disappear, and the cells recover their normal function.

THE BLOOD OF THE INSANE.

Ceni and Pini¹³ have made another attempt to determine whether the blood of the insane has any special toxic power. From 200 to 250 cc. of blood was taken from the patient's arm, and allowed to coagulate for twenty-four hours. The serum was then collected and injected into the peritoneal cavity of guinea pigs. The blood from two normal individuals and eighty-one insane persons was employed. In the first series of tests, three tests were made injecting $2\frac{1}{2}$, 5 and 10 cc. respectively. In the second series the dose was increased, injecting 5, 10 and 20 cc. As a result of these injections they conclude that it is impossible, notwithstanding the large number of experiments, to establish by this method any definite differences of a general nature between the toxic power of the blood serum of normal individuals and that of the insane. The greatest number of cases with a hypertoxic serum were found in melancholia, epilepsy and phrenasthenia. The toxic power of the blood serum of individuals affected with different forms of insanity did not present any constant variations worthy of note, nor were these noted in different phases of quiet and excitement in one and the same morbid form. The phenomena of the individual reaction of the animals are so frequent as to disturb the accuracy of the results. By the method employed it was found impossible to control the phenomena of hypotoxicity of the serum found by other observers in melancholia, dementia and in epileptics between the attacks.

ASSISTANCE AND FAMILY CARE OF THE INSANE IN ITALY.

Tamburini¹⁴ notes the increasing number of the insane in Italy, which has trebled in a little more than twenty years. This has naturally led to a great overcrowding of all the asylums in Italy. Of nearly 37,000 insane now registered in Italy, he believes that nearly a third — about 10,000 — could be cared for in some other way than by treatment in an asylum. This great increase in the number of the insane has necessarily led to a very much greater increase in the cost of providing for them, the cost in the provinces of Rome and Florence amounting to a million liras annually. As a relief for this it has been proposed to limit the admission of certain classes of insane, to establish special institutions for certain classes, such as epileptics, alcoholics and the pellagrous, and the development of family care. In 1898 about 1,400 insane were cared for in private families, either in their own families or in other families, in both cases with assistance from the state. The method of domestic custody

in the patient's own family has many disadvantages. It may, however, be permitted in certain cases where the director of the asylum is convinced that the family environment is really proper for the good physical and moral treatment of the patients, and when the patients thus entrusted to the family remain under the careful watch of the asylum by means of one or more medical visitors, who may inspect them frequently, and may control the physical and moral treatment of the patient.

The care in the family of strangers was introduced in July, 1897, and at first was not wholly successful, because the patients were boarded out without any regulation or oversight. This is a method to be absolutely condemned. Under proper oversight, however, and with proper selection of patients, the method has great advantages. Quiet chronic insane of the asylum are often desirous to be boarded out, and some prefer it to being with their own families. The families in the neighborhood of the asylums have now lost the distrust and suspicion of this form of assistance and recognize the convenience of it. There are an increasing number of requests for patients, even from people who have had no relations with the asylums. The experience of the last few years has shown the necessity of a prudent choice of patients to be boarded out, drawing them especially from the quiet, harmless, chronic insane, not excluding the forms of periodic, epileptic or hysterical insanity and the harmless paranoiac insane, and in some cases convalescents. A careful choice of the families should be made, the families of asylum attendants to be preferred who live not far from the asylum, and who offer guarantees of morality and trustworthiness, which are indispensable. Careful observation on the part of the government of the asylum is requisite. The colony and family care have both their advantages and their inconveniences, but both have their place. In Italy the best method to adopt is to entrust the patients to families in towns near the asylum under the oversight of asylum physicians. This system offers the advantage of being under the initiative of the director of the asylum, and will lead the way to what Tamburini regards as the ideal, — the care of insane in small asylums for the treatment of acute and dangerous cases, and in large farm colonies with family life for all the rest.

ARTERIAL DISEASE IN INSANITY.

In an analysis by Greenlees of the pathological findings in 232 insane patients, thickening of the walls or calcareous deposits, as found (a) in the main arteries of the body, and (b) in the cerebral arteries, were frequently noted conditions. Hypertrophy of the arterial muscular coat, and atheromatous deposit in the vessel, are conditions common to old age, even in the sane; but it is interesting to note that in general paralysis, and this in cases dying at a comparatively early age, one or other of these conditions was commonly found affecting not only the general arterial system, but also the cerebral arteries. While arterial disease was found in 20% of cases of "mania," it occurred in 60% of my cases of general paralysis; in the former disease it was only found in cases of long-standing disease, whereas the average duration of the latter disease is only about three years.

¹³ Rivista Sperimentale di Freniatria, xxviii, 613, 1902.

¹⁴ Ibid., 671, 1902.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

TWENTY-FOURTH ANNUAL MEETING, WASHINGTON, D.C.

(Concluded from No. 1, page 20.)

DR. GEORGE H. MONKS of Boston read a paper entitled

INTESTINAL LOCALIZATION; A STUDY ON THE CADAVER FOR THE PURPOSE OF DETERMINING TO WHAT EXTENT THE VARIOUS PARTS OF THE SMALL INTESTINE MAY BE IDENTIFIED THROUGH AN ABDOMINAL WOUND,

and reported a series of investigations on forty cadavers. The small intestine and mesentery in twenty-four of these cadavers were examined in reference to such characteristics of the different parts as might be of use in assisting the surgeon to determine the *position* of any loop of intestine in reference to the rest of the tube; and also to ascertain the *direction* of the tube in the loop (that is to say, which end of the loop was nearest the duodenum and which the ileo-cecal valve). Tests were made through various abdominal incisions on sixteen other cadavers to determine with how small an error a loop could actually be localized. Of the 180 loops localized, the average error proved to be about two feet.

The attempt to ascertain the direction of the gut was made in ninety different loops on fifteen different cadavers, and in eight the direction proved to be wrong, while in 82, or 91%, it was right.

An intestinal loop was localized principally from the characteristics of the loop itself, or from those of the adjacent mesentery, or from the relation of the loop to the deeper parts of the mesentery. The direction was ascertained by reference to the mesenteric route, which is an infallible guide, although, on account of the twists in the mesentery, it was occasionally difficult to properly apply the test.

A number of diagrams were exhibited illustrating the characteristics of the different parts of the intestinal tube and of the mesentery, and the writer stated that he had, on a number of occasions, determined the position and direction of an intestinal loop on the living subject by this method with success, due allowance being made for the different conditions.

This paper was discussed by Drs. W. W. KEEN of Philadelphia, and GEORGE WOOLSEY of New York, and closed by the author.

DR. LOUIS A. LAGARDE, Washington, D. C., read a paper entitled

THE LESIONS THAT AUGMENT THE DEVELOPMENT OF TETANUS AND OTHER INFECTIONS IN GUNSHOT WOUNDS,

in which he expressed the opinion that the lesions would depend upon: (1) The sectional area of the bullet; (2) its velocity, and (3) the resistance encountered on its impact. The greater the sectional area or velocity of the bullet, the greater will be the lesion. Hematomata especially predispose to infection and increase the danger from tetanus, as is also the case when the wound is burned by

powder, etc. He reviewed the observations of Dr. Lardy in the Greco-Turkish War, and also contrasted the lesions made by the various kinds of bullets. He referred to the experiments of Muller and Koller, on which they essayed various methods of treatment of the channel track in gunshot wounds caused by projectiles that were primarily infected, namely: (1) Controls, for which nothing was done; (2) those treated with a glass drain; (3) those treated with iodoform gauze drain; (4) those irrigated with 5% solution of carbolic acid; (5) those treated by rubbing with a cotton mop soaked in tincture of iodine; (6) those treated by cauterizing the wound. All the wounds were dressed with a clean sterile dressing, and the results showed that the animals treated by simple dressing did best of all, and that those treated by radical measures, such as swabbing with iodine and the application of the thermocautery, gave evidence of suppuration in every instance.

THURSDAY AFTERNOON.

DR. EMMET RIXFORD, San Francisco, Cal., read a paper entitled

NOTE ON THE OPERATIVE TREATMENT OF OLD UNREDUCED DISLOCATIONS OF THE ELBOW,

in which he remarked that the keynote to the situation was sounded by Stenson in a paper read before this association in 1891, in which he showed that the so-called fragments of bone which had frequently been observed within the joint, while unquestionably the chief obstacle to the reduction of the dislocation, were in a great majority of cases not fragments broken off the humerus or ulna by complicating fracture, but new growths of bone from stripped-up periosteum. He felt that, if the bone be reduced to its normal position shortly after the injury, which is nearly always possible, the function is practically in every case restored; but if allowed to remain displaced until this new bone has formed, manipulative reduction is impossible and should never be attempted if force is required. The reason that congenital dislocations treated by manipulative force recovered, he felt, was due to the fact that this new growth of bone had not formed, and also that the operation being done in children the joint would often recover from the traumatism.

He then reported cases in which he had employed the Kocher incision, but because of the difficulty in reducing the dislocation, and fear of loosening the periosteum, he had added the procedure of Trendelenburg of section of the olecranon. He commented on the value of the x-ray as a diagnostic aid.

This paper was discussed by Drs. JOHN B. MURPHY of Chicago and A. H. FERGUSON of Chicago, and closed by the author.

DR. E. WYLLYS ANDREWS, Chicago, Ill., read a paper entitled

DROWNING OF PATIENTS IN FECAL VOMIT DURING OPERATIONS FOR INTESTINAL OBSTRUCTION AND SEPTIC PERITONITIS,

in which, after reporting two cases which had occurred in his own practice and referring to several cases that had happened in the practice of others,

he summed up as follows: (1) Flooding of the air passages by fecal vomit is a real danger, and probably has caused many unexplained deaths. (2) Resuscitation is impossible or very difficult. (3) The fluid may flow by gravity through the relaxed stomach sphincters directly out of the intestines, where it has accumulated in enormous quantities. (4) The accident occurs with great suddenness with a stomach supposedly empty. The suffocation may be so complete that no outcry is made and may not be noticed by the attendant. (5) It may occur as late as an hour after anesthesia, or at any time until consciousness is restored. (6) We have no evidence that it can occur during consciousness, even *in extremis*. (7) After septic laparotomy, patients when returned to bed should be watched, without even momentary intervals, to full consciousness. (8) A suggestion made to me by Dr. McArthur that as many as possible of such cases be operated upon under cocaine anesthesia seems to me sound in the light of the above report, as well as for other reasons. I have tried both spinal and local cocaine anesthesia in several recent cases, and am convinced that it is a life-saving measure.

This paper was discussed by Dr. J. M. T. FINNEY of Baltimore.

THE PATHOLOGY AND TREATMENT OF TARDY POST-OPERATIVE INTESTINAL OBSTRUCTION, WITH A REPORT OF CASES

was the title of a paper read by Dr. ELLSWORTH ELIOT, New York, in which he called attention to the fact that it is not a rare occurrence, being most frequently caused by paralysis of peristaltic action from a spreading or septic peritonitis; it occurs less frequently after a laparotomy from a nonpurulent condition, even although no infectious material has been introduced at the time of the operation. In this latter group of cases the obstruction is usually of a mechanical nature, and is due to the angular adhesion of one or more loops of intestine to the parietal peritoneum, to each other, or to the stump of some recently resected pedicle of omentum or ligated base of tumor, to a possible valvulus or to the protrusion of a coil of intestine through some accidental orifice in the mesentery or some other peritoneal structure. The symptoms indicating the obstruction develop shortly after the operation and before restoration of the intestinal function has taken place.

Careful exclusion of any kind of mechanical, thermal or chemical irritants from the contents of the abdomen during the primary observation should be observed. Ligatures should not be needlessly employed, drainage should be carefully managed and changed early with subsequent diminution in its amount, or if possible, its complete removal, while the actual treatment does not differ from the treatment of obstruction arising from any other cause. Several cases resulting from various causes, among them being two following operation for appendicitis, were reported.

This paper was discussed by Drs. JAMES E. MOORE of Minneapolis, J. F. BINNIE of Kansas City and A. J. OCHSNER of Chicago, and closed by the author.

Dr. F. E. BUNTS, Cleveland, Ohio, read a paper entitled

NERVE INJURIES ABOUT THE SHOULDER JOINT,

in which he called attention to the distinguishing clinical nature of these injuries, which is a striking deformity resulting from the muscular atrophy, and the loss of function dependent upon the nerve injured and the muscle involved. He directed particular attention to: (1) Paralysis of the circumflex nerve; (2) paralysis of the long thoracic nerve, and (3) paralysis of the suprascapular nerve. He then gave in detail the symptoms produced by injuries to each of these nerves, giving a careful résumé of the literature on the subject, together with a tabulated report of cases showing the various diagnostic and prognostic points.

Under the head of general treatment and considerations, he stated that he had not referred to the individual treatment of these paralyses, as what applies to one is equally appropriate to all. The after-treatment in most cases has been the various anti-rheumatic preparations, and later electricity and massage. Where the cause is evidently a sudden traumatism, cold and rest are the most beneficial local measures during the acute stages.

He stated that he did not desire to advance any new or improved method of treatment, as the methods now in vogue have proven fairly satisfactory, so far as medical measures go, but that he had endeavored to point out in each case, as far as he was able, the synergistic action of other muscles which might, by careful and intelligent development, be so exaggerated or altered in their functions as to take the place of those which are totally or partially paralyzed.

Dr. GEORGE WOOLSEY, New York, read a paper entitled

A CONTRIBUTION TO THE SURGERY OF CEREBRAL TUMORS,

in which he called attention to the fact that only a small proportion of all cerebral tumors were fit to be made the subject of radical operation, varying from 2 to 8%, according to various observers by the autopsy records, and averaging about 16%, judging from the records of those clinically diagnosed. He felt that this small percentage of operable cases depended largely upon our imperfect means of exact diagnosis and localization and on the inaccessibility of certain parts of the brain to surgical operation. In arriving at a diagnosis, we must consider, first, the general or pressure symptoms, and, second, the focal or localizing symptoms.

He then gave a careful résumé of the history of 101 cases reported by various authors during the past five years, and after going at some length into the diagnosis, prognosis and operative technique, concluded as follows: (1) The sphere of operation for cerebral tumors may be and has been extended to those parts of the cortex where the tumors are accessible and localizable, that is, to the prefrontal, parietal and occipital regions in addition to the motor area. (2) The prognosis, both immediate and remote, is as good, or even better, than in operations for malignant growths in some other locations. (3) This prognosis has improved with

the improvements in localization and operative technique, and with the limitations of radical operations to cases accurately localized. (4) The palliative operation is strongly indicated to relieve the symptoms where localization cannot be accurately made or the tumor cannot be removed. The exploratory operation is contraindicated. (5) Practically all circumscribed growths of moderate size are suitable for operation. (6) The osteoplastic method should be employed and the most rapid (and perfect) technique adopted which the circumstances allow.

This paper was discussed by DR. F. E. BUNTS of Cleveland, but not closed by the author.

DR. EDWARD MARTIN, Philadelphia, read a paper entitled

THE TREATMENT OF SURGICAL SHOCK BY
ADRENALIN,

in which he referred to the experiments of Reichert, which have shown that adrenalin intravenously injected is a direct stimulant to the heart and to both the centric and peripheral vasomotor systems. He also notes that it is a stimulant to the respiratory center and that it increases general metabolism and body temperature. The brilliant experiments of Crile corroborate these findings, and would seem to point toward adrenalin as a potent medication in the treatment of shock or collapse. He also referred to the fact that in so far as the immediate lethal effects are concerned the drug is not markedly toxic, at least in the doses in which it would ordinarily be administered, since while .0005 dr. will markedly increase the blood pressure, this dose increased a hundredfold simply accentuates the increase, nor is there subsequently a compensating drop. He gave a full résumé of the experiments with this drug upon animals, and then followed a series of several clinical cases in which it had been used, one being a typhoid perforation and another a case of amputation at the hip joint required by osteomyelitis. He felt that the case of typhoid perforation spoke strongly in favor of the employment of this drug, as he stated he had never before seen a surgical patient so profoundly septic and collapsed make an operative recovery. He did not feel that the results of laboratory experiments should be taken as absolute indications of what the effect might be when employed on the human subject, and because of its power of lessening the bacteriolytic power of the blood of animals, he recommended that it be used in cases of infection in the human subject with caution until its exact effect has been demonstrated.

This paper was discussed by DR. EMMET RIXFORD of San Francisco.

DR. W. W. KEEN and DR. WM. M. SWEET reported the case of a boy of fifteen who on Oct. 24, 1902, was shot in the forehead. The bullet entered the right side of the forehead a half inch above the eyebrow and did not emerge. The wound was cleansed and a sliver of bullet removed from just above the wound of entrance. The left leg became entirely paralyzed, and on the day after the accident he had half a dozen severe epileptiform convulsions, but none since then. In the course of three months he was able to get about and when

first seen by the authors, April 9, 1903, the only remnant of the injury was a slight weakness in the left leg.

Dr. Sweet made a skiagraph of the head and located the principal portion of the ball at a point 2.2 cm. to the right of the middle line and 1.5 cm. back of the fissure of Rolando and at a depth of 5 cm. from the top of the head. The position of the ball corresponded with Plate No. 15, of Dalton's Transverse Sections of the Brain, and measurements showed that the ball lay just above the right lateral ventricle. In addition to this large fragment, there were seven other minute fragments, the largest one being about the size of a medium-sized pin's head. These lay 2 to 3 cm. above a line running from the wound of entrance to the present position of the ball. The ball was not lying in the leg center.

The conclusion reached, therefore, both by reason of the finding of the fragment 2.5 cm. above the wound of entrance, the position of the smaller fragments above a direct line from the wound of entrance to the present position of the bullet, by the boy's statement that his head was only slightly bent at the time of the accident and by the injury of the leg center, that the ball went upward and backward, struck on the inside of the skull at a point corresponding to the leg center and was deflected downward and backward to its present location.

It was decided, therefore, that it would do more harm, at present, to attempt to remove the ball than to let it alone, but that if symptoms of an abscess or a single epileptic attack should follow, the ball should be removed at once.

Dr. Sweet described in detail his new modified apparatus for the exact location of such foreign bodies.

DR. W. JOSEPH HEARN of Philadelphia showed a skiagraph of a case in which operation was shown by Sweet's method to be advisable, and was performed successfully.

DR. EMMET RIXFORD of San Francisco discussed the paper, and Drs. W. J. MAYO of Rochester, Minn. and N. B. CARSON of St. Louis briefly reported similar cases occurring in their own experience.

The following papers were read by title:

THE TOILETTE OF THE PERITONEUM AFTER OPERATIONS OF THE BILIARY PASSAGES. DR. EDWARD MARTIN, PHILADELPHIA.

AN UNUSUAL FORM OF SARCOMA OF THE TENDONS. DR. ROBERT F. WEIR, NEW YORK.

REMOVAL OF HEAVY SILK LIGATURE FROM AROUND THE PNEUMOGASTRIC NERVE. CLINICAL SYMPTOMS BEFORE AND AFTER REMOVAL. DR. CHARLES A. POWERS, DENVER.

The following officers are elected for the year 1903-1904: President, Dr. N. P. Dandridge, Cincinnati; Secretary, Dr. Dudley P. Allen, Cleveland; Treasurer, Dr. George R. Fowler, Brooklyn; Recorder, Dr. Richard N. Harte, Philadelphia.

The place of the next meeting, St. Louis, some time in May, 1904.

THE BOSTON

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SCIENTIFIC WORK IN PSYCHIATRY.

THE spirit of research which during the last century has pervaded all fields of human activity, and which has never been more active than in recent years, has exerted a potent influence on the institutions for the care of the insane throughout the world. From Pinel's day what had been virtually prisons began to become asylums. Forty years ago they began to change, owing largely to Griesinger's activity, from *asylums* to *hospitals*. This latter change was slow at first, but has advanced more and more rapidly, especially in the last decade. It has involved different conceptions and methods from those formerly in vogue—the inmates are becoming “patients,” not “boarders;” their care-takers are becoming “nurses,” not “keepers,” and are more and more being trained in their duties; the medical staffs are increasing relatively to the number of patients; the patients are being more carefully observed and studied as to their mental and physical conditions; active treatment is being better directed to the improvement of these conditions; careful search for and scientific investigation of the causes underlying these conditions are being instituted; and instruction to students is being given.

In all countries there are still some asylums. The majority of institutions in this country have, however, at least begun to be hospitalized, while some have caught the real spirit and full significance of the movement. Their annual reports generally show pretty clearly their stage of progress. Some, with large capacity, small medical staff, relatively few admissions and discharges in proportion to the capacity, are hardly out of the asylum stage—their reports deal only with financial and administrative matters. Others have increased the relative size of the medical staff, established clinical

laboratories and infirmary wards, train their nurses, and seek to give special care to recent cases. Their reports give, in addition to the financial and administrative data, statistics as to the number of autopsies, blood counts, urine analyses, sputum examinations and Widal tests, and other bacteriological examinations. Such institutions are becoming hospitals; and the work they do, while not advancing the bounds of our knowledge of insanity, yet indicates the growth of the hospital idea and the part these institutions are taking in it, and marks distinct progress towards a higher goal. A few institutions are in reality hospitals in the fullest sense of the term—places not only for the care and treatment of patients, but for the study of their conditions, the investigation of the causes of the conditions, and the spread of knowledge thus gained through instruction to students. This is notably true of the McLean Hospital at Waverley in this state, the annual report of which has recently appeared. The record of the work which it has undertaken and is carrying on and the methods employed in pursuance of this work invite comparison with the best of similar institutions in this or other countries. According to this record, the year just passed marks progress especially in the line of chemical investigation into the metabolic changes which may reasonably be considered to underlie the phenomena of many mental diseases. This work is the logical and normal development of a line of research conceived in the early 80's, begun in a small way with inadequate laboratory facilities and untrained workers in the late 80's, advanced during the following decade in enlarged laboratories but still by assistants not specially trained in the methods of physiological chemistry, but now, and for the last three years, being prosecuted in a thoroughly well-equipped laboratory by physiological chemists whose published papers have received recognition in the special journals and laboratories both in this country and abroad.

“Chemical laboratories” are shown in the plans of the buildings built within the last ten years in Germany in connection with the psycho-physical and pathological laboratories in the psychiatric clinics, as at Giessen, Würzburg, Kiel, etc., but it does not appear that more is being done in them than the routine investigations involved in the ordinary thorough medical examination of patients. The attitude of the directors of these clinics is well expressed by Gaupp as late as January of this year. While recognizing that chemistry “may give us a certain insight into the relations between bodily and mental processes sooner than anatomy,” he says, nevertheless, that it “is as yet unable to give us even a foundation” on which to work; we

must wait until "science understands fully the albumen bodies" and "all vitalistic questions have been once and forever done away with;" "only then can we satisfactorily begin to study the chemical processes in the organism." In other words, they do not yet see problems at which they can work in the present stage of development of physiological chemistry. England has held a broader conception of the possibilities of chemical investigation; as shown by the papers of Haliburton and Mott of London, published in 1899 and subsequently, on choline in conditions of nerve degeneration, and by the taking up under Mott's guidance of problems of pathological chemistry in these recent years at the Pathological Institute of the London County Asylums at Claybury.

Not only in the line of chemical research, organized and pursued for so many years with distinct purpose, but also in other lines of investigation, such as the clinical observation of mental and bodily states, the McLean Hospital is not behind the best of European institutions. Its methods of history and case-taking are thorough and adequate, gathering full data for present and future study. Its psychological laboratory, established in 1890, with a trained assistant, antedated Kræpelin's at Heidelberg by a year, though for some years before that Kræpelin had been seeking to adapt the methods of physiological psychology to the study of psychiatry. Clinical papers of value have been published by members of the hospital staff in journals and books of reference. The pathological-anatomical laboratory has contributed, through members of the staff, to the literature of lesions of the nervous system. Studies on the effects of certain modes of hydrotherapeutic treatment have been made and some of the results reported to medical societies, though not yet published. In the matter of treatment, besides other methods, new as well as old, the "bed-treatment," which is now being extensively discussed and introduced in foreign hospitals, has here been used in certain cases for many years. Since 1882 the nursing force has been trained, and the assignment of women nurses to the care of male patients has been made a prominent feature of the training-school system for twenty years. This practice is but newly attracting attention abroad, although for several years in a few hospitals the services of women in male wards have been used to a very limited extent.

We may well have a feeling of justifiable pride in an institution that takes such a leading position among others of its class. Its work not only reflects credit upon the community, but is productive of inestimable benefit, not only to the

patients who are cared for in it, but to those also of other hospitals. For there is not wanting evidence that others profit by its leadership. But such work as is there being carried on must receive generous support if it is to be maintained, and therefore it not only imposes a duty on the community that benefits by it, but creates a great opportunity as well. It opens the way for an entirely new line of philanthropy—the endowment of research work in hospitals for the insane. The character and quality of the work already done at the McLean Hospital is guarantee of what it would be under the more favorable conditions of permanent endowment; the standing of its managers is guarantee of the faithful administration of such a trust. It is worthy in all ways to be the recipient and trustee of an adequate endowment. May it not have long to wait for such an increment to its power for good!

BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS.

THERE has recently been organized in this city an association for the relief and control of tuberculosis, with the general object of demonstrating the prevalence of tuberculosis in Boston, and showing how it may be eradicated by intelligent effort. More in detail the object of this society is to make a careful study in this city of the relations between tuberculosis and the general conditions of life, also to extend as widely as possible knowledge regarding the communicability of tuberculosis by means of pamphlets, circulars and lectures, and to arouse general interest in procuring proper hospital treatment both for early and late cases, and for the care of the very poor as well as of those able to pay moderate fees. Finally it is intended to co-operate with various hospitals and dispensaries, where tuberculosis is under treatment, with the District Nursing Association, the Associated Charities and other organizations in caring by every possible means for indigent consumptives.

In the circular sent out by the association, it is stated that the work will be not only for the improvement of the condition of consumptives in Boston, but also for the permanent improvement of conditions in the community. It is estimated that about 1,200 deaths from consumption are annually reported to the Boston Board of Health, and that there are in the city in the neighborhood of 3,600 persons in various stages of the disease. It has been shown conclusively that many of these incipient cases, if given proper treatment in time, might be cured, and with this fact goes the hope that tuberculosis may ultimately be entirely eradicated.

Associations similar to this have been formed in America and Europe, and are already showing good cause for the support which has been given them. Naturally such work can only be carried on under a very considerable expense, and it is estimated that \$5,000 is at once needed. The work is in the hands of physicians and others identified in the community with progressive ideas and work in connection with the general subject of tuberculosis as well as with other worthy objects. Under this leadership the public may be sure that the work will be well and conscientiously done, and that any contributions offered will be wisely expended. In general, as we have frequently said in these columns, we are in entire accord with any movement which will spread in an intelligent manner the fundamental facts regarding tuberculosis. Commonplace as these facts have become to the more enlightened portion of the community, it is plainly evident that there is still and long will be opportunity for active missionary work among the poor, and it is in this class that the disease gets its firmest foothold and is most difficult to eradicate.

We are glad to note in the circular which has been sent out that the work of the association by no means consists alone in influencing legislation or public opinion in the matter of increased hospital facilities for consumptives. What we need more than this at the present time is a general recognition of the fact that until the centers of infection can be wholly eradicated hope for the disappearance of the disease must be deferred.

THE REGENERATION OF SPINAL NERVE ROOTS.

WE have previously commented editorially on an operation for trifacial neuralgia, suggested by Drs. C. H. Frazier and William G. Spiller of Philadelphia, consisting in a section of the nerve between the Gasserian ganglion and its entrance into the pons. The advantage of this operation was held to be that it was far less violent than destruction of the ganglion itself, and less liable to dangerous hemorrhage, and relatively simple of accomplishment. Its virtue, however, depended wholly upon the fact that the nerve roots were presumed not to have the power of regeneration.

To further substantiate this latter point, Spiller and Frazier have recently published in the University of Pennsylvania *Medical Bulletin* the results of an experimental study on the "Regeneration of Posterior Spinal Roots." The relative ease of operating on spinal roots, and the probable identity of the reactions in this and cranial nerves, led them to employ the spinal roots for their investigation.

The operations, which were performed on dogs, were carried out with most careful aseptic precautions, and also the roots were divided in such a way as to make most favorable provision for subsequent reunion, if such reunion could occur. The general result of this investigation, the details of which we need not enter upon, was that there was no evidence in the case most favorable for observation, in which the animal lived ten months, of regeneration of these cut nerves.

This result naturally justifies the claim previously made by these observers, that a similar operation undertaken on the fifth nerve for the relief of pain should be permanent. As opposed to this view, there is a certain amount of evidence which goes to show that regeneration may occur in the intramedullary portion of severed posterior nerve roots. The evidence, however, remains somewhat inconclusive, and further experimentation must, no doubt, be undertaken before anything absolutely definite may be claimed. The fact remains, however, that Spiller's experiment, so far as it goes, is of positive value, and should encourage surgeons to resort to the operation to which we have alluded on the fifth nerve, certainly in cases where the extirpation of the Gasserian ganglion is for any reason contra-indicated.

MEDICAL NOTES.

MORTALITY IN CHICAGO. — According to the bulletin of the Chicago Health Department, the remarkably low mortality rate of the month continued during the week ending June 27. The 454 deaths reported — only three more than the week before — represent an annual rate of 12.54 per 1,000 of the department's conservative estimate of Chicago's midyear population, 1,885,000. For the twenty-seven days of the month the rate has been 12.70, as compared with 13.12 for June, 1902, and with an average of 14.12 for the ten Junes of 1893-1902 inclusive.

SWISS MEDICAL CONGRESS. — The Congress of Swiss Physicians was held at Lausanne in the early part of June. Anti-diphtheria serum, goiter and chronic articular rheumatism were among the subjects discussed.

DR. HOWARD A. KELLY HONORED. — Dr. Howard A. Kelly has recently been elected honorary president of the Glasgow Obstetrical and Gynecological Society. The subject of his presidential address, given in Glasgow, June 17, was, "The History of Appendicitis in Great Britain." The *British Medical Journal* comments upon it in the following words: "The address was interesting

and racy, and was evidently meant as a compliment to British physicians and surgeons. Needless to say, it was enthusiastically received."

RETIREMENT OF SIR FREDERICK TREVES. — It is reported that Sir Frederick Treves is about to retire from the practice of medicine. In the report to which we have access no reason is given for this retirement beyond his inclination to devote himself to other matters than medicine during the remainder of his life.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 8, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 37, scarlatina 24, typhoid fever 20, measles 31, smallpox 0.

CONDEMNATION OF SIASCONSET WATER SUPPLY. — It is reported that the State Board of Health, having examined the water at present used in the village of Siasconset, Nantucket, has reported that it is too polluted for drinking purposes without preliminary boiling. Last year typhoid fever, presumably due to the water supply, appeared in the village, but nevertheless effort to secure a public water supply has hitherto been unavailing.

SCARLET FEVER. — There has been a considerable epidemic of scarlet fever in Woburn, so that for a time the Board of Health saw fit to recommend suspension of public gatherings. Schools have been closed, and the question of closing churches was agitated. The type of disease has been mild.

THE BOSTON FLOATING HOSPITAL. — The Board of Managers of the Floating Hospital have announced the opening of the season of 1903 on Tuesday, July 7. Trips down the harbor will be made daily (weather permitting), except on Sundays, from July 7 to a date in September to be determined later. On Sundays, every night, and up to eight o'clock in the morning, patients will be admitted to the hospital at the station, Pickert's Wharf, New Street, East Boston, near North Ferry. The daily trips will be made from City Wharf, South Ferry, Eastern Avenue, the hospital leaving at 9.30 A.M., and returning about 4 P.M. Patients will be received at these hours. The age limit for patients is six years. The requirement for admission is a certificate signed by a physician, and these may be obtained from the Floating Hospital Office, 178 Devonshire Street, Room 505, from any of the dispensaries and hospitals in the city, and from physicians and agents of charity organizations in the city proper as well as in Greater Boston.

Admission cards will be sent by mail on application. Co-operation is earnestly requested in the effort to exclude all contagious diseases from the hospital.

NEW YORK.

SUMMER CORPS OF BOARD OF HEALTH. — The summer corps of the Board of Health, organized for service in the tenement districts during the present season, commenced its work on June 29. This is somewhat earlier than usual, which is a distinct advantage, and will, no doubt, result in a greater saving of infant life. This year the corps consists of forty-three medical inspectors and seventeen trained nurses, a considerably larger number of nurses than last season. There are already entered at the health department the names of about twenty thousand infants and young children, and it is expected that before the summer is over there will be at least double this number.

JUNE MORTALITY. — The lowest mortality for the present year, and possibly for a number of years past, was recorded during the month of June. The health department reports show that this represented an annual death-rate of 16.54, against 18.51 for the month of May and 17.99 for June, 1902. Among the diseases presenting a decline in mortality were the following: The weekly average of deaths from pneumonia decreased from 149 $\frac{3}{4}$ in May to 84 $\frac{1}{2}$ in June; the weekly average of deaths from broncho-pneumonia, from 62 $\frac{1}{2}$ to 52 $\frac{1}{4}$; from acute bronchitis, from 36 $\frac{1}{2}$ to 20 $\frac{1}{2}$; from pulmonary tuberculosis, from 151 $\frac{1}{2}$ to 139 $\frac{1}{4}$; from Bright's disease and nephritis, from 111 $\frac{1}{2}$ to 93 $\frac{1}{2}$; from organic heart disease, from 91 $\frac{1}{2}$ to 87; from typhoid fever, from 9 $\frac{1}{2}$ to 7 $\frac{1}{2}$, and from influenza, from 4 $\frac{3}{4}$ to 1 $\frac{1}{4}$. During the last week in June, for the first time since early in the autumn, no death was reported from influenza. Almost the only affections in which there was an increase in mortality were the diarrheal diseases. The weekly average of deaths from these increased from 44 $\frac{1}{4}$ in May to 82 $\frac{1}{4}$ in June; and the weekly average from diarrheals in children under two years, from 44 $\frac{1}{4}$ to 82 $\frac{1}{4}$. Doubtless on account of the remarkable coolness of the weather during the month of June, this increase is smaller than usual for the season.

APPOINTMENT OF DR. R. M. PEARCE. — Dr. R. M. Pearce of Philadelphia has been appointed as the successor of Dr. George Blumer in the faculty of the Albany Medical College, as adjunct professor of pathology and bacteriology, and director of the Bender Hygienic Laboratory. Dr. Pearce is to assume the position on Sept. 1, when Dr. Blumer retires, and his assistants will be Drs. E. McD. Stanton of New York and Charles K. Winne of Mount Wilson, Maryland.

APPROPRIATIONS. — At the meeting of the Board of Estimate and Apportionment on July 1 a number of important appropriations were made. Among these were \$638,000 to acquire sites and construct public baths in Manhattan; \$211,600 for two baths in the Greenpoint and Navy Yard sections of Brooklyn, and \$155,000 for baths in the Bronx. This last is to be applied to the construction of three baths, one of which will be a permanent building for use throughout the year. At this meeting the board authorized the condemnation of additional land for the new Bellevue Hospital. This is to take in the block between First Avenue and the East River, which lies immediately north of the present hospital buildings. Issues of stock to the amount of \$175,000 and \$100,000, respectively, for the Zoological Park and the Botanical Gardens in the Bronx, were also authorized.

DEATHS AND BIRTHS IN 1903. — During the first six months of 1903, 34,855 deaths were reported in the city, representing an annual death-rate of 18.67, against 35,491 deaths in the first six months of 1902, with a death-rate of 19.54. The births reported numbered 46,408, against 40,392 for the first half of 1902.

HOSPITAL FOR CONVALESCENTS. — A new departure was made on July 1 by the department of public charities in opening a hospital for convalescent patients. The building used for the purpose is at the northern end of Blackwell's Island, and was formerly occupied by the Manhattan State Hospital for the Insane. It contains forty beds for men and thirty for women; and the number of these may be increased, with an increased demand, up to seventy-five for men and sixty for women. Patients will be allowed to remain for three weeks under ordinary circumstances, and for six weeks in exceptional instances.

STATE DEATH-RATE. — The monthly bulletin of the State Health Department, issued July 2, shows that the death-rate in the State declined from 16.8 in April to 16.1 in May. In the month of May pneumonia caused 1,084 deaths, a daily average of 35, against 40 in the first three months of the year. Influenza was credited with about 1,000 deaths, or 200 less than in April. Smallpox caused three deaths, all in Rochester, but no new cases had been reported there since May 25. At Elmira and Dansville cases of the disease were reported which originated from recently detected outbreaks in towns in Livingstone County, where smallpox has made considerable headway.

PRIZES FOR CLEAN TENEMENT HOUSES. — An interesting feature of the annual meeting of the East Side Janitors' Society at the Educational Alliance

Building, on July 2, was the presentation of money prizes, medals or diplomas, for keeping their tenement houses clean, to 37 out of a total of 130 contestants. In making out the awards the points considered included each particular part of the premises. Mr. De Forest, president of the Tenement House Department, was one of the speakers on this occasion, and in the course of his remarks said that if the members of this association could be got to teach the other janitors of New York to do the same laudable things which they were endeavoring to accomplish, there would be no need of any tenement-house inspection.

TETANUS GERMS IN BLANK CARTRIDGES. — It is reported that tetanus germs have been discovered by Dr. Richard N. Connolly, bacteriologist of the health department of Newark, N. J., in blank cartridges offered for sale in that city. It is stated that Dr. H. C. Herold, president of the department, had suspected the existence of the bacilli in blank cartridges for some time, and that his suspicions were greatly strengthened by the reports of a recent outbreak of tetanus in Pittsburg, in which fifty cases are said to have followed a celebration in which firearms were used. He therefore called the attention of Dr. Connolly to the matter, and in consequence of the discovery by the bacteriologist a special meeting of the Board of Health was held on July 2 to adopt suitable measures to protect the community.

BURNING OF AN ISOLATION HOSPITAL. — The main building of a group erected in Orange, N. Y., at the time of the smallpox outbreak about two years ago, and used since then as an isolation hospital, was destroyed by fire on July 2, and it is believed that the fire was an incendiary one. Considerable difficulty was experienced in finding a location for the hospital, and in consequence of the objections of neighboring property holders the buildings were shortly to have been removed to the Orange poor-farm.

NOTES FROM THE PHILIPPINES.

MANILA EXHIBIT AT ST. LOUIS EXPOSITION. — The Board of Health of Manila is preparing to make an elaborate display at the St. Louis Exposition, and a committee consisting of Dr. E. L. Munson, U. S. A., assistant to the Commissioner of Health, Mr. A. Jadin, sanitary engineer, and Dr. Arlington Pond, medical inspector, has been appointed to prepare the exhibit. The sum of \$1,000 has been appropriated to meet the expenses of the exhibit and 250 feet of wall space and 150 feet of floor space allotted for its display. The exhibit will be very complete, and is especially intended to show the good results attending the American con-

trol of sanitary matters in these islands. As far as possible in the photographic exhibit, conditions as they existed before and after the Americans took hold of affairs will be shown. The exhibit will show the results of an efficient sanitary administration, and will undoubtedly prove not only interesting but instructive to visiting sanitarians and others as illustrating the obstacles which it has been necessary to overcome.

The exhibit will include a complete file of all the publications, reports, circulars, blank forms and other printed matter issued by the Board of Health. There will be a number of maps and charts having to do with the distribution and prevalence of the most important diseases, and their prevalence among the different classes and races in the population of Manila. The photographic exhibit will include large photographs, more than one hundred in number, illustrating every phase of the work of the Board of Health in Manila. The subjects of streets, habitations, hospitals, drainage, sewerage, disposal of excreta, food and water supply will be fully illustrated, and special attention given to the subjects of cholera, plague and leprosy and the measures being taken for their prevention. Animal diseases and their prevention will be given much space. All in all, the exhibit will be very complete, and will probably compare most favorably with the showing made by other cities. It is felt that the situation and conditions here have not been fully understood, and the Board of Health proposes to show not only what has been accomplished, but the sanitary obstacles which have been overcome.

EXHIBIT FROM PATHOLOGICAL LABORATORY.—The Pathological Laboratory will also make an exhibit, which, though small, will be very instructive. Particular attention will be paid to the subjects of plague, cholera, leprosy, surra and the animal parasites of the Philippines. The laboratory has a wealth of pathological material, which it is proposed to work up as fully as possible, and exhibit in the form of gross and microscopical specimens, photographs, photomicrographs and tube and plate cultures. This exhibit should be of much value to those interested in the study of the diseases of the tropics.

CHOLERA.—In view of the development of a few cases of cholera daily in Manila, the health authorities have caused 30,000 circulars in Tagalog and 5,000 in Chinese, containing a few simple rules for the prevention of cholera, to be printed. One of these circulars will be posted with the sanitary card in every house in the city, and will also be placed in every casco, lorch and other inhabited watercraft in the bay and river.

PREVALENCE OF CHOLERA.—Since the beginning of the year to May 25, there have been 212 cases

of cholera in Manila, with 208 deaths, 7 recoveries and 27 cases under treatment. The disease has been practically confined to those whose occupations keep them along the waterfront, such as sailors, boatmen, fishermen, laundresses, etc. There is no question but that the Pasig and its esteros are infected, but it is a most difficult matter to prevent the natives from acquiring this infection. They bathe, wash their persons and utensils in the water, and probably in some cases use it to drink, in spite of every effort by the health authorities for the prevention of such practices. A considerable part of the population of Manila lives on boats, and at night-time it is practically impossible to prevent breaches of the sanitary regulations by this class. That a certain proportion of the cases of cholera occurring on these water craft are successfully concealed is evident from the considerable number of "floaters" dead from cholera which are removed from the river. A few cases of the disease seem to be traceable to the use of infected foods, but how this food question may be solved without bringing the low-class natives almost to the verge of starvation has not yet been apparent. All food offered for sale in the markets is carefully inspected, and any that is of doubtful character is rigorously condemned and destroyed; but it is not difficult to imagine how apparently good food may harbor the cholera germ and still pass muster with the inspector. A bacteriological examination of every article of food, or its disinfection, is quite out of the question, and all that can be done is to do the best possible under the circumstances. That the measures employed are reasonably efficient is shown by the fact that last year at this time there were fifty or seventy-five cases a day, while this year, with the same infection, there are probably not a half-dozen cases a day. Last year, however, a third of those attacked survived, while this year the disease has manifested a highly virulent character, and nearly all those who contract the disease seem to die in a few hours. Of the first couple of hundred cases during the present year, more than 90% died; of 54 consecutive cases 51 succumbed. The last week or so, however, the disease appears to have become milder in type. So far, the water supply of Manila has not become infected, and every possible precaution is being taken to prevent such contamination. Should the water supply become infected, the mortality in Manila, with the present virulent infection, would be very great.

THE PLAGUE SITUATION.—The plague situation at the present time shows very marked improvement. There were 17 cases in February, 42 in March, 52 in April, and only 24 up to May 27. This im-

provement is unquestionably due to the great activity of the health authorities in operating against plague; as in Hong Kong the plague has increased rapidly by leaps and bounds, and there were 117 cases in that city for the week ending May 16. In spite of the fact that Manila has a larger population than Hong Kong, and that the local conditions are here apparently more favorable to plague than in the latter city, Hong Kong has had about as many cases of plague in one week as Manila has had in three months. The plague mortality here has so far been 118 deaths out of 136 cases, with 9 recoveries and 9 cases remaining under treatment. The reduction in the number of plague cases is undoubtedly due to the stringent measures which are being enforced. Rats are being caught by the corps of rat catchers at the rate of about 12,000 a month, besides those poisoned, killed on the shipping and destroyed by property owners. Plague houses are carefully disinfected and repaired, or destroyed by fire. The most efficient measure of prevention is undoubtedly to be found, however, in the inoculation of every one of the 60,000 Chinese in the city with Shiga's plague prophylactic. This invention is being carried out systematically, house by house, street by street and district by district. All the Chinese are brought to the sanitary stations and inoculated, and this inoculation is repeated in ten days or two weeks. Those who are unable to call at the stations by reason of infirmity or illness are inoculated at their houses; such as choose, may employ private physicians approved by the Board of Health. Chinese women are inoculated at their homes by a trained female nurse. So far, there have been no untoward results whatever as a result of inoculation, and the local reaction is not sufficient to cause serious discomfort. That the measure is efficient is shown by the fact that no case of plague has occurred among the inoculated, while in a number of cases it has happened that the only uninoculated Chinaman in a large household has contracted the disease. The Chinese themselves see the efficiency of the process, and submit to it without opposition.

While the task of inoculation seems to be a mammoth undertaking, each sanitary station has a complete list of all the Chinese in its district, the location of their homes and data for identification. If a Chinaman leaves the district or takes up a new residence the health authorities must be notified. With such wholesale inoculation and rat catching the health authorities hope that the present year may see the last of the present infection in Manila. The proximity of China, however, implies special vigilance by the quarantine officials to prevent the importation of a new infection.

The Board of Health has also issued a plague circular in English, Spanish, Chinese and Tagalog, calling attention to the importance of rats as carriers of the plague infection, and the necessity of their destruction in combating the spread of the disease. All householders are urged to co-operate with the official rat catchers in the destruction of the rodents, and public notice given of the bounty to be paid for all rats delivered at Board of Health stations. The importance of sanitary surroundings and personal hygiene is also dwelt upon in the prevention of plague, together with the importance of early reporting cases of a suspicious nature to the Board of Health.

STATUS OF CHRISTIAN SCIENCE. — The attorney-general for the Philippine Islands has lately acted on a request from the Board of Health for information as to whether Christian Science healers could be prosecuted under the laws governing the practice of medicine in the Philippines. The law provides that those who "operate, prescribe, treat or advise" patients for a fee shall be regarded as engaging in medical practice, and restricts such practice to graduates of medicine who have passed the board of medical examiners, or who registered as practitioners of medicine prior to March, 1902. The attorney-general quotes extensively from the decisions in various states of the United States, relative to the status of Christian Science, which he regards as not finally determined. While the weight of evidence tends to permit the practice of Christian Science in the United States, the attorney-general states his personal belief that the practice of Christian Science constitutes the practice of medicine, and as such comes under the laws regulating the practice of medicine in the Philippines. He states, however, that this question is one for the courts to decide.

METEOROLOGICAL RECORD.

For the week ending June 27, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. | |
|---------|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| | | | | | | | | | | | | | | |
| S. . 21 | 29.74 | 54 | 56 | 51 | 100 | 97 | 98 | N E | N E | 12 | 12 | R. | R. | 2.36 |
| M. . 22 | 29.99 | 53 | 56 | 50 | 100 | 81 | 90 | N E | N E | 16 | 16 | R. | R. | .21 |
| T. . 23 | 30.01 | 51 | 53 | 49 | 90 | 88 | 89 | N E | N E | 16 | 16 | O. | O. | .01 |
| W. . 24 | 30.06 | 52 | 54 | 49 | 90 | 96 | 93 | N E | N E | 13 | 12 | O. | R. | .13 |
| T. . 25 | 30.02 | 52 | 55 | 48 | 94 | 91 | 92 | N E | N E | 9 | 4 | O. | O. | .47 |
| F. . 26 | 29.96 | 64 | 76 | 52 | 79 | 70 | 74 | W | S W | 2 | 6 | C. | C. | O. |
| S. . 27 | 29.84 | 70 | 81 | 59 | 74 | 52 | 63 | W | W | 2 | 6 | C. | C. | O. |
| Mean | 29.95 | | 62 | 51 | | | 86 | | | | | | | 3.18 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ‡ Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 27, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|-------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | Deaths under five years. | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,216 | 468 | 29.60 | 12.74 | 4.03 | 9.95 | 1.31 |
| Chicago . . . | 1,935,270 | 454 | 123 | 27.08 | 10.57 | 2.86 | 6.40 | 1.32 |
| Philadelphia . . | 1,378,527 | 466 | 163 | 34.33 | 7.08 | 2.15 | 9.44 | .63 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 176 | 77 | 36.46 | 8.05 | — | 18.18 | .57 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | — | — | — | — | — | — | — |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 79 | 34 | 31.65 | 8.86 | 1.26 | 13.65 | — |
| Boston . . . | 603,163 | 129 | 40 | 18.60 | 9.30 | .77 | 3.87 | — |
| Worcester . . . | 132,044 | 36 | 9 | 16.67 | 8.33 | — | 5.55 | — |
| Fall River . . . | 115,549 | 48 | 19 | 56.24 | — | — | 33.33 | 2.08 |
| Lowell . . . | 101,959 | 34 | 7 | 29.41 | 2.94 | — | 5.88 | — |
| Cambridge . . . | 98,639 | 23 | 2 | 21.74 | 13.04 | — | — | — |
| Lynn . . . | 72,497 | 18 | 12 | 5.55 | — | — | — | — |
| Lawrence . . . | 69,766 | 25 | 13 | — | — | — | — | — |
| Springfield . . . | 69,389 | 20 | 2 | 15.00 | 10.00 | — | — | 10.00 |
| Somerville . . . | 68,110 | 11 | 1 | 27.27 | 18.18 | 9.09 | — | — |
| New Bedford . . | 67,198 | 34 | 20 | 32.35 | 11.76 | — | 2.94 | 20.58 |
| Holyoke . . . | 49,286 | 18 | 14 | 44.44 | 5.55 | — | 27.77 | — |
| Brockton . . . | 44,873 | 9 | 1 | 33.33 | — | — | — | — |
| Haverhill . . . | 42,104 | 5 | 1 | — | — | — | — | — |
| Newton . . . | 37,794 | 6 | 3 | 28.56 | 21.42 | 7.14 | — | — |
| Salem . . . | 36,876 | 14 | 3 | 40.00 | — | — | — | — |
| Malden . . . | 36,286 | 5 | 1 | — | 20.00 | — | — | — |
| Chelsea . . . | 35,876 | 5 | 1 | — | 37.50 | — | — | — |
| Fitchburg . . . | 35,069 | 8 | 5 | 25.00 | — | — | — | — |
| Taunton . . . | 33,656 | 10 | 5 | 10.00 | — | — | 10.00 | — |
| Everett . . . | 28,620 | 5 | — | 20.00 | — | — | — | — |
| North Adams . . | 27,862 | — | — | — | — | — | — | — |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — |
| Quincy . . . | 26,042 | — | — | — | — | — | — | — |
| Waltham . . . | 25,198 | — | 1 | — | — | — | — | — |
| Brookline . . . | 22,608 | 3 | — | 33.33 | — | — | — | — |
| Pittsfield . . . | 22,589 | 3 | — | 33.33 | 33.33 | — | — | — |
| Chicopee . . . | 21,031 | 11 | 7 | 45.45 | 9.09 | — | 27.27 | 9.09 |
| Medford . . . | 20,962 | 6 | 3 | 33.33 | 33.33 | 33.33 | — | — |
| Northampton . . | 19,883 | 3 | 0 | — | — | — | — | — |
| Beverly . . . | 15,302 | 6 | 2 | 50.00 | — | — | — | — |
| Clinton . . . | 15,161 | 2 | — | — | — | — | — | — |
| Leominster . . . | 14,806 | 2 | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 3 | 2 | — | — | — | — | — |
| Woburn . . . | 14,300 | 6 | 2 | — | — | — | — | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — |
| Adams . . . | 13,745 | 3 | — | 33.33 | — | — | 33.33 | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,669 | 1 | 1 | 100.00 | — | — | — | 100.00 |
| Melrose . . . | 13,650 | 2 | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 4 | — | 50.00 | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 1 | — | — | 100.00 | — | — | — |
| Framingham . . . | 12,534 | 7 | 1 | — | 14.30 | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 3 | — | 33.33 | — | — | — | — |
| Weymouth . . . | 11,544 | 2 | 0 | 50.00 | — | — | — | — |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 3 | — | 66.67 | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 2,934; under five years of age, 1,031; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 867, acute lung diseases 298, consumption 340, scarlet fever 39, whooping cough 29, cerebrospinal meningitis 9, smallpox 5, erysipelas 6, measles 31, typhoid fever 44, diarrheal diseases 275, diphtheria and croup 75.

From whooping cough, New York 4, Chicago 7, Philadelphia 8, Baltimore 4, Providence 1, Boston 1, Cambridge 1, Holyoke 2, Brockton 1. From erysipelas, Chicago, Philadelphia, Baltimore, Boston, Cambridge and Newburyport 1 each. From smallpox, Chicago 1, Philadelphia 4.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending June 13, the death-rate was 13.9. Deaths reported, 4,022: acute diseases of the respiratory organs (London) 141, whooping cough 76, diphtheria 56, measles 124, smallpox 13, scarlet fever 39.

The death-rate ranged from 4.7 in Hornsey to 25.1 in Great Yarmouth; London 12.4, West Ham 12.8, Brighton 11.6, Portsmouth 13.1, Southampton 9.9, Plymouth 11.2, Bristol 12.8, Birmingham 14.8, Leicester 9.2, Nottingham 15.1, Bolton 15.9, Manchester 16.8, Salford 15.9, Bradford 14.4, Leeds 15.3, Hull 15.2, Newcastle-on-Tyne 15.7, Cardiff 12.4, Rhondda 16.1, Liverpool 19.3, Sheffield 18.6.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JUNE 25, 1903.

GASSAWAY, J. M., surgeon. Granted leave of absence for two days from June 7. June 19, 1903.

WASDIN, EUGENE, surgeon. Granted leave of absence for three days from June 20. June 25, 1903.

BROOKS, S. D., surgeon. Granted leave of absence for one day, June 22. June 25, 1903.

WHITE, J. H., surgeon. Granted leave of absence for one month from July 2. June 25, 1903.

CARRINGTON, P. M., surgeon. Six days' leave of absence, under paragraph 189 of the regulations, from June 20, 1903. Granted extension of leave of absence for 7 days. June 23, 1903.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for two months from July 7. June 22, 1903.

SPRAGUE, E. K., passed assistant surgeon. Leave of absence for seven days from June 4, 1903, granted Passed Assistant Surgeon Sprague under paragraph 191 of the regulations, amended so as to be for four days only.

Relieved from duty at Fort Stanton, N. M., and directed to proceed to Calcutta, India, for duty in the office of the U. S. Consul-General. June 25, 1903.

GRUBBS, S. B., passed assistant surgeon. Granted extension of leave of absence for seven days from June 23. June 18, 1903.

GWYN, M. K., assistant surgeon. To report to Assistant Surgeon V. G. Heiser, recorder of board of examiners, Manila, P. I., on August 8, 1903, for examination to determine his fitness for promotion to the grade of passed assistant surgeon. June 20, 1903.

HOBBY, W. C., assistant surgeon. To report to Passed Assistant Surgeon L. E. Cofer, recorder of board of examiners, Honolulu, T. H., on August 15, 1903, for examination to determine his fitness for promotion to the grade of passed assistant surgeon. June 20, 1903.

EARLE, B. H., assistant surgeon. Granted leave of absence for seven days from June 25. June 23, 1903.

BREADY, J. E., acting assistant surgeon. Leave of absence for three days granted Acting Assistant Surgeon Bready by Bureau letter of June 6, revoked. June 22, 1903.

HARRIS, B. Y., acting assistant surgeon. Granted leave of absence for thirty days from July 22. June 22, 1903.

SWEETING, C. B., acting assistant surgeon. Granted leave of absence, on account of sickness, for thirty days from June 10. June 18, 1903.

ILTIS, G. W., pharmacist. To report to Passed Assistant Surgeon W. G. Stimpson, chairman of board of examiners, San Francisco, Cal., on June 29, 1903, for examination to determine his fitness for promotion to the grade of pharmacist of the second class. June 22, 1903.

BOARDS CONVENED.

Board convened to meet at Washington, D. C., June 25, 1903, for the preparation of sketch plans and memoranda relative to a hospital building at Ellis Island, N. Y. Detail for the board: Assistant Surgeon-General L. L. Williams, chairman; Assistant Surgeon General W. J. Pettus; Surgeon G. W. Stoner; Passed Assistant Surgeon J. C. Perry, recorder.

Board convened to meet at San Francisco, Cal., June 29, 1903, for the examination of Pharmacist G. W. Iltis, to determine his fitness for promotion to the grade of pharmacist of the second class. Detail for the board: Passed Assistant Surgeon W. G. Stimpson, chairman; Assistant Surgeon C. W. Vogel, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JULY 4, 1903.

J. T. MILLER, acting assistant surgeon. Detached from recruiting duty; and ordered home to wait orders.

R. B. CHAPMAN, acting assistant surgeon. Detached from recruiting duty, and ordered home to wait orders.

D N. BERTOLETTE, medical inspector. Ordered to Washington, D. C., as member of the Naval Medical Examining Board.

J. A. MURPHY, assistant surgeon. Detached from the "Monadnock," and ordered to the "Celtic."

R. K. McCLANAHAN, assistant surgeon. Detached from the "Oregon" and ordered to the "Villalobos."

RECENT DEATHS.

Henry Melville Chase, M.D., M.M.S.S., died in Lawrence, June 15, 1903, aged sixty-five (65) years.

BOOKS AND PAMPHLETS RECEIVED.

An English Handbook of the Paris Medical School. By A. A. Warden, M.D., with Prefatory Letters by Lord Lister and Prof. W. W. Keen. Philadelphia: P. Blakiston's Son & Co. 1903.

Address.

THE SHATTUCK LECTURE.

THE SOURCES, FAVORING CONDITIONS AND PROPHYLAXIS OF MALARIA IN TEMPERATE CLIMATES, WITH SPECIAL REFERENCE TO MASSACHUSETTS.*

BY THEOBALD SMITH, M.D., OF BOSTON.

INTRODUCTORY.

AFTER I had accepted the honor of addressing you this evening as Shattuck lecturer, several topics of great interest to me presented themselves. After carefully considering them in the light of the provisions of the Shattuck bequest, it seemed to me that a discussion of malaria, with special reference to our own State, would at this time be the most useful. I accepted this self-imposed task the more willingly as since 1895 I had been giving much time during the summer months, under the auspices of the State Board of Health, to the study of malaria and the local conditions favoring it. Most of the facts I have personally gathered we owe to this board; for without their active co-operation the topography of the disease could not have been investigated.

If we were to depict the dissemination of malaria, this scourge of an invasive and militant civilization, upon the globe, we would paint it as a black belt girdling the tropical world and extending its lesser shadows in tongues toward the temperate zones. These shadows become less and less distinct the farther north we go. Though the harm it does to northern civilization is infinitesimal compared with its almost forbidding attitude in the tropics, yet even with us the energy needed for the ceaseless struggle for existence suffers severely when malaria is invading the blood, the integrity of which is so essential to our well-being.

Many things have conspired to bring about a renewed public interest in this disease. First and foremost the stimulus created by the colonial expansion of European nations, next the conditions which paved the way for a scientific demonstration of the existence of an intermediate host or carrier in the mosquito, and lastly the tendency of the intelligent classes in our climate toward suburban and rural homes and the general quickening of all interests in animal and plant life, have enlisted not only the attention of the public but their material support for the suppression of conditions favoring malaria. These various interests are perhaps a sufficient excuse for dealing with the newer aspects of this subject on this occasion. But the greater stimulus to me has been the fact that malaria is a prevalent disease of our State, that it has for us a decidedly sanitary as well as economic bearing. Some overworked and apathetic practitioners in rural communities may perhaps say, "What have the newer developments in regard to malaria to do with us? We can cure tertian fever with quinine and we can with equal readiness cure any relapse." This is true as far as it goes; but it would be a very narrow view to take and would, I feel sure, be

spurned by our society as unworthy of its past record and future promise. There is, however, a concealed, or at least overlooked, misinterpretation here which I cannot pass over in silence.

Medicine's legitimate field of work is not only sickness but health. Medical science has been moving the pivotal point of successful combat with disease more and more toward the well man. Hence we have the two great departments of the medicine of to-day, the curative and the preventive. The latter, the latest to develop, is yearly growing in importance and will eventually overshadow the former; for it is based on sounder biological and economic principles. Preventive medicine acts in an entirely different way from curative medicine. The latter saves its patient here and there and its services are conspicuous and positive, but the former works only collectively in a negative way and its services are inconspicuous. It also saves lives and prevents disease, but only through cold and dry statistics can it lay any claim to its achievements. It works by slow increments. Like the builder's screws which, placed under a building, raise it through an inappreciable distance each day, so preventive medicine slowly raises the sanitary level, and the total aggregate of all the inappreciable increments means many lives saved and much illness prevented. The study of malaria and the application of the principles underlying it mean no new cures, but a steady elevation of the healthfulness of rural life, the only source of a robust generation.

My task was finally made still easier from the observation I have made frequently of late that among many physicians, engineers and educated people generally, the mosquito has as yet no assured position as a transmitter of the malaria parasite. If our recent developments are to have much value, they must be applied at once, the principles must be made operative and enter intimately into the life of rural populations. We have become now fully cognizant of the hurtfulness of sewage out of place and of sewer gas. In fact our legislative sensitiveness to sewer gas became so great that both capital and labor trusts are said to batten on the severe restrictions created by it. Of now much more definite significance in pathology than sewer gas is the malaria organism! But the history of sewer gas legislation shows what can be done if the public interest is once aroused. Fortunately, the prevention of malaria does not demand such artificial measures as are in use against sewer gas, but only such as will add permanently to the utility and beauty of the land.

THE LIFE CYCLE OF THE MALARIA PARASITE HISTORICALLY AND BIOLOGICALLY CONSIDERED, WITH SPECIAL REFERENCE TO PLASMODIUM VIVAX, THE PARASITE OF TERTIAN MALARIA.

The proper presentation of my subject demands at the outset a very brief *résumé* of the main facts of malaria as known to-day, so that we may be able clearly to apprehend the application of these facts in the framing of preventive measures. The development of our positive knowledge of malaria etiology may be divided into two periods. The first embraces the period from 1880 to 1895 and is chiefly concerned with the study of the malaria parasite in human blood and the clinical interpretation of its

* Delivered before The Massachusetts Medical Society, June 9, 1903.

various appearances. The second period, extending from 1898 to the present, is concerned chiefly with the sexual reproduction of the parasite in the mosquito and with many questions of immunity and epidemiology.

The facts elucidated during the first period may be considered as already common property of the profession. They are included in all text-books on clinical medicine. All students who graduate from first-class medical schools are able to recognize malaria parasites and are prepared to make a diagnosis with the aid of suitable microscopes and accessories. Even many older practitioners have prepared themselves to do the same thing.

A detailed account of the discoveries of this first period would thus be superfluous; but I cannot refrain from mentioning the more important stages in its history, if only as a fresh acknowledgment of the arduous labors of those who were the important contributors. For this first period the excellent detailed historical *résumé* given by Thayer and Hewetson¹ should be consulted by all those interested in the laborious progress of science as well as its immediate achievements. To it I must also refer the student of malaria for a full bibliography to 1895.

In 1880 the parasite of malaria was first recognized as such by Laveran, then a French military surgeon stationed in Algiers. In 1885 Marchiafava and Celli in Italy pointed out the possible significance of the segmenting bodies as reproductive phases in the life-cycle of the parasite and insisted upon the fact that the parasites were within the corpuscles and not merely attached to them as Laveran maintained. In the same year (1885) a new observer appeared upon the field in Italy whose researches were, next to those of the actual discoverer of the parasite, the most important as bearing upon the parasite in the blood of man. Golgi described in detail the growth of the micro-organism of quartan fever and some years later that of tertian fever. He points out differences between these two parasites at various stages in their growth and first definitely associates the segmentation with the paroxysm. He shows that quotidian fevers are due simply to two or three groups of parasites maturing on different days. Henceforth the microscope would enable the skilled observer to make a diagnosis between tertian and quartan fever, to recognize quotidian types and to approximately fix the time of the paroxysm. This great advance did not include in its scope what we now know as the more dreaded estivo-autumnal or tropical fever, a type of malaria practically unknown in New England, excepting as it may be imported in isolated cases. Councilman was one of the first to insist upon the association of certain forms of parasites with the more irregular and continuous fevers. In 1889 Marchiafava and Celli and Canalis headed a long series of investigations upon this third type of fevers. This is not the time to recount the many shades of opinion, the many and diverse classifications into distinct varieties of the estivo-autumnal type as the result of laborious investigations. In brief, it may be stated that the tendency is to regard the varieties of this third type of fever as a unity to-day.

With the middle of the last decade the study of

the malaria parasite in the human body seems to have exhausted itself. As is the case where the microscope is the only tool, interpretation is difficult; and there is always danger in the framing of hypotheses from what we see that we may put the cart before the horse, as either method usually satisfies appearances. The stimulus which was to bring renewed life into this subject came from several different directions and with their aid the end the century saw revealed one of the most interesting biological phenomena, in which three different organisms combined to complete what is in many respects a most vicious circle for one of them. The second period presents a congestion of interesting details from several distinct sources. These details are not yet widely known, and an historical survey would be misleading. The simplest method which presented itself to me was to give a very concise sketch of the tertian parasite as it is known to us to-day and then refer briefly to the sources contributing the fertile hypotheses.

The parasite of tertian fever in its earliest stages appears within the red corpuscle either as a small ring or as a body consisting chiefly of slender filamentous prolongations or pseudopodia. Examined fresh, it exhibits ameboid movements most active at the temperature of the blood. Soon reddish brown pigment granules begin to appear which increase in number with the size of the parasite. Before the end of forty-eight hours the parasite has grown as large as the host-cell, and the latter may be still seen in faint outline or it may have completely disappeared. At this time signs of segmentation appear. The pigment tends to gather into a more or less compact mass in the center, and the parasite separates into from twelve to twenty-four small nucleated bodies, the so-called spores of the older writers, the merozoites of the present. These small bodies again enter red corpuscles, where the same process is passed through to the stage of segmentation or schizogony. The latter is associated with the paroxysm as already determined by Golgi.

This process of asexual reproduction is the one which is mainly responsible for the symptoms of disease. It destroys red corpuscles, and the fever induced may be due either to the corpuscular debris or perhaps more reasonably to the foreign substance of the parasite set free or left behind when the merozoites break away from the mother parasite to begin life anew.

After a certain time, as yet indefinitely known, the process takes another direction. The young merozoites, after entering red corpuscles, instead of growing into the segmenting bodies described above, develop into forms which closely resemble those bodies, but which do not segment. They are the male and female elements concerned subsequently in the body of the mosquito with sexual reproduction. The female body is known as macrogamete, the male as microgametocyte. These three individuals, the segmenting body or schizont and the male and female bodies, have been recently distinguished from one another by Bastianelli and Bignami,² Grassi,³ and more in detail by Schaudinn,⁴ who gives a number of differential characters pertaining to the structure of the nucleus, the cytoplasm, pigment, vacuole, and time of growth

of the sexual and asexual individuals. In other words, with proper methods of fixation and staining the skilled observer can determine at an early stage of the intra-cellular parasite to what cycle it belongs.

Leaving aside as somewhat beyond the scope of this lecture the characters of the sexual elements or gametes, I may simply state that they develop into bodies which slightly exceed those of the adult schizonts. While the latter rarely exceed 10 mm., according to Schaudinn, the former may become 12 to 16 mm. in diameter. When they have reached this stage no further changes occur until they have been drawn into the mosquito's stomach. It should be stated, however, that when freshly drawn blood is watched, further changes do occur in the male body, which consist in the extrusion of spermatozoa or microgametes, the so-called flagella of earlier writers. This extrusion is brought about by conditions simulating those in the stomach of the mosquito.

The life cycle of the malaria parasite thus comes to a standstill in the blood of man, after a certain time to be completed in another host. In the blood drawn into the mosquito's stomach the two sexual elements or gametes rapidly complete their development. The male element extrudes four to eight flagellate bodies or microgametes, which are from $2\frac{1}{2}$ to 3 times the diameter of a red corpuscle in length. These move and lash about actively, tear themselves away from the parent body, and move through the fluid. One of these penetrates into a macrogamete. This process of fertilization is similar to that of higher forms. The male element, composed largely of nuclear matter, unites with the nuclear matter of the female element to form a new nucleus.

The fertilized female body after about ten minutes begins to push out a hyaline prolongation, which gradually grows until the entire body has assumed a wormlike form. This little worm (oökinet) begins at once to seek its future abiding-place where it is to produce the countless infecting sporozoites. It penetrates the epithelial layer of the stomach and comes to rest beneath the external elastico-muscular tunic of this organ. In this situation the parasite slowly goes larger, and as it grows bulges the external tunic of the stomach, which forms its envelope, outward into the body cavity. Up to five hundred of such bodies may, according to Grassi, develop the stomach walls of a single individual. Their final size varies more or less according to external temperature and food supply. During the enlargement of these bodies profound internal changes are under way. The fused nucleus of the original oöcyt undergoes repeated division. The new nuclei become the centers of irregular masses, the sporoblasts. Each new nucleus again subdivides into an indefinite number of minute nuclei, which appear on the periphery of the irregular masses, or sporoblasts, and there, by gathering about them cytoplasm, they eventually form the myriads of fusiform bodies known as sporozoites. These when mature become detached from the mother mass, and when the cyst bursts they enter the body cavity. They are very slender bodies, on an average 14 mm. long and between 1 and 2 mm. wide in the middle. They

possess the power to change their form as well as to move. After their discharge into the body cavity, some attraction draws them to the salivary glands, which they penetrate and where they imbed themselves in the secreting cells and in the lumen of the gland.

These slender mobile organisms (sporozoites) are discharged into the blood of man when the proboscis of the infected mosquito penetrates the skin and reaches a vessel. Schaudinn recently described the entry of two of these bodies into red corpuscles as observed by him through the microscope. Within the red corpuscle each body begins the life cycle anew.

The time required for the formation of sporozoites in the mosquito varies with the temperature. According to Grassi the shortest period is about ten days. Allowing, according to the same observer, about ten days between inoculation by the mosquito and the appearance of the fever, at least twenty days would elapse after a mosquito had become infected before another case would appear.

We have now sketched, in bare outlines, the life cycle of the malaria parasite and with it the mode of transmission of the disease from man to man. As I stated before, the unraveling of this wonderful chain of events was not accomplished by one man, but a number of contributors have assisted in interpreting this wonderful bit of parasitism.

The germs of hypotheses concerning the mosquito have been traced well back. * In 1882 A. F. A. King advocated the mosquito theory on the basis of general epidemiological facts.

Manson, in 1894, declared for the mosquito as transmitter. The mosquito draws the parasites into its body with the blood. There spores are formed and when the mosquito dies they are shed broadcast in the air and the water, and we become infected when we inhale or ingest them. His hypothesis was evidently suggested by his important work on *Filaria*.

In the experimental studies upon the malaria of cattle, known popularly as Texas cattle fever, the writer,⁵ in association with F. L. Kilborne, after four years of nearly continuous investigation arrived at certain conclusions in 1893 which have been the forerunners of the well-established principles governing human malaria.

The blood parasite in this affection lives within the red corpuscles. The ectoparasite which draws it out of the body is the Southern cattle tick (*Boophilus bovis*, Curtice). But the process of transmission is more complicated than that for malaria discovered over five years later. The mother tick which draws the blood and in it the parasite into her body never attacks another animal. After having gorged herself with blood designed for the nourishment of the ova, she drops to the ground, deposits a large number of eggs, and dies. The young larvae, emerging from the eggs after three or four weeks, attach themselves to cattle, and in doing so inoculate the blood parasites transmitted to them by their mother. It will thus be seen that nature had to provide for the infection of an unborn generation of ticks in the body of the mother tick in order to have the

* For a full historical résumé, including bibliography, we are indebted to George H. F. Nuttall. — *Johns Hopkins Hosp. Rep.*, Vol. viii.

malaria parasite transmitted to other cattle. When this complicated mechanism for the transfer of a minute blood parasite came to light after two years of experimentation, it seemed so wonderful that it staggered my belief in the etiological rôle of the bovine malarial parasite, and new experiments had to be tried to make this wonderful mechanism credible. The malarial organism was soon rehabilitated, however, when we found that the disease could be produced without the aid of the cattle tick by simply inoculating with the blood of cattle carrying it. It could also be shown that the disease could be produced at a distance by simply importing adult female ticks from an infected locality, breeding the larvæ from the eggs and putting them on susceptible cattle. I speak of these experiments because they completely refute the hypothesis occasionally presented that the mere sting or bite can produce disease by a process akin to poisoning and because they illustrate the symbiosis existing between the cattle and the blood parasite on the one hand and the blood parasite and the cattle tick on the other.

Here we have the first actual demonstration that ecto-parasites drawing blood inoculate the virus when they sting. It remained too strange a fact to be properly accepted, but it slowly began to stimulate students of human malaria, as shown in their references to the implied analogy. Notably the Italians were impressed with it, and without doubt the fact that Koch,²² in 1898, was able to repeat and confirm the experiment upon cattle in Africa led him to attack the malaria problem with his usual energy. In the meantime Ross,⁶ working in India, had, in 1898, practically worked out in certain mosquitoes the cycle of bird malaria, which subsequently proved to be nearly identical with the cycle as observed in human malaria. Ross is therefore the one to whom the credit for demonstrating the malaria cycle belongs.

But there were other contributing sources which were essential to an understanding of the significance of certain forms of the malaria parasite. Since Laveran's discovery in 1880 it was known that certain large forms of the malaria parasite, when the blood containing them was watched under the microscope, extrude four or more delicate filaments which are actively motile for a time. There were also the peculiar crescent-shaped forms in the blood in the tropical fever which puzzled observers. Both the flagellate and the crescent forms were variously interpreted as degenerations and their significance wholly misunderstood. In 1897 McCallum⁷ in the study of bird malaria grasped the true significance of these forms when he saw under the microscope the flagellum of one form penetrate into another.

The sexual process here observed at once gave a new significance to these neglected, misinterpreted flagellate bodies, and to the crescents which we now know as the gametes, and which carry on the life of the malaria parasite in the mosquito. At the same time studies by Simond⁸ in France on related sporozoa, known as coccidia, revealed the presence of peculiar structures which were speedily identified as male sexual bodies. These two converging lines of experimentation, the demonstration of the transmission of malarial disease by the prick of arachnids in cattle and by mosquitoes in mala-

ria, and the disclosure of sexual phenomena in the malaria of birds and in the coccidia, enabled such skilled observers as Grassi in Italy, Koch in Italy and the tropics, Ross in India, and a host of others, to perfect the details of proof and give them weight before the uninitiated and incredulous multitude of professional and lay lookers-on.

There remained still one problem to be disposed of. The universality of the mosquito and the restricted areas of malarial infection are so clearly opposed to one another that the new facts could hardly be expected to make headway without further work. The many species of mosquitoes, rising into the hundreds, cannot all be concerned in this vicious circle. To Grassi more than to any other belongs the credit of having called attention to the genus *Anopheles* as the intermediate host of human malaria. So far, there seem to have been no developments to contradict Grassi's work. Not only he, but the English malaria expeditions, and quite recently Schüffner,⁹ have traced the parasite of human malaria through certain species of *Anopheles*. At the same time it is not to be inferred that all species of *Anopheles* are necessarily carriers, as I shall point out later on, and that in any locality the prevailing species should be tested with reference to this point.

It is interesting to note that one kind of bird malaria (*Proteosoma*) seems to be transmitted by certain species of *Culex*. Of the other widely distributed form of bird malaria (*Halteridium*), the intermediate host remains unknown.

It would be idle for me to assert that with the discovery of the sexual cycle of the human parasite in *Anopheles* all the vexed questions concerning the epidemiology of malaria had been disposed of. On the contrary, we have just begun to appreciate the sure footing gained and we must now begin to study those elusive variations in the disease due to latitude, climate and seasons, and to racial diversities, without which practical measures for the eradication of malaria from any given territory can have but little assurance of ultimate success. It is with special reference to these many variable factors that I venture to present the subject to-night.

THE RELATION OF THE TERTIAN PARASITE TO THOSE OF THE QUARTAN AND THE ESTIVO-AUTUMNAL OR TROPICAL FEVER.

It is now well known that there are three species or morphological types of malaria parasites. The tertian and quartan parasites were first distinguished by Golgi, the estivo-autumnal somewhat later. The distribution of these three forms and the existing controversy whether they are distinct species or manifestations of but one under different conditions, bring them necessarily within the scope of our subject.

Concerning their distribution it may be briefly stated that the estivo-autumnal or tropical parasite has its home chiefly in the tropics, and extends thence into the adjacent belts of the temperate zones. The quartan parasite has nearly the same distribution, but it is only rarely encountered. The tertian parasite is more cosmopolitan. It is found both in the tropics and in the temperate zones.

A majority of observers are agreed that the three forms are distinct, while a minority are of the

opinion that the three forms really represent one species and that a different environment and perhaps different degrees of immunity account for the different forms. This is not the place to enter into a description of the three types or forms. Good descriptions will be found in Thayer and Hewetson¹, Ewing¹⁰, Ruge¹¹, and others. Suffice it to state that certain differences between them are thoroughly well established. Among them are the crescents (gametes) of estivo-autumnal fever which are not found in tertian and quartan fevers. The tertian parasite attains a larger size than the quartan, and the red corpuscle is swollen and pale. In the segmenting stage twelve to twenty (Thayer), or fifteen to twenty-five (Ruge), spores (merozoites) are set free, whereas in quartan infections only six to twelve spores are formed. There are also differences in the form of the pigment.

The estivo-autumnal parasite differs from the tertian and quartan not only in the presence of crescents, but also in the absence of sporulating forms in the peripheral blood. The forms there found are rings, at first very minute, then larger. These finally disappear. The segmenting stages are found in the spleen, bone marrow, brain, etc. These differences, and others not mentioned, upon which observers working in different continents on the whole agree, appear sufficient to justify the establishment of three species of malaria parasites. Yet there are good reasons for not considering them impregnable. Assuming for the moment that they are independent organisms, we must meet the interesting fact that in our state and in others similarly situated only the tertian parasite is found. In the many specimens from various towns examined microscopically by me and my assistants, the estivo-autumnal species was not recognized as such in any case. Though many soldiers returning from the Cuban campaign brought this form in their blood, no indigenous cases seem to have occurred as a result of this importation. Recently some evidence has been presented to the effect that the estivo-autumnal type of fever is gaining a foothold about New York City. Jackson¹² reports four cases at West Point, only one of which was imported from Cuba. Peabody¹³ describes the same disease in a man who during eleven years was only once out of New York. He went to Pennsylvania three years ago and was away four days. Patterson¹⁴ thinks that this type began to appear since 1898.* If we maintain that the estivo-autumnal and the tertian parasites are distinct and independent organisms, we are obliged to support as a corollary one of several propositions: (1) The transmitter of the estivo-autumnal fever is wanting. This is not improbable even with *A. maculipennis* among us; for the crude external species characters may be the same as those in the South, yet the physiology of the insect may be decidedly modified by a colder climate. (2) The mean temperature with us is too low to successfully mature the tropical parasite in the mosquito. (3) The difference in temperature and other meteorological factors are sufficient to repress and suppress this parasite in the blood while we live in this climate. Some of the soldiers who came from the Cuban war affected with malaria showed at first

both estivo-autumnal and tertian parasites in their blood. Later on the former disappeared and the latter remained, in some cases producing relapses. This disappearance of the graver type of infection and the persistence of the milder type was noticed by Ewing¹⁰ in the military camp at Montauk, N. Y. Does it mean that the soldiers were infected with two parasites at the outset, or did the estivo-autumnal assume the tertian form in the northern climate?

The question is of great interest and importance, yet there is singularly enough no decisive argument which can be applied to definitely settle it one way or the other, although the preponderance of observation and experiment is in favor of the pluralistic view. This has been well summarized recently by Ruge.¹⁵

CONDITIONS UNDER WHICH THE HUMAN BEING MAY BECOME SOURCE AND CARRIER OF MALARIAL INFECTION.

Our present position as regards the etiology of malaria demands at least two links in the chain of causation. If one is absent the disease must fail to appear. They are:

- (1) Infected human beings.
- (2) Mosquitoes of the genus *Anopheles*.

In order to discuss intelligently the relation of human beings to the dissemination of the disease, it will be necessary to recall the fact already described, that in the fresh attack the asexual multiplication of the parasite goes on in the blood for a time. Then sexual forms appear, which, I think, are best interpreted as indicating a beginning of immunity. The mosquito can be infected only through the sexual forms. The important question before us is the relative danger as a source of malaria parasites of the infected person who comes from, or lives in, the region usually free from malaria and of one who comes from a region in which malaria is endemic. An attempt to discuss this complex question requires a brief statement of the new doctrine of acquired immunity in malaria.

This was brought distinctly before us by Koch¹⁶ in the reports of his work in the tropics. The idea that immunity can be acquired toward intraglobular parasites was not new, however. It was shown by myself and Kilborne that immunity is acquired toward bovine malaria, and this fact has been widely exploited in our country to prepare cattle for importation into endemic regions where susceptible animals usually die. In investigations made in East Africa and New Guinea, R. Koch came to the conclusion that malaria is very prevalent in young children, but that it gradually disappears with age and that the adults have acquired immunity. In them the enlarged spleen and other concomitants of malaria have disappeared. A. Plehn¹⁷ disputes the latter as not in harmony with facts, and cites his own studies of the blood of adults as well as the examination of the spleen to show that they too suffer to a considerable degree with malaria. The point I wish to bring out does not concern their controversy, but their essential agreement upon the great prevalence of malaria in children. Plehn, who made careful observations upon this subject, states that, while the youngest children may have numerous parasites in their blood, their

* I subsequently found that Ewing had reported another case in *Journ. Exper. Med.*, 1902, vi, p. 120.

general condition remains undisturbed and temperature elevations are uncommon. The same is true of many adults of whom Plehn found about 50% carrying the malaria parasite without the, to us, familiar clinical disturbances. Christophers and Stevens,¹⁸ in their work under the auspices of the Royal Society of England on the west coast of Africa, in India and other regions in the tropics, find that a large per cent of the native children have parasites in their blood. There is a gradual disappearance with age. After the age of twelve infection is rarely demonstrable. The disease is always mild.*

Annett, Dutton and Elliott¹⁹ of the Liverpool School of Tropical Medicine observed in Nigeria the extensive infection of children. Christophers and Stevens regard this phenomenon of such importance that they base upon the infection of children the prevalence of the disease, or what they call the "endemic index," in any given locality.

Though Koch has been severely attacked for his hastily formed doctrine of immunity, more particularly by Glogner²⁰ and Kohlbrugge,²¹ there can be little doubt that the available data derived from human and comparative sources agree with this doctrine. A distinction should, however, be made between what I prefer to call clinical immunity and biological immunity. An individual may have acquired a considerable degree of biological immunity, but owing to the effort required and the resulting loss of tissues he may come out of the struggle badly off. This must not shut our eyes to the fact, however. In this protean variation of disease, due to the struggle between two variable organisms, we must clearly keep in mind "*Den ruhenden Pol in der Erscheinungen Flucht*," even if it does not always help us cure the patient. The same principle which meets one patient on its downward curve and destroys him, meets another on its upward curve and saves him. We must study the curve and learn where the patient fits it, and where and how to apply assistance.

The general observation in tropical malaria that children are the chief objects of attack, that it is in fact a children's disease there, is another proof of the general doctrine of acquired immunity, for in nearly all endemic infectious diseases the virus attacks by preference the young because immunity protects adults.

The subject is, however, still more complicated. It would be folly to transfer the doctrine of immunity from natives of Africa to natives of our northern climate settling there. The former do not acquire all their immunity in a single lifetime. They start at birth with enough inherited accumulation of immunity to need but a little further training to come out victorious. That the Anglo-Saxon baby could do likewise is hardly within the range of probability.

The difference between the native of the tropics and the native of the temperate zone is probably dependent on a variety of physiological factors. Among these I am inclined to place differences in the biology of the red corpuscles at the front. The

red corpuscle is subject to much greater vicissitudes as regards osmotic changes in the tropics than in temperate zones. With us, temperatures below a certain mean are equalized by clothing and artificial heat. Temperatures above a certain mean are not equalizable. They must be endured. Hence the heat-regulating mechanism must come into more active play, the output and intake of water is large, and with it the changes in the concentration of the salts of the blood must vary more or less. The native of hot climates is adapted to these changes, primarily by a greater resisting vigor of the red cells. The temporary resident of the tropics suffers from those disorders incidental to the taking care of corpuscular débris, foremost among which are those of the liver. Added to this natural increase in the resisting power of the red cells is one due to increased use, such as takes place when new corpuscles must replace those destroyed by use and by malaria parasites. The blood-forming organs up to a certain point are strengthened by use.

Secondly, a specific immunity due to the malaria parasite itself must accumulate through generations in infected localities, which immunity may reside both in the blood and in the host cells themselves. This subject of the relation of the red cells to immunity I can only touch upon here. It is one which I think will repay thorough investigation.

In the malaria of our latitude the effect of the parasite upon natives and those coming from still colder climates is not seen in its frankest manifestations, because quinine enters at once to suppress the disease. When treatment is neglected cases do occur now and then which indicate that malaria freshly introduced into a locality may prove serious and even fatal at times.*

In our climate the French Canadians appear to be most susceptible, and in general it seems to be true, as with yellow fever, that the further north the home of the one who immigrates into an endemic region the more severe the disease when it does appear.

A similar relation between latitude and susceptibility seems to exist in bovine malaria. The disease imported into the northern states from the southern enzootic territory, though carried by healthy animals in their blood, is very murderous to the northern animals. On the other hand, cattle living in the tropics, but not in infected localities, are much more resistant, as indicated by Koch's experiments in Africa. The same seems to be true of the Venezuelan form of this disease, called Lomadera, and studied by Ziemann.²³ All that can be claimed from various observations upon immunity is that the influence of the malaria parasite upon the host is in the direction of a biological immunity. The latter may or may not reach a clinical immunity, for that would depend upon the degree of resistance with which the individual started in life, and the interruption of the process by the continued use of quinine.

During the immunization which goes on in the course of the manifest or latent infection, how early do the fully matured gametes appear, and how long

*"It must be understood that in speaking of a case of malaria in children we are referring only to the presence of parasites; the children are perfectly well and present none of the characteristic signs observed in Europeans affected with malaria." (Lagos, West Coast of Africa.) See Rep. to Malar. Committee. Third Series.

*In one town a young woman who was being treated without quinine told me that she had had thirty-six chills in thirty-nine days. An examination of the blood certainly confirmed her statement, for the disease had produced marked anemia and characteristic changes in the red cells.

do they remain in the blood? After fresh infection does the highly immune body destroy the injected sporozoites or do they form gametes? These questions are proposed in view of their bearing upon the infectiousness of the individual in different stages of the disease. Schaudinn, who states that with suitable methods gametes of tertian fever may be readily detected in the blood and distinguished from the schizonts or sporulating forms, has seen the former appear in one case after the third attack. But Schaudinn made his studies in a permanently infected region on the eastern coast of the Adriatic in Istria. Thayer and Hewetson have given summaries of their observations of the sexual forms of parasites, and from their report I take the following figures: in 153 cases of tertian fever, flagellate bodies were seen in 6. Of 105 cases of estivo-autumnal fever they were seen in 18. "In a half of the cases the paroxysms had ceased; in 8 out of 20 instances quinine had been previously given; that is, for days and sometimes for weeks after the activity of the infection had certainly been overcome, we were able to see flagellate bodies. . . ."

In the case of the crescents, the gametes of estivo-autumnal fever, they found in over 70% of the cases the crescents appearing in the second week or thereafter, practically none in the first week, if two doubtful cases are thrown out (p. 173). It seems that the gametes tend to appear after the more active process has subsided, and if the conditions where these cases were studied are similar to those in our latitude we may assume that patients may be infectious in the presence of Anopheles during and after the second week. However, I am not inclined to accept fully the findings of the latitude of Baltimore or Istria for Massachusetts.

G. Maurer,²⁴ studying tropical malaria in Sumatra, states that gametes appear in the blood only some time after the beginning of the fever, in some earlier than in others. In some they do not appear at all. The appearance of crescents is completely suppressed when the earliest fevers are treated rationally with quinine.

There are a number of factors working against the ripening of gametes in the blood in natives of our climate. These are the absence of any inherited or acquired immunity to begin with and the prompt use of quinine. Cases may, however, remain untreated. They may possess more or less natural resistance. Even cases treated successfully in one season may have relapses in the early spring of the following season. Such cases are probably much more likely to prove sources of infection than fresh cases. In them immunity has made some progress. These relapsing cases are probably the starting-point of the infection during the year.

The most dangerous individuals are those who have lived in permanently infected localities for a long time and who possess considerable resistance. In them the virus is latent and prepared to appear clinically under satisfactory provocation. Caccini²⁵ made an exhaustive study of the latent virus of malaria in Italy and the causes of its occasional outbreak into a paroxysm. He found that the general condition of the people was of considerable moment. The well-fed and well-housed masters had few attacks as compared with the laborers

under them. Heavy work during the vintage and harvest, gastro-intestinal troubles, a sudden chill, sleeping out of doors, being caught in rains, all predisposed to relapses. Certain foods causing vomiting, certain medicines, intercurrent illness, even sea-bathing, brought on an attack in some persons. It is related by A. Plehm,²⁶ with citation of cases, that persons having had no clinical disturbance in the tropics during a temporary residence because of prophylactic quinine treatment, on their return to Europe passed through a regular attack either on shipboard or in their native country. In such instances the infection occurred unperceived and may have been repressed by quinine from the start.

Though the conception of the latency of malaria is a very old one, yet its epidemiological significance has had no recognition until lately. The persistence of malaria has been chiefly of clinical interest, and the patient was considered, rather than his environment. To-day we are slowly becoming accustomed to the thought that the latter must also be considered. Absence of illness does not necessarily exclude the presence of infecting organisms, and carriers of infection must be kept in view as possible centers of disease. We are now fully acquainted with the possibility that bacteria may persist in the body after recovery. The vexatious question of diphtheria bacilli in recovered cases is present without doubt in the minds of most physicians. In typhoid fever the urine and feces may contain the bacilli after recovery. I might give many additional illustrations. But there is another fact of similar significance, namely, the presence of pathogenic bacteria in the well who have come in contact with infection. Thus, typhoid and cholera microbes have been found in the feces and diphtheria bacilli in the throat of well persons not previously diseased. This tendency toward a symbiosis between host and parasite is much more pronounced in the case of animal parasites, especially those belonging to the malaria group. Thus in bovine malaria the parasite has been demonstrated by inoculation to exist in the blood of immune animals three years after the last opportunity for infection.²⁷ More recently Wasielewski²⁸ has shown that one of the malaria parasites of birds (*Proteosoma*) remained in the blood five months after infection. The more favored theory would undoubtedly be that when the host becomes completely immune the blood parasites can no longer subsist in him, but I am inclined to believe that such complete immunity does not exist and that whenever an immune human being is infected the parasites go through the process of forming gametes or sexual elements without clinical manifestation and then await the opportunity of being withdrawn by some mosquito. Or else they await the equally desirable moment when the host has committed some indiscretion by which his resistance is reduced, when the parasite rapidly undergoes the usual asexual multiplication in the blood and calls forth a paroxysm. When equilibrium is re-established the sexual elements appear in large numbers. The forms in which the malaria organisms remain latent is a subject of great biological interest. Grassi assumed that sexual elements or gametes undergo parthenogenesis. Schaudinn recently claims to have established the

fact that the gametes may revert in part to forms which multiply asexually in the way familiar to us whenever a relapse is impending.

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(To be continued.)

Original Articles.

SUBPARIETAL INJURIES OF THE KIDNEY.

BY FRANCIS S. WATSON, M.D., BOSTON.

(Concluded from No. 2, page 35.)

THE AUTHOR'S SIX CASES.

(1) Laceration of the right kidney, and cerebral concussion. Hematuria of four days' duration. Small tumor in the loin. Expectant treatment. Recovery.

(2) Hematonephrosis — in a previously hydro-nephrotic kidney — and perirenal hemorrhage, without laceration of the kidney, resulting from violence inflicted upon the right side of the front of the abdomen. Lumbar nephrotomy and secondary lumbar nephrectomy. Recovery.

(3) Laceration of the left kidney. Peritoneum, renal vein and spleen. Retention of urine due to clots in the bladder. Abdominal nephrectomy twenty-four hours after the accident. Death four days later from peritonitis. Injury to spleen not severe.

(4) Rupture of left kidney and spleen, fracture of brim of pelvis, three ribs and arm on the left

side. Primary abdominal nephrectomy. Spleen tamponed. Laceration of spleen severe. Peritoneum overlying the kidney ruptured. Death from shock and hemorrhage from spleen, twenty-four hours later.

(5) Rupture of left kidney. Subcapsular and intrarenal hemorrhage. Lumbar incision and suture of the kidney wound on the third day. Recovery.

(6) Laceration of the right kidney, due to muscular effort. Resulting hydro-, later pyonephrosis. Infection fourth week after the receipt of the injury. Lumbar nephrectomy five weeks after the accident. Recovery.

(1) *Expectant treatment. Recovery. Laceration of the right kidney and cerebral concussion.*

Hematuria noted with the first urination after the accident — a fall of twelve feet — the blood was abundant for first twenty-four hours, it was present for three days, but in less quantity after the first day. Ecchymosis in the right loin. Patient unconscious for some hours. Swelling in the right lumbar region developed slowly twelve hours after the injury. It was of moderate size and had disappeared at end of ten days. Pain was not noted on account of unconsciousness during the first part of the time following the injury. Expectant treatment. Recovery.

(2) *Lumbar nephrotomy. Secondary lumbar nephrectomy. Recovery.*

A young man was jumped on by an opponent in a street fight, the right side of the abdomen being struck by his knees, while lying on the back. This man had sustained six severe injuries to the right kidney during the previous twelve years; each time there had been hematuria, severe pain in the right loin, and each time the patient had recovered under expectant treatment.

On the last occasion operation was determined by signs of progressive and serious hemorrhage, in the form of hematuria, four days after the receipt of the injury, and by the presence of a rapidly increasing tumor which appeared on the evening of the third day. Hematuria ceased at the same time.

Lumbar incision. Kidney enormously distended by blood clot. No wound of the kidney. A considerable perirenal hematoma, the latter originating from the injured perirenal blood vessels.

Nephrotomy. The kidney was emptied of its blood clot, tamponed and drained through the lumbar incision. It had evidently been hydro-nephrotic for a long time. The patient made an uninterrupted recovery, but a fistula remained and the kidney was removed some months later by my colleague, Dr. Thorndike, the patient recovering readily from that operation also.

(3) *Abdominal nephrectomy (primary). Spleen, peritoneum and renal vein torn.*

A man fell fourteen feet, striking left side against a plank. Violent lumbar pain. Hematuria lasting until the operation, and blood appearing with the first urination after the accident. Shock severe, free fluid in moderate quantity, and not rapidly accumulating, in the peritoneal cavity. A tumor in the left loin developed immediately after coming to the hospital, half an hour after the injury.

Operation twenty-four hours after the accident. Abdominal nephrectomy. Incision in the left linea semilunaris. Small wound of lower end of spleen.

Peritoneum over left kidney torn. Immense retro-peritoneal hematoma, intra-peritoneal hemorrhage chiefly through the torn peritoneum from the kidney, a small part from the wounded spleen. Wound in peritoneum enlarged. Renal vein found to have been injured also. Ligature of vessels and ureter in one mass. Wound of spleen tamponed. Abdominal wound closed. Drainage through a lumbar incision. Death on the fourth day from peritonitis. Condition of kidney shown in Fig. 1.



FIG. 1. — Case 3 (author's).

(4) *Laparotomy. Tamponing of wounded spleen. Kidney not touched. Left kidney lacerated. Spleen severely injured. Fracture of pelvis, three lower ribs on left side and left arm. Peritoneum torn. Death.*

Patient, a man, fell twenty-five feet into hold of vessel, striking left side. Shock severe, hematuria with first urine, which was drawn with a catheter. The bladder was filled with clots, great pain over left kidney. A rapidly increasing and very large quantity of fluid in the peritoneal cavity. Signs of serious progressive hemorrhage. Operation four hours after the accident. Laparotomy in the left linea semilunaris, incision prolonged outward from its upper end to the quadratus lumborum. The abdominal cavity filled with blood, principal source of which was the lacerated spleen, a smaller part of it coming from the kidney through rent in the peritoneum. Patient's condition too critical to allow of more than tamponing the spleen wounds, and draining through the loin. The patient died fourteen hours later from shock and continued hemorrhage, from both spleen and kidney. Fig. 2 shows the condition of the kidney, as seen post-mortem.

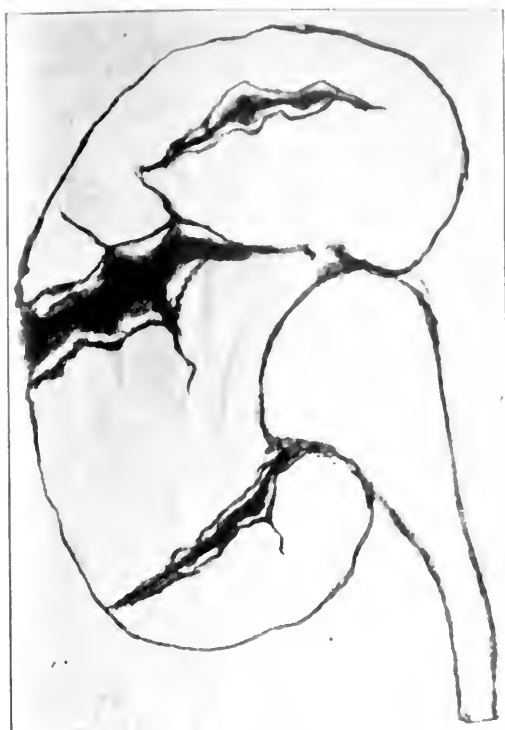


FIG. 2. — Case 1 (author's).

(5) *Lumbar incision and suture of the kidney wound. Left kidney ruptured. Subcapsular hemorrhage. Obstruction of ureter on the fourth day by clot. Recovery. Fistula persisted. Second operation. Pseudohydronephrosis. Recovery. Later condition not known.*

A man fell while stepping off his cart, striking the left side of the back. Great pain in the seat of injury. Hematuria profuse with the first urination. This continued, though in somewhat less degree, for the next four days, the patient's general condition being good during the interval. On the night of the fourth day sudden cessation of hematuria, development for first time of a tumor in loin, this grew rapidly. Operation one hour after the appearance of these symptoms.

Kidney exposed in the loin by lumbar incision. There was a very moderate amount of blood around the kidney. The organ itself was enlarged to more than twice its normal size, and the pelvis was enormously distended by blood clot. The kidney was of a dark purple color.

The fibrous capsule was not torn. There was a laceration of the kidney which is shown in Fig. 3. From it protruded beneath the fibrous capsule a blood clot, which had dissected the capsule from the kidney over nearly the whole of the posterior surface of the organ.

The capsule was incised and the clot expressed through the wound in the kidney by pressure with the hand upon the distended pelvis. The vessels, ureter and pelvis were not injured. The kidney at once resumed its normal size and color on being freed from the clot. No urine was found in the pelvis. The wound in the kidney was closed by seven catgut sutures. Hemostasis was complete

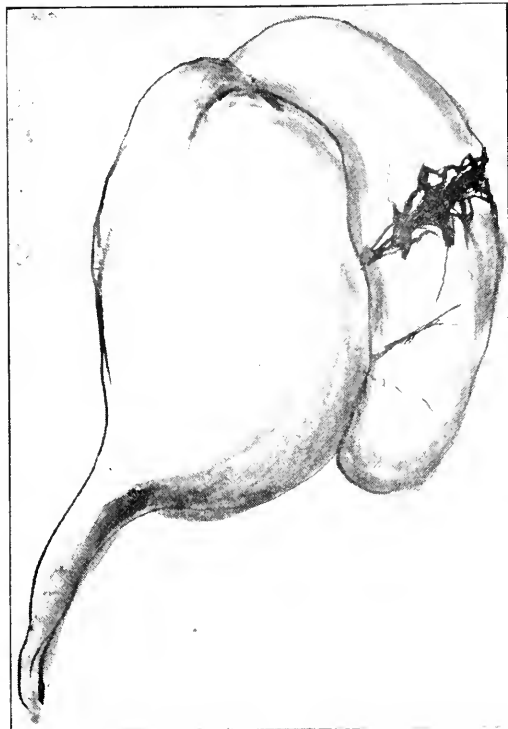


FIG. 3. — Case 5 (author's). Pelvis distended with blood clot.

and immediate, and the wounded surfaces adapted themselves perfectly. (See Fig. 4.)

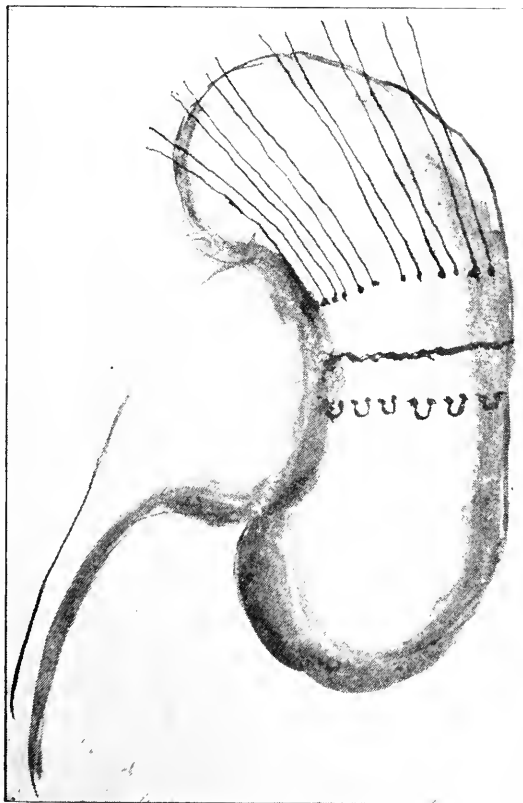


FIG. 4. — Case 5 (author's). Showing closure of wound by suture after removal of blood clot.

The patient made an uninterrupted recovery, but a fistula established itself after the wound had been closed without leaking for five or six days, and the patient had gone home. He presented himself again about two months later to have the fistula closed. The condition of the kidney found at the second operation was that usually termed pseudohydronephrosis, and is shown in Fig. 5.

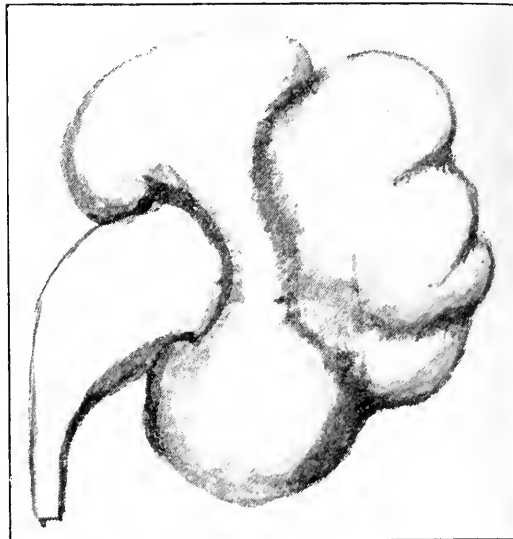


FIG. 5. — Case 5 (author's). Condition found at second operation.

The kidney was exposed in the loin through the old incision. Its anterior surface was adherent to the overlying peritoneum. The fistulous tract led to a sac about the size of a large hen's egg on the outer and posterior surface of the kidney. This sac was incised. No communication could be established between its interior and that of the kidney. Its inner aspect was apparently represented by the kidney's outer surface, and the remainder of its walls by more or less organized exudate. The walls were excised in part, and drainage supplied through the lumbar incision which was otherwise closed.

The patient made a rapid recovery from this operation also, but when discharged from the hospital the fistula had not closed, and was still open when he was last heard from, one month later, two months from the time of the second operation.

(6) *Lumbar nephrectomy for pyonephrosis*, resulting from a laceration of the right kidney five weeks previous, which injury was caused by the slight muscular effort made in stretching up quickly to reach the top of a window which the patient was washing.

The patient was a large woman. Five weeks before the operation she was washing a window, and on making a sudden effort to reach the top of it felt a violent pain in the right kidney, became faint, and vomited. Hematuria of moderate degree was seen at the second passage of urine after the accident, and the urine was noted as being rather red for the next two days. The pain lessened and vomiting ceased after a few hours, and faintness passed off. After a few days she was up and

about again, but did not resume her work again on account of a sense of discomfort and tenderness in the right renal region. Three weeks later this became more marked, and at the end of that week she was seen by Dr. Kelly, who then felt a tumor of moderate size, corresponding to the right kidney in contour and position. He sent her to the hospital, where she remained under observation for a week longer and was then transferred to the surgical service. The tumor during this — the fourth — week had increased in size, and now extended from the free border of the ribs to below the margin of the pelvis, filling the right side of the loin and part of the abdomen. It was tender to touch. On the day of her admission to the hospital the temperature rose to 101°F, and pus appeared for the first time in the urine. Operation, June 2, 1903.

The kidney was exposed in the loin, and found to be greatly distended by pus, and sacculated. The contents evacuated through a trocar, and the interior of the organ irrigated. The kidney was firmly adherent to the overlying peritoneum and the under surface of diaphragm, and less so to the lumbar fascia. The adhesions were separated from the fibrous capsule except in front, where the capsule was peeled off and left attached to the peritoneum.

The ureter was adherent, for the first four inches of its length, to the lower pole of the kidney, was greatly thickened, and, although not occluded permanently, had probably been closed at intervals at the point corresponding to its adhesion to the lower end of the kidney.

The pedicle, which was very short, was tied in two parts, the vessels in one, the ureter in the other.

The outer wound was partly closed, leaving free space for drainage by iodoform wicks.

The appearance of the kidney is shown in Fig. 6. There was a partially healed laceration extending transversely across the outer convex border, to midway on both the front and back surfaces of the kidney. At each end of this wound was an opening large enough to admit the tip of the little finger.

The part of the wound on the anterior surface was more firmly closed than that of the posterior, but both were sufficiently tight to have prevented any escape of the kidney contents into the perirenal tissue. The appearance of the kidney suggested that the organ had been hydronephrotic previous to the accident. There was, however, upon microscopic examination no disease other than hydronephrosis found to exist. The patient made a slow but good recovery.

TREATMENT.

The most noticeable features in the analysis of all the clinical data are the *high* death-rate attending the expectant treatment, as compared with any form of operative intervention, and the conspicuously *low* mortality of the series of cases treated by operations other than nephrectomy.

The expectant treatment shows at its worst in the cases with intra-peritoneal complications. It cannot, of course, be positively asserted that some of these having abdominal symptoms, treated expectantly and recovering, may not have had an intra-peritoneal injury, but the presumption in that case is, that if it did exist at all, it must have been of moderate character, and we are probably warranted

in saying that no patient who has had such complicating injury of a serious nature has recovered under expectant treatment.

The low mortality in the series treated by operations other than nephrectomy, compared with that attending the latter, is obviously due to the fact that the operation which was selected instead of nephrectomy — lumbar incision and suture, tamponing and drainage, or nephrotomy, etc. — was chosen for the reason that the kidney was not found to be so seriously damaged as to require nephrectomy. In other words, the cases were of a less grave nature.

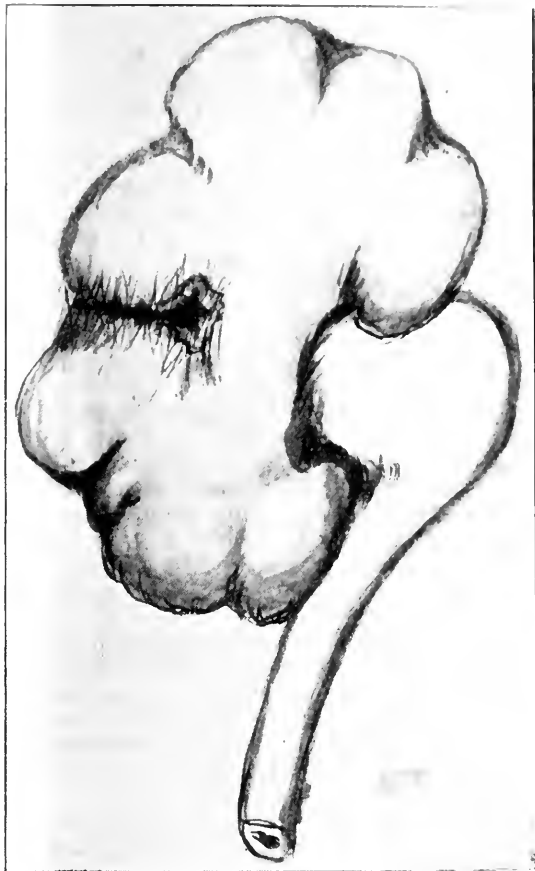


FIG. 6. — Case 6 (author's). Pyonephrosis following subparietal laceration of the kidney produced by muscular effort.

The reason for the even greater difference in the death-rate of this class as compared with that of those treated expectantly is equally clear. It is furnished by the fact that the operations other than nephrectomy save almost all such patients as those who die from hemorrhage or suppuration under expectant treatment.

Thus, these operations which were done for one or the other of the two conditions — suppuration or hemorrhage — in 85 out of 99 uncomplicated cases were attended by five deaths only, whereas 66 died from the same causes out of 81 fatal cases, in the total 273 treated expectantly, 5% of the whole number of cases in the former, as contrasted with 24% in the latter.

Hemorrhage is the one factor which most frequently demands prompt operative treatment.

Ordinary surgical common sense leaves no room for doubt as to the necessity for operative intervention in the presence of the signs of *progressive* hemorrhage. The only question that can arise is from the difficulty, soon after the accident, of discriminating between shock and hemorrhage. The characteristic feature ordinarily of the former is that it is at its height immediately or soon after the receipt of the injury, while that of the latter, if the bleeding continues, is the increasing seriousness of the symptoms.

There have been a few patients who showed remarkable absence of shock after receiving very grave renal injuries, some of them having associated wounds of intraperitoneal organs as well as that of the kidney, and who have died later, collapse coming on suddenly. In all of these in this series hemorrhage has been the cause of death and not "delayed" shock.

When there is intraperitoneal hemorrhage, which will always announce itself, if at all abundant, by the presence of free fluid in the peritoneal cavity, no reasonable ground for hesitation can exist. Operation is the patient's sole and only chance of being saved.

In the latter class of cases, there is, in the author's belief, moreover, no question as to the nature of the operation to be performed. *Laparotomy* will be the only avenue of approach by which all the sources of the bleeding can be under command. It is of no importance whether the intraperitoneal hemorrhage is from the kidney through a rent in the peritoneum or from an intraperitoneal organ. Moreover, no one can determine with any certainty beforehand which of the two it is. Loss of time, that may prove fatal, may result from going through the loin instead of the abdomen as the first step, in such circumstances.

Remembering what was said as to the injury of an intraperitoneal organ being on the same side as that of the kidney which is involved, the abdominal incision should be made in the linea semilunaris of that side. It may be enlarged, if necessary, best by a transverse cut outward to the edge of the quadratus lumborum.

The first thing to be done, after opening the abdomen, is to find the source of the hemorrhage.

If it is the left side that is concerned, in all probability the spleen is furnishing the greater part of the blood.

Do not stop at this time to clean the abdomen of blood, but *feel* for a wound in the spleen.

If none is found, the kidney is the next most likely source of the bleeding. The peritoneum overlying it should therefore be examined. If hemorrhage is found to be proceeding through a rent in the peritoneum, enlarge it with the fingers, and seize the renal vessels. The patient may *now* be turned upon the opposite side, the abdomen cleared of blood, and the field of operation exposed to view.

According to the character and nature of the damage to the kidney, one or another of a number of operations will be done.

As a fundamental principle, save the kidney or as much of it as possible.

If the blood vessels, pelvis and ureter are intact, and the injury to the kidney is not too great,

tampon, or suture, the renal wound and drain through a lumbar incision. If one end only of the organ is damaged, do a partial nephrectomy, closing the resulting wound of the kidney by suture. If the hemorrhage is intrarenal, nephrotomy should be done, tamponing the renal wound and removing the packing after twenty-four hours or so, or closing it by suture, if assured that complete hemostasis can be secured by this means. Supply drainage through the loin by a supplementary incision, and close the abdominal wound.

If the damage to the kidney is too great to allow of these measures, or if the renal blood vessels, pelvis or ureter are injured,—unless in the case of the two latter the wound is capable of being successfully sutured,—nephrectomy should be done.

Do not try to close the wound in the overlying peritoneum if the patient's condition is—as it probably will be in most cases—critical.

Make a lumbar incision for drainage in connection with the nephrectomy, as was advised with regard to the other operations.

If it is the *spleen* from which the hemorrhage is proceeding, and unless the injury to that organ is found to be of slight extent, splenectomy gives the patient his best chance, trusting to pressure by tampon to arrest whatever part of the hemorrhage proceeds from the kidney, rather than to undertake a nephrectomy in connection with the other operation. The spleen does not admit of suture or tamponing that can be relied upon. If one must choose whether the spleen or the kidney shall be removed, let it be the spleen. Splenectomy and nephrectomy were performed simultaneously in two cases only; both were fatal. Splenectomy alone, leaving the kidney undisturbed, was done successfully in two others.

If it is the right side, and the *liver* is involved, tampon or suture are appropriate, and have been successfully applied, either in connection with nephrectomy or other operations upon the kidney, performed at the same time or not, according to circumstances.

In the rarer cases in which other structures than the spleen or liver are associated with the injury to the kidney, the general principles which are applicable to such conditions ordinarily should be carried out. The intestine, for example, will be resected, or sutured bleeding vessels of the mesentery or omentum ligatured, etc., according to circumstances.

UNCOMPLICATED CASES.

It is more difficult sometimes to decide what is best to be done in uncomplicated cases. Such, for instance, as do *not* present evidence of progressive hemorrhage, or that suppuration has occurred, but in which either one or the other may be looked for.

How long is it safe to allow hematuria to continue? How long may a tumor in the loin be left to itself if it has not begun to subside? What are the chances of infection, and how can we know in which cases it is likely to occur or the reverse?

The study that we have made supplies answers in some measure to these questions.

With regard to hematuria. In spite of the fact that, *per se*, it rarely causes death, this in itself cannot be relied upon as a guide to treatment.

This much, however, may be asserted with some confidence, namely, that the great majority of cases in which hematuria is either of short duration even though very profuse—not more than thirty-six hours—or of much longer duration, if the quantity of blood is slight, when it is not secondary, and finally, when there are no signs of progressive hemorrhage shown by the patient, may—so far as any danger from hematuria alone is concerned—be treated expectantly. When the contrary of the above conditions exists, operative treatment should not be delayed.

The conditions presented by the 8 cases dying from hematuria were as follows: It was reported as being secondary in 7. In 3 death occurred under expectant treatment, and in 4 after operation. There were 16 cases of secondary hematuria altogether, 5 of which recovered under expectant and 4 under operative treatment. The remaining fatal case of the 8 died of exhaustion produced by three weeks' continuous hematuria, in which the amount of blood, though considerable, was not excessive at any one time.

Conditions in connection with hematuria which call for prompt surgical treatment are: (1) The sudden disappearance of blood from the urine, if accompanied by pain, and the appearance, or if already present an increase in size, of a tumor in the loin. These show that the pelvis or ureter has become blocked by blood clot or debris, and demand prompt surgical treatment. (2) Retention of urine due to the presence of blood clots in the bladder. (3) Profuse hematuria continuing longer than thirty-six hours. (4) Prolonged hematuria, unless the blood be in small quantity, and (5) secondary hematuria. (6) Signs of progressive hemorrhage, which under all conditions calls for surgical intervention.

In *perirenal hemorrhage* surgical intervention is called for by the following indications: Rapid increase in the size of the tumor, or gradual increase if it be prolonged.

The nature of the operation will be determined in the same manner as was described when speaking with regard to this point in connection with the conditions of the kidney found when performing the abdominal operation in cases complicated by intraperitoneal injuries.

It is as clear, in the writer's opinion, that all *uncomplicated* cases should be approached by the lumbar incision primarily, as it is that laparotomy should be the first step in those having intraperitoneal complications.

The question whether one should interfere surgically in *anticipation* of the actual occurrence of infection, and in order to avert it, is one of the most interesting aspects of the subject so far as treatment is concerned, and is certainly open to discussion.

On the one hand we have the fact that of the uncomplicated cases, in which the patients escape the dangers of primary hemorrhage,—which class alone is meant to be considered in this connection,—far the larger part recover without infection having occurred under expectant treatment. On the other we know that suppuration does take place in a considerable number, and when it does it is a serious matter. Also there is no way of determin-

ing beforehand whether it will occur at all, or at what time it is likely to do so. Furthermore we know that every lacerated kidney is liable to infection, and that the longer perirenal extravasation or hydronephrosis exist, the greater is the liability to it.

Surgical intervention seems to the writer to be indicated, for the purpose of guarding against, and in anticipation of, the actual occurrence of infection in the following circumstances:

(1) When there is a tumor in the loin—whether it be perirenal extravasation, hydronephrosis, or hematomphrosis—which does not begin to subside within a reasonable time, let us say a fortnight at most.

(2) When the bladder becomes or already is infected, or is especially liable to be so because of the necessity of frequent catheterization, as, for example, with patients having prostatic hypertrophy, or when there is retention due to blood clots.

(3) When there is reason to suspect the previous existence of such diseases of the kidney as tumors, calculus, pyelitis or pyelonephritis.

In the absence of the above conditions, it seems wiser to take the chances of infection, and treat the patient expectantly so long as it does not occur, reserving surgical procedures until it announces itself, and then operating promptly.

SUTURE OF THE RENAL WOUND.

The writer has been able to find but seven cases of subparietal injury in the literature of the subject, in which suture of the renal wound has been done for laceration of the kidney, with his own included eight altogether. These are as follows: Tuffier, in 2 cases; Peyrant, 1 case; Bidault, 1 case; Philippe-Liege, 1 case; Delbet, 1 case; Brewer, 1 case; Watson, 1 case. In six of the above cases the procedure was most successful, the wounds uniting quickly, and convalescence being materially shortened.

The two cases in which suture was not successful were those of Delbet and of the author. In the former the patient made a good operative recovery, but secondary nephrectomy some time later resulted fatally. In the author's case, fistula, as described in the report of Case 5, resulted.

One notable feature is mentioned by all of the above-named surgeons; namely, that suture of the lacerated wound produced immediate and entire hemostasis.

In view of these facts, and the well-known readiness with which wounds of the kidney—traumatic, if not too extensive, as well as incised—heal, it would seem worth while to apply suture in such conditions as warrant it in these cases of subparietal injury, as well as in exploratory renal incisions, for the closure of which it is frequently employed. Some writers have entirely condemned it, but most of them in referring to it preface their remarks by saying that they have never used it personally, having found tampon and drainage entirely satisfactory to them.

A COMPARISON BETWEEN LUMBAR AND ABDOMINAL NEPHRECTOMY.

Lumbar nephrectomy in subparietal injuries has

been credited by most writers with a much smaller mortality than the abdominal operation. In no previous publication of this class of cases has there been a sufficient number of nephrectomies to warrant this conclusion. The inference has rested moreover in some instances upon the face value of the cases treated by the two methods respectively, without regard to their character; that is to say, the comparison has been made between the total number of each, including both the uncomplicated and complicated cases as well. Inasmuch as there are more of the latter in which abdominal nephrectomy has been the operation done, than of those in which the lumbar method was employed, this is manifestly unjust to the former operation.

Although the number of nephrectomies in the series collected by the writer is nearly four times as many as that of Delbet, — 160 in the former, 44 in the latter,—it also is entirely inadequate for the purpose of drawing final conclusions. It does serve however to show the fallacy so frequently indulged by medical authors; namely, that of relying upon too small a number of data for their conclusions, since even upon the face value of the figures in this much larger number of cases, the verdict in favor of the lumbar operation is contradicted in a large measure; there being a difference of but 4½% in the death-rate in favor of the lumbar operation as compared with the abdominal, that of the former being 27% and of the latter 31% plus.

If, however, the complicated cases are separated from the uncomplicated in both the lumbar and abdominal operations, and compared respectively, the following facts appear:

There are but 11 complicated cases out of the 81 lumbar operations, and 7, or 63% of them, died, whereas there were 33 complicated cases out of the total number of 44 abdominal operations, and of these but 12, or 36%, died.

In other words, there were three times as many complicated cases treated by the abdominal operation as by the lumbar, and only about half as large a percentage of the former died as did of the latter.

The showing of the results of nephrectomies for various renal conditions, presented in Schmieden's article for a much larger number of cases, is very instructive in certain respects, as well as very hopeful, the latter because of the remarkable decline in the death-rate attending both the lumbar and abdominal methods during the last thirty years, as demonstrated by a comparison of them in three successive periods of ten years each, 1870-1900, inclusive. This is as follows:

The total number of nephrectomies was 1,118, collected from various sources.

This number is classified as follows:

Total number of cases, 1,118; deaths, 301; mortality, 26.9%.

| | Recoveries. | | Deaths. | |
|----------------|-------------|----------|---------|----------|
| 1st ten years, | 40 | or 49.4% | 41 | or 50.6% |
| 2d " " | 319 | " 66% | 164 | " 34.0% |
| 3d " " | 458 | " 82.6% | 96 | " 17.4% |

LUMBAR OPERATIONS.

| | Recoveries. | Deaths. | |
|-------------------|-------------|-----------------------|-------|
| 1st ten years, | 23 | 18, or mort. p. c. of | 43.9% |
| 2d " " | 231 | 85, " " | 26.9% |
| 3d " " | 303 | 62, " " | 17.0% |
| Total number 722. | 557 | 165 | 22.9% |

ABDOMINAL OPERATIONS.

| | Recoveries. | Deaths. | |
|-------------------|-------------|-----------------------|-------|
| 1st ten years, | 18 | 22, or mort. p. c. of | 55.0% |
| 2d " " | 83 | 77, " " | 48.1% |
| 3d " " | 133 | 32, " " | 19.4% |
| Total number 365. | 234 | 131 | 35.6% |

The above figures show the following details: First, the remarkable diminution of the death-rate for both methods, during the thirty years,—in the lumbar operation of 26.9%, and in the abdominal of 35.6%. Next, the steady gain in the successive periods in the recovery percentage of the abdominal operation, as compared with the lumbar, the difference in favor of the latter in the first ten years being 11.1% and in the last ten years but 2.4%.

ADDENDA.

It is impossible to give a full bibliographical list of the somewhat more than 600 writers whose works or reports of cases have been studied in detail by the author while preparing this paper, but in order to save labor for those who may wish to consult the literature of the subject a list of the more important series of cases and writings published up to the present time is herewith appended alphabetically. In this list are included all but 103 cases of the total 660 comprising the whole series collected by the author, these 103 being made up of the 25 hitherto unpublished cases, and 78 individually reported ones found by the author in the literature.

- Albarran.
 Bloch, 1873. 40 cases.
 Cerou. 8 cases of anuria. Thesis. (Quoted by Morris.)
 Davis, 1902. 23 cases. (Annals of Surgery, Philadelphia, vol. xxxvi, No. 3, p. 346.)
 Dodge, 1902. 9 cases. (Annals of Surgery, Philadelphia, vol. xxxvi, p. 897-920.)
 Delbet, 1901. 320 cases. (Ann. des Mal. des Org. genit.-urin., vol. xix, p. 669-805.)
 Dolgoff, 1900. (N. Y. Med. Journ., lxxii, p. 871.) Experiments.
 Edler, 1887. 152 cases.
 Goldstein, 1902. 20 cases. (Deutsch. Zeitschr. f. Chir., Leipzig, vol. lxx, p. 87-98.)
 Guterbrock, 1895. 35 cases. (Autopsies, with relation to frequency. See Morris.)
 Hohlbeck, 1898. 14 cases. (St. Peters. Med. Woch., N. F., xv, p. 449-452.)
 Grawitz, 1888. (Arch. f. klin. Chir., Bd. xxxviii, p. 436.)
 Johnson, 1898. 7 cases. (Annals of Surgery, Philadelphia, vol. xxxvii, p. 774.)
 Keen, 1896. 118 cases. (Annals of Surgery, Philadelphia, vol. xxiv, p. 138-181.)
 Küster, 1896. 306 cases. (Deutsche Chir. Lieferung, 52b, S. 196, 1896.) 1895. (The mechanism of the injury. Arch. f. klin. Chir., Berlin, vol. 1, p. 676-686.)
 Maas, 1878. 71 cases. (Deut. Zeit. f. Chir., Bd. x, p. 126.)
 Morris, 1901. (Surgical diseases of the kidney and ureter.)
 Obalinski, 1891. (Samml. klin. Vorträge, [Volkmann's], Leipzig, N. F. 16.)
 Petroff, 1901. (Thesis, Lyons, A. Storey & Co., Publishers. On intraperitoneal ruptures of the kidney.)
 Quervain, 1901-1902. On intraperitoneal ruptures. (Deutsche Zeitschr. f. Chir., vol. 62, p. 58.)
 Schmieden, 1901-1902. 36 cases. (Deutsche Zeitschr. f. Chir., vol. 62, p. 205.)
 St. Thomas Hosp. Rep. 27 cases.
 Tullier, 1899. 138 cases. (Duplay et Reclus, Surgery.)
 Wagner, 1900. 27 cases. (Schmidt's Jahrb., Leipzig, vol. cclxvi, p. 90.)
 Waldvogel, 1902. 20 cases. (Deutsche Zeitschr. f. Chir., Leipzig, lxxiv, p. 39.)
 Wallis, F. C., 1897. 14 cases. (Trans. Clin. Soc., London, vol. xxx, p. 38.)
 Wyss, 1901-1902. 14 cases. (Beitr. z. klin. Chir., Tübingen. xxxii, p. 242.)

Delbet's article in 1901 contains a summary of 320 cases; includes all of those published by Keen, Maas, Grawitz, Bloch, Obalinski, Wallis; also, almost all those of Küster and Tullier, and of the series of Wagner's previous to that included in this article the theses of Foy, Moser, Ravel, Martin, Poireault, Gargam, Sladowski, Pean, Pfeiffer and Bidault.

In my own compilation I have included such cases prior to 1901 as were not included by Delbet in his series, and all that were accessible to me published between Delbet's article, 1901, to the present time, June, 1903, to the number of 340, which, added to those of Delbet, makes a total of 660, comprising the whole series.

Clinical Department.

CLINICAL MEETING OF THE STAFF OF THE MASSACHUSETTS GENERAL HOSPITAL, FEB. 20, 1903.

INSULAR SCLEROSIS; CHARCOT JOINTS.

DR. J. J. PUTNAM showed patients illustrating these conditions. The two patients whom I am about to demonstrate, illustrate some of the difficulties in the diagnosis of insular sclerosis. This is a matter which has been attracting a good deal of attention of late years and about which neurologists have by no means come to a definite conclusion. A paper published recently by a German observer gives it as the author's opinion that there are more than twenty different diseases with which this one might be more or less easily confounded.

This difficulty is due, of course, in great measure to the fact that the arrangement of the areas of disease seems to be entirely independent of any special distribution of nerve tracts in the central nervous system, and also independent of vascular areas; furthermore, the nerve elements themselves within the limits of the morbid change are damaged but not destroyed, and on this account we are liable to get clinical pictures which suggest disorders of function rather than actual loss of function of the parts disturbed.

Not only is this disease difficult of diagnosis, but the frequency of its occurrence seems to vary according to locality, although of course it may be that the latter fact is only apparent and is in reality dependent upon the former. In our clinic we have hitherto seen only a very few cases, whereas in Edinburgh vastly greater numbers are reported (by Dr. Bramwell).

At the present moment three patients are in attendance on the clinic who show the signs of the disorder in a fairly typical form, and yet even in these cases the diagnosis has to be made by putting all the evidence together rather than by the presence in a pathognomonic form of the various characteristic signs, of which the scanning speech, the intention tremor and the nystagmus are among the most striking.

The first patient to whom I call your attention has a tremor, which on the whole increases in propor-

tion to his muscular efforts, and which is present in slight degree even when the patient is apparently at rest, as so often happens. This patient shows no scanning speech and no nystagmus, but on the other hand he has a well-marked atrophy of his left optic nerve and his enunciation is slightly drawing in character. His memory is also poor and his hearing on one side for air and bone conduction is markedly affected. Most of these symptoms date back only for two or three years, but he says that when he was a young man he and his friends used sometimes to take turns in shaving each other, but they were usually unwilling to have him act as barber because his hand used to shake.

The second patient, a young man of a little more than twenty, has a tremor which could hardly be called "intentional" by any stretch of definition. It is really a fine oscillation hardly distinguishable from that which is due to toxic conditions, or that which occurs at a constitutional neurosis. His speech is perhaps rather slow and a little dragging, but not characteristic. On the other hand, he has a well-marked nystagmus, noticeable even when the eyes are directed forward.

Finally, I will pass around some striking sections made by Dr. E. W. Taylor and Dr. G. A. Waterman, from the spinal cords of two other patients. These are interesting partly because one of these postmortems, which was done some years ago, was among the first made in this country, a fact which seems to bear out my statement that the disease is comparatively rare among us. The diagnosis in both of these cases was a matter of doubt. In one of them, although it was considered as not improbable that this disease was present, it was also believed that the case might be one of glioma of the pons. The other patient exhibited in the course of her illness a great variety of morbid signs and symptoms, quite sufficient, as I now think, to have established the diagnosis. Nevertheless, for some years before her death she was in a condition of well-marked spastic paralysis, which confined her to her bed and chair, and threw all other symptoms into the shade. This case is interesting from another point of view. It has, namely, been recognized that one of the diseases for which insular sclerosis may be mistaken is hysteria, and that diagnosis suggested itself several times to persons who examined this patient during the early part of her illness. At one period, when she was so much paralyzed and her muscles so rigid that she was ordinarily unable to walk alone, she several times walked across the floor in a somnambulistic condition, to the occurrence of which she was subject. The truth is that hysterical manifestations not infrequently are superadded to the other symptoms in this affection, apparently in consequence of the damage to the nerve elements of the brain and pons, to which I have above alluded.

The other two patients are affected with tabes, and exhibit the so-called Charcot's joint in its most typical form. (Radiographs illustrating the conditions present were here shown.) In one case it is the knee that is affected, in the other the hip. In the latter it is evident from the physical examination that either the head of the femur is entirely out of joint or else that it is lacking altogether. In fact, the radiograph shows the latter to be the case.

DR. ARTHUR K. STONE first showed

TWO CASES OF ANEURISM.

CASE I. *Aneurism of the aorta* — (by permission of Dr. Fitz).

The patient is a Scotchman, age sixty-two, and a carpet-layer by occupation. He denies all venereal history, and there is nothing in his past history which bears upon the present condition. Hoarseness was noticed first about a year ago. This came on suddenly and later let up for a time, only to return again. For the past three months there has been marked hoarseness and persistent coughing, rasping in character. A few weeks ago there was some pain on swallowing.

Patient is very thin; chest appeared generally resonant on percussion, and auscultation showed diffuse dry râles, and heart area and sounds practically normal. Examination of the larynx by Dr. Cobb showed a paralysis of the left vocal cord. Re-examination in the light of this finding showed the apex in fifth interspace, one-half inch within the nipple line or three and one-half inches from the mid-sternal line. The right border was to be made out three fourths of an inch to the right of the median line. Sounds regular and normal, excepting the second aortic, which was increased.

There was no pulsation in the neck; there was no trachial tug. The pulse at the wrists was very nearly equal. Later it was decided that the left was weaker. Blood pressure taken by Dr. R. C. Cabot showed that the pressure in the left arm was slightly greater than in the right. Both chests hyper-resonant, excepting directly over the sternum at level of second rib there was a small dull area. Respiration behind high pitched, and over an area about three inches in diameter the breathing was bronchial in character. Heavy percussion over the upper portion of the hyper-resonant left chest showed some dullness above and below the second rib to the left of the sternum, but the bounds were indefinite.

The impression given by the examination even after knowing that there was paralysis of the left vocal cord was that there was probably a slight dilatation of the arch of the aorta, which had taken place just at the point where it had involved the recurrent laryngeal nerve. The fluoroscopic examination of the chest showed a round, pulsating shadow. Extending from the first rib to the fourth rib at a point an inch above the nipple, it extends three inches to the left from the mid-sternal line, an aneurism with a shadow nearly five inches in diameter.

Without the aid of the x-rays no one would have been able to have given a correct estimation of the size of the aneurism present.

(X-ray plate and the man were shown, and percussion attempted by many of the physicians present.)

CASE II. *Aneurism of the sub-clavian and embolus of the brachial artery.*

The patient was a powerful man of thirty-two years of age, a freight handler by occupation. He denied all venereal disease and excess of alcohol. He had always considered himself well till about a

week before, when, during breakfast, his right hand suddenly became numb, and he found that he could not grasp as well as with his other hand. Later he noticed that his right hand and forearm were colder than the left. He was referred to the medical room from the nerve room. There was a small fusiform aneurism in the right subclavian artery, with pulsation to be seen and felt above the clavicle and outside of the insertion of the sterno-cleido-mastoid muscle; the size is, roughly, about one inch by two inches. No pulse was to be felt in the right wrist, nor anywhere in the forearm until the elbow was passed; here the beats were well marked once more. The right hand and forearm felt colder to the touch than the left, and the surface thermometer registered 83° on the right and 88° on the left. Sensation in the right hand was normal. Examination of the other organs of the body showed nothing abnormal. Evidently there had been an embolus set free from the aneurism, which had lodged in the brachial artery at its branching into the radial and ulnar arteries. The advice of the surgeons as to the desirability of operation was asked.

The two cases next presented by Dr. Stone demonstrated the well-known fact that specific disease frequently simulates new growth, and that in apparently most unfavorable conditions potassic iodide may yield unexpected results.

SPECIFIC DISEASE SIMULATING NEW GROWTH.

CASE I. *Multiple Tumors at the Elbow and on the Sternum.*

The patient was a slaughter-house workman twenty-eight years old. He had had a sore on his penis seven years before, which was not followed by any secondary manifestations.

He had been well till about one year ago, when he began to have pain and ache across his shoulders. Movements of the arms became painful. A swelling appeared at the inner side of the left elbow which increased in size and gradually became a purple red color.

Examination showed the internal organs apparently normal in condition. The patient, however, looked wretched and sick, and had a temperature of 101° F. There was a dark purple swelling over the inner condyle of the left humerus about two inches in length and an inch in breadth. The swelling was tender, there was some limitation of motion of the elbow, and apparently the swelling was attached to the bone. (No x-ray was taken, as the patient seemed so sick that he was sent at once to the house.) Over the sternum there were three slightly-raised semi-fluctuant reddish nodules of about one-half inch in diameter, and the insertion of the sterno-cleido-mastoid was thickened. All of these nodules were tender. There was also tenderness over both acromial processes, particularly the left. The general appearance of the man, and the position of the tumor, made it seem probable that the process was that of a sarcoma of the arm with secondary deposits in the sternum. The fact that there had been a chance of the introduction of syphilis seven years before, although unsupported

by any history of secondary manifestations, indicated anti-specific treatment. It chanced that the hospital was full when he applied for admission, and when the patient returned for entrance at the end of a week the improvement that he had made under specific treatment made it unnecessary that he should enter the wards. At the end of two weeks there was no trace of the tumors on the sternum, the pains had all disappeared, and he was able soon afterwards to go back to work. He is still upon potassic iodide, and the tumor over the condyle can be made out with difficulty. The skin over the tumor has returned to its normal color.

CASE II. *Enlarged nodular liver.*

The patient is an Italian, forty years of age. Little could be made out of his history except that he had "rheumatism" fifteen years ago. No venereal history was obtained and no scars found upon his penis. He has a family of seven very healthy children. He has used both alcohol and tobacco in great abundance. About six months ago there was some blood in the stools. This was probably bright blood, as I do not believe that tarry stools were meant or described. Two months ago he noticed a lump in the upper part of the abdomen, with moderate general pain. For the previous two weeks there had been blood in the stools, great general weakness, though the appetite and digestion were both good. There was and had been no jaundice. He looked sick and very dull and heavy.

Examination showed slight arteriosclerosis. The lungs were normal. The heart, though not enlarged, had a soft systolic murmur at the apex transmitted to the axilla and a slight accentuation of the second pulmonic sound. The whole upper portion of the abdomen between the arch of the ribs looked full, and was resistant and boardlike on palpation. The liver dullness extended from the sixth space on the right to 4 cm. below the costal border and continuous across to the left costal border. The edge, however, was not to be palpated. The spleen was just to be felt below the costal border. Below the zyphoid and just to the right of the median line, and apparently in the mass of the enlarged liver, were two nodules, the larger 1.5 cm. in diameter, which descended on respiration together with the mass beneath. The urine was normal and a stained specimen of blood showed only a slight leucocytosis. The appearance of the man, the enlarged and nodular liver in spite of the absence of jaundice and stomatic disturbance, made carcinoma seem the probable eventual diagnosis. Anti-specific treatment, however, made him return within a week, smiling, and feeling much better. The nodules were less easily palpated. A week later, and the nodules were not to be made out. The patient was feeling well, there was no pain and he felt able to return to work. Examination still shows a much enlarged liver, though the boardlike condition of the upper abdomen has partly disappeared. Certainly there has been a most marked amelioration of the symptoms in the few weeks' treatment. My experience has been that when new growths yield to so-called anti-specific treatment they do so within a short time and to moderate doses of the iodide.

(To be continued.)

Medical Progress.

REPORT ON DERMATOLOGY.

JOHN T. BOWEN, M.D., BOSTON.

THE RELATIONSHIP OF ERYTHEMA MULTIFORME AND LUPUS ERYTHEMATOSUS TO GENERAL TOXEMIA.

GALLOWAY and McLeod¹ report several interesting cases of this association. The first case was that of a woman of twenty-one, who entered the hospital suffering from a severe dermatitis of the face, hands and feet, accompanied by some fever. There were symmetrical red patches on the cheeks, which met across the nose and extended down to the chin. There were some red patches also behind the ears. There was considerable exudation from these areas, with crusts and desquamation. There were also erythematous areas on the backs of the hands and feet. There was some tendency to ulceration about the nails. Small erythematous lesions were also present on the forearms. On the feet and ankles the eruption was multiform, beginning with erythematous patches which tended to form vesicles or bullæ, and finally to crust or ulcerate. The gums and mucous membrane of the mouth were also affected. The urine was small in amount, of specific gravity 1.021; alkaline reaction; urea, 3 %; albumen 3 %; deposit of urates and epithelial, hyaline, and finely granular casts. The patient remained in the hospital until her death in a little less than a month, during which time she continued to have considerable fever of a remittent type. The blood was examined several times with negative results. At the autopsy it was found that the patient had evidently died from nephritis. The microscopical examination of a piece of skin excised from the right hand showed in the corium the usual signs of an acute inflammation of the skin. The epidermis showed definite changes. The Malpighian layer was edematous throughout; and in one or two places there was vesicular formation. There was also a reticulation in places. There was also a condition of parakeratosis present. The writers looked upon this as an exceptionally severe erythema multiforme, the result of toxemia produced by the disease. They had some difficulty in excluding an acute generalized lupus erythematosus.

The second case was considered without doubt an acute form of lupus erythematosus, with a close resemblance to erythema multiforme. The patient was a woman of thirty-six, who presented patches of erythema on the face, hands and arms. They were specially pronounced on the backs of the hands, and there were also lesions on the fingers. There was slight superficial atrophy of the skin in areas previously occupied by the disease. She had a continuous rise of temperature. After a time the skin lesions improved greatly, many of the areas disappearing entirely. The improvement continued for some months, when she was again admitted to the hospital in a condition somewhat similar to that previously described. It was discovered then that she was addicted to frequent fits of alcoholism, and developed a cirrhosis of the liver. She left the hospital, but died a few weeks later.

In comparing the two cases, their striking clinical

¹ Brit. Journ. of Dermatol., March, 1903.

cal resemblance is a noteworthy feature. In both cases there was a general toxemia of intense grade. In the one case a virulent toxin circulating in the blood caused an acute inflammatory disturbance in the skin; while in the other case alcohol is looked upon as the toxic element, which gave rise to a more chronic form of dermatitis.

THE URINARY CONSTITUENTS IN PSORIASIS.

Von Zumbusch² examined twenty-one cases with reference to the excretion of nitrogenous constituents and of uric acid. He notes that a number of observers, especially in England, have considered that there is a connection between psoriasis and uric acid diathesis. In fact psoriasis has been by some called gout of the skin, and the urinary analysis has been brought forward as a proof of this.

Others have declared that there was a relationship between psoriasis and diabetes, and numerous observers have described the urea and uric acid as increased in this disease. It is to be noted, however, that exactly opposite statements are made by other observers. The twenty-one cases examined by Von Zumbusch were all males, and were taken at varying stages of the affection. No internal medicine had been given before the investigation in any case. The cases are related quite fully, and the table of the results of the examination is appended. The result of this examination was a completely negative one, that is to say, it was found that the total nitrogenous constituents and the uric acid had not varied at all in amount from what we find in health. Furthermore, the quantity and specific gravity varied in no way from the normal. No relationship was found to exist between the severity of the disease and the contents of the urine.

MULTIPLE SPONTANEOUS KELOID.³

The conclusions of this article, which consists of a careful survey of the literature and report of a typical case, are as follows:

(1) By the name "keloid" is understood a special affection of the skin which, in many respects, resembles a neoplasm, and which, for the present at least, is to be included among the fibromata.

(2) Only the so-called primary and secondary keloids belong to the keloid group. The hypertrophied scar must be sharply separated from them.

(3) Both the clinical and the histological appearances prove that the division of keloids into primary and secondary has no justification, as both of these kinds of keloid are developed according to the same type of scar process. Nevertheless, such a division may be retained on clinical grounds.

(4) The histological changes in keloid are produced by an increased growth of connective tissue, with simultaneous disappearance of the elastic tissue along the course of the blood vessels.

(5) The histological differences between primary and secondary keloids, which were formerly accepted (especially the retention of the papillary layer in true and its disappearance in false), can no longer be considered valid.

(6) The etiology must be regarded as obscure.

(7) As chief cause of the development of keloid, a particular personal, family or race disposition must be assumed whereby the skin reacts to often slight irritation by the formation of keloid. In this way the tendency of keloids to recurrence is explained.

(8) The vascular system unquestionably plays a prominent part in the development of keloid.

(9) Keloid is neither a scar nor a simple hyperplasia of the connective tissue, and differs also in its formation from the infectious granuloma and fibromata, although its exact classification is at the present moment impossible.

(10) The cause of the spontaneous cessation of the growth of keloids is unknown.

(11) The prognosis of keloids is, in general, unfavorable.

(12) The treatment of keloids demands much time and is, on the whole, a rather thankless task.

A CASE OF SYSTEMIC BLASTOMYCOSIS.

Ormsby and Miller⁴ report a case of this disease from the laboratory of Drs. Hyde and Montgomery in Chicago. The patient was a Swede, fifty-six years old, a machinist. He had never been very strong, and for years had lived over a stable, where the odor was at times almost unbearable. The first evidence of the illness which ended fatally was in the lungs, and made its appearance about eight months before his death. Two months later a lesion appeared on the skin of the outer part of the right thigh, which ulcerated and discharged. A month later another lesion developed on the right side of the nose. At this time he was pale, emaciated and anemic. There were also at this time several subcutaneous nodules; the temperature varied from 100° in the morning to 103° in the evening. Physical examination of the lungs showed bronchial breathing and other signs of pulmonary disease. From the subcutaneous abscesses pure cultures of blastomycetes were obtained before death, and from a considerable number of tissues and internal organs postmortem. Only one of the lesions assumed the usual characteristics of this disease; but this fact was owing to the rapidity of the process, in all probability. The lesions continued to increase in number, and at the time of his death the body was practically covered with lesions, varying from small superficial crusted ones on the face to ulcers of a large size on the extremities. He was treated with Koch's new tuberculin without reaction. Postmortem examination showed the lesions completely filled with milium abscesses and tuberclelike nodules. The pleura were filled with nodules. The liver was extensively filled with milium abscesses and nodules. The kidney was also affected, but not so extensively. The spleen was extensively affected so that some parts of it were practically destroyed. The mesentery was filled with nodules. In all these organs blastomycetes were demonstrated, both by the microscope and by cultures, in many cases existing in the form of a practically pure culture. Repeated examinations of these various tissues for tubercle bacilli were negative. Especial attention was given to

² *Zeitschr. f. Heilkunde*, 1902.

³ *Tschlenow: Dermatol. Zeitschr.*, April, 1903.

⁴ *Journ. of Cutaneous Dis.*, March, 1903.

this point, as the symptoms would suggest tuberculosis of the lungs. Guinea pigs were inoculated with the tissue, but none developed tuberculosis. The microscopical examination of the skin lesions showed that the lower part of the corium had been invaded in some places; but most of the infiltration was confined to the subcutaneous tissue. This infiltration was made up of enormous numbers of the organisms, together with leucocytes, red blood cells, plasma cells, mast cells and giant cells. In many instances the organisms were seen in giant cells. Numerous budding forms were everywhere seen.

The writers conclude that although the early lung involvement and other symptoms, such as the laryngitis and the microscopic appearance of the organs, all suggested tuberculosis, the latter affection may be ruled out by the absence of the tubercle bacilli, culturally, microscopically and experimentally, by the negative tuberculin reaction, the absence of the usual microscopic structure, the failure to produce tuberculosis in animals, the large number and rapid evolution of the skin lesions and the abundance of blastomycetes found in each lesion.

BLASTOMYCOSIS IN ENGLAND.

Sequeira⁵ reports the first case of this affection in England, although he admits that his case differs from those described in America in many particulars, and that possibly the organism found may be of a different species.

The patient was a strong, healthy man of thirty-seven, who had never lived out of England. At one time he was employed at a brewery and had had a good deal to do with cattle. A little over a year previously he had noticed a small white spot, the size of a pin's head, just below the inner canthus of the left eye, which had increased and spread inwards. About five months after the first lesion appeared, a precisely similar one was noticed below the right eye, which had also progressed in the same manner until the lower lid was so much swollen that vision became difficult. Several other similar lesions appeared in the vicinity. A stained specimen of the discharge from one of the tumors showed the presence of yeastlike bodies. The patient was put upon iodide of potash in 5 and later in 10 gr. doses. There was little improvement until the drug had been increased to 105 gr. a day, when the lesions began to diminish rapidly. Ultimately the lesion under the left eye almost completely disappeared, while that under the right eye was less than half its original size. The patient was then lost track of.

Microscopically, there was found to be a great increase in the epidermal layer; the horny layer was thickened in places and contained numerous small abscesses; the deeper layers of the epidermis were thickened, and there was considerable down growth into the corium. In the corium there was a considerable infiltration of round cells; and in some of the sections there were giant cells. The yeastlike bodies were visible in the abscess cavities. The pus that was squeezed out from one of the growths showed pus cells, a few eosinophiles, a large number of cocci and yeastlike bodies. They were ovoid, with a well-defined margin and a double contour.

They were seen both singly and in pairs, and in some the formation of buds was well marked, and in some instances there was a short chain formation. Unfortunately the organisms could not be cultivated, which he regards as due to the fact that the lesions examined were already infected with cocci. The organism found in this case is much smaller than those found in the American cases. He bases his diagnosis of blastomycosis on the fact that the face and scalp alone were affected, that the lesions were multiple and fresh lesions appeared apparently by inoculation, that the edges were well defined, with but little infiltration, and that they soon became pustular. Furthermore, there were numerous minute abscesses which were discovered under the microscope, which contained budding, yeastlike organisms. The fact that the deeper layer of the epidermis extended downward into the corium and that the growths were much influenced by large doses of iodide of potash also tends to strengthen the diagnosis.

LIGHT TREATMENT IN LUPUS.

Morris⁶ begins with a résumé of the principles on which the Finsen method is based, namely, that light acts as a stimulant of organic life, which has been proved by experiments on the movements of animals; that this stimulating property has been shown to exist generally in the actinic or chemical rays of light; also that the chemical rays have the property of causing inflammation of the skin, as dermatitis from the sun and from electric lights has been proved to be caused by the actinic rays. It has also been proved that light has bactericidal properties, and that this increases in direct proportion to the degree of concentration of the rays. It has also been shown that light can penetrate the skin. With regard to lupus, Finsen's method has become a well-established method of treatment in most parts of Europe. In Finsen's latest statistics he claims 94% of successes and only 6% of failures. These statistics are more favorable than those from most other sources. Favorable results have also been reported in lupus erythematosus, alopecia areata, and in epithelioma.

Turning now to his own results, Morris asserts that while not so brilliant as those of Finsen, they have been satisfactory in a considerable number of the cases of lupus so treated. The larger part of the more extensive cases are still under treatment, and require a short course of treatment from time to time when new nodules make their appearance. In most of the cases in which a complete cure is claimed the diseased area has been of small extent. In the severe cases treated it is asserted that relapses are becoming fewer and the interval between them much longer. Of 65 cases of lupus, 11 have remained without relapse for from six months to two years. In 10 favorable cases of small extent, he thinks himself justified in saying that there has been a complete cure. In two cases in which there was extensive ulceration, the Finsen method proved useless; while in both there was rapid healing under the x-rays. A number of cases in which the disease was in the mucous membranes responded favorably to the Finsen treatment. Of 11 cases of lupus erythematosus

⁵ Brit. Journ. of Dermatol., April, 1903.

⁶ The Practitioner, April, 1903.

there was great improvement in 7; in 1 there was a speedy relapse as soon as the treatment stopped. Of 27 cases of rodent ulcer favorable results are reported in 15. In most of these, however, the x-ray treatment was combined with that of Finsen. Relapse shave, however, occurred in most of them.

Morris asserts that it is better to restrict the term "Finsen light" to the particular way in which he applies the treatment, which differs from other methods in concentrating or focusing the rays before they reach the skin. It is on this principle that the original Finsen lamp is constructed; and according to Finsen, concentration is necessary in order to obtain the full effect of the light. In the French lamp of Lortet and Genoud there is no such focusing, and hence the penetration of the light is not so great. Morris thinks that the original Finsen lamp gives the best results on account of the greater intensity and penetrating power of the concentrated light. Among the disadvantages of this mode of treatment may be enumerated the great length of time required, the tediousness of the treatment for one hour daily, the occasional pain and the expense. Its advantages, however, are its excellent cosmetic results and its trustworthiness, as improvement may be expected in all cases, provided sufficient time is allowed. Under unfavorable conditions may be mentioned excess of pigment and thickness of the skin, great depth of the disease, scarring from previous treatment and great vascularity of the parts. The light treatment may also with advantage be combined with other methods, such as the x-ray; and where the disease is very extensive or there is much infiltration, curetting should be applied first.

Morris then relates five cases in which this method was employed, giving photographs of the patients both before and after treatment. In some of them the x-rays were used in combination.

Reports of Societies.

AMERICAN ORTHOPEDIC ASSOCIATION.

SEVENTEENTH ANNUAL MEETING, HELD IN WASHINGTON, D.C., MAY 12, 13 AND 14, 1903.

LOUIS A. WEIGEL, M.D., of Rochester, N. Y., President.

FIRST DAY.—TUESDAY, MAY 12.

EXCISION OF THE KNEE FOR BONE ANCHYLOSIS. REPORT OF A CASE.

DR. A. J. STEELE of St. Louis reported this case, one in which cuneiform osteotomy had been done. It was necessary to sacrifice the femoral epiphysis, but good osseous union was obtained. Nails were used in the first instance to secure proper fixation of the bones, and subsequently a well-fitted leather case.

DR. JOEL E. GOLDTHWAIT of Boston reported a series of similar cases, all of which had been treated by a wedge-shaped excision. In these cases much difficulty had been experienced in maintaining a good circulation when the limb was straightened, apparently because of implication of the vessels in cicatricial tissue. In one case the

circulation became so impaired that gangrene rapidly developed, necessitating an amputation.

DR. A. J. GILLETTE of St. Paul said that according to his experience, ankylosis in cases of tuberculous disease of the knee was rare. With forcible correction he found no occasion for tenotomy.

THE ABUSE OF FLAT-FOOT SUPPORTS.

DR. W. R. TOWNSEND of New York presented this paper. He called attention to the general increase in the use of flat-foot supports, partly owing, no doubt, to free advertising in the lay press and the sale of such supports in department, shoe and instrument stores. This general interest in the subject would be gratifying were it not for the present tendency to ignore the necessity for a correct diagnosis in cases of flat foot before applying such support. A support was not always required even though flat-foot were present; moreover, the existence of extreme spasm, deformity or inflammatory conditions might make the use of a support worse than useless. Many of the supports sold were so flimsy as to be utterly incapable of giving support, and not infrequently the support was applied so far forward or backward as to have no effect in preventing deformity; indeed, it often caused deformity and disability. He wished to specially emphasize the impossibility of treating all cases of flat foot in a routine way by ready-made supports and without skilled advice and supervision.

DR. GOLDTHWAIT called attention to a class of cases of rigid or extreme valgus which had proved obstinate to treatment by flat-foot plates. Quite recently he had learned to recognize these cases as examples of talipes valgus instead of varus, and they had responded readily to treatment for valgus, that is, excision of the scaphoid and shortening of the inner side of the foot, followed by correction.

THE SURGICAL PATHOLOGY OF GENU VARUM AND GENU VALGUM.

DR. WALLACE BLANCHARD of Chicago read this paper. He said that the skiagraphic observation of genu varum usually showed three contributing curves, which, in the order of their development, were: (1) An exaggeration of the normal out-curve of the lower part of the femur; (2) an outward bending of the upper part of the tibia; and (3) distributed outward bend of the shaft of the tibia. The curve in the upper part of the tibia generally became most pronounced. The least over-correction was required at the culminating point in order to give straight and lengthened legs. In genu valgum the primary inward bending was usually in the upper part of the tibia, and a succeeding inward curve became distributed through the shaft of the tibia. The least over-correction was required at the apex of the tibial deformity. Lorenz and Renier claimed that epiphysiolysis corrected by attacking the seat of the deformity in the condyles, but it had been shown that the operation was founded on a pathological error. Several of Renier's illustrations showed opening of outer knee articulations without indications of separation of the epiphyses or of fractures, and the result was apparently the same as in Lorenz' recently discarded operation of over-stretching of the external hamstring tendon.

In the operations of this kind that he had done there had been so much reaction that he had not felt justified in continuing to practise it. His own method of rapid osteoclasis he considered decidedly superior, and that either this or osteotomy should be preferred to epiphysiolysis.

THE MECHANICAL VERSUS THE OPERATIVE TREATMENT OF RACHITIC DEFORMITIES OF THE LOWER EXTREMITIES. A STATISTICAL REVIEW.

DR. R. TUNSTALL TAYLOR of Baltimore was the author of this paper. To show the superiority of operative treatment he quoted their statistics, that is, 109 cases with only two relapses and one over-correction. In this connection he exhibited a very ingenious, and apparently effective, osteoclast that he had devised. The distinguishing feature was that it worked on the lever principle, and was constructed to give very rapid and accurate results.

DR. AUGUSTUS THORNDIKE of Boston remarked that the new instrument impressed him favorably because it appeared to imitate closely the natural process of producing a fracture.

DR. JOHN RIDLON of Chicago, from the standpoint of one who had invented and had used a similar device, suggested that a round or elliptical bar be substituted for the flat one, and that if the leather covering were discarded, and bare, polished metal bars be used, there would be less danger of lacerating the skin.

DR. HENRY LING TAYLOR of New York called attention to the twist of the shaft of the tibia occurring in most cases of bow-legs, and advised that, in operating, one should give the lower fragment a strong outward twist.

THE TREATMENT OF PARALYTIC TALIPES BY TENDON TRANSPLANTATION SUPPLEMENTED BY OTHER OPERATIVE PROCEDURES.

DR. ROYAL WHITMAN of New York presented this paper. He said that the results of the operation of tendon transplantation at present were unsatisfactory, the favorable effects of the operation often being only temporary. This was often due to the correction of deformity and the removal of a deforming force rather than to a permanent gain in muscular power. Simple operations, in which both the positive and negative effects of transference of muscular power could be utilized should be selected, and the attachment of transplanted tendons to those of the paralyzed muscles should be replaced by direct implantation at a point of election. Periosteal implantation was less effective than that to the bone itself. Secondary operations, such as arthrodesis of the mediotarsal joint for the prevention of varus or valgus deformity, and astragalectomy, were often indicated, or, indeed, imperatively demanded.

DR. J. E. GOLDTHWAIT said that by tendon transplantation it often became possible to make use of lighter braces. In some of these cases a double pull was established by reason of a cicatricial formation in the old sheath of the tendon.

ACUTE ATROPHY OF BONES AND JOINTS FOLLOWING COMPARATIVELY SLIGHT INJURIES.

DR. JOEL E. GOLDTHWAIT of Boston was the author of this paper. He said that slight injuries

were often followed by long impairment of function of the affected part, and not infrequently by permanent disability. The active stage was characterized by subacute swelling, pain on motion, and, at times, by an appearance not very unlike a tubercular process or rheumatoid disease. X-ray examination showed general atrophy of the bones and joints of the part, thus explaining the permanent disability.

DR. WHITMAN remarked that as bone was living tissue, there was no need to invoke the action of the trophic nerves in order to explain the atrophy.

DR. STEWART L. MCCURDY of Pittsburg said that the atrophy was dependent upon a lesion of the sympathetic rather than of the cerebrospinal system.

DR. L. A. WEIGEL said that this atrophy, which was eccentric, could only be positively diagnosed by the x-ray, but there was often a peculiar cadaveric coldness of the part which was quite characteristic.

EARLY OPERATIVE TREATMENT OF TUBERCULAR OSTEITIS OF THE KNEE.

DR. BERNARD BARTOW of Buffalo read this paper. He said that localization in the early stage was generally limited to the femoral epiphysis. The existence of an epiphyseal focus of disease could often be determined before the occurrence of joint infection, but when the joint had once become invaded excision should be substituted for protective treatment. In carrying out the early operative treatment, search should be made for the focus by trephining the condyle above the capsular attachment. When diseased tissues were found, they should be curetted away, the cavity treated with carbolic acid, iodine or chloride of zinc, and the operation wound closed by suture. Severe flexor contraction should be relieved by open division within the tendon sheaths, and fixation secured by plaster of Paris. After healing of the wounds locomotion might be allowed with the aid of crutches and a high shoe. If excision should be indicated at any time, it could, of course, be performed with the same chances of success as if the foregoing procedure had not been undertaken.

SECOND DAY. — WEDNESDAY, MAY 13.

SOME POINTS IN THE TREATMENT OF HIP JOINT DISEASE.

DR. GEORGE B. PACKARD of Denver read this paper. The author considered the time traction and fixation should be continued, for, he said, he had long been impressed with the retardation of growth incident to interference with functional use. The advantage of massage and protected use of the limb after the acute stage was passed was dwelt upon, and emphasis was laid upon the general treatment, particularly the dietetic. It was recommended that these children should have three substantial meals a day, and that each of these meals should be followed by a glass of milk and a raw egg.

OBSERVATIONS ON HIP DISEASE AS SEEN IN HOSPITAL OUT-PATIENTS.

DR. AUGUSTUS THORNDIKE of Boston was the author of this paper. While admitting the unsat-

isfactory character of out-patient treatment, the author insisted that the results obtained contrasted well with recent statistics on hip disease from abroad. An analysis was then given of 55 cases coming to the Children's Hospital Out-patient Clinic, nine, ten and eleven years ago. Of these 55 cases, 17 had the disease in the right and 36 in the left hip, while 2 were double. The first five years of life furnished 51.7%, the next five years 42.6% and the period between ten and twelve years of age 5.5%. The shortest duration of treatment was four years, and the longest treatment was now over eleven years. In all but six of the cases the Taylor long-traction splint was used. Prolonged recumbency was not employed. Abscesses were present in 42% of the cases, and in 38% of these abscesses were incised, curetted and drained. The average shortening amounted to $1\frac{1}{3}$ inches. The results were considered good, although falling a little short of those achieved in some other hospitals in this country.

HIP DISEASE, CONSIDERED WITH SPECIAL REFERENCE TO THE COMBINED TREATMENT.

DR. R. TUNSTALL TAYLOR of Baltimore presented this communication as a continuation of the one presented a year ago. He reviewed the methods already advocated, and dwelt upon the great value of the skiagraphic diagnosis as contrasted with tuberculin, and upon the choice of cases, the method of disinfecting the joint after erosion and the subsequent treatment. Having lost one case from carbolic acid poisoning, he had substituted formalin for carbolic acid. A series of cases were reported upon, and the skiagraphs of the same exhibited; also two patients. The author was firmly convinced of the value of the *combined* treatment which he advocated, and believed that exploratory incisions would often clear up the diagnosis, serving to differentiate between septic and tuberculous conditions. The patients were kept in bed for six or eight weeks with traction in abduction, and were then allowed up and around for about one year with traction splint and high shoe. He thought Lorenz was right in his statement that Americans were inclined to overdo the restraint of the functional use of tuberculous joints. He was of the opinion that the x-ray would aid the surgeon in determining the proper time for tentatively allowing functional use.

DR. BERNARD BARTOW of Buffalo, in opening the discussion on the foregoing papers, said that, while good climatic conditions were of advantage, it should not be forgotten that perfect fixation was essential to success. He strongly indorsed the line of treatment advocated in the paper of Dr. Taylor.

SIR WILLIAM HINGSTON of Montreal was also thoroughly in favor of early operation, having been long convinced that the treatment of a child for an indefinitely long period by extension was an error.

DR. G. G. DAVIS of Philadelphia said that he had frequently made a number of small trephine openings in the head of the bone in cases of acute tuberculosis of that part, and while this had cut short the acute symptoms, and in a number of instances had apparently been completely successful, yet in time the symptoms had reappeared, emphasizing once more the truth of the old doctrine that, in this

disease, it was necessary to rely largely upon rest to effect a cure.

DR. V. P. GIBNEY of New York advocated cutting down upon the points of infiltration, evacuating their contents and suturing the wound without drainage and without the use of chemical agents. A skin-fitting plaster bandage and an ice bag should then be applied, and the child kept at rest for several days. The subsequent progress of the case could be followed by skiagraphs, and in this way a useful guide obtained as to the amount and duration of the traction.

DR. NEWTON M. SILAFFER of New York said that the initial limp was the danger signal, and at all times weight-bearing was the true test of whether or not it was safe to discard apparatus. When in doubt, it was safer to err on the side of the too prolonged use of apparatus.

DR. CLARENCE L. STARR of Toronto said that two or three years ago he had advocated early curettage, followed by swabbing with pure carbolic acid, and a continuance of this practice had not been attended by carbolic acid poisoning in any instance. The use of alcohol after the application of carbolic acid seemed to him to distinctly favor the absorption of the acid, by dissolving away the wall of coagulum first formed by the acid.

DR. E. H. BRADFORD of Boston objected to Dr. Taylor's recommendation that when there was much detritus the surgeon should cut down and remove it on the ground that the hip could not be treated the same as the knee or ankle. Experiments conducted in the pathological department of the Harvard Medical School had demonstrated the fact that the x-ray did not serve as a reliable guide to the limits of the disease.

DR. B. S. McKENSIE of Toronto said that Dr. Taylor was working in the right direction, but should be cautious not to exceed the limits of true conservatism. In his own city the orthopedic surgeons had obtained the very best results from having their patients in the hospital kept in tents all the year.

DR. TAYLOR, in closing, pointed out that the anterior incision passed through the intermuscular septum down to the capsule, thus doing the minimum of damage to the tissues.

THE CORRECTION OF DEFORMITY AT THE HIP THE RESULT OF DISEASE. A STUDY OF THE BEST METHODS AND BEST POSITIONS.

DR. V. P. GIBNEY of New York presented a paper with this title. He raised the question as to whether the disturbance of the reparative process occasioned by forcible correction under an anesthetic might lead to a recurrence of the disease, and expressed the opinion that the Gant operation was the safest and most effective operation for appropriate cases. It was unsafe to resort to forcible correction where sinuses led down to the joint. It had been asserted that forcible correction caused the development of tuberculous meningitis, but available statistics did not seem to bear out this assertion. He was strongly of the opinion that osteotomy should be done by the subcutaneous method, and that the ability to sit comfortably should be sacrificed to the ability to stand and walk erect.

DR. A. J. STEELE of St. Louis cited a case in

support of the view that the use of extreme force in correction was liable to lead to the development of tuberculous meningitis.

DR. JOHN RIDLON of Chicago placed on record five cases operated upon last fall by the Lorenz method, in all of which the deformity had remained corrected and the extent of motion varied between 5° and 10°.

DR. J. E. GOLDTHWAIT placed on record sixteen cases, operated on during the past winter.

DR. NEWTON M. SHAFFER said that so many disastrous results had followed forcible correction in advanced cases that he was not yet convinced of the propriety of this procedure.

THE FORCIBLE REPOSITION OF CONGENITAL LUXATION OF THE HIP.

DR. C. G. DAVIS of Philadelphia read this paper. He expressed the opinion that the methods employed in the past had been unnecessarily severe, and it was desirable to follow more closely the original lines laid down by Paci. The use of the more recent methods had been accompanied by severe traumatism, paralyzes and even death. It was obviously inappropriate to style a method "bloodless" which caused the formation of hematoma of such size as to extend from the middle of the thigh to the umbilicus. It was best to attempt the reposition by the gradual and careful manipulation advised by Paci, aided, if necessary, by the subcutaneous division of the adductors, and if this failed, instead of resorting to extreme force, employ weight extension in bed, with the limb abducted until reduction was possible without the use of excessive force. Or, it might be well in difficult cases to incise and clear a way for the head to enter the acetabulum.

CONGENITAL DISLOCATION OF THE HIP. REPORT OF A BLOODLESS REPOSITION FOLLOWED BY DEATH, WITH AN ANALYSIS OF TWENTY-THREE CASES IN PROCESS OF TREATMENT.

DRS. H. AUGUSTUS WILSON and J. TORRANCE RUGH of Philadelphia presented this paper, together with a pathological report by Dr. W. M. L. COPLIN. The patient was a girl of seven years with a double congenital dislocation of the hip. She was in fair condition, and a radiograph showed conditions favorable for replacement. Reduction by the Lorenz "bloodless" method was undertaken at the Jefferson Medical College Hospital on March 18, 1903. All associated in the treatment of this case had been intimately connected with the eight cases reduced by Lorenz on Dec. 11 and 12, 1902. The fifth and sixth hips reduced by Lorenz were extremely difficult, but finally yielded to his experienced and skillful manipulations. Thirteen hips were subsequently reduced at the Jefferson Hospital, and two more outside. There were 12 girls and 5 boys, 6 being double. Of the single, 8 were right and 3 left. The youngest patient was twenty months; 6 were under two years; 2 were between two and three years; 5 were between three and four years of age; 5 were between six and seven years; 3 were between eight and nine years, and 2 were ten years old. In the case forming the subject of this report,

a child of seven years had been under treatment elsewhere since the age of two years, and until within a few days of the operation. At the latter very great difficulty was encountered in reduction, far greater than in a boy of ten years with double dislocation. Complete, satisfactory reposition could not be obtained, and fixation in the "frog position" by means of plaster of Paris was done, intending to do a cutting operation later. The anesthesia lasted one hour and twenty minutes, and 3½ oz. of ether were consumed. Complete consciousness returned after the operation, only to be followed by a mild delirium, then collapse, which was partially recovered from, and eventually by death in twenty-two hours. The postmortem examination was performed by Dr. Coplin, who found that a long and large ligamentum teres more than filled the acetabulum, and was the cause of the failure in effecting reduction. The articulating surface of the head of the femur rested on the posterior and upper edge of the acetabulum; the capsule was elongated and thickened, and there was a fracture of the femoral neck, one of the body of the ischium and one of the ascending ramus of the ischium. The ends of all the bones were in close apposition. In addition, the pathologist found an acute catarrhal bronchitis, and acute catarrhal pneumonia and an acute diffuse hemorrhagic nephritis.

THE RESISTANCE OF TISSUES AS A FACTOR IN THE MANUAL REDUCTION OF CONGENITAL HIP DISLOCATIONS.

DR. E. H. BRADFORD of Boston presented this paper. He stated that the practical use of the method was limited by the surgeon's power and the strength of the resisting tissues. Variations in the surgeon's strength might be disregarded in estimating the problem, but the other factor was of great importance. The force necessary to tear the insertion of the tendo Achillis was often beyond the limits of practical surgery, and the danger in the use of great force on strongly resisting tissues was manifest in the irreducible cases of congenital hip dislocation. Tenotomy of the tendo Achillis was of recognized utility, and while tenotomy of the hamstrings and adductors had been used in these cases, the procedure did not possess great value. Lorenz' method for children between the ages of three and six was satisfactory. As a result of an anatomical study he had reached the conclusion that the chief resistance came from the strong tendon of the adductor magnus, and that this could be overcome by a tenotomy at some distance from the hip, thus rendering unnecessary the employment of great force. It was found that the lower fibers of the adductor magnus were collected together into a strong tendon, which could be readily divided. The chief factor in transposition was apparently the torsion of the femur.

(To be continued.)

FOOT AND MOUTH DISEASE. — It is reported that foot and mouth disease has been completely stamped out in Massachusetts, and it is probable that the quarantine will be completely raised within two weeks.

THE BOSTON
Medical and Surgical Journal

THURSDAY, JULY 16, 1903.

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SIGNED EDITORIALS.

At the recent meeting of the American Medical Editors Association, held at New Orleans in May, Dr. T. D. Crothers of Hartford, Conn., read a paper in which he discussed the shortcomings of the editorial pages of our medical journals. Quoting the scepticism with which ether as a means of anesthesia was at first discussed by medical men through their journals and their frequent unjustifiable criticisms of work which later has been proved to be of scientific value, he maintains that any study of the editorials in our present-day journals continues to show traces of this same "narrow, assertive dogmatism."

He finds that advances in medicine are not always reflected in the editorials, and that the editorial matter as a rule is not of the same quality as the original articles. He thinks further that editors write superficially, that they misjudge the power of discrimination of the readers, that many phases of medical practice are discussed with small knowledge and appreciation. He also finds fault with what he calls "personality in journalism," and sees in the various attitudes of our medical editors a just cause for criticism. As a remedy for all this and various other faults, which he regards as apparent, he thinks that all editorial comment expressing definite personal opinion should be signed.

Apparently this point of view has been accepted by one of our contemporaries, the combined *New York and Philadelphia Medical Journal*, whether stimulated or not by this paper of Dr. Crothers' we have no means of knowing. In the last issue of this journal two of the editorials on points of practical importance to the physician are signed by their authors. In justification of this somewhat

radical editorial policy, the journal speaks in part as follows:

In this issue of the journal we begin the publication of "signed editorials." Those of our readers who are strict of diction may object that there can be no such thing as a "signed editorial"—that a signed article is necessarily not an editorial. Well, we are disposed to concede a good deal to strictness of diction, and we will admit at the outset that we use the term "signed editorial" simply for the sake of convenience, without in the least pretending that it is satisfactorily expressive. Still, our readers may perhaps be willing to admit that a signed article may have a certain degree of editorial quality if we let them into the secret of the fact that we are in great measure editorially responsible for these signed articles; that is, that we share the responsibility with the writers, which we do not profess to do in the case of other contributions bearing the authors' names, but, on the contrary, quite disclaim doing.

We certainly see no harm in applying the principle of individual authorship to editorial comment, but we confess that the argument advanced by our contemporary does not seem to us wholly satisfactory. The mere fact that the editor agrees with statements made by another man and holds himself editorially responsible is rather an evasion of the issue. In medical matters, should any question be raised, it is clear that in the eyes of the profession at large the responsibility must ultimately rest with the author of a signed article. We take it that it is because of this fact that the universal custom in journalism, whether medical or lay, has come to devote certain pages to unsigned statements, thereby giving added dignity to its utterances, and also, we are willing to admit, at times permitting superficiality of treatment, as Dr. Crothers has suggested.

In general we are inclined to think that the accepted method is the better one, and that communications to retain their editorial character should remain unsigned. If this be true in lay journalism, we see no reason why it is not equally applicable to medical journalism. Dr. Crothers' strictures are certainly in a measure justified, but we cannot accept his conclusion that the matter would be remedied by the free use of individual signatures. It is certainly desirable to improve our editorial pages as such, to guard against personalities, to be fair to our contemporaries and to maintain an increasingly higher standard, but this should, and may in our opinion, be accomplished by a continuance of the time-honored system.

THE MANILA DEATH-RATE.

The report of the commissioner of health for the Philippines, Major E. C. Carter, surgeon U. S.

Army, for the month of March last, is of particular interest, since it calls attention to the gratifying and progressive decrease in the death-rate for Manila, as shown by comparing the vital statistics for the first three months of each of the past four years. Figured for each month on a basis of the deaths which would occur at the existing rate in each 1,000 population for one year, the figures are as follows:

| | 1900. | 1901. | 1902. | 1903. |
|---|---------------------------|---------------------------|---------------------------|---------------------------|
| MONTH. | An. death-rate per 1,000. | An. death-rate per 1,000. | An. death-rate per 1,000. | An. death-rate per 1,000. |
| January | 50.65 | 36.22 | 30.16 | 23.46 |
| February | 47.08 | 36.69 | 30.81 | 22.05 |
| March | 42.67 | 42.67 | 30.02 | 21.01 |
| Average annual death-rate for period compared | 46.80 | 38.19 | 30.33 | 22.17 |

It is seen from these figures that so far during the present year the Manila death-rate is less than half what it was for the same period four years ago. Based on present estimates of population, the number of lives which may be expected to be saved in 1903, judging from the first three months of this year, as compared with the same period in 1900, will amount to 7,442.

During the first quarter of the present year the death-rate has been reduced by 27%, as compared with the rate existing for the same period twelve months previously. This latest improvement has been accomplished in spite of the fact that Asiatic cholera and bubonic plague had both previously gained a foothold in the islands, and that the existence of a largely unvaccinated population in the provinces meant a constant introduction of smallpox into the city. Cases of plague, cholera and smallpox have occurred in Manila in each of the above months of the present year, but the precautions taken by the Board of Health prevented any epidemic outbreak as a result of these cases.

The sanitary results attained in the past four years through American control have been accomplished in spite of the naturally unsalubrious location of Manila, and its total lack of sanitation under Spanish sovereignty. Its level site interfering with drainage, the many foul canals extending through the city, the absence of any sewerage system, and the existence of an impure and insufficient water supply and of many old, unhealthful habitations, have all combined to create sanitary problems of the greatest difficulty. The Board of Health has been unable to turn previously existing methods and conditions to sanitary advantage, and

has found it necessary not only to develop entirely new plans of improvement, but at the same time to combat the results of inherited unsanitary conditions. The mixed character of the population, Americans, Spanish, Filipinos, Chinese and others, and the prejudices, superstitions and largely primitive habits of life of the latter classes, have been a constant obstacle to sanitary work.

The report invites attention to the fact that the Manila death-rate so far during the present year, 22.17 per 1,000, is lower than that of many cities in the United States and elsewhere, which are not commonly regarded as unhealthful. For the year 1900 the following are some death-rates useful for comparison: Washington, D. C., 22.80; New Orleans, La., 24.74; Atlanta, Ga., 23.01; Memphis, Tenn., 25.10; San Antonio, Tex., 27.01; Charleston, S. C., 34.94. The rate for Honolulu in 1902 was 25.59; the rate for Boston in 1900 was 20.12; and for Havana, Cuba, in 1901, it was 22.11.

These results attained in Manila are certainly remarkable, and reflect great credit upon the ability and energy of the Americans who have conducted the sanitary work. It is not probable that equally as low rates as in the first quarter can be maintained throughout the present year, in view of the slight increase in cholera certain to occur with the onset of the rains; but in the coming year, when both plague and cholera will probably have ceased to be factors in the death-rate, it is probable that the death-rate of Manila will compare favorably with those of the cities in the southern part of the United States. That such results as have already been attained could be brought about in four years in spite of every obstacle shows that the American sanitarians here are bearing their full share of the "white man's burden."

CHANGES IN THE MEDICAL DEPARTMENT OF COLUMBIA UNIVERSITY.

PRESIDENT BUTLER of Columbia University, at the recent annual commencement, commented upon the past and present status of the College of Physicians and Surgeons, now affiliated with the university as its medical department. He alluded to the fact that the institution had suffered through the increasing number of its students, and the consequently increasing lack of facilities for their proper instruction, and also to the need of readjustment of the curriculum in order to keep up with the progress of medical teaching.

In consideration of these facts he announced, as stated in the *Medical News*, that the faculty had decided to put in operation a new and thoroughly

revised curriculum, with a diminution in the number of didactic lectures and an increase in personal laboratory work in various medical branches. Increasing facilities will hereafter be given to physiology, and, as previously announced, an entirely new department of pharmacology and therapeutics will be organized under men of recognized prominence in that branch of work. The principle of individualizing the instruction will also find place in the work in pathology, so that not more than ten students will be assigned to any one laboratory instructor.

After commenting on the development of the Vanderbilt clinic, which has long been associated with the medical school, President Butler urged the necessity of a university hospital, an adjunct of medical schools which has been peculiarly slow in coming in this country. Another suggestion, which we regard as of very great importance, is that a reference library for students be provided at the medical school. This again is a need which has been slow of recognition. It would certainly be possible to organize and equip such a library with the more important medical books and periodicals to which students should have free access, and there can be no question that such a library close at hand would prove as valuable a stimulus to students of medicine as do libraries in other departments of knowledge to students of those branches. Finally, President Butler expresses the hope that with a raised standard of admission to the medical school there may be this year a diminution of the number of students applying, and that this diminution will take place among those least competent.

All this sounds familiar. The stimulus which for various reasons has been given to the cause of medical education, within the last few years, is gradually finding expression in all our large medical institutions, and will, no doubt, by degrees have its effect upon the smaller ones. Large financial resources are evidently necessary in order that these complicated schemes of instruction may be carried out. It is gratifying in this connection to note that President Eliot, whose judgment of the trend of contemporary events is not likely to be at fault, recently remarked, as stated in another column, that "the money" (speaking of the medical school) "comes easier there than anywhere else. . . . It is directed in this way by the conviction that many more discoveries and unimagined blessings are coming out of medical study into the service of the world."

If this be true there can be no question that the future of medical education, and the best medical education, is assured. We are glad to note that the College of Physicians and Surgeons of New

York is coming to a clear recognition of the needs of the immediate future, since it is eminently desirable that our leading medical institutions should unite in their claims as to what the definite requirements are, of the most progressive medical school. That the necessary money will be forthcoming to meet this general demand, recent events bring absolute assurance.

MEDICAL NOTES.

DEATH OF PROF. CARL GUSSENBauer.—The death of Prof. Carl Gussenbauer of Vienna is announced in the sixty-second year of his age. He was formerly one of Billroth's assistants, and after holding various professorships in other universities, he was in 1894, on the death of Billroth, called to Vienna as professor of surgery. In 1895 he became an editor of the *Archiv für klinische Chirurgie*. His contributions to medical literature have been numerous and on most diversified topics in relation to the general subject of surgery.

DEATH OF PROF. CARL GEGENBAUER.—The death of Prof. Carl Gegenbauer, at one time professor of anatomy in the University of Heidelberg, is announced at the age of seventy-six.

RECORD OF CHICAGO HEALTH DEPARTMENT.—In reply to an attack on the Chicago Health Department made in certain of the Chicago daily papers, Commissioner of Health Arthur R. Reynolds makes a vigorous defense in the *Bulletin of the Health Department* and submits the following figures: During the six years 1891–1896, immediately preceding the present administration of the department, a total of 152,424 deaths were reported in Chicago; during the six years 1897–1902, of the present administration, the total deaths reported were 145,907, or 6,517 fewer deaths in upwards of 360,000 more population. The reduction is even greater among infants and young children—the acknowledged test of the efficiency of a sanitary administration. During the first period there were 68,008 deaths under five years of age; during the second period there were only 49,360 such deaths.

BOSTON AND NEW ENGLAND.

CHANGE OF EDITORIAL OFFICE.—The editorial office of the JOURNAL will hereafter be Room 707, Paddock Building, 101 Tremont Street. MSS. and communications to the editor should be sent to this address.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, July 15, 1903, there were reported to the Board of Health of Boston

the following cases of acute infectious diseases: Diphtheria 30, scarlatina 18, typhoid fever 18, measles 20, smallpox 0.

CHILD LABOR.—The American Federation of Labor has taken up the question of child labor and has presented an appeal for a stricter enforcement of the law, particularly in certain districts in Lowell. It is stated that many children under fourteen are at work in the mills.

FURTHER GIFTS TO THE HARVARD MEDICAL SCHOOL.—In his speech at the commencement exercises of Harvard University, President Eliot said: "This year our treasurer reports that the cash addition to the property of the college is \$1,300,000. Of that sum \$500,000 consists of contributions to the great undertaking of the medical school. And that leads me to speak of this particular direction of the beneficence of the friends of the university—for medicine. More than \$2,000,000 have been attracted to the medical school undertaking. The money comes easier there than anywhere else. What is the reason? It is directed in this way by the profound sense of gratitude of many men and many women for the service which medicine has rendered to them, to their children, to those dear to them. It is directed in this way by the conviction that many more discoveries and unimagined blessings are coming out of medical study into the service of the world. This very day there have been added to the funds provided for the medical school undertaking \$285,000. And both gifts—there are two—come charged with the most sacred purpose to do good in this world."

WORK OF BOSTON DISPENSARY.—At a recent meeting of the managers of the Boston Dispensary, it was reported that the total of new patients treated at the dispensary during the last quarter was 9,902, and that the number of visits made by district physicians at the homes of patients was 5,036. Ninety-three physicians are now connected with the institution, and about 15 special departments of medicine are reported. With the growth of the institution, in spite of the recent enlargement of the building, there is still lack of room for the best work. An additional building is needed at a cost of \$65,000, and there is also need of funds to provide districts in Charlestown and Dorchester, in order that patients may be treated at their homes. The Boston Dispensary is doing a somewhat unique work and one which all who have information on the subject know to be of the greatest value to the community. It is to be hoped that the necessary expansion of the work may not be hindered for lack of financial support.

BOSTON MORTALITY STATISTICS.—The number of deaths reported to the Board of Health for the week ending July 11 was 202, as against 190 the corresponding week last year, showing an increase of 12 deaths, and making the death-rate for the week 17.46. Of this number 102 were males and 100 were females; 126 were born in the United States, 73 in foreign countries and 3 unknown; 40 were of American parentage, 139 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 31 cases, 1 death; scarlatina, 21 cases, 2 deaths; typhoid fever, 19 cases, no deaths; measles, 23 cases, no deaths; tuberculosis, 20 cases, 24 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 15, whooping cough 1, heart disease 17, bronchitis 1, marasmus 3. There were 24 deaths from violent causes. The number of children who died under one year was 39, under five years 56, persons over sixty years 41; deaths in public institutions 60.

NOTES FROM THE PHILIPPINES.

VACCINATION.—During the first three and one-half months of this year the vaccine farm of the government laboratories has issued 750,257 units of vaccine virus. During the previous three months 162,221 units were thus issued, making 912,478 units distributed in about six months. The present increase in the output of vaccine virus is due to the development of smallpox through the provinces, and the effort of the Board of Health to vaccinate the entire population of the islands as soon as possible. The latter task, herculean under the best conditions, is rendered even more difficult by lack of proper transportation, which renders the progress of the vaccinators through the islands unduly slow, and also is a cause of annoying delays in supplying them with virus. The fact that there are so many tribes in the islands, with entirely different ideas, customs and languages, also complicates the situation. As the sanitary machinery gets in better condition over here, the work will go on more rapidly. The city of Manila is now thoroughly vaccinated, and the work has about come to an end. During the present outbreak there have been only thirty-eight cases of smallpox in Manila, with six deaths, a fact that speaks volumes for the efficient way in which the health authorities have carried on their work. This small number of cases will compare very favorably with the amount of smallpox in the cities of the United States of the same size, and especially those largely having a dark-skinned population. Manila has a large floating population, and with the provinces as yet insufficiently gone over by the vaccinators, it is

inevitable that the infection should be introduced by unvaccinated individuals from time to time. Smallpox has been especially severe in the Igoriote country and in the smaller southern islands, where whole communities were swept away before the health authorities were able to control the epidemics by vaccination. Fortunately this is one of the few sanitary measures to which the native is not seriously opposed, and one which does not depend upon his own exertion for its performance. Any measure which calls for labor on the part of the native population has been shown by experience to be rarely properly carried out.

DESTRUCTION OF UNSANITARY HOUSES. — The Board of Health is destroying many unsanitary native houses in its operations against plague, but as the infected houses are usually tumble-down shacks of flimsy materials, appraised on an average as having a value of \$10 or \$15 each, no very great pecuniary loss results. These houses are drenched with coal oil and burned under charge of the fire department. As the new houses erected on their sites must be approved by the sanitary engineer of the health department, and as the further erection of nipa and bamboo houses in certain districts of the city is prohibited, the destruction of each house means not only a temporary but permanent sanitary improvement of the city.

IMPORTATION OF CARABAO. — Bids have already been opened for 10,000 carabao to be sent to the Philippines to replace those lost from rinderpest, the Government proposing to expend \$1,000,000 for the purpose of restocking the islands. Most of the animals will be imported from southern China and Saigon, and all will be immunized with rinderpest prophylactic serum before embarkation. Thorough inoculation is absolutely necessary to the success of the plan, as many of the cattle ships are undoubtedly infected with rinderpest, and the disease is so prevalent in many parts of the islands that to ship the cattle without treatment means almost certain death to them. In the work of immunization so far carried on, only 5% of the animals have been lost, and if that ratio can be maintained in the future the officials in charge will feel fully satisfied. A part of the appropriation of Congress for the islands has been set apart to pay for the work of immunization. At present, the facilities for inoculation are not so complete as is desirable. Animals afflicted with the disease are necessary for the work of preparing the serum, and the sixty animals from which the material for inoculation has been obtained are now so thoroughly immunized that they are no longer of value for the purpose. The Board of Health is making strong efforts to keep new rinderpest infections from gain-

ing entrance to the islands, and all cattle ships are now disinfected by the marine hospital surgeons at the Mariveles quarantine. At present, cattle ships are inspected by a board of veterinary surgeons before they are allowed to discharge their cargo. The animals are isolated in corrals near the water front and kept under observation prior to slaughter. No animal is permitted to leave the yards for any other purpose than slaughter without receiving an anti-rinderpest inoculation. A large quarantine camp for cattle is projected, and will probably be located at Malabon, six miles from Manila. The best place for the cattle quarantine is at Mariveles, but at that place it would be necessary to re-load the animals on boats for Manila and the provinces, and the added expense inclines the officials to regard the site at Malabon with more favor.

ATTEMPT TO SAVE CARABAO FROM RINDERPEST. — The health department of the Philippines has met with many unusual experiences in its sanitary work in the archipelago, of which its efforts to save the carabao on the island of Tablas from rinderpest furnish a good example. Last year, when this disease was killing the cattle and carabao herds throughout the larger islands, inoculators with anti-rinderpest serum and apparatus for the immunization of these animals were sent to Tablas. The disease at that time had made scarcely any progress there, and the natives, with characteristic dread of new ideas and with distrust of the vaccinators, objected to having their cattle and carabao inoculated. It was tried on a few animals almost by force; and when these animals developed the slight illness which follows inoculation, a wave of indignation swept over the island. Carabao were hurried into the mountains and hidden so that they might be kept from the evil influence of inoculation. The inoculators explained and pleaded, but all in vain; and when they threatened to forcibly inoculate the animals they were met with a like threat, and were warned that if they followed the carabao to the mountains they would be mobbed and killed by the aroused natives. Open threats were made, and the government inoculators were practically forced to flee from the island after having inoculated but twenty carabao. In due time the wave of rinderpest reached Tablas and the animals began to die. Hundreds perished from the disease, but not one of the twenty that had been given the mysterious treatment of the Americanos. The immunized twenty browsed and fed and wallowed with the other carabao, but were not affected. When all was over the twenty were about the only survivors from rinderpest left on the island, and as time passed the business end of the proposition finally penetrated to the brains of the natives and over-

came their superstitions and prejudice. A few days ago a very humble delegation of residents of Tablas presented itself to the government authorities in Manila, and requested that an expert with a barrel of anti-rinderpest serum be sent to their island to treat the few remaining animals and those that they were importing.

Miscellaneyp.

RESOLUTIONS ON THE DEATH OF W. D. HOLMES, M.D.

THE Fellows of the Norfolk South District Medical Society hereby express their regard and esteem for their deceased colleague :

Dr. Holmes, although a recent member of our society, did not hesitate to express his opinion in our deliberations, our actions, our discussions, and that too in a manner suggestive of ripeness, deliberation and thought. Many of us had met him professionally but little, during his short residence in Braintree, and yet those in his immediate vicinity who had, always found him the true physician, the courteous, unselfish, professional gentleman, the tried and trusted guardian of his patients, his friends.

The members of this society offer to his wife and family their heartfelt sympathy in their deep affliction, and to that larger circle who have lost their warm, sincere and sympathetic adviser, our condolence at this time.

Resolved, That this memorial be entered upon the records of this society; that a copy of the same be forwarded to Mrs. Holmes, and that a copy also be furnished for publication to the Braintree papers and to THE BOSTON MEDICAL AND SURGICAL JOURNAL.

Respectfully submitted,

For the society,

HENRY L. DEARING, M.D.

ROBERT F. BURLEIGH, M.D.

FRANK W. BRETT, M.D.

Correspondence.

ARE NURSES PROFESSIONAL PERSONS?

Boston, July 5, 1903.

MR. EDITOR: Your editorial in the current number of the JOURNAL (July 2) must interest all of us who have concerned ourselves with what one may call the nurse's problem. One aspect of the problem frequently has appeared to me to be too little regarded; I refer to the condition which you mention in describing the work of nurses as a "liberal profession,"—their status after graduation.

The meaning of the words "liberal profession" must be an extremely elastic one. The Standard Dictionary defines a profession as "an occupation that properly involves a liberal education or its equivalent, and mental rather than manual labor." Truly this is a halting description, though correct enough so far as it goes.

I take it that professional persons, such as lawyers, doctors, literary men, engineers, etc., work for fees for small fees or for large fees according to their earning capacity. The professional person's success in life must depend upon his mental and physical achievements and capacities, and his tasks, limited in the same fashion, are a measure of his success.

In this sense can nurses be regarded as professional persons? In the very nature of things they must work for wages and not for fees, their wages are limited by well-recognized conventions and their ambitious and progress are not stimulated by increasing opportunities and proportionate increasing returns.

Most of the advocates of the higher training of nurses have lost sight of the individual after her graduation. It would be interesting to know in what way they propose to solve the problem of nurses as practitioners and not as undergraduates.

School work is but the first step in the career of most professional persons. After graduation comes development, progress, achievement. In every true profession there must be ceaseless advance, but no goal.

Who may say that in a nurse's life work, her graduation does not mark the goal of progress?

M.

APPENDICOSTOMY?

Boston, July 3, 1903.

MR. EDITOR: With the interrogation mark preceding this word, after the manner of the Spanish, it simply says what is the expense attached to my appendix? It would be a wise plan to appoint a philologist on the surgical staff of every hospital and as the surgeons invent new operations the decadence of the classics could at the same time be avoided.

It is not plain to me how this word can come to signify the procedure which your editorial describes. If, as you admit, the word is a hybrid, then it is part Latin and part Greek while wholly English. I cannot translate the "cos" unless it means rib. It is to be supposed that the usual *τομή* extends to the ribs then? But why do you allow Meyer to continue that surgical falsehood that the appendix is "an absolutely useless organ," in the light of the numerous investigations already published which show that this is a very important organ which "actively functionates"?

It is very poor logic which allows the conclusion that because we do not know what an organ does we must infer that it does nothing.

I rather discourage your attempt to award a palm to a surgeon for a discovery which no surgeon (worker by hand) can ever make unless at the same time he is a good physiologist. Will you not write for us a timely editorial upon the true function of the appendix? It will, at least, encourage the farmers who have had very poor luck with their grape culture since our lamented Jackson so earnestly told us that its only function consisted in "catching grape seeds and giving typho-enteritis."

Very truly yours,

EDMUND D. SPEAR, M.D.

METEOROLOGICAL RECORD.

For the week ending July 4, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. | | |
|------|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|----|---------------------|----|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | | |
| | | | | | | | | | | | | | | | |
| S. | 28 | 29.99 | 66 | 74 | 57 | 47 | 57 | 52 | N | W | 4 | 12 | C. | C. | O. |
| M. | 29 | 29.94 | 59 | 63 | 55 | 71 | 72 | 70 | N | E | 6 | 6 | O. | R. | O. |
| T. | 30 | 29.90 | 63 | 72 | 54 | 78 | 79 | 78 | N | E | 3 | 12 | F. | O. | .16 |
| W. | 1 | 29.80 | 75 | 84 | 66 | 90 | 90 | 90 | W | E | 12 | 5 | R. | F. | .18 |
| T. | 2 | 29.68 | 82 | 91 | 73 | 65 | 38 | 52 | W | W | 11 | 15 | C. | C. | O. |
| F. | 3 | 29.86 | 75 | 84 | 66 | 62 | 56 | 59 | N | W | 10 | 16 | C. | F. | O. |
| S. | 4 | 30.05 | 66 | 72 | 61 | 46 | 61 | 54 | N | E | 9 | 9 | C. | C. | O. |
| ☞ | 20.89 | | 77 | 62 | | | 66 | | | | | | | | .40 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞—Mean for week.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 4, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Scarlet fever. | |
| New York . . | 3,785,156 | 1,323 | 545 | 31.22 | 9.52 | 3.55 | 14.58 | 1.05 | |
| Chicago . . . | 1,935,270 | 563 | 172 | 28.59 | 12.68 | 2.06 | 8.52 | 1.60 | |
| Philadelphia . | 1,378,527 | 479 | 191 | 37.35 | 6.05 | 1.46 | 13.77 | .83 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 262 | 110 | 36.64 | 3.82 | .76 | 20.23 | 1.14 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 189 | — | 34.38 | 4.76 | — | 19.04 | 1.05 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 73 | 35 | 24.66 | 13.70 | 1.37 | 10.96 | — | |
| Boston . . . | 603,163 | 168 | 38 | 26.18 | 6.54 | 1.78 | 3.57 | 1.78 | |
| Worcester . . | 132,044 | 29 | 11 | 20.68 | 6.89 | — | 6.89 | — | |
| Fall River . . | 115,549 | 41 | 23 | 43.90 | 2.44 | — | 36.58 | — | |
| Lowell . . . | 101,959 | 35 | 13 | 14.28 | 5.71 | 2.85 | — | — | |
| Cambridge . . | 98,639 | 16 | 4 | 18.75 | 6.25 | — | 6.25 | — | |
| Lynn . . . | 72,497 | 19 | 6 | 5.26 | — | 5.26 | — | — | |
| Lawrence . . | 69,766 | 22 | 12 | 50.00 | 22.72 | — | 31.81 | — | |
| Springfield . | 69,389 | 32 | 10 | 9.37 | 18.75 | — | — | — | |
| Somerville . . | 68,110 | — | — | — | — | — | — | — | |
| New Bedford . | 67,198 | 35 | 15 | 34.28 | 8.57 | 2.85 | 2.85 | 11.42 | |
| Holyoke . . . | 49,286 | 14 | 11 | 57.12 | 7.14 | 7.14 | 21.42 | 14.28 | |
| Brockton . . . | 44,873 | 7 | 0 | — | — | — | — | — | |
| Haverhill . . | 42,104 | 10 | 4 | 20.00 | 10.00 | — | — | — | |
| Newton . . . | 37,794 | — | — | — | — | — | — | — | |
| Salem . . . | 36,876 | 10 | 2 | — | — | — | — | — | |
| Malden . . . | 36,286 | 13 | 3 | 23.10 | — | — | — | — | |
| Chelsea . . . | 35,876 | 14 | 6 | 7.14 | — | 7.14 | — | — | |
| Fitchburg . . | 35,069 | 4 | 1 | — | 25.00 | — | — | — | |
| Taunton . . . | 33,656 | 11 | 2 | 27.27 | 27.27 | — | 18.18 | — | |
| Everett . . . | 28,620 | 8 | 1 | 12.50 | — | — | — | — | |
| North Adams . | 27,862 | — | — | — | — | — | — | — | |
| Gloucester . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 4 | 1 | — | — | — | — | — | |
| Waltham . . . | 25,198 | 5 | 2 | 20.00 | 20.00 | — | — | — | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 9 | — | — | 11.11 | — | — | — | |
| Chicopee . . . | 21,031 | 6 | 3 | 33.33 | 16.67 | — | 16.67 | — | |
| Medford . . . | 20,962 | 5 | — | — | 20.00 | — | — | — | |
| Northampton . | 19,883 | 6 | 3 | 16.67 | — | 16.67 | — | — | |
| Beverly . . . | 15,302 | 4 | 1 | 75.00 | — | — | — | — | |
| Clinton . . . | 15,161 | — | — | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 2 | 1 | — | — | — | — | — | |
| Woburn . . . | 14,300 | 2 | 2 | 50.00 | — | — | — | — | |
| Hyde Park . . | 14,175 | 9 | 2 | 22.22 | 11.11 | — | 11.11 | — | |
| Adams . . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 3 | 0 | 33.33 | — | 33.33 | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 1 | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 1 | — | — | — | — | — | — | |
| Framingham . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 1 | — | 100.00 | — | — | — | — | |
| Weymouth . . | 11,344 | 4 | 2 | — | 25.00 | — | — | — | |
| Southbridge . | 11,268 | 6 | 1 | 16.67 | 16.67 | — | — | — | |
| Watertown . . | 11,077 | 1 | 1 | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,447; under five years of age, 1,234; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,066, acute lung diseases 300, consumption 333, scarlet fever 41, whooping cough 36, cerebrospinal meningitis 8, smallpox 12, erysipelas 11, measles 35, typhoid fever 55, diarrheal diseases 443, diphtheria and croup 83.

From whooping cough, New York 8, Chicago 2, Philadelphia 9, Baltimore 2, Pittsburg 3, Boston 1, Worcester 1, Fall River 3, Lowell 2, Cambridge 1, Springfield 2, Woburn 1, Beverly 1. From erysipelas, New York 3, Chicago 2, Philadelphia 3, Pittsburg 1, Boston 1, Everett 1. From smallpox, Philadelphia 8, Pittsburg 4.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending June 20, the death-rate was 14.3. Deaths reported, 4,138; acute diseases of the respiratory organs (London) 134, whooping cough 99, diphtheria 42, measles 136, smallpox 7, scarlet fever 38.

The death-rate ranged from 4.7 in Hornsey to 28.7 in Coventry; London 13.1, West Ham 12.2, Brighton 10.0, Portsmouth 12.6, Southampton 8.0, Plymouth 14.4, Bristol 11.7, Birmingham 17.1, Leicester 13.0, Nottingham 16.1, Bolton 13.8, Manchester 18.9, Salford 12.9, Bradford 13.6, Leeds 15.3, Hull 16.9, Newcastle-on-Tyne 17.4, Cardiff 17.5, Rhondda 13.9, Liverpool 17.8, Great Yarmouth 15.1.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JULY 9, 1903.

GASSAWAY, J. M., surgeon. Leave of absence granted Surgeon Gassaway for two days from June 28, amended so as to be effective from July 5. July 3, 1903.

STONER, G. W., surgeon. To proceed to Richford, Vt.; Malone, Niagara Falls and Buffalo, N. Y.; Montreal, Canada; Port Huron, Detroit and Sault Ste. Marie, Mich., for special temporary duty. July 8, 1903.

DECKER, C. E., assistant surgeon. Granted extension of leave of absence, on account of sickness, until July 15. July 7, 1903.

TROTTER, F. E., assistant surgeon. Granted leave of absence for seven days. July 6, 1903.

McLAUGHLIN, A. J., assistant surgeon. Assigned in charge of Miscellaneous Division, Bureau of Public Health and Marine Hospital Service. July 8, 1903.

ROBERTSON, H. MCG., assistant surgeon. Granted leave of absence for five days. July 3, 1903.

CHANDLER, R., acting assistant surgeon. Granted leave of absence for eight days from July 18. July 8, 1903.

CLEAVES, F. H., acting assistant surgeon. Granted leave of absence for twenty-three days from July 6. July 2, 1903.

PRIMOSE, R. S., acting assistant surgeon. Granted leave of absence for ten days. July 2, 1903.

WIGHTMAN, W. M., acting assistant surgeon. Granted extension of leave of absence for one week from June 26. July 2, 1903.

BOARD CONVENED.

Board convened to meet at Washington, D. C., July 8, 1903, for the purpose of considering the preparation of plans for the inspection of vaccine farms and anti-toxin establishments. Detail for the board: Assistant Surgeon-General H. D. Geddings, chairman; Passed Assistant Surgeon M. J. Rosenau; Passed Assistant Surgeon J. F. Anderson, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JULY 11, 1903.

R. L. SUTTON, assistant surgeon. Detached from Naval Hospital, Washington, D. C., and ordered to Baltimore, Md., for special temporary duty.

O. KOHLHAASE, assistant surgeon. Ordered to Naval Hospital, Mare Island, Cal.

W. H. RENNIE, assistant surgeon. Ordered to Naval Hospital, Naval Home, Philadelphia, Pa.

W. B. SMITH, assistant surgeon. Ordered to Naval Hospital, Pensacola, Fla.

J. S. WOODWARD and P. T. DESSEZ, assistant surgeons. Ordered to Naval Hospital, Navy Yard, Washington.

J. D. MANCHESTER, assistant surgeon. Ordered to Naval Hospital, Navy Yard, Boston, Mass.

A. J. GEIGER, W. S. HOEN, assistant surgeons. Ordered to Naval Hospital, Navy Yard, Norfolk, Va.

C. E. RYDER, J. A. RANDALL, assistant surgeons. Appointed assistant surgeon with rank of lieutenant, junior grade, from June 26, 1903.

J. T. MILLER, acting assistant surgeon. Ordered to Navy Yard, Mare Island, Cal.

F. W. TYREE, acting assistant surgeon. Appointed acting assistant surgeon with rank of lieutenant, junior grade, from July 1, 1903.

S. H. DICKSON, medical inspector. Granted sick leave for three months.

G. R. PLUMMER, acting assistant surgeon. Appointed acting assistant surgeon with rank of lieutenant, junior grade, from July 1, 1903.

H. N. T. HARRIS, surgeon. Detached from "Glacier" and ordered home to wait orders.

F. W. F. WIEBER, surgeon. Detached from Naval Academy and ordered to wait orders.

BOOKS AND PAMPHLETS RECEIVED.

Uric Acid as a Factor in the Causation of Disease, a Contribution to the Pathology of High Blood Pressure, Headache, Epilepsy, Nervousness, Mental Diseases, Asthma, Hay Fever, Paroxysmal Hemoglobinuria, Anemia, Bright's Disease, Diabetes, Gout, Rheumatism, Bronchitis, and Other Disorders. By Alexander Haig, M.A., M.D. (Oxon.), F.R.C.P. Sixth Edition. Illustrated. Philadelphia: P. Blakiston's, Son & Co. 1903.

A Treatise on Diseases of the Rectum, Anus, and Sigmoid Flexure. By Joseph M. Mathews, M.D., LL.D. Third Edition. Revised. Illustrated. New York: D. Appleton & Co. 1903.

Protozoa and Disease. By J. Jackson Clarke, M.B. (Lond.). Illustrated. New York: William Wood & Co. 1903.

Addresses.

THE SHATTUCK LECTURE.

THE SOURCES, FAVORING CONDITIONS AND PROPHYLAXIS OF MALARIA IN TEMPERATE CLIMATES, WITH SPECIAL REFERENCE TO MASSACHUSETTS.*

BY THEOBALD SMITH, M.D., BOSTON.

(Continued from No. 3, page 64.)

WHATEVER may be the biological process, to us its significance is summed up in the possibility of infecting the mosquitoes.†

Without doubt the parasites are so few in the blood in the clinically recovered or the immune cases that only a small percent of the attacking *Anopheles* would infect themselves. The most favorable time for such infection would be at the end of a relapse or a fresh infection, when a large number of the parasites would become gametes and thereby capable of continuing the cycle in the mosquito. The attacking mosquitoes would at this stage find plenty of gametes and the danger of creating a focus would be at its maximum. It will be seen that I am putting the burden of starting new foci of malaria and of awakening the disease in the spring upon the older, latent or partly immune cases, who are in that stage of immunity which readily produces gametes after a relapse.

The transmission of sporozoa seems to be accomplished chiefly through the agency of recovered cases. *Coccidium oviforme* of rabbits is handed down from parents to young. This is probably the case with one form of bird malaria due to *Halteridium danilewskyi*. Some years ago I examined in this vicinity the blood of four young crows belonging to the same brood. In one of them the malaria parasites were very numerous. The others were not infected. I examined the blood of the infected bird day after day without seeing any forms indicating multiplication. When a drop of this blood was examined with high powers of the microscope, a considerable number of the largest parasites would rupture the red corpuscle in about two minutes and a half, assume the form of spheres, and throw out a number of flagella. The parasites were all gametes or becoming such.‡ The infection of the young bird which had not yet left the nest came probably from the parents through some ectoparasite. In their blood the parasite was probably in a "latent" condition.

The surest way of testing the infectiousness of persons freshly attacked, those who have passed through several seasons of malaria and those who have grown up where malaria is endemic, is to determine from what class of cases mosquitoes can infect themselves. It should also be thoroughly ascertained to what extent infection is possible in the latent stage. Experiments made for this pur-

pose by endeavoring to infect mosquitoes have been reported from various countries. The precise history of the cases from whom mosquitoes drew blood is not given and in most instances the experiments were made in localities more or less permanently under the influence of malarial virus. Big-nami and Bastianelli refer to a patient with crescents in his blood who successfully infected *A. clariger* and *A. superpictus*. Grassi succeeded in infecting *Anopheles* from a patient whose blood was full of crescents. W. S. Thayer²⁹ reported in 1900 a slight infection of *A. maculipennis* after feeding on a case of tertian and one of estivo-autumnal fever. Woldert³⁰ writes of one infection after many negative trials with the estivo-autumnal parasite. Similarly, Berkeley³¹ refers to one infection out of sixty dissections. Van der Scheer and Berkelom³² in an endemic locality in Zealand (Denmark) found that they were able to infect *Anopheles* when the blood contained gametes, but not when quinine treatment had preceded the experiment. Manson's³³ son was successfully infected with mosquitoes imported from Italy which had fed upon the blood of a case of benign tertian fever.

It is evident that the infection of mosquitoes is not an easy matter and frequently fails. These failures may be in part due to the mosquito, but I am inclined to believe that they are largely due to the patient not being ready to furnish satisfactory gametes. Grassi³ (p. 115) makes the significant statement that "there are persons who though their blood contains gametes are not capable of infecting *Anopheles*. These gametes . . . are sometimes too young, more often they appear too old, or perhaps the suspected parthogenesis which leads to relapses has already been started." It is quite obvious that the large amount of painstaking work which has been done in studying the transmission of malaria is only the beginning of more detailed and thorough work to be done not only in the tropics but in those localities in our climate where malaria is trying to obtain a foothold, but has not yet fully succeeded.

The persistence of the malaria parasite in the blood explains not only the dissemination of malaria by human beings, but it also throws a strong light upon the many theories formerly held concerning the source of malarial infection. The so-called hydric theory which regarded bad drinking water as a source of infection is quite prevalent in the South. When a person drank bad water, upset his digestive system and had an attack of malaria as a result, the inference that the water introduced the germs was a natural one. We know, however, that such digestive disturbances simply give the latent virus an opportunity to multiply by temporarily breaking down protective barriers, as shown by the exhaustive statistical studies of Caccini. Summing up the evidence concerning human beings as carriers of malarial parasites and as sources of infection, we find that there is no definite information at hand as to the time when affected individuals may infect mosquitoes. Data from various sources including comparative pathology favor the view that human beings are not at once infectious, but that this capacity comes with prolonged parasitism and that it may be retained indefinitely.

* Delivered before The Massachusetts Medical Society, June 9, 1903.

† To me the simplest explanation which has suggested itself is that during the period of latency the parasites multiply as they do during the clinical outbreak, but more and more slowly, and in fewer numbers. Each sporulation is drawn out, in time as it were, and leads finally to the formation of gametes.

‡ The asexual stage of this parasite is not known.

MOSQUITOES AS INTERMEDIATE HOSTS OF MALARIA.

To follow the intricate processes of the immunization of man during malaria, and their bearing upon infectiousness of the patient, can have only a secondary value with us, even if it were possible to say at what precise moment the mosquitoes may become infected by drawing blood. The healthy individual, even though dangerous, should not be restrained if the suppression of malaria can be accomplished in other ways. This leads me to the second link in the etiological chain — the mosquito. The relation of mosquitoes to malaria as carriers became a definite working hypothesis with me in 1896. In 1897 I devised a set of questions for use in the investigation of local epidemics, among which those concerning mosquitoes and the relative exposure of individuals to them were prominent. The hopelessness of making any progress in this subject, in a latitude usually free from malaria and only sporadically invaded by it, soon became evident. The sequel showed the reasonableness of this state of mind. Not a single fact of fundamental importance in the etiology of malaria has been discovered outside of the endemic foci, and the most valuable studies have been made in the heart of the tropics. There are, however, minor problems pertaining to local conditions which can be solved perhaps better in our latitude than farther south.

Basing ourselves upon the work of Grassi and those who have followed him, we include only the genus *Anopheles* among the intermediate hosts of the malaria parasite. In our State two species of this genus are widely disseminated and encountered in many localities. These are *A. maculipennis* and *A. punctipennis*. The introduction of these species into Massachusetts is not known. They are, however, not a recent acquisition. Dr. C. S. Minot³⁴ found larvæ identified by Mr. Burgess as *Anopheles* in ponds of the Forest Hills district in 1880. Which species they represented is not known. By far the most prevalent and most numerous species is *A. punctipennis*. It is as large as the large *Culex* species, and is particularly conspicuous on account of the yellowish-white spots on the wings and its peculiar position when resting. The adult female, leaving its hiding places in the early spring, measures (excluding proboscis) 5 to 6 mm. in length. The life history differs only in unimportant details from that of the genus *Culex*. The aquatic larvæ, after a period of two or more weeks, depending upon the temperature and food supply, enter the pupa stage. In this they remain about three days and then emerge as sexually mature insects. *A. punctipennis* may be encountered on the wing from March until late in November. In 1902 I encountered a number of females on March 22, when they vigorously attacked me. In 1903 they did the same thing, March 14, a very warm day. Even in mid-winter they may be seen about houses when they have been driven from their hiding places by workmen.

The larvæ, as is now well known, differ from those of *Culex* in lying horizontally just below the surface of the water, with the short air-tubes on the eighth abdominal segment at the surface. They vary more or less in coloration from a light to a dark green. White dots along the dorsal median

line of the abdomen may or may not be present. The largest are about 6 to 7 mm. long. During the summer of 1902 I spent much time in the effort to find some means of distinguishing the larva of *A. punctipennis* from that of *A. maculipennis*, but thus far without success. This may have been in part due to the fact that the latter were quite scarce. The pupæ of the two species of *Anopheles* differ very slightly from those of *Culex*. The shorter breathing-tube in *Anopheles*, as mentioned by Howard,³⁵ has served me well in recognizing them.

A. punctipennis I have found either in the larval or the adult form in different parts of our State. The larvæ were taken to the laboratory, and there the development into the adult insect was watched in order to make sure of the species. In this way I have collected or bred *A. punctipennis* from various regions of the Boston district (Forest Hills, Jamaica Plain, West Roxbury near Charles River, Faneuil Station, Cambridge, Belmont), Weston, Concord, Clinton, South Lancaster, Pittsfield and Williamstown. They have been found in Worcester and Springfield. I am inclined to believe they will be found breeding in all parts of our State, if diligently looked for.

A. maculipennis, according to my observations, is a less common species. It is distinguished from *Culex* with greater difficulty, owing to very slight spotting of the wings. In its position also it differs less from *Culex* than does *A. punctipennis*, and I have been deceived several times at a distance in confounding it with *Culex*. I have already referred to the difficulty in distinguishing it from *A. punctipennis* in the larval stage. This species has been collected from Greater Boston. It was found very abundant, in the fall of 1901, near the Charles River in West Roxbury (Parental School). Among specimens sent me from Concord by Dr. Chamberlin, some years ago, this species was included. Only very few of the insects I have bred in the laboratory were *A. maculipennis*. This may be due to their relative scarcity or to the difficulty of rearing them artificially, as some larvæ usually die. It is of interest to note that in certain localities certain species or groups of species seem to predominate. In the fall of the year when mosquitoes are driven indoors by the cold, in search of places for passing the winter, I have noticed that in one building almost exclusively individuals belonging to the genus *Culex* would appear. In another building, an eighth of a mile away, individuals of *A. punctipennis* were found almost exclusively. In a third place, three or four miles away, *A. maculipennis* was the predominant species. In a suburb of Harrisburg, Pa., in August, 1900, Bashore³⁶ counted 133 *A. maculipennis* and 7 *A. punctipennis*. The conditions favoring the breeding of these species may throw an important light upon the endemicity of malaria in certain places. Thus far they have not been thoroughly studied, and they remain unknown.

It is now generally conceded that all species of *Anopheles* may become intermediate hosts of the malaria parasites. But some are much more easily infected than others. Of the two prevalent in Massachusetts, *A. maculipennis* (*A. quadrimaculatus*, *A. claviger*?) is the one which has been chiefly experimented with in other countries. I am not informed of any experiments with the commoner *A. puncti-*

pennis. Some test of this important matter under conditions and with *Anopheles* existing in our latitude is very urgent. We should know the relative capacity of the two species for maturing the tertian parasite as drawn from the infected individual. We should know more about the temperature limits within which this development may go on to a successful conclusion. Since such experiments can now be carried on without exposing human beings to infection, by simply dissecting the infected mosquitoes, there is no reason why this information should not be forthcoming. We are in many respects better situated than those commissions who have made their investigations in tropical and sub-tropical countries, because we have but one parasite, that of tertian fever, to deal with, while their work has been complicated by the prevalence of three forms.

The application of knowledge gained in tropical countries, while applying in general to our own conditions, may fail in what are biologically speaking minor details, but practically speaking of very great importance. Outwardly and to the entomologist, *A. maculipennis* of our climate and that of Italy or the tropics may be the same.* But there may be important physiological differences due to climatic conditions. Marked differences in susceptibility toward certain diseases may exist in varieties or breeds of higher animals. Similar varietal differences could hardly be detected in mosquitoes by the classifier. Experiments to determine definitely the rôle of our two species of *Anopheles* in transmitting malaria are called for the more pointedly since voices have been raised recently against the assumption that all *Anopheles* species act as carriers. Christophers and Stevens found that the very abundant *A. rossii* in and about Calcutta did not convey malaria. When they proceeded in their investigations toward the foothills of the Himalayas, foci of endemic malaria appeared associated with other species of *Anopheles* shown to carry sporozoites in their salivary glands. Schüffner⁹ in studying *Anopheles* on Sumatra, where malaria prevails chiefly on the coast, came to the conclusion that the coast mosquito soon degenerates in inland regions owing to unfavorable environment.

The mosquito, like the higher animals, appears to be the victim, or at least the host, of a number of parasites, belonging to widely different genera. In 1901, H. P. Johnson,⁵⁹ working in my laboratory upon *Anopheles* caught in the Charles River district, found in about 10% of the individuals of *A. maculipennis* bodies on the stomach wall which simulated very closely the malaria parasite. A very careful study, however, led to the decision that it was some other sporozoon, probably a gregarine.

The breeding places of *Anopheles* in our State are, as a rule, small, more or less stagnant bodies

of water. They do not appear to breed in water kept in receptacles such as rain barrels, tin cans, street traps, obstructed house gutters and the like, but only in water collecting on the ground. But once I saw many *Anopheles* larvae in rain-water which had collected in a large iron scoop; but even this was in a country district. This choice of natural bodies of water may account for the fact that *Anopheles* with us is essentially a rural insect so far as its breeding habits go. Occasionally it has been found in slightly brackish water;³⁷ but it is essentially an inhabitant of fresh water. It is stated that the insects prefer sunny places, but I have seen them in well-shaded brooks.

The food of these larvae consists of minute forms of life floating in the water, and chiefly algae and protozoa. The larva during feeding turns its head 180° so that its ventral surface is directed upward. The two brushes begin to swing rapidly. Currents are produced and the minute particles suspended in the water are violently thrown toward the mouth of the larva. They are thus dependent upon food floating near the surface layer of water. As is well known, ground water emerging into the light is rich in those salts which greatly favor the rapid growth of algae, and E. O. Jordan⁵⁸ has found during observations made in Maine that such ground water contains *Anopheles* larvae.

The wide prevalence of these larvae in the country does not indicate any very great fastidiousness on their part; or any easily determined conditions which must prevail if they are to succeed. Among the places where they are found with us I may mention a few.

In low-lying rich meadows, with very little slope, the ditches used for drainage frequently contain *Anopheles* larvae. Where foot-bridges cross them collections of rubbish are likely to form quiet pools for them. In larger brooks, *Anopheles* larvae are encountered in pools formed by obstructions in the bed, such as tree stumps, soil carried down during freshets and rubbish thrown into them. Especially where roads cross them, the aqueducts are apt to become dilapidated. Fallen stones and pieces of wood form artificial barriers here to favor the mosquitoes.

Not infrequently small shallow pools of rain or ground water without any outlet are favorable breeding places. These are frequently the result of insufficient or obstructed drainage due to road building and railroad embankments. The railroads are in fact responsible for many breeding places. Not only has the natural drainage been more or less interfered with by the construction of embankments across drainage valleys, but the soil used for such embankments has often been taken in such a manner as to leave ditches filled with stagnant water on one or both sides.

The larger bodies of water, including ponds, lakes and rivers, are not as a rule breeding places of mosquitoes. The enemies of the larvae seem to predominate in such waters or else the food

*The position of the two last segments of the palpi in the male of our *A. maculipennis* is at right angles to the body axis and directed laterally. The figures of the European species, as given by Nuttall and Shipley⁶² Kerschbaumer,⁶⁰ Grassi and Celli,⁶¹ have the male palpi nearly straight and nearly in the body axis.

supply is too limited. Occasionally the shallow margins densely overgrown with water plants may favor them, but even here I have as a rule failed to find any larvæ.

The influence of sewage pollution upon the immunity of the larger bodies of water, more particularly the rivers (that is, the shallow margins, coves and stagnant reaches), is an important, though as yet unrecognized, question of public sanitation. It has been my personal experience to find larvæ in several badly polluted streams and not in those comparatively free from such pollution. Whether we are dealing here with a general fact or an accidental coincidence, I am still unprepared to say. Yet there is food for reflection and further study in the suggestion. Water polluted to a certain degree may favor the food of mosquitoes and suppress their enemies. Without going into any detail concerning my observations and impressions on this point, I leave it for future investigation.

Abandoned canals have in some states formed the focus of malaria infection, and there can be little doubt that they are admirably suited as mosquito breeders. Another variety of nuisance is created by brick manufacturing. Excavations are made for clay, and these are abandoned to themselves after the available material has been removed. Some years ago, in trying to account for cases of malaria in Southborough, I found in company with Dr. C. P. Jones a series of depressions overgrown with vegetation and partly filled with standing water. Mosquito larvæ were abundant in some, absent in others. We could not account for these depressions until told that they were old clay pits. A few broken bricks found near them afterward confirmed the statement.

The relation of shallow, stagnant pools and of small brooks and ditches to the mosquito varies considerably with the season and the rainfall. A certain abundance of rainfall may produce breeding places on the one hand, while on the other it may destroy such places already in existence by flooding and washing them out. To take a simple illustration: In 1902 a brook which during the greater part of the summer contained a moderate amount of running water did not harbor any mosquito larvæ. Late in August the amount of water in it decreased, and its bed consisted of a series of pools with only a little running water. In September I found the stream now containing many larvæ of *Anopheles* flourishing in the disconnected pools. Here the dry weather favored the mosquitoes. In other parts the dry weather had caused the shrinkage and disappearance of stagnant, undrained pools, which earlier in the season contained many larvæ.

Severe drought may favor them by a shrinkage and concentration of water in streams which may greatly favor the food supply of mosquitoes along the banks and in quiet, shallow coves. It may also disconnect shallow portions

along the banks or shores from the main body and thus create breeding grounds where ordinarily none exist.

High temperature is universally favorable to the mosquito, for its larval life is shortened thereby and the food increased. It is also favorable to the rapid maturing of the malaria parasite in the mosquito. Under a certain temperature the parasite does not ripen.

There still remains one other condition of our surface waters which has been frequently considered the cause or at least the favoring condition of malaria. I refer to the impounding of flowing water artificially by dams. Only those who have explored our State more or less can have an adequate conception of the number of dams which have been built along its watercourses, and which have either been abandoned or which are still in use. To those familiar with the actual condition of things, an occasional examination of the map is a source of much interest. The streams, large and small, show a series of aneurysmal dilatations which might be considered freaks of nature, were it not that they are the work of man, and that originally beautiful streams have been defaced and deformed to yield the power needed to develop the factory industries of New England.

The site of a dam is usually chosen where its construction will permanently flood the original banks and form a reservoir. The result is a settling basin, in which the suspended matter is deposited, slowly filling up the available space. The next step to offset this filling up is to raise the dam and flood more territory, thereby producing a still broader and usually very shallow basin.

The influence of dams upon the incidence of malaria will depend on a number of factors, and each dam must be considered by itself. The main factor is the relation of the dam to mosquitoes. Among the conditions which may favor the breeding of mosquitoes a few deserve special consideration:

(1) The shallowness of the water and the very gradual slope of the banks, which are usually densely overgrown with vegetation and which protect the larvæ from natural enemies.

(2) The relative pollution of the water, which on the one hand may stimulate the multiplication of microscopic algae and other food for mosquito larvæ, on the other interfere with the higher animal life.

(3) The seasonal fluctuation, whereby in late summer detached pools and larger collections of water are left as mosquito breeders, provided the water in them does not dry up within three or four weeks.

The great dangers of such reservoirs has usually been ascribed to daily fluctuations of the water level, due to draining off during the working hours and refilling at night. The sloping sides of the reservoirs, formed of a deposit of very fine mud and ooze, are exposed to the sun during the day and in some unknown manner

malaria germs were supposed to rise from this alternately submerged and exposed mud. In many instances the original construction of the dam, or its subsequent elevation to a higher level, flooded woodland and the decaying tree stumps were looked upon as favoring or incubating malaria germs. To-day we interpret the matter quite differently. There is no evidence, experimental or theoretical, which assigns to malaria parasites life outside of man or the mosquito. They spend their whole life as parasites. Hence the exposed mud flats, though offensive, cannot any longer be regarded as the *causa peccans*, and the decaying vegetation is concerned only in furnishing food to pools of water harboring larvæ. Dams obstructing the normal current of any stream cannot thus be condemned without investigation. The particular local conditions must be taken into consideration and a careful search made for larvæ at different times of the warm season.

The salutary break in the continued breeding of mosquitoes, and hence in the accumulation of infection, by our severe winters, leads me to consider briefly the ways in which the mosquito escapes destruction during the cold season.

The hibernation or wintering over of adult mosquitoes has been known for many years. They seek the shelter of dark, unoccupied rooms and warm cellars, and the protected nooks in outhouses where they hide in a partly paralyzed condition until the warmth of the approaching spring stimulates them to move and leave their hiding places. It is surprising to note how many mosquitoes live through the winter in this way. Swarms appear quite suddenly on the first warm day. I have been unable to find among these any males.* The hibernating females are as a rule impregnated and very eager when they have left their hiding places to obtain food. Hence their vicious attacks at this time. The relation of these early attacks upon human beings to the production of malaria I shall refer to again later on. The wintering over of larvæ in water under the ice has been observed in different localities. Its occurrence in our latitude has not yet been reported, I believe, and I have no observations bearing upon this subject beyond the one that I have almost always failed to find larvæ late in the fall, shortly before the approach of winter.

The adult females which emerge in the early spring to obtain food for maturing the eggs have not been found with sporozoites in the salivary glands or with sporocysts on the stomach walls. The consensus of opinion seems to be that the malarial infection is not carried over in the mosquito, but that the latter is infected by drawing blood from cases having early relapses or a latent infection.

In concluding this chapter on the mosquito I shall merely mention the hypothesis occasionally brought forward that the infection may pass from the female mosquito to the ova and

that the young may spread the germs. This complex process is the one which obtains in bovine malaria, and it is the only way in which the parasite can be transmitted; for the female which draws infected blood never passes to another host. No proof has been adduced in favor of this process in the mosquito; yet I think it should not be lost sight of or cast aside too peremptorily in any future work, for epidemiological studies do not contradict it.*

THE HISTORY AND PRESENT STATUS OF MALARIA IN MASSACHUSETTS IN THE LIGHT OF RECENT BIOLOGICAL DISCOVERIES.

Interest in intermittent fever in our own State has been steadily maintained since the Boylston prize essay of Dr. Holmes. The disease has had more than its share of historians and chroniclers who have industriously labored to set before us accurate records of its dissemination and prevalence and who have attempted to locate the cause or causes.

As stated by Dr. J. F. A. Adams, there were several distinct epidemics of malaria in New England: (1) The earliest of which we have any records occurring among the settlers, especially in the New Haven region; (2) the epidemic of 1793-99 in Western Massachusetts; (3) that of 1828 to 1836, also in Western Massachusetts; and (4) the one beginning roughly in 1870 and continuing sporadically up to the present.

In Hubbard's "General History of New England," ague and fever is referred to as the "seasoning" through which newcomers had to go at New Haven in the earliest years of the colony. In the second epidemic, toward the end of the eighteenth century, the source of the infection in Massachusetts is, according to Dr. Holmes' correspondents, Western New York. The types of malaria are spoken of as quotidian, tertian, and quartan, and a type is described by Dr. Buel as occurring in the Sheffield epidemic in 1795 whose picture does not fit into the clinical frame of simple tertian. It suggests the estivo-autumnal fever of more southern latitudes. Yet it may after all have been a very severe type of tertian due to the presence of many generations of parasites. Buel calls it a bilious remittent fever. He emphasizes the pain in the head, back and limbs, the length of the hot fit as from six to forty-eight hours. There was no regularity in the reappearance of the paroxysms. "The fever tended to an intermittent form; but it could neither be called quotidian, tertian, quartan nor any other name used by authors to distinguish the different species of intermittent fevers." Possibly typhoid fever may have complicated the clinical picture. The immediate occasions for the appearance of the

* A large number of works on the mosquito have recently appeared in various languages. For those intending the more thorough study of species the work of L. O. Howard forms a very good introduction. The largest and most recent monograph is that published in three volumes by F. V. Theobald under the auspices of the British Museum of Natural History. In this volume the reader will find references to other similar monographs. The work of Kerschbaumer⁶⁹ gives many interesting details concerning the life history of the mosquito.

* I believe that the testimony is quite general that males have not been found hibernating.

disease were then as now assumed to be the construction of dams, the lowering and raising of the water level in them, and the building of canals. I find mosquitoes mentioned once in Dr. Holmes' essay as being more numerous than usual during the epidemic of intermittent fever and dysentery in the town of Sheffield in 1796.

Concerning the epidemic in 1828 to 1836, Dr. Oliver Peck of Sheffield writes, among other things, to Dr. Holmes that "the people here generally have a prejudice against the arrest of the disorder, imagining that they must have about a certain number of paroxysms at any rate, and that they are left more healthy if the disease is permitted to go on undisturbed, though bark was formerly and quinine is at present frequently used, and as I think with benefit. The disorder affects newcomers more especially, and more certainly the nearer they reside to the locality." In this letter we have a cropping out of the doctrine of immunity in malaria, already noted in the experience of the earliest settlers, who referred to it as the seasoning process. Dr. Holmes' correspondent was as eager then as now to impress upon him that the cases in his town were introduced and not indigenous. Relapses were clearly recognized, and some stated what is not an infrequent occurrence nowadays, that the recovered patient had a relapse early the following spring. Moreover, the influence of various bodily conditions due to intemperance, exposure and the like in bringing on a paroxysm was emphasized repeatedly.

The reappearance of malaria in more or less epidemic form since 1870 was carefully studied by Dr. J. F. A. Adams. He states that the summers of 1870, 1876 and 1880 were hot and dry, and all streams and ponds became extremely low. These seasons were characterized by an unusual prevalence and rapid spread of intermittent fever; in 1870 in New Haven and vicinity; in 1876 at Hartford and other towns on the Connecticut River in Connecticut; and in 1880 on the Connecticut River in Massachusetts and certain localities in Berkshire. The low water of 1880 was extraordinary. The Connecticut River had not been so low for many years, and all artificial reservoirs became drawn down so as to expose an immense area of marshy bottom. The irregular progress of the epidemic is also commented on. It jumped over certain places at first, to attack them later on.*

Intermittent fever around New Haven was described by Dr. H. Bronson⁴⁰ in 1872. The first case he traces to a sawmill in West Haven in 1863. The epidemic in South Framingham in 1885 has been investigated by Dr. Z. B. Adams⁴¹ and described in a graphic manner. It seems to have been associated more or less directly with the building of a new conduit through Farm Pond.

Dr. C. H. Cook⁴² in 1890 published an exhaustive inquiry into the prevalence of intermittent fever in Massachusetts. From 152 cities and towns responding to his circular letter, 86 reported intermittent fever, "an increase of 39 over the number reported in 1880 by Dr. Adams." Thirty-four towns reported sporadic cases only. In 52 the disease was more or less epidemic. In 1894 Dr. J. J. Thomas⁴³ collated information obtained from physicians and hospital records in towns along the Charles River, which showed a very great prevalence of malaria, especially in the town of Newton. The largest number of cases occurred in 1891-94, although in the years 1890 and 1891 the cases had been numerous. There are still two other papers dealing with the same theme whose authors made careful local inquiries. In 1901 Dr. F. L. Morse⁴⁵ investigated the prevalence of intermittent fever, past and present, in the towns bordering the Sudbury and Concord rivers. The earliest case of which he could obtain any definite information occurred in 1880, and is said to have been acquired in Boston. Among 1,186 persons, 209 cases occurred during the past twenty years.

A similar inquiry was made by Dr. Chamberlin⁴⁵ for Concord, for the period from 1870 to 1900.*

In addition to these various more or less exhaustive reports we have certain data collected by the State Board of Health in the routine examination of blood films for the malaria parasite. These data are valuable, since they are based on the demonstration of the parasite in the red blood corpuscles.

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(To be continued.)

* A somewhat similar survey of this last wave of malaria was published by Dr. C. V. Chapin. (The Origin and Progress of the Malarial Fever now Prevalent in New England. Fiske Fund Prize Dissertation, No. 32. 1884.)

* See, also, Malaria in Boston and Vicinity, by C. W. Townsend, Bost. Med. and Surg. Journ., 1892, cxxvii, p. 615, and Intermittent Fever in Brookline, by H. L. Chase, *ibid.*, p. 565.

Original Articles.

STUDIES ON THE ACTION OF ALCOHOL IN DISEASE, ESPECIALLY UPON THE CIRCULATION.¹

BY RICHARD C. CABOT, M.D., BOSTON.

PERHAPS no subject has been more frequently or more heatedly discussed during the last few years than the action and value of alcohol. We have had two interesting symposia upon the subject in Boston within a year, and many similar discussions are reported in domestic and foreign journals. One might think, therefore, that the subject was about threshed out and that nothing new could be said about it, but as one looks over the reports of these discussions one fact is very striking, and that is the scarcity of experimental evidence regarding the action of alcohol in diseased human beings.

In the discussions to which I have referred, the disputants have usually ranged themselves in two parties, those favoring the use of alcohol on one side and those opposed to its use on the other. Those who favor its use usually do so on the ground of their general impression that it has done good in cases under their observation. Those opposed to the use of alcohol usually refer to a number of experiments, for the most part not very recent ones, upon the action of the drug in the lower animals. But very rarely has any one anything to say about experiments or measurements of the action of the drug upon any of the functions of the diseased human being. The "advocates of alcohol" say that it does good, but if you ask them: *What good does it do? Does it decrease temperature? Does it improve sleep? Does it slow or strengthen the heart's action, and if so how much?* — they have rarely anything to answer. On the other hand, if you ask the "opponents of alcohol" what harm it does they will point to the effect produced on a dog or a rabbit by doses of alcohol which would correspond to giving a man a quart of whiskey at a drink, or they will refer you to experiments on healthy soldiers or typesetters. The use of such evidence assumes that alcohol acts in the same way in all animals; whereas we know well that its action in mammals is very different from its action in birds, and have by no means proved what is true of its action in dogs or rabbits is true of its use in man. Another common assumption is that the effects of alcohol in disease are similar to its effects in health. But this is a totally unproved assumption, and there is, I think, a good deal of evidence that it is not true.

It seems to me, therefore, that there is a real need for exact experimental evidence regarding the action of alcohol in sickness, and it is to this problem that I have addressed myself. I have not sought to show that alcohol does good or that it does harm. I have rather tried to find out *what it does*, what its effect is upon temperature, upon the heart and pulse, upon the rapidity of the respiration, upon the amount of urine, upon the sweat, upon the appearance of the tongue, upon the appetite and upon the cerebral condition of the patient as shown in the amount he sleeps, in the effect of the

drug upon delirium, and upon his spirits so far as could be ascertained by talking with him.

I will not deny that I have approached the subject with a marked bias, but I hasten to add that I have done all I could to prevent this bias from influencing my observations. That I have succeeded, at least to some extent, is evidenced, I think, by the fact that my results have not come out at all as I expected and indeed hoped that they would.

In order to counteract so far as possible the bad effects of my prejudices, I have recorded each of my observations on separate slips of paper without allowing myself to refer to the chart in which they were later recorded. As I could not retain in memory the records of the individual patients, and did not allow myself to be reminded of them by looking at the chart, I was thus unable to influence the readings in the direction of my expectations, as I previously found it very tempting to do.

In the study of the effects of alcohol on temperature, appetite, sleep, etc., I have circumvented my bias by getting nurses, who had no idea of what I had in mind, to record the data for me on blanks provided for the purpose.

I have said that there was a dearth of experimental evidence regarding the action of alcohol in diseased persons, but this lack is much more striking in certain directions than in others. Certain points have, I think, been pretty well cleared up, while others are still obscure. Hence it may not be out of place to sum up what may be regarded as relatively settled, in order that the unexplored regions may be made more evident by contrast.

About the food value and the digestive action of alcohol, about its effect on temperature, respiration, the secretions and the susceptibility of the lower animals to infection, there is a good deal that we may consider settled.

On the other hand, there are very few experiments upon its action on the *circulation* of the sick, or upon the protective powers of the human blood against infection.

These two problems, then, confront us:

(1) What effect has alcohol upon the circulation in sick persons?

(2) What is its effect on the power of man's blood to protect his organism against infection?

The first of these two questions I have tried to answer in the present lecture. The second I hope to attack later.

Before presenting the results of my own experiments I will endeavor to summarize what seems to me established as the result of work previous to my own.

We may treat as established the following statements:

I. ALCOHOL AND METABOLISM.

(1) In healthy persons alcohol is capable of replacing satisfactorily the fats and carbohydrates of ordinary food.

(2) It is not yet settled whether or not alcohol can replace the proteids of our customary diet.

(3) The food value of alcohol as a substitute for carbohydrates and fat is perfectly consistent with its toxic properties. It is beyond doubt both a food and a poison.

¹ Read before the Association of American Physicians, May 13, 1903.

II. THE ACTION OF ALCOHOL ON DIGESTION AND ABSORPTION.

(4) While it is in the stomach, alcohol disturbs the digestive processes to a greater or less extent according to its concentration.

After absorption (either from the stomach or from the intestines) alcohol acts upon the stomach through the nervous system, and exerts a favorable influence both on its secretions and on its motility. But the nervous system is soon blunted to its influence, so that more and more is needed to influence digestion.

(5) On the intestinal absorption of food alcohol has no considerable influence so far as is known.

III. ALCOHOL AND DIURESIS.

(6) In healthy persons and in renal or cardiac disease, alcohol has no considerable effect as a diuretic. The free diuresis often seen after beer drinking is due in part to the water ingested and in part to the CO₂ and other non-alcoholic constituents of the beer.

IV. ALCOHOL AND DIAPHORESIS.

(7) The experimental data are not conclusive, and great individual differences exist, but the majority of experiments seem to show that alcohol diminishes sweating in healthy persons.

V. ALCOHOL AND RESPIRATION.

(8) Practically all experiments show that under the influence of alcohol a larger volume of air passes through the lungs. This is especially marked in fatigued persons. There is, however, no increase in the amount of O₂ absorbed or in the amount of CO₂ given off.

The patient is made to do more work in breathing without getting any known benefit from it.

ALCOHOL AND PULSE RATE.

Lichtenfels and Frohlich¹ found first a decrease, later an increase in pulse rate.

Tscheschichin² and Ruge³ noted a very marked rise in pulse.

Zimmerberg⁴ could find no variation from normal. Reiss got similar results.

Mertens⁵ noted no change, Martins⁶ a decrease, Jacobi,⁷ Duchek,⁸ Hemmeter⁹ no increase.

In all the experiments in which subjects have been put into an unchanging environment and conditions, the changes in pulse before and after alcohol sink to a minimum.

Wendelstadt¹⁰ took especial pains that the persons on whom he experimented should remain quiet some time before the beginning of the test and stay in just the same position after swallowing the alcohol. With these precautions the changes in pulse rate were trifling. For a few beats the pulse rate sometimes rose a little, but soon returned to nor-

mal. Occasionally there was a slight decrease in rate. The following data may be quoted:

N. K., healthy, fasting, horizontal position for two hours before the experiment.

| | |
|--------------|---------------------------------------|
| I. 9.30 A.M. | Pulse 54 |
| 9.50 | " 56 |
| 10.07 | Sherry, 300 c.c. (=10 $\frac{2}{3}$) |
| 10.15 | Pulse 56 |
| 10.40 | " 56 |
| 11.05 | " 56 |

II. Same subject; same conditions.

| | |
|-----------|--------------------------------------|
| 8.55 A.M. | Pulse 60 |
| 9.15 | " 60 |
| 9.30 | Brandy, 100 c.c. (3 $\frac{1}{2}$ 3) |
| 9.40 | Pulse 57 |
| 10.00 | " 58 |
| 10.20 | " 58 |
| 10.40 | " 55 |
| 11.00 | " 60 |

III. Same subject after a hard day's work, and one-half hour in horizontal position.

| | |
|------------|---|
| 6.40 P. M. | Pulse 64 |
| 6.55 | Absolute alcohol $\frac{3}{4}$ ii diluted |
| 7.05 | Pulse 64 (subject drunk) |
| 7.28 | " 64 |
| 7.55 | " 68 |
| 8.15 | " 64 (less drunk) |
| 8.35 | " 68 |

To the finger the pulse after alcohol feels fuller and stronger, and the sphygmograph shows a tracing like the "pulsus celer" of aortic regurgitation.

BLOOD PRESSURE AFTER ALCOHOL.

Zimmerberg¹¹ found after putting alcohol into a cat's stomach a marked fall in blood pressure.

Gutnikow¹² experimented on curarized dogs, into whose stomachs he introduced 250 c.c. of 50% alcohol. The result was a considerable fall in blood pressure, together with a dilatation of the small arteries, capillaries, especially in the territory of the splanchnic.

The dog here used was so small (20 kilos), and the dose so enormous, that no inferences ought to be made from these experiments as to the effect of moderate doses in man.

Weissenfeld¹³ reports work done in Binz's laboratory. The experiments were carried out on men with the help of v. Basch's sphygmomanometer. After 2 or 3 oz. of sherry the pulse rose in three cases from 15 to 30 mm. Hg.; in one even as much as 60 mm. Hg.

Passler¹⁴ and Schuele,¹⁵ working with Gaertner's tonometer on a healthy man, recorded a fall from 110 to 95 mm. Hg. twenty minutes after sherry and brandy. An hour later the pressure was 115 again.

Rosenfeld¹⁶ worked with dogs, connecting the femoral artery with a mercury manometer. He was careful to avoid the common mistakes of overdosage and over-concentration in the alcoholic solutions used, which were of 10 to 25% strength, and introduced by a tube into the dog's stomach.

¹¹ Loc. cit.

¹² Zeitschr. klin. Med., 1892, vol. 21, p. 128.

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⁸ Duchek: Prager Vierteljahrschr., 1853, vol. 111, p. 104.

⁹ Hemmeter: Transactions of the Med. Fac. of Baltimore, 1889.

¹⁰ Wendelstadt: Ref. in Rosenfeld (*vide infra*).

The question whether dogs tolerate alcohol better than men seems to be answered in part by the following facts:

(1) It takes the same dose *per kilo* to narcotize an average man or an average dog.

(2) It takes approximately the same dose *per kilo* to kill a man or a dog.

But to make sure that he did not err on the side of too small dosage Rosenfeld increased his doses from the equivalent of $\frac{3}{4}$ i of whiskey at a time up to the equivalent of $\frac{3}{4}$ x of whiskey.¹⁷

The upshot of his 300 or more measurements in 8 dogs was that alcohol has no appreciable effect upon the dog's blood pressure. He used fresh dogs with high blood pressure (152 mm. Hg.), tired dogs with low pressure (82 mm. Hg.) and dogs with pressures intermediate.

The result was the same in all cases. Variations in the pressure from hour to hour were no greater than occurred spontaneously, that is, when no alcohol was given.

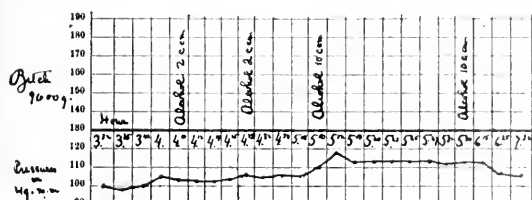


CHART I.—Blood pressures in dog after alcohol. (Rosenfeld.)

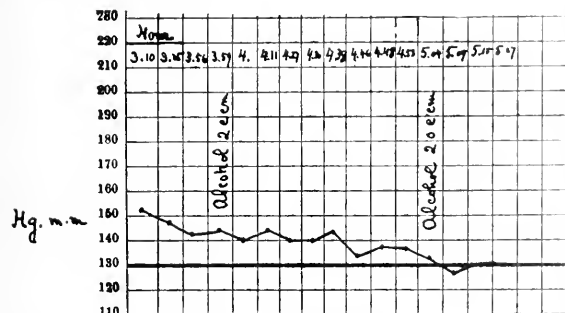


CHART II.—Blood pressures in dogs after alcohol. (Rosenfeld.)

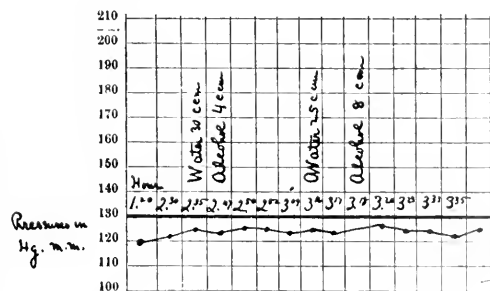


CHART III.—Blood pressure in dog after alcohol.

ALCOHOL AND TEMPERATURE.

In states of profound intoxication, belonging practically to the class of collapse states, there may be a very marked lowering of temperature.

¹⁷ Two cc. of alcohol at a dose for a dog of 8 kilos, corresponding to a little over $\frac{3}{4}$ i of whiskey for an adult.

Experimentally Rosenfeld produced readings of 88.7 F. in dogs.

Therapeutic doses of alcohol given to sound men seemed to produce a slight lowering, amounting, according to the experiments of Binz's pupils, to about .7° F. In sick people the decrease was about the same. The temperature of the skin is greater than that of the rectum, a fact which seems to indicate that the lowering of the rectal temperature and presumably of that of the internal organs in general, is due to the dilatation of the cutaneous vessels.

Dumouly¹⁸ found that no effect was produced in fever patients by doses of less than 20 gm. of absolute alcohol (= about $\frac{3}{4}$ iss of whiskey).

ALCOHOL AND THE NEURO-MUSCULAR SYSTEM.

The most recent and careful researches on this much-disputed point seem to show that in fresh healthy men the power of voluntary muscular movement is increased about 7% for the first one-half hour, after which there is decrease to a point about 5% below the normal.

By diminishing the sense of fatigue, alcohol undoubtedly enables men to push themselves for a short time beyond the limit which nature would otherwise have imposed upon them through fatigue.

ALCOHOL AND THE SUSCEPTIBILITY TO INFECTION.

Latinen found a decrease in the number of leucocytes in cases of pneumonia during alcoholic infection, and Massart and Bordet observed a negative chemo-tactic effect upon leucocyte even with very dilute solutions of alcohol.

That it increases in animals the susceptibility to infection and diminishes the animal's power of resistance has been shown so many times and in so many ways that it is not necessary to go over the evidence in detail.

In man something more or less akin to experimental evidence in this matter is furnished by the well-established fact that alcoholics are predisposed to infectious diseases, and have them in a very virulent form.

More direct and important evidence is furnished by researches designed to investigate the antitoxic power of the blood in health and in disease with and without alcohol.

Mircoli¹⁹ compared the antitoxic power of normal human blood with that of alcoholics by testing the power of each to neutralize Maragliano's tuberculin. The blood of normal men was found to neutralize large doses of this toxin; for example, 10 cc. of this tuberculin is a fatal dose for animals of 1 kilo weight. But this animal can be protected against this dose by the injection of 2 to 3 cc. of normal human serum. The serum of chronic invalids, on the other hand, does not possess this power.

But the serum of drunkards was found to be much more strongly antitoxic than that of normal men. In one case $\frac{1}{10}$ of a cc. of drunkard's serum was sufficient to protect a kilo animal against 10 cc. of tuberculin. From these facts Mircoli concludes that alcohol is a most valuable remedy for tuberculosis, forgetting that tuberculin and tuberculosis

¹⁸ Paris Thesis, 1880.

¹⁹ La Clinica Medica Italiana, March, 1900, p. 133.

are by no means the same, and that alcoholic cirrhosis and tuberculosis of the lungs or peritoneum are very frequently associated.

Nevertheless, Mircoli's results are of great interest both in themselves and as an indication of the direction in which future research should be turned.

More recently Abbott and Bergey²⁰ have undertaken a study of the blood reactions of normal and alcoholized rabbits by Ehrlich's methods. Their conclusions are:

(1) The daily administration of alcohol per os to rabbits reduces the amount of hemolytic complement in their blood.

(2) The diminished reactivating power of the blood of alcoholized rabbits is not due to the presence of small amounts of alcohol as such in the blood.

(3) Alcohol not only reduces the amount of complement in the rabbit's blood, but may cause at the same time a reduction in the number of free specific receptors in the blood of a rabbit artificially immunized against an alien blood.

(4) The diminished complement-content of the blood of alcoholized rabbits renders the animal more susceptible to the toxic action of an alien blood.

THE TOLERANCE OF FEBRILE PATIENTS FOR ALCOHOL.

It must have forced itself upon the notice of any one who has watched the effects of alcohol in fever cases that such patients will stand an extraordinary amount of the drug without any signs of intoxication.

For example, I recently watched a patient with typhoid in the service of Dr. F. C. Shattuck, who took for nearly a fortnight 2 oz. of whiskey every hour, day and night, that is, three pints of whiskey every twenty-four hours, without any sign of intoxication. In the same service a young girl also suffering from typhoid took 60 oz. of champagne, nearly two quarts, every day for three weeks without any of the ordinary evidences of intoxication.

This certainly proves that alcohol acts differently in disease and in health, and makes it obvious that the results of experiments with alcohol on healthy men should not be supposed to prove what its effects in sickness may be.

But because alcohol acts *differently* in disease, are we obliged to suppose that it acts *more beneficially* than in health?

That we do not smell it in the breath of typhoid fever patients, despite a dosage which would make a well person reek with it, does not point to any considerable difference in the amount burned up in the body, for even in the intoxicated states produced by alcohol in healthy persons, 98% of the alcohol is burned in the body. The alcoholic odor in the breath does not prove that any considerable portion of the alcohol is being excreted through the lungs.

Alcohol given to dogs with sugar does not make them nearly as drunk as when it is given without sugar,²¹ but its harmful effects are no less marked.

That sick persons are not intoxicated even by enormous doses of alcohol gives us no evidence whatever that it is doing good, nor on the other hand is it a reason for believing that it does harm. It is an interesting but a wholly neutral fact so far

as the therapeutic value of alcohol is concerned, and is important chiefly as a warning to those who tend to argue directly from the known effects of the drug in health to its supposed effects in disease.

THE PSYCHIC EFFECTS OF GIVING ALCOHOL.

(1) On the mind of the physician and of the patient's family or friends.

(2) On the mind of the patient himself.

(1) The virtues of alcohol as a stimulant have been so firmly established in the minds of the laity that both the patient and his friends are apt to be comforted by the knowledge that it is being given. It does not sound exactly like a drug, its taste is generally not disliked, and the cheering impression that something is being done, and done pretty frequently, is diffused among those who are caring for the patient, and may reach the mind of the patient himself.

By a sort of auto-suggestion, a similar impression is sometimes produced upon the physician as well. It is very hard to sit still and do nothing for the patient, and when we have no very reasonable belief in the efficacy of a drug it is a relief to the physician's mind to give *something*, especially something that is welcomed by the patient and his friends, and something of which the community generally has a high opinion. Then the soothing effect upon the patient, which the narcotic action of alcohol produces, is indirectly soothing to the physician as well, and increases his willingness to prescribe and to continue the so-called "stimulant." In short, alcohol makes physician, patient and friends more comfortable.

(2) The narcotic action of alcohol, its tranquillizing and benumbing effects upon the nervous system, have been very properly insisted on as a therapeutic influence of considerable importance by Cushny and by Meltzer in recent addresses on the use of alcohol in disease. To save the patient from worrying about himself, from broodings on the cause and apprehensions about the future of his disease, is certainly to do him a service. But we cannot, at the same time, praise alcohol for bringing the patient into so passive and vegetative a condition and expect also to take advantage of that active, fighting, determination to get well which many physicians suppose to have a real effect in combating disease. Either the tranquillity or the actively resistant will-power of the patient must be sacrificed. Whether either factor has any genuine influence on the course and outcome of disease is entirely a matter of guesswork. We have no definite knowledge in the matter, and all that I mean here to point out is, that if we are to maintain that the narcotic effect of alcohol is beneficial, we must give up the idea that the patient's will-power is an important factor in his recovery.

But although it is generally assumed that alcohol has a benumbing effect, and so a tranquillizing effect upon the patient, it has not been my experience that any such effect is always or even usually to be observed. That very striking *neutrality* of alcohol, which has been my chief lesson throughout all the other observations which I have made on its action, has impressed me and surprised me afresh in studying its psychic effect. Only in four out of the sixty-nine cases in which I have watched for

²⁰ Univ. of Penn. Med. Bull., Aug.-Sept., 1902.

²¹ Rosenfeld: Loc. cit., p. 162.

the tranquillizing effect of alcohol has any such effect been noticeable. In the vast majority of patients as I talked with them, several times each day during a period of about six weeks, no change whatever in the prevailing mood could be determined. The down-hearted patients were not notably more or less down-hearted, the cheerful ones were neither more nor less cheerful. One patient in especial, in whom the dose of sixty ounces of champagne per twenty-four hours was suddenly cut off, showed not the slightest psychical change that I could detect.

A few of the typhoid patients seemed to sleep a larger part of the day during the time when alcohol was given them, but it was difficult to be sure that this change would not have taken place spontaneously. In one patient who became more sleepy just after the alcohol was given him, the sleepiness continued just the same for the next ten days after the alcohol was withdrawn, in fact until the temperature became normal.

Very likely finer psychical tests, such as Kraepelin employed in his studies on typesetters, would have shown that, in disease as in health, the associations and reactions necessary for the more delicate psycho-motor processes are slowed by the action of the drug; but that any constant effect was produced on the temper, mood and spirits of the patient I could see no reason to believe.

MEASUREMENTS OF BLOOD PRESSURE.

From this résumé will be seen that no considerable amount of work on the estimation of blood pressure in human beings during the administration of absolute alcohol has so far been done. Rosenfeld's observations are, it seems to me, conclusive, so far as concerns the effect of the drug upon dogs, but we cannot immediately reason from its effect in healthy or in tired dogs to its effect in sick men. Accordingly, I have undertaken a series of measurements of the blood pressure before, during and after the administration of alcohol in patients for the most part sick with typhoid fever in the medical wards of the Massachusetts General Hospital. I am especially indebted for the opportunity to carry out these researches to the kindness of Drs. F. C. Shattuck and R. H. Fitz. My method of work has been the following:

Two instruments have been used: the Riva-Rocci machine for the estimation of the maximum or systolic pressure, and Oliver's hemodynamometer for the estimation of minimum or diastolic pressure. The working of these instruments may be explained in a few words.

The Riva-Rocci apparatus consists of a dilatable rubber armlet about three inches wide, covered with tough canvas as a support to the rubber, and arranged by means of a series of hooks and eyes so that it can be tightly fitted to arms of any size. By means of a V-tube air is blown simultaneously into this armlet and into the bulb of a mercury manometer. For inflation an ordinary cautery bulb was used.

To use the instrument we attach the armlet snugly around the patient's upper arm about two inches above the bend of the elbow, and force air into it until the radial pulse disappears. When the radial

pulse is no longer felt, we note the point to which the mercury column has been forced up and record the reading in millimeters. The instrument appears to be very accurate in the sense that different observers after an equal amount of practice read practically the same independently, and that successive readings by the same observer in the same patient do not vary more than 3 or 4 mm. of mercury. It is very easy to use, and requires very little practice. It is not at all painful to the patient, as I have ascertained by many experiments upon my own arm, and no patient has complained of it in any way, although in some cases more than a dozen readings were taken in the course of a day. No bad effects upon the arm of the patient have occurred, although the cases selected were mostly typhoid, in which the thrombosis is well known to be favored. Any errors that there may be in the instrument may be disregarded in a series of comparative observations upon the same patient by the same observer, since the amount of error is presumably the same in all the measurements.

Oliver's hemodynamometer is a more difficult instrument to use. It consists essentially of a hollow rubber pad filled with glycerine and water which is put over the radial artery and through which the pulsations of the artery are transmitted to a rigid rod and thence through a ratchet and pinion adjustment to a needle moving upon a clock-face dial. By exerting pressure with the instrument through the pad upon the radial artery the needle is made to revolve and, by suitable pressure, the pulse may be obliterated. If, then, we relax the pressure upon the artery until a faint pulsation is permitted, this pulsation is represented by slight oscillations of the needle. As we relax the pressure gradually more and more, the needle upon the face of the dial has a double motion. It moves backwards towards the starting point (zero) and it also oscillates back and forth during its course. These oscillations gradually increase up to a maximum as we relax the pressure, after which if we relax it still more, the oscillations begin to diminish and gradually disappear as the needle approaches the zero of the scale. The maximum oscillations in normal persons occur between the points marked 100 and 130 on the scale. But the pressure within the fluid pad of the instrument is the same as that within the artery when its maximum oscillation is reached, and this corresponds, as Howell has shown, to the minimum or diastolic pressure. The fluid pad obviates the difficulties of applying the instrument over the uneven surface of the wrist. The soft and elastic surface of the pad adjusts itself among the structures of the wrist, and gets into contact with the artery at some point, provided the artery is palpable at all. The chief difficulties in using the instrument are (1) to hold it steady without increasing or decreasing the amount of pressure used upon the artery, and (2) to record accurately the position of the swiftly-moving needle. With well sustained pulses it is very easy to see just where the needle starts and where it ends in each of its excursions, but in the bounding pulses of febrile patients this is often very difficult. With a moderate amount of practice, however, different observers do not vary more than five points in the

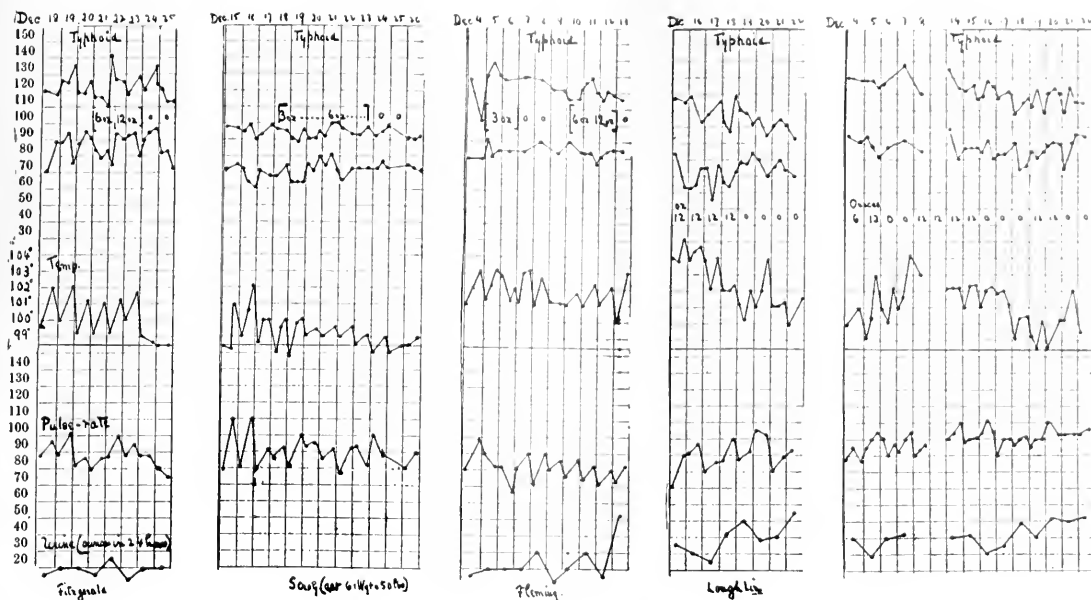


CHART VI.—Same as Chart V.

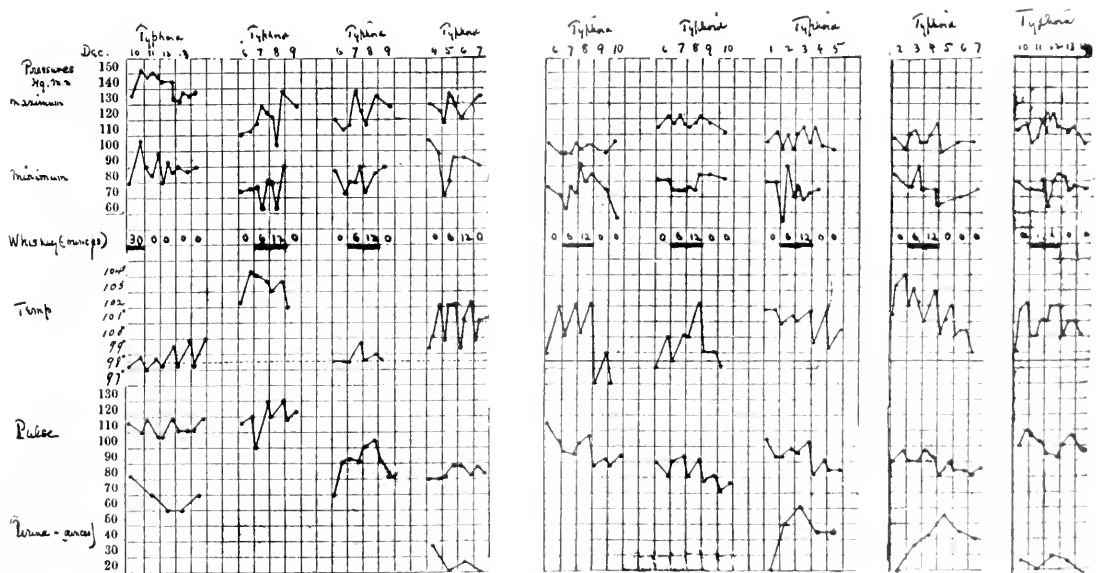


CHART VII.—Same as Charts V and VI.

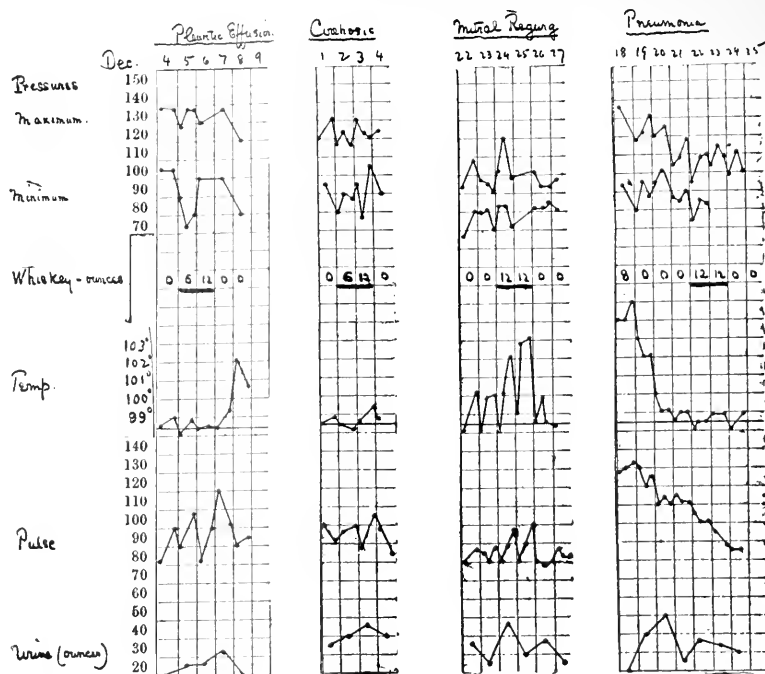


CHART VIII.— Blood pressure in various diseases before, during and after whiskey.

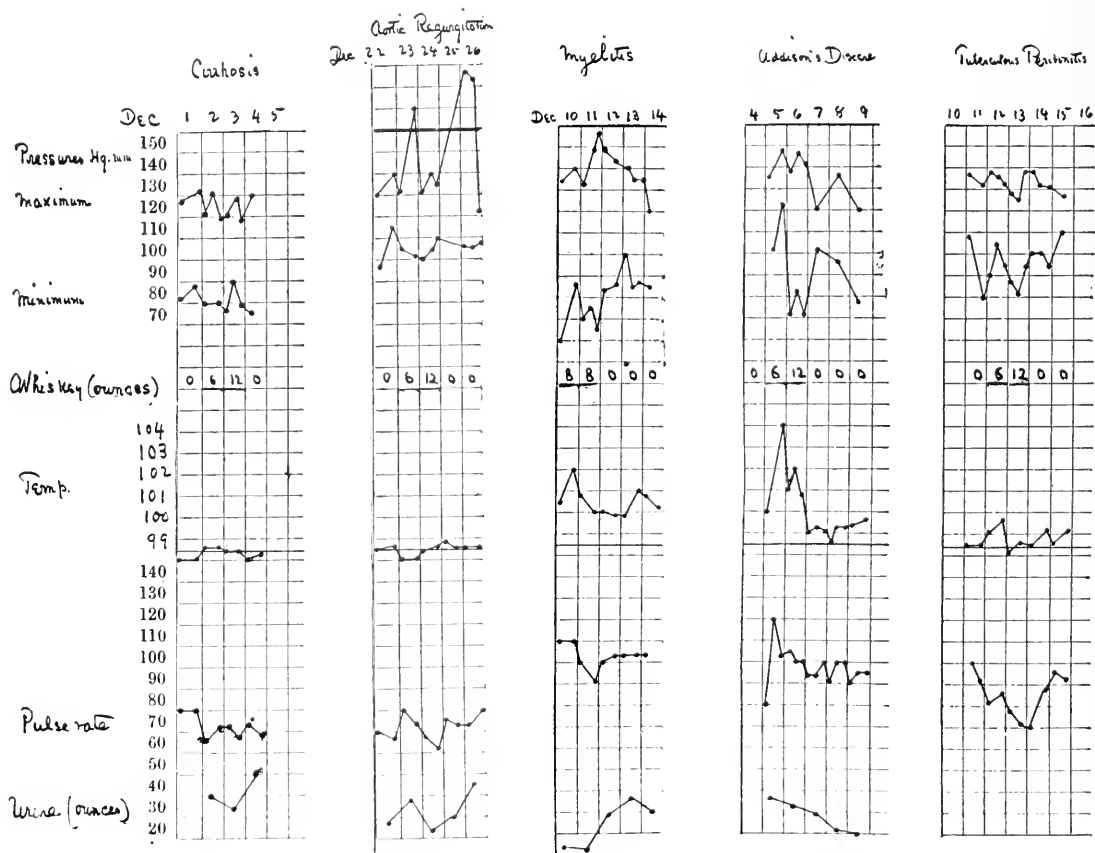


CHART IX.— Same as Chart VIII.

SUMMARY AND CONCLUSIONS.

(1) In 41 patients, mostly cases of typhoid fever, 1,105 measurements of the blood pressure were made before, during and after the administration of alcohol in therapeutic doses. Neither the maximum nor the minimum blood pressure showed any variations that could reasonably be referred to the action of the alcohol. So far as was determined by the methods and in the cases used in this research, the action of alcohol upon the circulation was *nil*.

(2) The same neutrality and apparent inertness of therapeutic doses of alcohol in relation to the temperature, pulse rate, respiration rate, appetite, sleep, delirium and secretions (renal and cutaneous) of 309 patients suffering from a great variety of diseases was the total impression derived from 2,160 observations in these cases.

(3) These observations are not interpreted as proving that alcohol is useless or useful in disease.

As a narcotic and vaso-dilator it may have an important place in therapeutics.

(4) More important probably than any of the questions investigated so far is the problem of the effect of alcohol upon the power of the sick man's blood to protect him against infection and other harmful influences. The studies of Abbott and of Mircoli have begun to clear a path in this direction, and we have a certain amount of evidence relative to a similar problem in the lower animals. But as the results of studies regarding the action of alcohol upon animals or upon healthy men cannot be used as evidence of its action in sick men, there is a good field for experimental work in this direction along the lines of Ehrlich's newer methods.

TABLES.

Temperature.

| | | |
|--|------------------|--|
| Raised over .2°, alcohol, 149 cases, } | | |
| " " " " whiskey, 12 " } | Total 161 cases. | |
| Lowered over .2°, alcohol, 64 " } | | |
| " " " " whiskey, 13 " } | " 77 " | |
| Within .2° the same, alcohol, 70 " } | | |
| " " " " whiskey, 1 " } | " 71 " | |
| | 309 " | |

Effect of Alcohol on the Temperature in Febrile Cases (100° or more).

| | | |
|---|-------------|--|
| Raised over .2, alcohol, 29 cases, } | | |
| " " " " whiskey, 6 " } | = 35 cases. | |
| Lowered over .2, alcohol, 20 cases, } | | |
| " " " " whiskey, 8 " } | = 28 " | |
| Within .2 the same, alcohol, 4 cases, } | | |
| " " " " whiskey, 0 " } | = 4 " | |
| | 67 " | |

Pulse.

| | | |
|--|--------------|--|
| Raised over 5 beats, alcohol, 98 cases } | | |
| " " " " whiskey, 8 " } | = 106 cases. | |
| Lowered over 5 " alcohol, 56 " } | | |
| " " " " whiskey, 7 " } | = 63 " | |
| Within 5 beats the same : | | |
| Alcohol, 128 " } | | |
| Whiskey, 12 " } | = 140 " | |
| | 309 " | |

Respiration.

| | | |
|--|------------|--|
| Raised over 4 periods, alcohol, 22 cases } | | |
| " " " " whiskey, 2 " } | = 24 cases | |
| Lowered over 4 periods, alcohol, 27 cases, } | | |
| " " " " whiskey, 3 " } | = 30 " | |
| Rate the same, alcohol, 232 cases, } | | |
| " " " " whiskey, 23 " } | = 255 " | |
| | 309 " | |

Food.

| | | |
|---------------------|------------|--|
| Taken the same..... | 212 cases. | |
| " better..... | 61 " | |
| " less well..... | 18 " | |
| | 294 " | |

Tongue.

| | | |
|------------------------------|------------|--|
| The same..... | 213 cases. | |
| Better..... | 12 " | |
| Worse..... | 20 " | |
| Moister and more coated..... | 6 " | |
| | 281 " | |

Skin.

| | | |
|---------------|------------|--|
| The same..... | 215 cases. | |
| Moister..... | 39 " | |
| Drier..... | 12 " | |
| | 266 " | |

Insomnia.

| | | |
|---------------|------------|--|
| The same..... | 155 cases. | |
| Better..... | 7 " | |
| Worse..... | 8 " | |
| | 170 " | |

Delirium

| | | |
|------------------------------------|------------|--|
| The same..... | 150 cases. | |
| Worse..... | 3 " | |
| Excited and nervous..... | 1 " | |
| Better..... | 1 " | |
| | 155 " | |
| Total number of observations | 2,160 " | |

Clinical Department.

CLINICAL MEETING OF THE STAFF OF THE MASSACHUSETTS GENERAL HOSPITAL, FEB. 20, 1903.

(Concluded from No. 3, page 73.)

DR. E. A. CODMAN presented the following three cases :

CASE I. *Traumatic rupture of kidney; nephrectomy; recovery.*

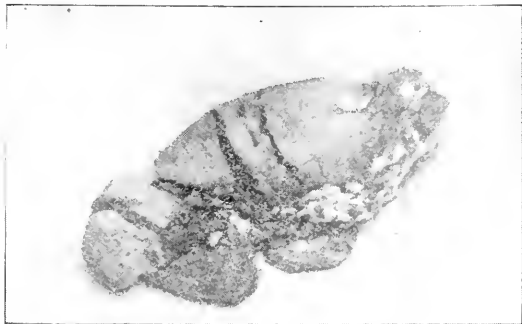
This patient was brought to the accident room on Aug. 28, 1902. He is a brakeman on the N. Y., N. H. & H. R. R., and was struck in the side by a wooden awning while climbing a ladder on a moving freight car about an hour before entrance. He managed to climb on top of the car and lay down and was soon afterward brought here in fair condition. The house officer in the accident room watched him for about an hour, and as the symptoms of internal hemorrhage rapidly increased and a catheter specimen showed clear blood, sent for a surgeon. Since the patient was in great pain, extremely pallid, rigid in the right flank and growing distinctly worse, I thought it wise to explore the kidney, which I found in fragments. I ligated the vessels which were attached to the lower half and removed it. The upper half, which was practically free, being only held by a few shreds of capsule, was removed

separately. The hemorrhage was very severe throughout the operation, which only took a few minutes.

He made an uneventful recovery.

These fragments which have been hardened in formalin give a poor idea of the amount of laceration, as they were molded together before placing them in the formalin.

The patient has been perfectly well since leaving the hospital. The scar in the right flank shows the region of the incision.



Although in this case nephrectomy was clearly indicated, I want to say that I do not believe in nephrectomy for every case of traumatic rupture of the kidney, for undoubtedly most cases get well without interference. Exploration of the kidney was indicated by the rapid increase of the symptoms of internal hemorrhage and the filling of the bladder with clear blood. When the incision exposed the kidney the hemorrhage was so great that nephrectomy was the only course, as the bleeding could not have been stopped by packing.

CASE II. Osteo-chondroma of posterior surface of pubes; excision; recovery; no recurrence in a year and a half.

This patient was operated on July 1, 1901. His previous history was unimportant. He was a well-developed man of twenty-seven in first-rate condition. Eight years before he had first noticed a tumor in the suprapubic region. It had grown steadily, and at the time of the operation was about the size of an orange and of an irregular lobulated shape. It arose from the posterior and upper surface of the left pubic bone and pressed the bladder backwards. One lobe had grown down the femoral canal and about the great vessels, which lay in a sort of tunnel through the growth. The cord of the left testicle also lay in a sort of tunnel in the mass. At the base the tumor was of cancellated bone, though many of the lobules were hyaline cartilage with myxomatous degeneration at their centers.

The operation is of interest on account of the anatomical relations of the structures involved. I made a crescentic incision from the left anterior-superior spine two thirds of the way to the right and a vertical incision over the femoral artery. The testicle and cord were removed from the scrotum and canal, and hung in a wet towel over the patient's left side. The insertions of the rectus and the oblique muscles, Poupart's ligament, and all the adductors of the thigh were cut entirely free

from their pubic attachments and reflected. By pushing aside the peritoneum this gave easy access to the tumor, the bladder and the iliac and femoral vessels. The growth, with practically the whole left pubic bone and part of the right, was chiselled away, leaving only an outline of normal bone above the obturator foramen. The large gap thus made was then closed by returning the attachments of the muscles in their natural order, sewing the adductors of the thigh to the rectus and abdominal muscles as well as what remained of the pubic bone. A new canal was made for the cord and the testicle returned to its former pocket in the scrotum.

He made a good recovery and has remained well since. There is a slight bulging in the region of the scar, but no true hernia.

CASE III. Intussusception in a man of twenty-four; resection of the intestine; recovery.

This patient was brought to the hospital on Sept. 26, 1902. His history, signs and symptoms were typical of a severe case of appendicitis with a large abscess. Examination showed a large "cake" in the right iliac fossa. His bowels were said to have moved twice and there was no blood in the stools. The only symptom which I can recall that was against appendicitis was the persistent vomiting since his first attack of pain three days before. In appendicitis the vomiting is apt to be intermittent.

Supposing the mass in the right iliac region to be an abscess, I opened the abdomen, using Dr. Harrington's modification of the McBurney incision. The mass proved to be intussusception of the ileum almost reaching the ileo-cecal valve. It was easily resected and a simple end-to-end suture done. The patient was under ether an hour and ten minutes and barely recovered. This is the specimen. It consists of about three feet of intestine. The region where the upper segment enters is so tightly twisted that reduction was obviously impossible even after resection. The pent-up blood clot between the walls offers an explanation of the fact that the stools were not bloody, that is, the obstruction was complete.

The patient as you see is well, and thanks to the modified McBurney incision his abdominal wall is as good as ever. This is the first case of successful resection for intussusception at this hospital and one of the few recorded cases in adults, I think the oldest in point of age.

HYDATID MOLE.

DR. J. COLLINS WARREN showed a water-color of a case of Cesarean section for hydatid mole. The drawing was made by Mr. Aitken, and showed very perfectly the gelatinous structure of the mole and the method of operation. The patient, an Assyrian, was twenty-two years of age, was regular up to last September, when from the 20th on flowed profusely for ten days. Since then, a tumor has gradually developed with pain on right side of abdomen. On entrance Nov. 28, 1902, a tumor was found reaching to the umbilicus, soft and somewhat fluctuating. Vaginal examination showed a soft and patulous os. The patient was examined by Dr. W. L. Richardson, who decided there was no pregnancy and advised exploratory

incision. This was done Dec. 2. On opening the abdomen the uterus was seen symmetrically enlarged and extending to the umbilicus. There were no signs of fetal contents and the organ fluc-



tuated distinctly — the uterus being carefully walled off. An incision was made in the median line and the contents emptied into a basin. The wound in the uterus was stitched with two layers of catgut sutures and the wound in the abdominal wall closed with interrupted sutures. The patient made a good recovery, but the uterus was not fully involuted at the time of leaving hospital on Dec. 26. A month later the patient returned to the hospital for profuse flowing, for which the uterus was curetted. She was discharged from the hospital Feb. 3, "much relieved," but is still kept under observation, as flowing threatens to recur.

CURE OF UMBILICAL HERNIA.

Dr. WARREN reported two cases of umbilical hernia in stout women in whom the operation for medical cure was combined with the excision of the adipose tissue of the abdominal wall. The cases will be reported at length in a separate article.

DOUBLE HALLUX VALGUS.

The patient, a young man aged eighteen, presented himself at the hospital with enlargement of big toe

joints of both feet. Had worked up to two days before entrance. His occupation was that of a clerk. The right foot had troubled him specially for a month and the left toe joint became inflamed two weeks ago, and at time of entrance there was a discharging sinus over the joint. There was also a slight ulceration of the skin over the other joint. Both joints were much swollen and the skin reddened.

After a few days of rest in bed an operation was performed, which consisted in opening the joints by a longitudinal incision about one inch in length, removing the ulcerated skin at the same time. The head of the metatarsal bone was removed in each case and the wound closed by deep catgut sutures through the synovial membrane and silkworm gut sutures through the skin. The feet were then placed in a posterior wire splint.

A slight discharge of synovial fluid continued for about three weeks and then ceased.

When exhibited at the clinical meeting one month after the operation the patient expressed great relief and the wounds appeared to be healed with the exception of a pinpoint scab on one toe. The patient walked about without difficulty and was ready to resume work. The deformity of the inner border of the feet had been entirely removed by the operation.

GASTROTOMY FOR FOREIGN BODY.

Dr. WARREN showed a hat-pin five inches long removed from the pyloric end of the stomach.

The patient, a married woman forty-five years of age, had entered the hospital with the history of having swallowed the pin twenty-four hours before. She was suffering from melancholia. Patient stated that she was obliged to bend the pin, as shown in photograph, before being able to swallow it head first.

The next day she complained of a pricking feeling in the epigastrium, and confessed her act. There was a pin missing from her room. Beyond the slight pain there were no symptoms. An x-ray plate examination was negative in its results. Dr. Warren passed an ivory-tipped probang down the esophagus, but nothing was found there. Rectal examination was negative. A fluoroscopic examination showed a shadow about four inches long, which could be seen very distinctly at times, when



patient was standing. With patient lying on her side this shadow could not be seen. Mr. Dodd concluded that the pin was probably free in the stomach and when the patient was turned on her side the pin fell toward the median line and escaped from view behind the liver.

After twenty-four hours' observation it was decided to make an exploratory incision—although the x-ray plates had not given a positive result. There were no new symptoms. A four-inch median incision was made between ensiform cartilage and umbilicus, exposing anterior wall of stomach. The point of the pin was found protruding from the pyloric end of stomach and piercing the outer edge of the lesser lobe of the liver. An inch incision was made through the anterior wall of stomach, and the finger was introduced, but the pin could not be felt. It was then apparent that the head of the pin was in the duodenum and the greater portion of the shaft was lying between the mucous membrane and muscular wall of the stomach, having been pushed upwards by the peristaltic action of the bowel in its efforts to pass the pin around the curve of the duodenum.

The tip of the pin was now seized, it having freed itself from the liver, and was drawn upwards until the head pressed against the peritoneal covering of the stomach. A small incision allowed it to escape. The two incisions in the stomach were sewed up and the abdominal incision closed, a small wick being left in at one point. The wick was removed on the following day. The patient was fed by nutriment enemata for about a week, and left the hospital two weeks later, having entirely recovered from the operation, although her mental condition remained the same.

INTESTINAL OBSTRUCTION FOLLOWING OPERATION FOR APPENDICITIS.

[In the discussion of Dr. Beach's case of obstruction following an operation for appendicitis, Dr. WARREN reported the following case, which had just been discharged "well" from the hospital.]

J. M., barber, twenty-eight years of age, was operated upon June 14, 1902, for an appendix abscess, accompanying gangrene and perforation of the tip of the appendix. Numerous colonies of bacilli of the colon group were found in the culture taken at the time, from cloudy fluid filling pelvis and in region of appendix. Culture taken from near middle line showed mixed infection in coverslip. The bowel was congested and adhesion found near cecum. A wick was passed into pelvis and the walling off wicks were replaced by clean wicks, also a wick leading to appendix stump was introduced. No stitches taken.

The patient made an uninterrupted recovery, and left the hospital Feb. 4, with "wound closed all but small granulating area at its lower end."

Patient was admitted to the hospital again Jan. 2, 1903, with a history of obstruction following a hearty meal four days before. The symptoms were not acute, but had occasional attacks of hicough and vomiting and tympanitis, the latter continuous in greater or less degree. There was a slight hernia at upper end of cicatrix. Lavage and careful diet failed to relieve the symptoms, and on Jan. 29 the tympanites having greatly increased,

Dr. Warren opened the abdomen through a six-inch incision, parallel to line of old scar on either side. A band was found extending from the peripheral surface of a coil of small intestine to the old cicatricial area in the right iliac fossa. Beneath this band another coil of small intestine was caught and its lumen practically obliterated. While withdrawing this loop, the band was ruptured. The wound was brought together by stitches throughout its entire length, and the patient made an uneventful recovery. Seen to-day, Feb. 24, and pronounced entirely well. This was the only case of obstruction following such an operation which Dr. Warren had had in his experience.

DR. H. H. A. BEACH next showed the following cases:

INTESTINAL OBSTRUCTION FROM A TWIST AND A TIGHTLY CONSTRICTING BAND.

The patient, a boy of sixteen, entered the hospital in June with acute appendicitis. The appendix was removed and the cavity drained. He was discharged well, but re-entered in July, for abscess in the wound, which was opened and drained. Rapid healing followed. Since leaving the hospital he has enjoyed good health, with the exception of occasional attacks of indigestion. Three days ago he had what was called an acute attack, with general abdominal pain, gradually increasing in severity, becoming sharp and paroxysmal. He vomited first food, later, greenish material, and on the morning of re-entrance to the hospital a dark brown fluid. The bowels had not moved from the beginning of the attack, though cathartics had been freely used. I found the abdomen distended and tympanitic. There was no muscular spasm or tenderness. Shifting dullness in the flanks. No induration could be detected. The legs were flexed, and there was considerable pain. Pulse 120, regular, of fair volume and tension. Bulging of anterior rectal wall, no ballooning. Heart and lungs normal. A high enema was given without a result.

Laparotomy five inches to the right of the median line at the outer edge of the rectus muscle — two pints of clear serum evacuated. A loop of small intestine, much distended and reddened, was found on the right side, the loop formed by a complete twist of the gut, and held in this position by a firm band, extending across the loop from the intestinal border of one side of the loop to the corresponding border of the intestine on the opposite side of the loop. This band prevented me from untwisting the intestine, until the former had been tied at either end and divided. It was then easy to untwist the coil. Immediately the contents of the intestine moved along, and a fecal discharge occurred before he left the operating table. The degree of constriction and its duration seemed remarkable in not producing sloughing or gangrene of the intestine. The wound was closed and the stomach washed out before his recovery from ether. There was no more vomiting. The bowels moved promptly on the following day after a dose of calomel. His wound healed rapidly. Convalescence was uneventful and he was discharged well, on the twenty-second day after the operation.

NEEDLE IN KNEE-JOINT.

The x-ray plate shows about half of a needle imbedded in the inner condyle of the femur of a young child. A few hours before entering the hospital, he had, by kneeling upon some cloth holding the needle, driven it directly into the bone and broken it, the part holding the eye being left outside the joint. Through a small incision the joint was opened and a black spot corresponding to the fractured end of the needle found flush with the cartilaginous surface. A disk of cartilage with the needle insertion as a center was removed, when the needle projected sufficiently for the forceps to grasp and extract it from the bone. The joint was closed and recovery prompt.

APPENDECTOMY INCIDENTAL TO SALPINGECTOMY.

The specimen is presented to illustrate the attachment of the appendix to the Fallopian tube of the right side by inflammatory adhesion—and the probability in such cases of more serious consequences from appendix complications in delayed operations than in those where the tubes alone are involved.

ABDOMINAL INJURIES WITHOUT EXTERNAL SIGNS.

The lack of general interest in these injuries, which are commonly classified under the head of internal injuries, though they are much more frequent than penetrating wounds, suggested the report of the following case. Their expectant treatment involves great responsibilities, for if hemorrhage or extravasation occur, early infection or exhaustion may soon place the patient beyond the reach of surgical interference. In the first case occurring in my service there were multiple fissures of the liver, kidneys and spleen, with extensive sub-peritoneal hemorrhage; the injury caused by a fall of sixty feet. In the second there was a longitudinal tear of two inches in the small intestine, caused by the kick of a horse. In Dr. Mixer's case there were no external signs, but the small intestine was torn apart and the two ends separated three inches.

In Dr. Greenough's case there was no symptom but muscular retraction, and the small intestine had been torn open toward the mesentery.

The patient presented had a fall of eighteen feet, forty-eight hours before reaching the hospital. A ladder upon which he was standing suddenly broke. He could not tell how he struck the ground. Two lower ribs on the right side were fractured in the anterior axillary line. He had severe abdominal pain not localized on the following night, and vomited once. There had been no movement of the bowels for two days, though enemas and cathartics had been freely used. Pulse 84. Temperature 99. White blood count 29,000 at time of admittance. The abdomen was much distended, tympanitic, painful and tender throughout. No spasm except in gall-bladder region near broken ribs. No dullness in flanks. Rectal examination negative. Urine normal. Three hours later, about the same condition, with increasing dullness of flanks. Result negative from high injection.

From the pain, tenderness, distention, obstruction, it seemed judicious to explore the peritoneal cavity for possible visceral injury. Laparotomy of

six inches in the median line. Intestines much distended and injected, no free fluid, collapsed bowel blood or fecal extravasation. The wound was carefully closed. A large fecal evacuation occurred on the following morning, and much relief to all of his symptoms followed the examination. His recovery and convalescence were uneventful. Whether the injury had the effect of displacing the intestines in such a way as to produce a kink, obstructive in character, I do not know, but no other explanation of the apparent relief from interference seems more reasonable.

THEOCIN AS A DIURETIC.

Dr. R. H. Fritz presented some charts showing the results of the use of theocin. In a case of adherent pericardium, with ascites, the flow of urine was at once increased from 15 to 90 oz. when 5 gr. of theocin were given three times daily. In a case of arterio-sclerotic myocarditis 5 gr. doses of theocin increased the secretion of urine from 25 to 90 oz. But little effect followed its use in a cardio-renal patient, while in one with chronic diffuse nephritis 5 gr. doses, three times daily, increased the flow from 20 to 90 oz.

IDIOPATHIC DILATATION OF THE COLON.
PHANTOM TUMOR.

The patient, a neurasthenic and hysterical single woman, twenty-four years old, had been operated upon on account of a floating kidney, but without relief. When lying on her back there was nothing abnormal in the appearance of the moderately distended abdomen. As the head and shoulders were raised the contraction of the recti muscles caused an asymmetrical, tympanitic tumor to project in the lower abdomen, bulging especially in the right iliac fossa. The oblique muscles were flaccid. The deformity also was apparent when the patient stood.

OBLITERATION OF THE INFERIOR VENA CAVA.

The specimen from the patient with dilated veins from obstruction of the inferior vena cava shown at a previous meeting had been prepared by Dr. JOHN WARREN and was exhibited. Just below the entrance of the hepatic vein there was a complete obliteration of the inferior cava about a half inch long. From this point to the pelvic brim the vein was dilated somewhat and filled with a laminated, in part decolorized thrombus.

The femoral vein for some two inches below Poupart's ligament was transformed into fibrous tissue and could not be distinctly isolated. The collateral circulation was afforded by distention of the spermatic veins and of the superficial veins of the abdominal wall, but especially by the greatly distended azygos veins. The upper portion of the right azygos vein was nearly as large as the forefinger.

CASE OF PAGET'S DISEASE.

from Dr. F. C. Shattuck's wards, was shown by Dr. RICHARD C. CABOT. This patient knew of his trouble simply from the bowing of the legs. It has been going on for three years. The x-ray shows that not only are the tibia and femur affected, but

the smaller bones of the foot and the bones of the arm and the clavicle, of which he was not aware. I have here some x-ray plates which show the thickening of some parts, and decalcification of some others. In the hospital, when he is sitting down or lying down, he is very comfortable, but when he tries to stand he gets very tired.

This disease used to be called very rare. Up to 1901 only seven cases had been reported in America, but since Dr. E. A. Locke and Dr. Joel Goldthwait have looked it up, a number of cases have come to light, so that Dr. Locke, who is making a careful study of the disease, has notes of twenty-one cases living in and about Boston.

The next case is one of gastric ulcer in a child of eight years. It was accompanied by fever, at the times of bleeding, as you will notice by this chart. We have looked over the hospital records, and find that out of 487 cases of gastric ulcer there have been 4 cases under fifteen years; 14, twelve; 10, eight, respectively, this child being eight years of age. Before the child came into the house she lost about a quart of blood from the mouth. Since coming in here has had one or two small hemorrhages. The points of interest are, first, that the girl is so young; second, that hemorrhage each time is accompanied by fever, and that it was some days before it came down to normal. Of course we do not know that it is gastric ulcer; but there were tarry stools and vomiting of blood, and we have no other explanation as yet.

NITRIC ACID IN THE STOMACH.

This case of Dr. S. J. Mixter's was shown by DR. BENNER.

This case, which Dr. Mixter wishes reported here to-night, is that of a man brought to the accident room last August in a state of collapse. He had swallowed about two tablespoonfuls of nitric acid, mistaking it for gin. After two weeks he was discharged from the hospital much relieved. He came back about three weeks after his discharge very much emaciated. He was able to swallow, but unable to retain anything. Dr. Mixter operated on him about seven weeks after and found the pylorus completely obstructed. He did a gastro-enterostomy. The man after the operation weighed 100 pounds. He is now able to eat anything, and weighs 175 pounds.

CLINICAL MEETING, FEB. 20, 1903.

(1) *J. J. Putnam*: Insular Sclerosis, 2 cases; Charcot's Joint, 2 cases. (2) *A. K. Stone*: Aneurism, 2 cases; Syphilis of Liver, 2 cases; Phthisical Cavity (Remarks Dr. Beach). (3) *Dr. Codman*: Intussusception; Rupture Kidney; Osteochondroma of Pubes. (4) *Dr. Warren*: Umbilical Hernia; Hydatiform Mole; Hallux Valgus. (5) *Dr. Beach*: Obstruction after Appendix; Needle in Knee Joint; Abdominal Trauma with Obstruction (read) (Remarks Dr. Warren). (6) *Dr. Fitz*: Charts of Diuresis; Dilatation of Colon; Vena Cava Obstruction. (7) *Dr. R. C. Cabot*: Gastric Ulcer in Girl of Six; Paget's Disease. (8) *Dr. Benner* (for Dr. Mixter): Nitric Acid in Stomach.

A CENTENARIAN. — Mrs. Georgiana Witham, of Epping, N. H., died last week at the age of one hundred and five years. She was born in England in 1797, and came to America in childhood; she married her fourth and last husband in her ninety-seventh year.

Reports of Societies.

AMERICAN ORTHOPEDIC ASSOCIATION.

SEVENTEENTH ANNUAL MEETING, HELD IN WASHINGTON, D.C., MAY 12, 13 AND 14, 1903.

(Concluded from No. 3, page 79.)

SECOND DAY — (continued).

PERIPHERAL PALSIES FOLLOWING MANUAL REPLACEMENT OF THE CONGENITALLY DISLOCATED HIP.

DR. HENRY LING TAYLOR of New York read this paper. He said that since Dr. Lorenz' visit to this country more force had been used in the reduction of this dislocation and in stretching the contracted tissues, and the position of retention had been more extreme. In the cases that he had observed in the past three or four months total paralysis of the quadriceps had been a not uncommon sequel of the operation, and in two instances total paralysis of the muscles supplied by the anterior tibial nerve had been noted. These peripheral palsies were a common cause of the difficulty experienced by some patients in walking after the operation. Nine cases were reported.

DR. ROSWELL PARK of Buffalo, in opening the discussion on the foregoing papers, pointed out the folly of calling this rather formidable method a "bloodless" one.

DR. JAMES E. MOORE of Minneapolis spoke in the same vein, calling attention to the attendant dangers and to the probability that some of these cases would do better from clean, cutting operations.

DR. V. P. GIBNEY of New York also took the position that this method was one fraught with considerable danger.

DR. N. M. SHAFFER of New York said he did not consider the Lorenz operation any more brutal than osteoclasis.

DR. GEORGE B. PACKARD of Denver showed skiagraphs of four of the six cases that had been operated on in Denver by Lorenz. Two of these skiagraphs showed the hip in perfect position, two others showed anterior transposition.

DR. JOHN RIDLON of Chicago was of the opinion that the Lorenz operation was the best known single operation for this class of cases. Of the 21 cases upon which Lorenz had operated it was already known that in six replacement had not been secured, and that in two out of the six fracture of the femur had occurred. He had taken the plaster off four other hips, with the following results: (1) In a child of four the hip was in anterior transposition and the joint quite loose; (2) in a child of four there was anterior transposition with a firm joint; (3) a double dislocation, one hip appeared to be in the socket; (4) there was a fracture through the neck of the other femur, and that bone was on a level with the greater trochanter and posterior and to the outer side of it. In one case in which replacement had been effected the perineum was torn.

DR. B. S. MCKENSIE of Toronto called attention to the fact that Lorenz did not claim that his was a perfected operation, and that he had heard Lorenz make the statement that in double dislocations the

result should be successful in 25%, and in single dislocations in about 50% of the cases.

DR. ARTHUR J. GILLETTE of Minneapolis said that it was generally assumed that congenital dislocation of the hip was very disabling, but that such was not by any means always the case.

DR. DEFOREST WILLARD of Philadelphia said that since Lorenz' visit he had done the operation with better results than before. The fact that congenital dislocation of the hip was associated with a defect both of the acetabulum and of the femoral head and neck made it very probable that within a year after the child began to walk many of these cases would relapse. The method under discussion was far from being "bloodless," for a torn muscle bled more profusely than one incised with a tenotome. These manipulative measures would probably be reinforced in the future by division of the adductors.

DR. A. J. STEELE of St. Louis cited a case upon which Lorenz had refused to operate, yet by prolonged traction, coupled with division of the adductors, it had been found possible to reduce both hips.

SIR WILLIAM HINGSTON of Montreal expressed his delight at the impartiality and candor displayed in this discussion, and remarked that it was not Lorenz, but his method, that was on trial.

DR. BRADFORD, in closing the discussion, said that he had found the ligamentum teres present in a considerable proportion of the young children. He wished to take this opportunity to say that he was now of the opinion that in a communication made some years since he had exaggerated the importance of a folding in of the capsule as an obstacle to reduction.

THIRD DAY — THURSDAY, MAY 14.

A TREATMENT OF OSTEITIS DEFORMANS AND OSTEO-ARTHRITIS.

DR. FRANK E. PECKHAM of Providence read this paper. The paper contained a report of four cases of osteitis deformans and one of osteo-arthritis successfully treated by superficial cauterization of the skin around the diseased area. This cauterization had been done once a month, and midway between a small cantharidal blister had been applied over the spine at a point corresponding to the nerve center of the part involved.

DR. GOLDTHWAIT remarked that it was well known that counter-irritation in these cases would give relief, and that for a long period the disease would remain quiescent; hence he thought the treatment advocated in the paper had effected only temporary benefit.

AN UNUSUAL CASE OF POTT'S ABSCESS.

DR. STEWART LEROY McCURDY of Pittsburg reported this case, the essential feature of which was the incision of the abscess below Poupart's ligament and the demonstration by means of injections of methylene blue of a direct communication. The patient freely expectorated the colored matter.

BONE WIRING FOR RECENT AND UNUNITED FRACTURES, WITH REPORT OF CASES.

DR. McCURDY also presented this paper, together with an instrument used to cut the ends of the bone.

The chief points were: (1) Wiring of bone while the ends remained down in their normal position, thus reducing the disturbance of the periosteum to the minimum, and preserving nutrition and preventing necrosis; (2) the use of iron, a metal naturally present in the system, for silver, a foreign substance; (3) the anchoring of the fragments of bone to external bridge work, with the object of retaining them in position during repair.

A FURTHER STUDY OF THE MECHANICS OF ROTARY LATERAL CURVATURE OF THE SPINE.

DR. R. W. LOVETT of Boston was the author of this paper. He said that he had succeeded in demonstrating by experiment that the vertebral bodies when deprived of the articular cartilages acted mechanically as any flexible rod permanently bent in one plane. It could not, therefore, be bent to one side without twisting, neither could it be rotated or twisted without acquiring a lateral curvature. A left lateral curvature was acquired by twisting to the right, and the reverse by twisting to the left. This curve was constant and marked. It seemed possible that this connection of twisting and lateral curvature might explain certain features of scoliosis, and that both active and passive twisting movements might be used in the treatment of distortion. It was not yet possible to state the therapeutic value of this method in cases having fixed curves.

TREATMENT OF LATERAL CURVATURE OF THE SPINE.

DR. GWILYM G. DAVIS of Philadelphia read this paper. He said that as methods of treating lateral curvature were at present in a transitional stage it was of value to record personal experiences. He advised confining the patient to bed for a large part of the time, with the object of overcoming body weight. While the patient was in bed an effort should be made to assist the straightening of the spine by the use of position, weight extension to the head and by the lateral pressure of hands. The patient should rise daily and take suitable gymnastic exercises; and walking cases should not only have the exercises, but, if the deformity were marked, should wear braces.

A CONSIDERATION OF THE PROPER ARRANGEMENT OF THE CLOTHING IN GROWING CHILDREN WITH REFERENCE TO THE PREVENTION OF FAULTY ATTITUDES.

DR. J. E. GOLDTHWAIT of Boston presented the results of a study he had made of this subject. He pointed out that the normal position, with the shoulders square, could not long be maintained if the clothing, representing a weight of from three to five pounds, were supported on the tips of the shoulders, as was commonly the case. This defect in dress led to stoop shoulder, flattening of the chest, protrusion of the abdomen and of the head, and consequently led to muscle strain, particularly of the spinal muscles, weakness, and frequently to lateral curvature. He exhibited several different styles of garments commonly worn by children, and pointed out the good and bad points in each. The point to remember was that when the clothing was supported on the base of the neck, and not on

the tips of the shoulders, this muscle strain was avoided. In the adult male the weight of the clothing was borne on the base of the neck, if the suspenders were properly adjusted.

SPASTIC PARALYSIS. — SPASTIC PARALYSIS TREATED BY TRANSPOSITION OF THE HAMSTRING TENDONS.

DR. BERNARD BARTOW of Buffalo reported a case of this kind. The patient was a boy of eleven years with spastic double hemiplegia, involving especially the lower extremities. The spasticity had been first noticed at the age of three months. There was associated structural shortening with spasticity in the hamstrings, and the flexors and adductors of the thighs and the leg groups were strongly spastic during movements. The patient could not stand erect or maintain the sitting position except with difficulty. The development of the child was backward, and mentality was enfeebled. On June 9 and 20, 1902, he had operated, transplanting the hamstring tendons to the quadriceps, and correcting the malposition of the knee. This treatment was followed by rapid mental improvement, and extension power in the quadriceps was apparent after three months. Five months after the operation the patient was able to walk with the aid of crutches, and four months later he was able to walk three quarters of a mile. Before the operations he had never been able to walk in the usual way.

THE SCOLIOTONE, A MACHINE FOR ELONGATING THE SPINE AND LESSENING THE ROTATION IN LATERAL CURVATURE.

DR. COMPTON RIELY of Baltimore exhibited this apparatus, and presented a paper. The author reviewed the anatomy, mechanics and pathology of scoliosis. He was of the opinion that the muscles of the back had been unjustly accused of being responsible for the production of scoliosis. There seemed to be almost invariably in these cases an asymmetry in the two sides of the pelvis, a fact which had not received general attention. The anterior superior spine was commonly half or three quarters of an inch higher on the convex side. Attention was called to the importance of obliterating mechanically the element of lordosis as a preliminary to the lessening of the lateral rotation deformity. In the scoliotone the direction of the correcting force was adaptable equally to the lateral deviation and rotation, or chiefly to one or the other element.

HOME APPARATUS FOR FORCIBLE CORRECTION OF LATERAL CURVATURE.

DR. R. W. LOVETT exhibited a simple and cheap device intended to be used at home for the forcible correction of such deformities.

DR. A. B. JUDSON of New York opened the discussion. He said that a brace applied to produce antero-posterior pressure would be useful in treatment, although not practically efficient for absolute reduction of the deformity. A column, curving antero-posteriorly and at the same time laterally, might be said not to have two curves but rather one, partaking of antero-posterior and lateral qualities. This was not necessarily attended with rotation.

DR. B. S. MCKENSIE remarked that the maximum force could be applied by suspending the weight entirely by the spine and applying a lateral force by means of a girdle until the body was drawn to an oblique position represented by an angle of 45° or 50°.

DR. N. M. SHAEFFER suggested a new operation for arresting the progress of the deformity by producing a synostosis in the contiguous articular processes.

BREAKING DOWN OF THE FOOT IN TRAINED NURSES. A SERIES OF 500 OBSERVATIONS ON NORMAL AND DISABLED FEET.

DR. R. W. LOVETT of Boston presented this communication, based on an experience in the observation of the nurses entering a large general hospital during a period of eight years. He found that the foot broke down in about 60% about two months after entering the school, and that whereas the milder cases could be relieved by the use of felt pads and foot plates, the more severe ones required to rest in bed for a time. The only element that had assisted him at the first examination in predicting the resisting power of the feet in a given case was the extent of bearing surface as seen through glass. The breaking down of the feet was largely due to general causes, and could be partially prevented by the wearing of proper shoes.

OFFICERS AND PLACE OF MEETING.

President, DR. REGINALD H. SAYRE; First Vice-President, DR. J. E. GOLDTHWAIT, Boston; Second Vice-President, DR. G. G. DAVIS, Philadelphia; Secretary, DR. JOHN RIDLON, Chicago; Treasurer, DR. E. G. BRACKETT, Boston.

The next meeting will be at Atlantic City in June, 1904.

Recent Literature.

Obstetrics. Volume V, in the Practical Medicine Series of Year-Books. Edited by REUBEN PETERSON, A.B., M.D. Chicago: The Year-Book Publishers. April, 1903.

The present volume of obstetrics is one of a yearly series of ten, issued at monthly intervals, and covering the entire field of medicine and surgery. A similar volume on obstetrics in the same series was favorably reviewed in this column a year ago, and the present work covers the field since the publication of last year. The same general plan has been followed by the editor of abstracting important articles on obstetrical subjects, as they have appeared in the current periodicals in English and foreign languages. The editor has endeavored to make the two volumes supplementary, the one of last year and this year, and consequently those subjects considered at length in the former have been given but little space this year, and *vice versa*. Very few comments on the different articles are made by the editor. The book is of especial value to those particularly interested in the subject of obstetrics as well as to the general practitioner, as an epitome of the year's progress.

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MEDICAL LEGISLATION OF 1903.

DURING the legislative session of the General Court of Massachusetts, which closed on Friday, June 26, several acts were passed which are of greater or less interest to the medical profession of the State. None, however, of this character were enacted during the first four months of the session, the first act having any interest to medical men being Chapter 305 of the Acts of 1903, which is entitled "An Act Relative to Returns of Records of Deaths by Clerks of Cities and Towns." This act provides that the clerks of cities and towns shall transmit returns of deaths to the Secretary of State monthly, instead of after the close of the year as heretofore. This is entirely in harmony with the advice of the census authorities at Washington, as presented in their recent pamphlet, urging a uniform system of registration in the different states, and will tend to make the work of the central office more efficient and more prompt in its collection and publication of registration material.

Chapter 306 is entitled "An Act Relative to Infected Articles," and is a modification of a very old law which was enacted in 1751. It provides that "for any article of furniture or wearing apparel ordered to be destroyed by an order of the Board of Health the city or town may recompense the owner to an amount not exceeding fifty dollars." This refers, in the words of a preceding section, to articles "infected with any disease dangerous to the public health."

Chapter 358 provides for an investigation by the State Board of Health "of the dumping of garbage and rubbish in the harbors and along the seacoast of Massachusetts Bay." The board is authorized by this act "to report its findings to the General Court, with such recommendations as it may deem

expedient to provide for the inspection and regulation of such dumping, and to prevent the strewing of the shores with offensive material, whereby a nuisance is created."

Chapter 361 is one of the many acts relating to food inspection, and provides for definite penalties for fraudulent sales of so-called "renovated butter," varying from \$25 to \$500, or imprisonment, according to the extent of the crime and the discretion of the judge in whose court the victim happens to be arraigned.

Another act of the same class, Chapter 367, provides that employees or clerks engaged in selling food or drugs shall not be punished for violation of the adulteration acts "unless such violation was intentional on the part of the said employee."

Chapter 383 is entitled "An Act Relative to Separate Systems of Drainage," and provides for a definite separation of storm waters and surface water from the sewage of cities and towns, wherever separate sewerage systems exist.

Chapter 400, entitled "An Act Relative to the Care of the Insane," provides that the State Board of Insanity may by agreement with the local authorities, and at a limited cost for care and treatment, "place insane persons of the chronic and quiet class in the almshouses of cities and towns, under the care of the proper local authorities."

By the provisions of Chapter 467 an additional annual appropriation is made of \$1,000 for the enforcement of the acts relating to food and drug inspection. This appropriation was made on account of the act passed last year requiring the State Board of Health to conduct the work formerly done by the State Assayer of Liquors, for which no appropriation had been made in 1902.

The enactment of Chapter 480, which received the Governor's approval and became a law on the last evening of the legislative session, deserves more than a passing notice. This act is entitled "An Act Relative to the Production and Distribution of Antitoxin and Vaccine Lymph,"—and provides an amendment to Section 4 of the organic act, creating the State Board of Health and defining its duties, by which the board is authorized "for the use of the people of the Commonwealth, to produce and distribute antitoxin and vaccine lymph."

Early in the session of the previous year, and while the outbreak of smallpox was at its height, a bill was introduced upon petition of Dr. Durgin, chairman of the Boston Board of Health, providing for the production of vaccine lymph by the State Board of Health.

After several lengthy hearings before the Legislative Committee on Public Health, at which evi-

dence was presented showing the need of better provision for vaccine production than any which then existed in the State, the opponents of the measure so far succeeded in their attempts to defeat it as to secure the enactment of a resolve requiring the State Board of Agriculture to investigate the practicability of maintaining a vaccine establishment at the Agricultural College in Amherst, and to report upon the same to the next General Court, thus deferring the settlement of the question to another year.

At the beginning of the session of 1903 the question was reopened by the report of the Board of Agriculture favoring the establishment of a vaccine plant at Amherst. The Druggists' Association was represented by Mr. W. W. Bartlet, while the manufacturers of antitoxin and vaccine lymph from other states maintained a corps of agents at the State House throughout the early part of the session. On the other hand, the Norfolk District Medical Society took the initiative, and with other medical organizations secured the services of Mr. V. C. Lawrence, to whom very largely the final successful issue of the movement to give the State Board of Health authority to produce and distribute antitoxin and vaccine lymph is due. He was seconded in his efforts by the active assistance of President Eliot, Dr. S. H. Durgin and other prominent men, and by the petitions of many district medical organizations and local boards of health.

PARATYPHOID FEVER.

The term "paratyphoid" was used first by Achard and Bensaude. In 1896 they reported two cases which clinically resembled typhoid fever, but they called them paratyphoid infections because from the urine of one patient and from a suppurative sterno-clavicular joint of the other they obtained a micro-organism which closely resembled the typhoid bacillus but was not identical in its cultural reactions. Little attention was paid to this communication until the publication, several years later, of the carefully studied cases of Gwyn and Cushing in this country and of Schottmueller in Germany. During the past eighteen months many cases of infection with the paratyphoid bacillus have been recognized. Up to February, 1903, Pratt¹ was able to collect eighty-one cases from the literature and gave the notes of three additional cases which occurred in Boston. No other cases have been reported from New England, but during the past few months instances of paratyphoid fever have been observed in places as widely separated as Havana, Prague and Chicago.

The bacillus is intermediate in character between the typhoid and colon bacilli, and the term "paracol" is sometimes applied to this micro-organism, but as it is more closely related to the typhoid than to the colon bacillus, and as it produces typhoidal symptoms, the name "paratyphoid" seems preferable. The chief cultural property which distinguishes it from the typhoid bacillus is its power to form gas from glucose.

The disease cannot be distinguished by the symptoms alone from typhoid fever. All the typical features of the typhoid symptom-complex may be present. The fever usually lasts three or four weeks. Brion from his analysis of the recorded cases state that rose spots and an enlarged spleen were noted in eighty per cent. of the cases and in thirty per cent. the urine gave the diazo reaction. Diarrhea with pea-soup discharges occurred in eighteen per cent. As a rule the disease runs a milder course than typhoid fever, although the variety and frequency of the complications has been a striking feature.

Only three undoubted cases of paratyphoid fever have resulted fatally. In none of these were the intestinal lesions of typhoid fever present. The absence of general involvement of the lymphatic apparatus of the intestine clearly distinguishes the disease from typhoid. There was no ulceration or swelling of Peyer's patches and the mesenteric lymph nodes were not enlarged. In one of the cases there was a slight diphtheritic enterocolitis, while in the recent case of Lucksch there was hyperplasia of the solitary follicles of the colon, several of which were ulcerated. The lesions in these two cases resembled those of dysentery rather than of typhoid fever. As in other acute infectious diseases there is parenchymatous degeneration of the viscera and a splenic tumor. Early in the disease the paratyphoid bacilli are found in the blood in large number. They have also been obtained during life from the urine, feces, sputum, rose spots and spleen.

The source of the disease has been traced in two instances to the drinking water.

The surest way of making the diagnosis is to cultivate the bacillus from the blood. The withdrawal of 10cc. of blood from one of the large veins of the arms is a simple and safe procedure if aseptic precautions are taken. In some cases the diagnosis has been made by isolating the paratyphoid bacillus from the urine or feces or some localized lesion and then demonstrating that the individual's blood in high dilution agglutinated the bacillus. If the blood from a suspected case of paratyphoid fever agglutinates a paratyphoid bacillus in very high dilution and fails to agglutinate

¹ Boston Med. & Surg. Journ., 1903, cxlviii, p. 137.

the typhoid bacillus at all or only in low dilution the diagnosis of paratyphoid infection can be made. Although the blood of a paratyphoid patient usually does not clump the typhoid bacillus even in as low a dilution as 1:10, recent observations have shown that cases do occur in which the paratyphoid serum does clump the typhoid bacillus in as high a dilution as 1:100. There are two species of paratyphoid bacilli, and inasmuch as the blood of an individual infected with one species may fail to clump the other, cultures of both should be used in making the tests. The fact that the prognosis is more favorable in paratyphoid fever than in true typhoid makes a correct diagnosis a matter of practical importance.

SUPPRESSION OF THE NEWS OF SUICIDES.

It is reported that an attempt is to be made in Cleveland, Ohio, to suppress details in all cases of suicide. Such a course of procedure is certainly justified by the facts at our disposal regarding the contagion of acts of violence. The effect of suggestion in suicide, as in lynching and other crimes against the individual or society, is a potent influence which should always be taken into account. It would no doubt be very much to the public benefit if details of such crimes or misfortunes, often drawn out to wholly unnecessary length in our daily papers, could be completely suppressed. How far this is compatible with our ideas of freedom of the press and liberty of public expression is open to doubt, but there can be no question that a very great incentive to the unfortunate occurrences which form so conspicuous a part of certain of our daily papers would be removed could a general suppression of all such news be enforced.

MEDICAL NOTES.

DENGUE IN HAWAII.—It is reported that an epidemic of dengue has appeared in Hawaii, with upwards of fifteen hundred cases, but up to this time no deaths have occurred from the disease.

TYPHOID IN ITHACA.—The report comes that typhoid fever, although naturally diminished in amount, is still prevalent in Ithaca, and that the water supply is not yet above suspicion. July 16 nine cases were reported as ill with the fever, with several suspected cases. It is alleged that the Ithaca Water Company is still serving the city with infected water through a failure to protect its watershed. Artesian wells are being driven with a capacity nearly sufficient to supply the city.

COCAINE HABIT AMONG NEGROES.—At the annual Hampton Negro Conference, which began its sessions July 15, the question of the growth of the cocaine habit among negroes was discussed by Dr. J. W. Prather. After a report on the diseases to which the negro is liable, he called attention to the alarming growth of the cocaine habit, and pointed out the fact that upwards of 200,000 negroes are addicted to the cocaine habit or the use of other narcotics. In a recent number of the *Medical Press* reference is made to the increasing spread of the cocaine habit, and its prevalence among negroes is commented upon.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, July 22, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 31, scarlatina 22, typhoid fever 21, measles 22, smallpox 0.

MORTALITY REPORT.—The number of deaths reported to the Board of Health for the week ending July 18 was 215 as against 189 the corresponding week last year, showing an increase of 26 deaths, and making the death-rate for the week 18.58. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 31 cases, 5 deaths; scarlatina, 20 cases, 3 deaths; typhoid fever, 16 cases, no deaths; measles, 23 cases, no deaths; tuberculosis, 34 cases, 18 deaths; smallpox, no cases. The deaths from pneumonia were 25, whooping cough 1, heart-disease 21, bronchitis 3, marasmus 1. There were 13 deaths from violent causes. The number of children who died under one year was 52; under five years, 67; persons over sixty years, 47; deaths in public institutions, 79.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—A recent meeting of the Middlesex South District Medical Society was held at Pemberton, Boston Harbor, in which certain matters other than medical claimed the attention of the members.

NEW YORK.

STEVENS' TRIENNIAL PRIZE.—The Stevens' triennial prize of Columbia University for original research was awarded to Drs. L. Pierce Clark and Thomas P. Prout of New York for an essay upon "Status Epilepticus: A Clinical and Pathological Study of Epilepsy."

CLAIMS OF A VETERINARIAN SUSTAINED.—In special term at Troy on June 20, Justice Howard decided, in spite of the opposition of the State, represented by Deputy Attorney-General Church, that the State Board of Veterinary Medical Examiners

must recommend the issue by the board of regents of a veterinarian certificate to Albert L. Harris of Nassau, Rensselaer County. The question at issue was whether the examiners could refuse to report as satisfactory Harris' alleged proofs of at least three years' practice of veterinary medicine prior to the year 1890, and Justice Howard's decision seems to make the applicant's affidavit to that effect sufficient. The case is important as probably involving all similar cases of medical practitioners, and it is said that the State is likely to appeal.

ST. JOHN'S GUILD FLOATING HOSPITAL.—The first trip of the twenty-eighth season of the St. John's Guild Floating Hospital took place on July 7. About a thousand women and young children were carried, and a number of very ill children were left at the Guild's Seaside Hospital at New Dorp, Staten Island. Owing to lack of sufficient funds, but one boat instead of two will be operated this season.

A CENTENARIAN.—Thomas Thompson, a negro who was born a slave in Moonachie, N. J., died at his home on the Hackensack Meadows, Hudson County, N. J., on July 8, at the reputed age of one hundred and two years.

DEATHS FROM HEAT.—During July 9 and 10 forty-four deaths from the direct effects of the heat, besides a large number of non-fatal prostrations, were caused in New York.

Correspondence.

MANILA LETTER.

SPECIAL CORRESPONDENCE.

THE CHOLERA SITUATION. — PLAGUE. — LOSS TO BOARD OF HEALTH BY FIRE. — LOCUSTS. — CURIOUS BELIEFS ON MEDICAL MATTERS.

THE cholera situation continues to show marked improvement. The islands are quite widely infected, but the people are more generally taking precautions and an improved sanitary organization is enabling the Board of Health to handle the situation more effectively. The amount of devastation done by the disease is gradually being reduced to figures, as a number of the Board of Health doctors are making investigations in regions from which no reports have previously come. Their figures include the entire period of the epidemic. In one daily report recently no less than 1,040 deaths were reported, but all except about 50 of these deaths occurred some months ago. The total number of deaths from cholera now reported reaches more than 86,000. A few cases occur daily in Manila, but only four or five where a year ago at this time there were a hundred deaths daily. As these cases have nearly all occurred along the water front among boatmen and laundresses, and a large part of these developed on board boats lying in certain parts of the river where there was slack water not greatly affected by currents or tides, the attention of the health authorities was called to the probability of the Pasig being the chief, if not almost entirely the sole source of infection; in one instance occurring in the Santa Ana District of Manila, five persons drank Pasig River water on June 3, and all were dead of cholera on June 5. While in a certain number of cases infected food seemed to play an essential part, and the Filipinos

themselves attributed the disease to such foods. The fact of the disease occurring in certain restricted classes seemed to point to a subsequent infection of the food after it had left the markets. Investigation showed that the marine and river population usually washed their food in the Pasig River water. An elaborate system of investigation of this water as to the presence of the cholera bacillus was at once instituted by two representatives of the Board of Health working independently. Samples were collected from various parts of the river in and near Manila, and of 20 such specimens 18 showed the presence of the cholera bacilli in large quantities. The water was first tested with the "cholera red" test, and the organisms subsequently isolated. As little as one half of a cubic centimeter of river water gave in many cases a strong reaction. The bacilli were found in the slack water and particularly in the shallow reaches used as places of anchorage for cascoes awaiting employment, and were not found in the main current. In view of this discovery of the cholera bacillus in the Pasig, the Board of Health has just instituted more strict measures for enforcement of the standing prohibition of the use of Pasig water. While nearly all of the natives use water from the city supply for drinking and cooking purposes, many bathe and wash clothes and food in the Pasig, and in this way acquire the infection. Bathing and swimming is particularly an important factor, and with as little as half a cubic centimeter giving a strong reaction it is hard to see how a swimmer could avoid taking at least that much river water into his mouth, and thus acquiring an infection. The patrolling of the river by sanitary inspectors will probably much reduce the use of its waters, and proportionately decrease the number of cases of the disease. Every possible effort is being taken to prevent the contamination of the city water supply, and so far with excellent success. The sharp epidemics which have lately occurred in certain small provincial towns show what might be expected if the water supply here should become infected. In Apiani, for instance, every water sample sent to Manila for analysis showed large numbers of cholera bacilli present, and the cholera mortality in that place has been very high. When the authorities at Apiani were notified of the continued presence of the cholera bacilli in their water supply, they illustrated the general helplessness of the natives in respect to sanitary matters, for, on being directed to boil their drinking water and cook their food thoroughly, they promptly replied with a request that the soldiers stationed at that place be directed to distill water for their use. This is only equalled by the request of natives on the watershed of the Manila water supply, who asked that the soldiers acting as sanitary guard look after their carabao while the natives went to mass. At the present time cholera appears to be worst in the province of Albay, Luzon and in the island of Mindanao, and it would appear as if the number of deaths occurring was considerably in excess of those reported. As everywhere at this time, the disease assumes a most virulent form, and nearly all those attacked quickly die. The concealment of cases is a most serious drawback to the work of the sanitary authorities, as they are thus prevented from taking proper preventive measures before the disease has assumed an epidemic form.

The plague situation is also very gratifying and shows excellent results, due to the general inoculation of the Chinese, the catching of rats, fumigation of ships and destruction of plague houses. During the month of May there were but twenty-five cases of plague in Manila, while in Hong Kong there were nearly four hundred and fifty. For the single week ending May 23, the Hong Kong plague report showed one hundred and thirty-six cases, among them a number of Europeans. As the outbreaks in the two cities started at the same time and progressed up to a certain point at about the same rate in respect to the number of cases, it is fair to presume that the admirable showing of Manila in comparison with Hong Kong is the result of the much more strict measures instituted by the Board of Health here as soon as it was apparent that a severe epidemic was threatening. Too much credit cannot be given to Major Carter, the commissioner of health, for the excellent results obtained in cutting down plague and cholera,

and the local press is very enthusiastic over the sanitary work being done by the health authorities here. Even the natives, who are always rather loth to admit the fact that American reforms are productive of good, are beginning to recognize the excellent results attained by the health authorities.

The loss of property by the Board of Health by the recent fire has been determined at nearly \$100,000, in spite of which the sanitary work has gone on with practically no interruption. Rebuilding of the buildings destroyed is going on rapidly, and with an idea to future convenience and permanence. A large amount of material for use in connection with the pail system of disposal of excreta will have to be purchased. This matter of disposal of excreta is being taken up vigorously, and a committee has been appointed to draw up plans and specifications for the establishment of sewers, disposal of excreta, improvement of the esteros and the sanitation of the low-lying submerged lands in and around Manila. As soon as the report of this committee has been rendered, it is expected that the work of improvement will be pushed as rapidly as possible.

Locusts are again devastating the fields of the provinces of Pangasinan, Tarlac and Nueva Ecija, and the health authorities are making every effort for their destruction. The ignorant peasants are ascribing the presence of the locusts to all kinds of fantastic causes. Some say that God is angered by the coming of Protestants into fields that were once under exclusive control of the Church of Rome; others, the adherents of the new Filipino Independent Church, intimate darkly that there is some connection between the appearance of the locusts and the arrival of Archbishop Guidi, the papal delegate, in the Philippines, and say frankly that there is no hope of getting rid of the locusts until Mons. Guidi departs. Some of the adherents of the Catholic Church, on the other hand, opine that the locusts are sent as a just punishment upon the Filipinos for joining the new church started by Aglipay. Still another party says that the Spanish friars are to blame, and there are many who believe that the Union Observa, a new political party, is the cause, as it was established and the locusts appeared at about the same time. These whimsical ideas are quoted to show the ignorance and credulity of the Malay mind, the workings of which are frequently beyond the comprehension of the American.

Curious beliefs of this sort are particularly entertained in respect to medical matters, and often create serious obstacles to the health authorities in their efforts to prevent disease. Instruction and education must be given before the people can be brought to a realizing sense of the necessity for following even the most elementary sanitary rules. A good example of this fact is found in a trial now going on at Iloilo of a native who circulated a story to the effect that the Americans were poisoning the wells during the late cholera epidemic there. The sanitary authorities had him arrested, and now the government is prosecuting him under the charge of sedition, alleging that his words had a dangerous effect upon peaceable conditions and were inciting the Filipinos to rise against the government. It will be much to the advantage of sanitary work here if he is severely punished if proven guilty, for the ignorance of the natives is too frequently taken advantage of by more educated individuals, who are against the government or opposed to sanitary reforms.

PARATYPHOID FEVER.

BOSTON, July 3, 1903.

MR. EDITOR: "Paratyphoid" is at present frequently applied to cases of typhoid fever, particularly in the culture reports by the Bacteriological Laboratory. The majority of the profession are uninformed as to what the term denotes pathologically, and I am one of that number, although I have consulted recent literature on typhoid, and have conferred with several of the eminent members of the medical profession in our city. Can you not serve the profession by giving them light editorially?

INQUIRER.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 11, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Percentage of deaths from | | | | | |
|--------------------|--------------------------------|-----------------------------|-----------------------------|-------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | Deaths under five years. | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,516 | 633 | 33.83 | 9.69 | 2.37 | 19.15 | 1.05 |
| Chicago . . . | 1,885,000 | 563 | 176 | 25.04 | 9.06 | .71 | 11.07 | 1.12 |
| Philadelphia . . . | 1,378,527 | — | — | — | — | — | — | — |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 274 | 129 | 38.68 | 1.37 | 1.09 | 26.64 | 1.09 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 165 | 59 | 36.36 | .50 | 1.21 | 29.29 | 1.21 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Millwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 80 | 41 | 56.25 | 3.75 | 6.25 | 35.00 | — |
| Boston . . . | 603,163 | 202 | 56 | 20.79 | 7.92 | .50 | 6.93 | .99 |
| Worcester . . . | 132,044 | 49 | 22 | 32.64 | 12.24 | — | 18.36 | — |
| Fall River . . . | 115,549 | 57 | 48 | 54.37 | 1.75 | — | 50.86 | — |
| Lowell . . . | 101,959 | 47 | 24 | 23.40 | 8.51 | — | 14.89 | — |
| Cambridge . . . | 98,639 | 28 | 10 | 28.57 | 7.14 | 7.14 | — | — |
| Lynn . . . | 72,497 | 16 | 1 | 12.50 | — | — | — | — |
| Lawrence . . . | 69,766 | 21 | 13 | 57.14 | — | — | 42.86 | — |
| Springfield . . . | 69,389 | 13 | 2 | 30.80 | — | — | — | 7.70 |
| Somerville . . . | 68,110 | 19 | 6 | 26.31 | 15.79 | — | — | 5.26 |
| New Bedford . . . | 67,198 | 35 | 17 | 37.14 | 11.42 | 2.86 | 25.71 | 5.71 |
| Holyoke . . . | 49,286 | 18 | 11 | 50.00 | 11.11 | — | 44.44 | — |
| Brookton . . . | 44,873 | 11 | 2 | 18.18 | — | — | — | — |
| Haverhill . . . | 42,104 | 10 | 1 | 10.00 | 10.00 | — | — | — |
| Newton . . . | 37,794 | — | — | — | — | — | — | — |
| Salem . . . | 36,876 | 12 | 4 | 25.00 | — | 8.33 | 8.33 | — |
| Malden . . . | 36,286 | — | — | — | — | — | — | — |
| Chelsea . . . | 35,876 | 15 | 6 | 13.33 | — | — | — | — |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 11 | 1 | 18.18 | 18.18 | — | — | — |
| Everett . . . | 28,620 | 6 | 1 | — | — | — | — | — |
| North Adams . . . | 27,862 | 4 | 1 | 25.00 | 25.00 | — | — | 25.00 |
| Gloucester . . . | 26,121 | 9 | 3 | — | — | — | — | — |
| Quincy . . . | 26,042 | 8 | 1 | 25.00 | — | — | — | — |
| Waltham . . . | 25,198 | 5 | — | — | — | — | — | — |
| Brookline . . . | 22,603 | 4 | 1 | 25.00 | 25.00 | — | 25.00 | — |
| Pittsfield . . . | 22,589 | 10 | 1 | 10.00 | 20.00 | — | — | — |
| Chicopee . . . | 21,031 | 13 | 9 | 61.60 | 7.70 | — | 53.90 | — |
| Medford . . . | 20,962 | 4 | 1 | 25.00 | — | — | — | — |
| Northampton . . . | 19,883 | 6 | 3 | — | — | — | — | — |
| Beverly . . . | 15,302 | 2 | 1 | — | 50.00 | — | — | — |
| Clinton . . . | 15,161 | — | — | — | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . . | 14,478 | 4 | 1 | — | — | — | — | — |
| Woburn . . . | 14,300 | 2 | — | 50.00 | — | — | — | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — |
| Adams . . . | 13,745 | 2 | — | — | — | — | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 5 | 0 | 60.00 | — | — | — | — |
| Melrose . . . | 13,600 | 3 | — | — | 33.33 | — | — | — |
| Westfield . . . | 13,418 | 3 | — | — | — | — | — | — |
| Millford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 4 | 1 | 25.00 | 25.00 | — | — | — |
| Frammingham . . . | 12,534 | 1 | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 3 | 1 | 66.67 | — | — | — | — |
| Weymouth . . . | 11,344 | 3 | 0 | 33.33 | — | — | — | — |
| Southbridge . . . | 11,268 | 4 | — | 50.00 | — | — | 25.00 | — |
| Watertown . . . | 11,077 | 2 | 0 | 50.00 | — | — | — | — |
| Plymouth . . . | 10,730 | 4 | — | 25.00 | — | — | — | — |

Deaths reported, 3,849; under five years of age, 1,545; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,242, acute lung diseases 301, consumption 307, scarlet fever 41, whooping cough 24, cerebrospinal meningitis 12, smallpox 13, erysipelas 6, measles 34, typhoid fever 48, diarrheal diseases 686, diphtheria and croup 62.


From whooping cough, New York 7, Chicago 4, Philadelphia 5, Baltimore 2, and Boston, Lowell, Cambridge, Springfield, Somerville and Quincy, 1 each. From erysipelas, New York 4, Chicago 1, Philadelphia 1. From smallpox, Philadelphia 11, Pittsburg 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending June 27, the death-rate was 14.3. Deaths reported, 4,137: acute diseases of the respiratory organs (London) 150, whooping cough 84, diphtheria 44, measles 137, smallpox 13, scarlet fever 48.

The death-rate ranged from 5.3 in Ipswich to 27.2 in Great Yarmouth; London 13.5, West Ham 11.1, Brighton 8.7, Portsmouth 13.4, Southampton 12.3, Plymouth 10.2, Bristol 12.8, Birmingham 16.6, Leicester 14.4, Nottingham 17.4, Bolton 17.4, Manchester 18.0, Salford 18.6, Bradford 15.8, Leeds 12.9, Hull 15.0, Newcastle-on-Tyne 17.6, Cardiff 10.6, Rhondda 13.9, Liverpool 18.8, Hornsey 9.3, Coventry 24.4.

METEOROLOGICAL RECORD.

For the week ending July 11, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. | | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. | |
| | | | | | | | | | | | | | | | |
| S. | 5 | 30.14 | 68 | 79 | 58 | 60 | 61 | 60 | W | W | 10 | 12 | C. | O. | O. |
| M. | 6 | 30.02 | 70 | 77 | 63 | 62 | 67 | 64 | S | W | 12 | 9 | O. | C. | C. |
| T. | 7 | 30.04 | 75 | 86 | 64 | 66 | 51 | 58 | N | W | 5 | 5 | C. | C. | C. |
| W. | 8 | 29.90 | 80 | 90 | 70 | 60 | 58 | 59 | W | W | 9 | 9 | F. | O. | O. |
| T. | 9 | 29.86 | 82 | 93 | 70 | 57 | 76 | 66 | W | E | 9 | 6 | O. | C. | C. |
| F. | 10 | 29.82 | 80 | 93 | 68 | 72 | 60 | 66 | W | W | 4 | 12 | O. | C. | O. |
| S. | 11 | 29.72 | 82 | 90 | 74 | 58 | 62 | 60 | N | W | 12 | 7 | C. | C. | O. |
|  | 29.93 | | 87 | 67 | | 65 | | | | | | | | | .31 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. **Mean** for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JULY 16, 1903.

PERRY, J. C., passed assistant surgeon. Granted leave of absence for one month from July 14. July 10, 1903.

ROSENAU, M. J., passed assistant surgeon. To proceed to Boston, Mass.; Philadelphia, Marietta and Swiftwater, Pa.; Detroit, Mich.; St. Louis, Mo.; Milwaukee, Wis.; Chicago, Ill., and Baltimore, Md., for special temporary duty. July 10, 1903.

WICKES, H. W., passed assistant surgeon. Granted leave of absence for one day, July 17. July 15, 1903.

CLARK, T., passed assistant surgeon. Granted leave of absence for seven days from July 13, 1903, under paragraph 191 of the regulations.

MCCLINTIC, T. B., assistant surgeon. To proceed to Atlantic City and Point Pleasant, N. J., for the purpose of making physical examinations of keepers and surfmen of the Life Saving Service. July 15, 1903.

To proceed to Tuckerton, N. J., for the purpose of making physical examinations of keepers and surfmen of the Life Saving Service. July 16, 1903.

TROTTER, F. E., assistant surgeon. Granted seven days' extension of leave of absence from July 13. July 11, 1903.

WILLE, C. W., assistant surgeon. To proceed to Ocean City, Md.; Chincoteague Island and Olney, Va., for the purpose of making physical examinations of keepers and surfmen of the Life Saving Service. July 15, 1903.

BARNESBY, P. N., acting assistant surgeon. Granted leave of absence for two weeks, on account of sickness, from July 2. July 8, 1903.

HICKS, W. R., acting assistant surgeon. Granted leave of absence for three days from July 14. July 15, 1903.

SWEETING, C. B., acting assistant surgeon. Granted leave of absence for thirty days, on account of sickness, from July 10. July 13, 1903.

TUTTLE, JAY, acting assistant surgeon. Department letter granting Acting Assistant Surgeon Tuttle leave of absence for thirty days, amended so as to be effective July 3. July 10, 1903.

WELDON, W. A., acting assistant surgeon. Granted leave of absence for fifteen days from July 11. July 11, 1903.

BOARDS CONVENED.

Board convened to meet at the marine hospital, Port Townsend, Wash., July 17, 1903, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Passed Assistant Surgeon J. H. Oakley, chairman; Passed Assistant Surgeon N. H. Foster, recorder.

Board convened to meet at the marine hospital, Chelsea, Mass., July 21, 1903, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon R. N. Woodward, chairman; Assistant Surgeon W. C. Rucker, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY. WEEK ENDING JULY 18, 1903.

H. L. LAW, surgeon, retired. Ordered to additional duty at Marine Recruiting Station, Providence, R. I.

H. L. BROWN, assistant surgeon. Appointed assistant surgeon with rank of lieutenant, junior grade, from June 29, 1903.

J. C. THOMPSON, assistant surgeon. Detached from the "Columbia" and ordered home and to wait orders.

C. H. DELANCY, assistant surgeon. Detached from the Navy Yard, Norfolk, Va., and ordered to the "Columbia."

G. R. PLUMMER, acting assistant surgeon. Ordered to Naval Station, Key West, Florida.

C. H. T. LOWNDES, surgeon. Detached from the Naval Station, San Juan, Porto Rico, and ordered home and to wait orders.

G. PICKRELL, surgeon. Ordered to Naval Station, San Juan, Porto Rico.

H. N. T. HARRIS, surgeon. Orders of July 8 modified; detached from "Glacier" and ordered to Navy Yard, Pensacola, Fla., July 18.

W. H. BUCHER, passed assistant surgeon. Detached from Navy Yard, Pensacola, Fla., and ordered to Washington, D. C., July 21, for examination for promotion, and thence to San Francisco, Cal., to take passage on "S. S. Siberia," sailing August 8 for Asiatic Station, for duty at Navy Yard, Cavite, P. I.

J. C. THOMPSON, assistant surgeon. Orders of July 14 modified; detached from "Columbia" and ordered to "Chesapeake" July 17.

A. J. GEIGER, assistant surgeon. Detached from Naval Hospital, Navy Yard, Norfolk, Va., and ordered to Washington, D. C., for duty as recorder of Naval and Medical Examining Board now in session at Naval Museum of Hygiene and Medical School.

R. B. CHAPMAN, acting assistant surgeon. Ordered to duty with Recruiting Party, No. 6.

L. H. SCHWERIN, acting assistant surgeon. Detached from duty with Recruiting Party, No. 6. and ordered to the "Southery."

F. W. TYREE, acting assistant. Ordered to the Naval Station, Port Royal, S. C.

RECENT DEATHS.

CHARLES BLODGETT, M.D., M.M.S.S., formerly of Holyoke, died at Grass Valley, Cal., June 25, 1903, aged seventy-five years.

STEPHEN JOSEPH DUNN, M.D., M.M.S.S., of Springfield, died in Hartford, Conn., June 27, 1903.

CHARLES LANCASTER, M.D., of Plainfield, N. J., died on July 6, at the age of ninety-six years. He was well known as a literary man as well as a physician.

EDWARD V. ARMSTRONG, M.D., U. S. Navy, retired, died at the Presbyterian Hospital, New York, on July 16, from the results of tropical malarial fever, which he contracted when on service in the Philippines. He was thirty years of age. At the time of the outbreak of the Spanish-American War, Dr. Armstrong was practising at Mount Vernon, Westchester County, N. Y. He promptly offered his services to the Government, and in April, 1898, was appointed an assistant surgeon in the navy. During the war he served on the "Scorpion," and at its close was assigned to duty in the Philippines. Ill health necessitated his retirement and until he came to New York about the 1st of July to undergo an operation, he resided at Mount Vernon. A year ago he married a sister of Mayor Fiske of that city.

GEORGE CHAPPELL CRAWFORD, M.D., of Brooklyn, N. Y., died on July 13, at the age of thirty-five years. He was a native of Long Island and was graduated from the Long Island College Hospital, Brooklyn, in 1894.

BOOKS AND PAMPHLETS RECEIVED.

First Principles of Otology. A Textbook for Medical Students. By Albert H. Brick, M.D. Second edition. Illustrated. New York: William Wood & Co. 1903.

A Parasite Roundworm (*Agamomermis culicis*, n.g., n.sp.) in American Mosquitoes (*Culex sollicitatus*). By Ch. Wardwell Stiles.

The Type Species of the Astode Genus *Hymenotesis*. By Ch. Wardwell Stiles. Bulletin No. 13. U. S. Public Health and Marine Hospital Service. May, 1903.

La Sindrome nelle operazioni conservatrici del testicolo. By Dottor G. Pascole. Napoli, 1903.

Addresses.

THE SHATTUCK LECTURE.

THE SOURCES, FAVORING CONDITIONS AND PROPHYLAXIS OF MALARIA IN TEMPERATE CLIMATES, WITH SPECIAL REFERENCE TO MASSACHUSETTS.*

BY THEOBALD SMITH, M.D., BOSTON.

(Continued from No. 4, page 52.)

IN 1895 the board began the distribution of coverslips in small metal capsules upon which blood films from suspected cases were to be spread, dried and mailed to the laboratory. There the films were stained and carefully scrutinized for the malaria parasite. Since the establishment of this service many cities of the Commonwealth have created their own diagnostic laboratories, and material from the cities rarely finds its way to the laboratory of the board. Many physicians do not consider it worth the trouble to send in blood films where the fever is clearly intermittent and is cut short with quinine. In spite of the incompleteness of our records concerning the prevalence of malaria, they are quite suggestive. Since April, 1896, malaria parasites have been demonstrated in specimens from twenty-eight different towns. Some of these towns have sent specimens for three consecutive years. Very few appear but once on the list. In all, 175 individual cases were found infected. What proportion of the whole these represent I am unable to state approximately; but I am inclined to believe, from conversations with many physicians practicing in the country, that they represent only a small fraction of the actual total.

Under the most favorable circumstances the study of the distribution and epidemiology of malaria remains difficult for two reasons. The most inveterate malaria carriers know how to treat themselves with quinine, and thus the very cases which might explain the incidence of intermittent fever escape the inquirer. In the second place the very people who in other matters pertaining to the public welfare may be depended on for aid are often averse to giving information concerning malaria in their neighborhood. Dr. Bronson stated in 1871 that "as a rule men having residences or building lots for sale are, on the ague question, not above deception."

In attempting to interpret the appearance of these waves of intermittent fever we must distinguish between the original sources of the infection and the local favoring conditions. The malaria parasite is not created anew by telluric and meteorological conditions, but it comes from some pre-existing parasite. Where did it come from? In the tropics malaria is potentially present at all times. With us it appears as a rule quite unexpectedly and may again disappear. The belief was quite general that upturning of the soil was responsible in

some way for the disease. That it closely follows operations involving excavations such as railroad building, grading, tunneling, and the building of dams, dikes, bridges and reservoirs is well known. The immediate popular inference was the crude, unbiological notion that the germs of malaria live in the soil. While studying the appearance of malaria along the line of construction of the Metropolitan Water System in 1897 and the epidemic in Billerica and Concord several years later, I became firmly impressed with the belief that malarial infection is imported by workmen. This theory* was suggested by experimental studies in bovine malaria which showed that all cattle from endemic regions carry the germs in their blood and that the disease can readily be produced by inoculating a little blood from these healthy, immune animals from infected districts. That workmen from malarial countries may carry the parasite in the same way perhaps indefinitely was the only theory that could satisfactorily explain the observed facts. Since that time the theory that human beings are the sources of malarial infection has become firmly entrenched. Koch⁴⁶ in his Italian investigations stated that the infected human beings must be considered the starting-point of every season's new cases. Christophers and Stevens, reporting to the Royal Society from their field of investigation on the west coast of Africa, go so far as to strongly argue segregation of Europeans from the natives, as the latter are largely carriers of the parasites.† The same authors point to the analogy between malaria and Nagana or the tsè tsè disease. A fly transmits the blood parasite of this disease from apparently healthy wild game and from buffaloes to the domestic animals imported from Europe. The latter usually contract a fatal disease. While admitting the analogy I must confess that that between human and bovine malaria is much closer. The tsè tsè parasite is a flagellate and lives free in the blood. The parasites of the two forms of malaria are sporozoa, both live in the red corpuscles and have many characters in common. Christophers and Stevens, furthermore, ridicule the idea that malaria can be acquired in regions free from human beings, and they show that there are very few places even in the heart of Africa where the explorers are not near natives.

When the theory that the laborers and not the upturned soil were responsible for malaria was first formulated in my mind I felt that in so important a matter there should be ample proof. New theories or hypotheses unsupported by facts are more dangerous than none at all when promulgated, since many are contrary to fact and if applied are certain to cause damage. It seems to me that taking into consideration the

* Was tentatively published by me in 1901 (see Lit. 47 and 63).

† "These facts are of importance as they show that the generally received idea that Europeans derive malaria from pre-existing cases in Europeans requires considerable modification. This factor, it seems to us, sinks into complete insignificance beside that of infection derived from native sources." (Rep. to Malaria Committee, Royal Society, Seventh Series.)

* Delivered before the Massachusetts Medical Society, June 9, 1903.

abundant contributory and demonstrative evidence which has been accumulating since 1897 we are quite safe, in our efforts to suppress malaria, in now taking this theory as a fact and acting upon it.

If then we focus our attention upon man as the carrier of malarial infection, and if at the same time we consider that the more "seasoning" a man has had up to a certain point the more ready he may be to have gametes in his blood after infection from a less seasoned neighbor or bedfellow, we shall be able to explain many of the peculiar freaks played by malaria in our State.

The experience of the early New Haven settlers in going through a "seasoning" process is the same as that experienced by the early settlers of the middle West. Malaria was quite prevalent during pioneer days, but it slowly declined and in many places disappeared. This decline and disappearance were usually ascribed to the drainage and cultivation of the soil. This was, to be sure, an important factor in suppressing local breeding grounds of mosquitoes, but these did not originate the germs. The latter were, in part, brought by pioneers from endemic regions in the South and transmitted to the susceptible population from the North. A third factor, which in many places and probably also in the Connecticut colonies may have been the predominant one, was the Indian. The aborigines, when exposed to malaria, must have gone through the process of immunization just as to-day the native Africans are going through this process from infancy on. Even if we assume that the adult was wholly immune and free from infection, there must have been all grades of immunity in accordance with age and frequency of exposure in any given locality. With the gradual thinning out of the natives or their forced migration, and the introduction of Peruvian bark, the malaria parasite was gradually destroyed.*

Of the outbreak in western Massachusetts, at the end of the eighteenth century, the sources of infection can be discovered only by a careful study of contemporary local history with special reference to the movement of the population and the modes of life. Even without any appreciable influx of immigrants from malarial countries, our own Southern States could have furnished at any time a sufficient quota of malaria carriers to start an epidemic under favorable local conditions. Dr. Bronson, in his quest for the origin of malaria around New Haven, found what he took to be the first case in 1863 on Cove River, in West Haven, in a sawmill. "While thus occupied (repairing in the pit and about the flume of the mill) in August, 1863, in a season of drought, he [the patient] was seized with a fit of ague. *He had been at the South several years before and knew the disease, but had not had*

*it.** According to his statement, his was the first case in that quarter and the only one that year."

The last invasion of New England by intermittent fever, beginning roughly with 1870 and extending to the present, a period which has been so well described in its various manifestations by others already referred to, was largely due to the great material development which found expression in many new public and private enterprises, such as the reconstruction of railroad beds and highways, the introduction of public water supply and sewerage plants, the building of mills, and the draining, filling and grading of suburban territory and the like. In connection with these enterprises the source of malarial infection during the last thirty years I regard as coming from the Italian, Hungarian and other immigrants from endemic foci, and the contingent of colored laborers from the Southern States.

There is a remarkable coincidence between the growth of this foreign body of immigrants and the progress of malaria in New England in these latter decades. Those who have traced its movements claim that it came from the southwest, that is, from the New Jersey coast, and spread northward and eastward. I am inclined to believe that it came from the transatlantic steamers landing their passengers in New York City.

The twelfth census gives these figures of the foreign-born population from Italy in our country since 1860:

| | | |
|--------------|---------|------------------|
| 1860 | 10,518 | |
| 1870 | 17,157 | |
| 1880 | 41,230 | |
| 1890 | 182,580 | Increase 312.8 % |
| 1900 | 481,027 | Increase 165.1 % |

Of that same population there were males of voting age, in —

| | |
|----------------|---------------|
| 1890 | 70,853 aliens |
| 1900 | 133,810 " |

the total number of males of voting age in 1900 being 252,534. The predominance of men is seen by comparing this figure with the total Italian population given above.† Of this large contingent Mr. Prescott F. Hall⁴⁸ states that 95% are destined for New England, New York, New Jersey and Pennsylvania. What proportion of such immigrants come from malarial districts of Italy it would be impossible to determine with any accuracy. The Commissioner of the Bureau of Labor Statistics of Connecticut is quoted by R. Mayo-Smith⁴⁹ as stating that "the Italian immigrants come almost entirely from the southern districts of Italy." In 1897 I interrogated twelve Italians living in

*The italics are mine.

†The annual immigration from Italy was 12,354 in 1880. Fluctuating more or less during the decade, it reached 52,003 in 1890. During the following years it was usually above this figure. In 1900 the total was 101,662, of which 84,346 are reported as from southern Italy. In 1902 the total reached the enormous sum of 180,535, of which 152,915 are from southern Italy. (From figures kindly furnished by Mr. Prescott F. Hall, Secretary of the Immigration Restriction League.)

* It is of interest to note here that the year of the introduction of Peruvian bark by the Countess of Chinchon, 1638, witnessed the planting of the New Haven Colony. Quinine, the active principle, was not used until 1820.

a laborers' camp in Southborough. Five claimed to have come from Naples, three from Rome, and only one from Piedmont. Three did not give the district.

Concerning the importation and use of Italian laborers, I quote from Prof. R. Mayo-Smith the following statement:

There has been a large number of such cases (laborers imported under contract) during the last ten years (1880-1890). Many of the Italians who have worked on our railroads have been brought by contractors for that purpose. The New York Commissioners of Labor, in 1885, found a contractor in Buffalo who admitted that he had furnished four hundred foreigners to railroad companies and other corporations during the preceding year. We hear of similar cases in New Jersey, Kansas, Iowa, and Wisconsin. The Commissioner of the Labor Bureau in the last named state asserts that in the year 1886 the state was flooded with circulars from an Italian labor and construction company in New York, offering to let men for "tunneling, grading, mining, breaking stones, laying ties, repairing washouts, laying water and gas mains," etc.

Among the other foreign immigrants from southern Europe who may bring the malaria parasite and who are of sufficient importance numerically to be considered here, are those from the basin of the Danube and its tributary, the Theiss, in Hungary. The twelfth census furnishes us with the following figures of the foreign-born Hungarians:

| | | | | | | |
|------|---|---|---|---|---|---------|
| 1870 | . | . | . | . | . | 3,737 |
| 1880 | . | . | . | . | . | 11,526 |
| 1890 | . | . | . | . | . | 62,435 |
| 1900 | . | . | . | . | . | 145,714 |

Of voting age, there were in —

| | | | | | | |
|------|---|---|---|---|---|--------|
| 1890 | . | . | . | . | . | 38,749 |
| 1900 | . | . | . | . | . | 72,897 |

Assuming that these figures are fairly accurate, there were in the United States, in 1900, over three times as many foreign-born Italians as Hungarians.*

Malaria may also be disseminated by chronically infected inhabitants of malarial districts in the South when conditions are favorable, as in camps of negro laborers. A number of cases occurred in 1897 in such a camp near West Berlin, Mass.

The thousands of immigrants from malarial regions are under ordinary circumstances absorbed without causing any appreciable increase in malaria. Those that go into the crowded quarters of our large cities are not exposed to the bites of Anopheles, excepting in rare instances. Those that go into the country districts to till the soil are not likely to create a focus of malaria, as the conditions for transmission from isolated cases are not very favorable in our climate. Under ordinary circumstances, therefore, the scattering of such potentially dangerous people over a wide territory would perhaps arouse no attention or apprehension.

There are many examples of imported malaria,

known to physicians of our latitude, before whose door the spread of malaria cannot be laid. The returning soldiers of the Civil and the Spanish wars did not, so far as observations go, infect their neighborhood. Sergeant,⁵⁰ after studying the subject in Paris and its suburbs, states that although there are many Anopheles in the suburbs, and some chronic cases of malaria in the city from the colonies, no indigenous cases came to the notice of the author.

When, however, a considerable number of individuals remain together, work in rural districts in proximity to breeding places of mosquitoes and sleep at night in sheds built in the open country, usually near some small body of water and wholly unprotected from the attack of the omnipresent species of Anopheles, the situation is wholly different. Under such conditions, usually, some one or more individuals carry malaria parasites. These are transmitted to the non-immune or only partially immune fellow-laborers. Opportunity for the infection of mosquitoes with gametes from the blood is ample; and, sooner or later, the infected mosquitoes find their way to the very susceptible natives of the territory where the work is going on.

We are all of us tolerably familiar with the condition I have described. It is a method employed many years ago in pushing railroad construction forward in more or less unoccupied territory where it was necessary to retain the force of men near the scene of operations. This method of carrying on work in more or less densely populated districts has been in use certainly since 1870. Dr. Bronson furnishes the following illustration for the New Haven district, which I quote verbally:

In pursuance of this agreement they drew down the water, and when the ground was sufficiently dry, in August, 1871, set about forty men to work cutting the bushes at Pine swamp, and in a tract of about twenty acres at the head of the lake. The men were occupied some four weeks cutting and burning, during which time about half the party slept on the ground near their work. Of the whole number, only one had the fever before the job was completed, but I have heard of two or three others who had it afterward.

Dr. J. F. A. Adams quotes the following letter received from Dr. C. Seymour of Northampton, Sept. 27, 1880:

A very large percentage of the cases have occurred at a railroad station on the Connecticut River, two miles below our village. Here is located a large sawmill, employing seventy-five men; and these have quite generally suffered. Many of them have never consulted a physician, as they know quinine cures the "shakes," and get and use it accordingly.

Dr. Z. B. Adams says that in 1885 "an Italian, a laborer upon the new conduit through Farm Pond, was sent away together with several companions suffering from the fever."

I have the microscopic records of malarial infection from several laborers' camps. Such cases were usually overlooked some years ago. If discovered they were supposed to be a product

*In 1880 the number of immigrants from Hungary was 4,363; in 1890, 22,062. In 1902 the total Magyar immigration was 23,610. In the intervening years there was the usual fluctuation, corresponding with periods of industrial depression and prosperity.

of the environment, the upturned soil, the swamp or the partly drained pond or stream about which they were at work. Many patients treated themselves. The presence of malaria was recognized only when the infection had become disseminated and had attacked the inhabitants living near by.

Occasionally the accumulation of infection goes on so rapidly that veritable epidemics are the result. The disease appears in an explosive manner like typhoid fever or cholera. A good illustration of this type of outbreak occurred in Rhode Island in 1880.⁵¹

On Aug. 18 a workman in the yards of the Nayatt Brick Company was taken with chills and fever. Five days later sixty workmen were affected, some with very severe symptoms. On Aug. 25 the disease reached its climax, with seventy on the sick list. About Sept. 1 there was a general lessening. On Sept. 20 nearly fifty were again on the sick list. During the season one hundred and eighty-five persons, comprising almost the entire force, had been affected. Of the workmen attacked nearly all were Canadians. They slept in two lodges near the works. The two upper stories were occupied as sleeping rooms, the highest being twenty feet from the ground. Both floors were equally affected. The epidemic came very unexpectedly, for cases of malaria in this vicinity could not be recalled by the oldest inhabitant.*

Another epidemic of a different character as regards time and topography is the celebrated New Lenox case described by Dr. J. F. A. Adams.^{39b}

In 1870 the dam of the Smith Paper Company on the Housatonic River was raised three feet above the already existing four feet. In the lower half of the district influenced by this dam, which caused a setback of four miles in a direct line, water spread out irregularly to an average width of a quarter of a mile. With the daily variations in the depth of the water portions of the muddy bottom were alternately covered with water and exposed to sun and air. During the very low water in the summer and fall of 1880, coves and detached pockets of water were formed.

In the summer of 1878 intermittent fever began to prevail in the vicinity of this reservoir. The first cases appeared close to the river on the east side at the foot of the mountains bordering the reservoir.

Of a population of eight hundred souls about three hundred and fifty-three were attacked up to Oct. 1, 1882. Up to 1880 cases had appeared in every one of the twenty houses on the east side of the river between the dam and the Pittsfield line. In some houses as many as six cases occurred. The surrounding towns were comparatively free from malaria during these years.

The celebrated lawsuit which followed failed

to place the cause of the epidemic upon the company who raised the dam. Looking at the case from the present standpoint, we should say that some germ carriers, possibly foreigners, as workmen, wandering gipsies and the like, entered the territory around the reservoir, and the conditions being made very favorable by the drought, the mosquitoes became infected in large numbers. Last autumn I had the good fortune to inspect this interesting region both alone and in company with Dr. Adams. *Anopheles* larvæ were encountered in the ditches in the meadows, in isolated pools and in the river itself. Those which I reared into adults were all *A. punctipennis*.

I have no doubt that similar severe local epidemics have occurred, but they usually fail to find a faithful student and chronicler to put them on record.*

In endeavoring to trace the origin of such localized outbreaks the student of to-day is confronted with the task of searching past records concerning the movement of the population with special reference to the laboring classes. This task, which I have left untouched, would amply repay many a student in searching for subjects for a thesis, and it would utilize the experiments which human beings, quite unaware, have been and are still making upon themselves and upon one another, experiments which are of the highest value as they are inflicted upon us in the natural way.

In the position taken that laborers from malarial countries may introduce intermittent fever, I find myself no longer alone, for similar inferences have been made by European observers recently.

The mouths of the Elbe and the Weser rivers in Germany have been in times past the scene of much work in the construction of wharves, dikes and reclaiming of wet land. Malaria has usually accompanied this work. Martini⁵³ has recently published an account of several outbreaks which are of special interest to us. A number of Dutch laborers were imported in April, 1901, to work upon a large dike near Wilhelmshafen. Soon after their arrival some were affected with malaria (relapses?). From the scene of their work malaria spread and prevailed in 1901 and 1902.

ARTICLES REFERRED TO IN THE TEXT.

46. Ergebnisse der wissenschaftl. Expedition des Geh. Med. Prof. Dr. Koch nach Italien, etc. Deutsche med. Woch., 1899, p. 69.

47. Theobald Smith: Notes on *Anopheles*, etc., in the Boston Suburbs. Journ. Boston Soc. Med. Sc., 1901, v, p. 321.

48. Prescott F. Hall: N. A. Rev., 1896, cxliii, p. 252.

49. R. Mayo-Smith: Emigration and Immigration, 1895, pp. 129-130, 133.

50. MM. E. et Ch. Sergent: Observations sur les *Anopheles* de la Banlieue de Paris. Annal. de l'Inst. Pasteur, 1902, xvi, p. 942.

51. Report of the Board of Health of Rhode Island for 1880, p. 228.

52. E. H. Stevens: Malaria in Cambridge and Vicinity. Boston Med. and Surg. Journ., 1892, cxvii, p. 614.

53. E. Martini: Deutsche med. Woch., 1902, p. 786.

(To be concluded.)

* Similar epidemics were noticed by Dr. E. H. Stevens⁵² in the Cambridge brickyards among French Canadians in 1892 and previously.

* An epidemic in Deerfield in 1886-1888 is briefly described by Dr. S. W. Abbott in the report of the State Board of Health for 1888.

Original Articles.

PROBLEMS OF CLINICAL ANATOMY.¹

BY THOMAS DWIGHT, M.D., LL.D., BOSTON.

Parkman Professor of Anatomy at the Harvard Medical School.

My attention was called very early in my career, by a murder case in which I figured as an expert, to the fact that all men are not made alike. This started me on my hobby of anatomical variations, concerning which I have had the honor of speaking before this society more than once. Years of observation have taught me that there is a practical clinical side to these studies. Just as the expert hesitates in estimating the height of a body from a single bone, because he is not aware how much the body in question may have varied from the norm, so the practitioner with his patient before him has often wondered whether some uncommon variation of structure might not be the cause of the impossibility of making the symptoms square with what, according to the books, should be the condition of affairs. There is a wide and but little explored area between the domains of anatomy and pathology; a debatable ground passing alternately under the sway of each of the claimants, which contains very valuable mines of information. It is not pure anatomy nor is it pathology. It treats of conditions which for the most part are not recognized during life, but the knowledge of which would have helped the practitioner in many a strait. This knowledge, I may add, is of special importance to the surgeon. The purpose of this paper is to point out certain groups of peculiarities which may be of clinical importance. They include not only variations of structures, but also changes which are the more or less constant results of disease. Increasing knowledge will, I am sure, show us that certain pathological conditions are almost necessarily associated with certain morphological changes. Moreover, the results of certain series of observations are, I think, establishing the law that certain pathological conditions have their origin in some peculiarity of development. Thus certain lesions from trauma occur only when there is an abnormal weakness due to peculiarity of structure. It is worth while to know that certain parts of the skeleton are particularly subject to errors of development, though we may be still ignorant of the cause. Why, for instance, is the last lumbar vertebra the only one in which the arch occasionally, especially in savage races, remains ununited with the body? Or, to take another and more practical instance, for it may affect the motions of the head and be accessible to the x-rays, why are the second and third cervical vertebrae especially likely to be more or less fused, and consequently underdeveloped? Why is the third metatarsal the only one that in the absence of any disease is fused with the tarsal bone supporting it, and why is this fusion limited to the plantar part of the joint? I shall follow none of

these topics very far on this occasion, for that calls for minute details which would be out of place to-day. I have, indeed, already written on some of these points and have other papers in the course of preparation and publication. To-day I invite your attention merely to instances illustrating principles. I hope to show that they are of practical importance; nay more, that the deductions from some of them are far-reaching.

As a distinctly clinical point let me call attention to the symptomatology of aneurism of the right subclavian artery. The recurrent laryngeal nerve which winds round it is the chief motor nerve of the right half of the larynx. A certain more or less characteristic paralysis of the muscles of the right half of the larynx is the necessary consequence of an enlargement of the artery at the place where the nerve loops under it. Nevertheless there may be an aneurism at the very place at which it should give rise to this symptom without its appearing. Why? Because in a certain proportion of cases the right subclavian artery, owing to a deviation from the usual course of development, arises the last of the large branches of the arch of the aorta, and passes behind the esophagus to its destination. In these cases the inferior laryngeal nerve is not recurrent, but runs from the vagus in one or two bundles directly to the larynx, having no relation whatever to the subclavian artery. I expect to meet with this arrangement at least once a year, in the dissecting room. Here is a pretty instance of it.

Let us turn to peculiarities which are the direct results of pathological conditions. Look at these specimens of severe Pott's disease. Note how the aorta is as it were half coiled round the spine, lying in transverse folds with sharp angles. These specimens have been already described in print. The stoppage of the circulation by the compression of the vessel at these angles has been given as an explanation of the sudden death that occasionally occurs in this disease. It should be known that this is the most probable course of the aorta under these circumstances.

Here is another and a very different specimen concerning which there might be a good deal of discussion as to whether it is the result of a pathological change or of a congenital malformation. I may not discuss it because an article on it is about to appear in a medical periodical. Let me therefore merely show you this cast of a very remarkable hour-glass stomach which I had the good fortune to find in a hardened body. Plenty of hour-glass stomachs have been shown before now, but the true shape and relations can be learned only when the body has first been hardened. The appearance of this one is, so far as I know, unique. I leave you to judge whether or not such an observation is of clinical importance.

Orthopedic surgery is, perhaps, the most fruitful field of all for this line of research. Let us think for a moment on all the queer positions of the head. Nothing is more characteristic than its poise. I imagine any portrait painter would say that not only are there certain types of head

¹ Read before The Massachusetts Medical Society, June 10, 1903.

and face, but that each of these is associated with some peculiarity in the holding of the head. I do not say that structure determines function; for, beyond question, function modifies structure. Though some positions of the head imply structural peculiarities, certain long-continued postures must have their effect on the original structure. This question is full of difficulties; but what I want to insist upon is that a certain carriage of the head, when once it has become thoroughly habitual, predicates a certain anatomical condition which it imports the practitioner to understand. Which is the cause of the other, and how much one may react on the other, is not clear. Neither is it easy to say when we cross the dividing line between the peculiar and the pathological.

I have here several specimens which I again pass over lightly as I hope to discuss them more thoroughly hereafter. Look at this fusion of the atlas with the occiput. It is symmetrical; the whole of the atlas is developed, only the condyles and the skull are absolutely fused. Was this congenital or acquired? Evidently such a condition must give rise to a peculiarly stiff carriage of the head with, one would think, limitation of the motions. Here is another specimen in which one lateral half of the atlas is underdeveloped and fused with the skull while the other half stands out free. It is a modern skull, which came into my possession only a few years ago. Here is another which would be almost its exact counterpart were it not that the fusion is on the opposite side. It is from a mummy of the twelfth Egyptian dynasty, and at least four thousand years old. Many years ago I bought in Paris the separated bones of a head. Among them was this occipital, which bears on the left a stout process descending from the under side external to the condyle. I was at first at a loss to know what it was, but soon learned that it is known as the *paramastoid process*, which is found in many mammals, and is particularly large in ungulates and rodents. It is common enough in man as an insignificant projection, but this one was remarkable for its size and for being apparently fitted to articulate with the transverse process of the atlas. During the past winter I have found it again, and this time can show you the neck. The paramastoid process rests indeed against a corresponding surface of the transverse process of the atlas. The specimen is from a man of sixty-eight, and again it occurs on the left. Now this condition was evidently congenital. It is self-evident that it must have modified the movements of the head. That it involved a peculiar position is highly probable. Who would have suspected such a condition had the man come as a patient? Had the man been x-rayed would there not have been talk of an exostosis or of a tumor? I must beg leave to omit entirely what is perhaps my best case of peculiar conditions at the junction of the head and neck. I hope within a year to publish all these and others in detail and together.

We come now to some of the most practical considerations connected with this subject. X-

ray work has brought a new factor into surgery. Its help can hardly be overestimated; but we must beware that it does not sometimes lead us astray. I do not refer here to the ordinary difficulties in the interpretation of the x-ray negative, of the necessity, for instance, of knowing which side of the object was nearest to the bulb and of allowing for the distance. These and other points are for the expert. I refer to the danger of the misinterpretation of peculiarities of structure. The specimen just shown is a case in point. It is remarkable how little is known of far more common variations. The late Professor Pfitzner wrote of his astonishment at finding that a distinguished surgeon was utterly unaware that the epiphysis which forms the end of the acromion may remain permanently separate from the rest of the bone. Not only would it suggest a fracture under the x-rays, but it might of course be detached by violence that would not break a normal bone. This naturally suggests the burning question of fracture of the scaphoid bone of the wrist, which I think no one had ever heard of before the x-ray. Now it occurs all the time. My friend Dr. Codman was kind enough a while ago to show me a room full of patients with fractured scaphoids at the Massachusetts General Hospital; and yet I still believe that, putting aside extraordinary cases of injury, a normal scaphoid is never broken, and that the separation into two parts, which undoubtedly occurs, is the result of violence acting on a bone composed of two pieces united merely by cartilage. This also I hope before long to establish.

The late lamented Professor Pfitzner of Strasbourg was the true pioneer in the scientific study of the bones of the wrist and ankle. He declined to be limited to the usually accepted number of bones and declared that there are many other true ones, some of which but rarely appear, while others are almost constant in the early cartilaginous stage. Some lose their identity by absolute degeneration, but more commonly this occurs by fusion with one of the neighboring cartilaginous centers. A case in point is what we commonly call the styloid process of the third metacarpal, which projects from the radial side of the base of that bone between the os magnum and the trapezoid in a way that makes the disarticulation of the third metacarpal particularly difficult. Now this styloid process is really a true carpal bone, the *styloid*, which usually, to be sure, joins the metacarpal, but which occasionally joins the os magnum or the trapezoid, thereby considerably modifying the articular lines, or which may indeed persist throughout life as a distinct bone. It is to be noted that such a bone which usually fuses with a certain recognized one, but which exceptionally may fuse with another, is also capable of fusing with both. This accounts for the tendency of particular bones to be fused. At the beginning of this paper I asked why the third metatarsal was particularly likely to be fused with the supporting tarsal bone, and why this always occurs on the plantar side. The answer is: owing to

the existence of a bone of this nature deep in the sole of the foot. Both Pfitzner and I myself have seen this several times in feet which present no sign of any pathological process. I have a specimen of it in a beautifully formed foot of a girl of nineteen.

Now it is evident that the persistence of such an occasional bone may give rise to x-ray negatives that are liable to misinterpretation. Many years ago, before the x-rays had been thought of, an excellent anatomist and surgeon thought that he had found in the dissecting room a fracture of the astragalus, because the external tubercle at the back of the astragalus was distinct. This is now known as the *os trigonum*, which may be found in all degrees of fusion, from complete distinctness to absolute incorporation with the astragalus. No one knows how many of these distinct centers of the wrist and ankle there may still be to discover. I had the luck a year or more ago to find a new bone in the ankle (the *os intercuneiforme*), and I think I have found a new one this winter in the wrist. To be sure, these discoveries at first may seem of no more value than that of one more asteroid or of a one-horse comet, which nevertheless are telegraphed all over the world; but I am sure that many of them have their very practical significance. Conversely the fusion of bones usually distinct is of practical importance. I have just mentioned one way in which it occurs, but it is not likely that it is the only one. Fusion of distinct bones is not only a disturbing circumstance to the operator who expects to sweep his knife gracefully between them, but it is of greater importance to the orthopedist who is studying the relations between structure and, let us say, flat foot. Thus the *os calcis* occasionally is connected by cartilage or fibro-cartilage with the outer end of the scaphoid. Though I believe the opposite opinion has been maintained, I think from my experience that it is associated with a high instep. What influence it may have on the movements of the foot is a more abstruse problem.

And so on, and so on:

"Though I'm anything but clever,
I could talk like this forever,"

and keep on showing you peculiarities which once were (perhaps still are) considered mere curiosities, but which in point of fact are alike of great scientific and of great practical importance. Let no one say that anatomy is exhausted. On the contrary, we are just entering on a new era, and on one which concerns especially the practitioner who would be eminent.

THE NEED OF A SUPPLEMENTARY LANTERN TEST FOR THE PROPER EXAMINATION OF COLOR PERCEPTION.¹

BY CHARLES H. WILLIAMS, M.D., BOSTON, MASS.

THE test for color vision most commonly used at present is that proposed by Professor Holm-

¹ Read at the Medical Meeting of the Boston Medical Library, April 6, 1903.

gren. It consists of a collection of skeins of worsted of various colors, one hundred and twenty-five or more in number, well provided with different shades of red, green, blue, brown, gray and other colors. In addition to these there are two or three larger test-skeins, one of green, one of rose and one of bright red, the last being omitted in some of the test sets.

The principle on which this test is based is the fact that when a person who has a decided lack of perception for red or green looks at the solar spectrum, he sees in the green part of the spectrum a band of gray or neutral color, and this green test skein is carefully selected so as to correspond to that part of the green spectrum where the gray band is seen. To a person who is defective either for red or green, this green test-skein will appear of the same color as the light grays, or browns, and he will select as looking like it other grays, greens or browns, and will show by this mixing of confusion colors with the true colors that he is defective in his color perception, either for red or green, or both of these colors. The second test is made by placing a rose test-skein at one side of the pile of worsteds and having the person examined select such colors as look to him like this test-skein. If he is more defective for red, he will select with the rose some of the blues or violets; but if he is more defective for green he will select with the rose some of the grays or greens. The green test-skein, which has generally been furnished with our American sets of worsteds, has been too light in shade, and on comparing it with the green test-skein in some sets of Holmgren worsteds imported from Upsala by the writer, and which were prepared by the person who made them under the direction of the late Professor Holmgren, it was found that the green test-skein of the Swedish sets was much darker and of a more decided green than ours, and was better adapted for use as a test-skein; and in some of the American sets of worsteds now made this defect has been corrected.

Some ten years ago the writer prepared fifty sets of Holmgren worsteds for use on the Burlington system of railways. In these sets all the skeins were numbered with small metal tags, the odd numbers being the true colors and the even numbers the confusion colors. By making a record of each examination as it proceeded, noting on proper blanks the numbers selected as looking like the test-skeins, a permanent record was kept of all examinations, which was sometimes of great use. Formerly the only record of the examination was the statement of the examiner who conducted the examination, as to whether the applicant's color vision was satisfactory or not.

A very extended use of the Holmgren test in the hands of many examiners is now showing that some cases are able to pass this test correctly and without hesitation, who when examined with the lights from a distant signal, may be unable to distinguish the red or green with any reasonable degree of certainty, and, in fact,

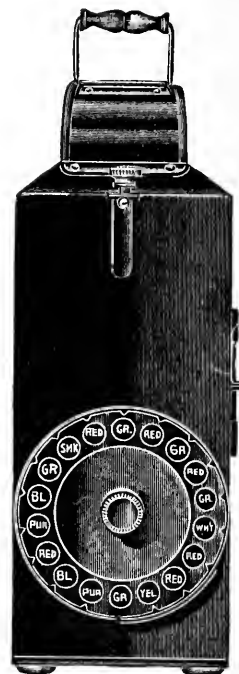
often confuse these colors. This occurs most frequently in cases of acquired defect in color-vision caused by excessive use of tobacco or alcohol, or by a combination of the two. In such cases there is often a small defect in the central part of the retina, so small that the retinal image of the skein of worsted is large enough to be formed partly within the affected area and partly beyond it, and if at any part it falls on healthy retina its color can be at once recognized. If the object is small, like a distant signal light, the retinal image is formed wholly within the affected area, and the color is not recognized. At night there is often no other means of distinguishing between safety and danger except by the quick and accurate recognition of the color of a railway signal or the side light of a ship, and it is of special importance that the test for color perception should include a test resembling as nearly as possible the conditions of service, and of such a kind as to show conclusively, after the test has been made, whether the person can be relied on to recognize quickly and accurately the color of a distant signal light. For some years the Dutch railways have required a test with the Donders lantern, in addition to the worsted test, but my experience with this lantern showed that it was not well adapted to tests made by railway officials, as is often done in this country.

In 1892 the writer devised a wheel with sixteen colored glasses, which could be brought in succession before a light by revolving the wheel; there was also a diaphragm to vary the size of the colored area, and this test is still used as a reference test on the Burlington road. In 1899 a smaller and more portable lantern was arranged for use on the N. Y., N. H. & H. R. R., when they revised the methods of examining their men

This lantern showed only one light at a time, and was soon replaced by another in which either one or two lights could be shown at a time, and where the colors of the glasses in the lower disc could be modified by combinations with the glasses of the upper disc, and where the area of the colors could be varied.



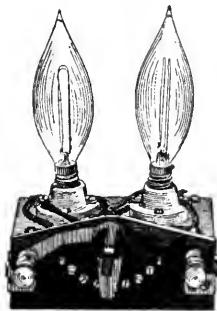
This lantern is now in use on the N. Y., N. H. & H. R. R., the Great Northern, the Boston & Maine, the Canada Atlantic and some other roads. It has been found in practice that the



MODEL OF 1903.

upper disc of these lanterns is seldom used, and it brings in a complication which is not desirable. It is very necessary that these tests should be made as simple as possible, so that a person of good intelligence can be easily instructed to make them in such a way as to give reliable results, especially when they have printed instructions and forms to guide them. For this reason a new lantern was constructed this year having on its face a single disc with eighteen colored glasses, and within the lantern two lights and a shutter, so arranged that either two or one of the colored glasses can be illuminated at one time. By revolving the disc all the colors can be brought before the lights in succession, and it is found that with two lights showing at one time, a person with defective color-perception is often more confused than when he has only one colored light to look at; for instance, with a light and a dark red he will often call one of them a green and the other a red. The shutter, beside regulating the lights as single or double, also changes the area, so that two lights with the full opening, half size, or the smallest opening can be shown, or one light of each of these sizes. Under each colored glass in the disc is an opening with a transparent number, which is lighted at the same time as the color above it. This number can be seen by the examiner, but is screened from the person examined, and by means of these numbers a record of the examination can be kept, the number under the color and the name given to this color being noted as the examination proceeds. The lantern is placed in a dark room twenty feet from the person to be examined, and on a level with his head. The area of the largest opening at this distance then corresponds to the apparent size of a standard switch light at a distance of 160 feet, and the smallest opening to such a light at a distance of 1,300 feet.

This form of lantern is already in use on the Canadian Pacific Railway and the Northern Pacific Railway, and is to be preferred, on account of its greater simplicity, to the previous models.¹ In addition to the test with different colored lights, it is important to make the test with a light whose intensity can be varied by fixed amounts; for in some cases those who are defective depend on the intensity of the light to distinguish between red and green. For this pur-



¹ Since this paper was written, twenty of these lanterns have been ordered for use on the different divisions of the Southern Pacific Co.

pose the writer made an electric lamp with a specially constructed rheostat in the base, through which the current for the two incandescent lamps can be passed.

By means of a handle projecting through the door at the back of the lantern the resistance introduced by the rheostat into the current for the lamps can be varied from nothing to 150 ohms, and the candle power of the lamps can thus be reduced or raised by fixed amounts at pleasure. Oil lamps are used in case an electric current cannot be obtained, but the latter is preferred. This lantern test is now used on the above roads *in addition to* the Holmgren worsted test. If a person calls red green, or green red, in the lantern test, or selects confusion colors with both the green and the rose test-skeins, he is rejected as showing an unsafe degree of defective color-perception.

With these two tests carefully made it is reasonably certain that no dangerous case of defective color-sense will be passed; but with either test alone it is possible to have men pass the test who are so defective that they may be dangerous in positions where it is necessary to distinguish quickly and accurately between red and green. In cases where the trouble is due to an acquired defect, as from the excessive use of tobacco, a considerable improvement may result from stopping the tobacco; but in the congenital cases no treatment will be of much use. Some men can learn by constant practice to give the correct names to certain colors or even to select correctly the proper colors in a given set of worsteds, but when tested with new colors that they have not previously seen and practiced with, they will generally be unable to recognize them correctly.

EFFORTS TO ABATE THE MOSQUITO NUISANCE IN BROOKLINE.

BY H. LINCOLN CHASE, M.D., BROOKLINE, MASS.

THE great prevalence of mosquitoes every spring, summer and fall in certain sections of Brookline, the increasing number of citizens in every part of the town, the comparatively recent discovery that intermittent fever is transmitted from a patient to well persons through the bite of a mosquito,—these facts induced the Board of Health in August, 1901, to consider the feasibility of suppressing the mosquito nuisance.

The Board of Health voted to refer the matter to its agent, the writer, for an investigation and report, with recommendations. The report was duly made, and summarized most of the information then available on the subject, much of which was secured from Dr. Theobald Smith's valuable and interesting paper on the subject given before the Massachusetts Association of Boards of Health at its meeting in July, 1901; partly from Dr. L. O. Howard's book entitled "Mosquitoes" and much also from the experience of our medical officers in Cuba in suppressing the mosquitoes that transmit malaria and yellow fever. The Board promptly authorized its agent

to proceed along the lines recommended in his report.

We prepared a list with the help of our Police Department, of nearly all the stagnant water in the town. We next marked the exact location of all these places on the town map, and had them systematically inspected and reported on by Mr. Nyhen, the Board of Health laboratory assistant, as to the presence or absence of mosquito larvæ, and of their natural enemies, frogs and fish.

An examination was also made of a number of our street catch-basins; and, with the exception of those few that received large quantities of cold water from neighboring standpipes, all were found to be teeming with mosquito larvæ, all of which were those of *Culex*. Our largest body of water, Leverett Pond, was found at that time to be entirely free from larvæ, minnows and other fish being quite plentiful. Other ponds that had either no larvæ visible, or only very small ones, were found to be well supplied with frogs. Most of the ponds, pools and ditches, however, were found to be breeding places of mosquitoes, all furnishing larvæ of *Culex* in abundance; and quite a number, notably those off upper Boylston Street, near Chestnut Hill, where malaria has been more or less prevalent for some years, had numerous larvæ of *Anopheles*.

We secured a barrel of light fuel oil, and in September Mr. Nyhen, with the help of a laborer and a horse and wagon, treated a single time all of the breeding places of *Anopheles* and all the more important breeding places of *Culex* in the more thickly settled sections of the town, including two hundred and fifty catch-basins. Every pond surface was measured more or less accurately. Light fuel oil was then applied, and the surface of the water well agitated with a pole to hasten the diffusion of the oil. As an experiment we also put quicklime into a few shallow pools, but were rather disappointed in the results. Later we filled in all shallow pools. The oil treatment we found very successful as a temporary measure, especially in the catch-basins, all of which, almost three weeks after treatment, remained wholly free from larvæ.

At the same time that we began to treat the larger breeding places of mosquitoes, we distributed by the police to each family in town the following circular of information:

OFFICE OF THE BOARD OF HEALTH,
BROOKLINE, MASS., Sept. 9, 1901.

MOSQUITOES.

Both malarial and common mosquitoes are numerous in Brookline, and the Board of Health invites the co-operation of citizens in its efforts to diminish their numbers and to reduce the areas in which they breed.

Mosquitoes always lay their eggs in water, as the young (larvæ) cannot live elsewhere. They rarely fly far, and their presence is usually accounted for by the existence of standing water close at hand. The eggs and larvæ abound throughout the season in ponds, pools, puddles, cisterns, rain barrels, water buckets, old tin cans, clogged gutters, and, in fact, everywhere where even a very little water is allowed to stand for a few days.

Experience in other places has shown that much good can be accomplished by giving attention to all the stand-

ing water in any neighborhood. In permanent ponds, fish and frogs, if in sufficient numbers, will destroy the eggs and larvæ, but care is needed to see that small pools around the edges are filled up or treated with oil. Unnecessary pools and puddles of all kinds should be drained or filled up. A little kerosene oil (preferably "light fuel oil") put into standing water spreads easily and rapidly over the surface, and, without injuring the water for other purposes, destroys the larvæ, and prevents the laying of eggs. An ounce of oil is sufficient for fifteen square feet of surface; and an application of it is effective for about two weeks, at the end of which time it should be renewed. Good results have also been obtained by putting unslaked lime into standing water.

The mosquitoes which live through the winter in cellars and barns, under bridges, and in other sheltered places, lay eggs again in the following spring; and it is believed that active measures taken now will materially reduce the numbers to survive the winter. The board intends to treat some of the worst places in town with oil at once, and to remove certain stagnant water entirely, and also to follow the matter up closely early next year. Citizens are urged to look after all standing water on their own premises.

OUTFIT OF 1891.

Mr. Nyhen was given the personal supervision of the work in the field, under the direction of the agent of the board. He was allowed one laborer at \$1.75 per day to assist him. Our equipment consisted of: One hired horse and light wagon; 1 outfit for collecting specimens of larvæ, pupæ and adult mosquitoes; 1 five-gallon oil can; 1 single gallon watering-pot; 1 brass spigot; 2 galvanized iron oil dripping pans; 1 pick; 1 funnel; 50 gallons light fuel oil.

Beginning the work in September, we hoped to destroy the last mosquito larvæ of the season, the ones that otherwise would have matured and lived through the winter, to produce the first brood of mosquitoes of the following spring. So much for the season of 1901.

Early in 1902 the board allowed four hundred dollars for mosquito work, and those in charge prepared to make an early start. For various reasons, however, work could not be begun until early in May; while the mosquitoes appeared in considerable force late in April.

A second circular of information, more particularly in regard to the cause and prevention of malarial fever, was prepared, and distributed by the police to every family in town. In response to the request to the citizens to report all probable breeding places known to them, numbers of notifications were received.

Mr. Nyhen was placed in immediate charge of the work as previously, and most of the season he had at his disposal two laborers at \$1.75 each per day, and a horse and wagon. The equipment consisted of most of that of 1901, and in addition we had the following list of articles: Four five-gallon oil cans; 1 ten-gallon oil can; 2 picks; 2 hoes; 2 rakes; 2 shovels; 2 scythes; 2 Breck hand-force pumps; 3 one-gallon watering-pots; 16 feet of hose in three sections; 3 galvanized iron pails; 2 pairs of deep water leather boots, for use by men handling oil; 3 pairs of deep water rubber boots; 1 zinc wagon pan; 500 gallons of light fuel oil.

This outfit proved to be somewhat inadequate, but the tools and utensils used were as suitable

as could be found. More satisfactory tools might be devised. We badly needed two or three more laborers.

METHODS OF WORK.

(1) All pools, ponds, ditches and other breeding places, including catch-basins, were located upon the town map. We also located and treated a number of breeding places just beyond the town's borders.

(2) The approximate areas were determined, and the number of catch-basins ascertained.

(3) Breeding places of *culex* and *anopheles*, respectively, were determined, and also the places where both species were breeding. This we did in order to learn the proper intervals for treatment; that is, whether every three weeks or every four weeks.

(4) The location on the town map of the public dumps or other places where accidental receptacles of water were to be found; for example, tin cans and boxes.

(5) Details of treatment, temporary or permanent. Petrolizing, and necessary work preliminary to it. Last, but most important of all, filling or draining.

Treatment of catch-basins.—Three ounces of light fuel oil we found to be the necessary quantity for each treatment of one of our street catch-basins. This will keep the catch-basin free from larvæ, and prevent mosquitoes from laying their eggs, for a period of about three weeks.



TREATMENT OF A CATCH-BASIN.

The treatment of ponds and ditches.—The amount of oil used for a given pool or pond we determined as follows: Calculate the amount necessary from Dr. Howard's rule, 1 oz. of light fuel oil to fifteen square feet. If the pond had vegetation growing luxuriantly in it, irregular shores, and a large amount of vegetation about it, we added an excess of one fourth of the original amount. If the pool presented a clear water surface, we added one sixth more than the usual

amount. Pools well stocked with fish did not require a film of oil over the entire surface; but



"PETROLIZING" AND "PUDDLING."

a belt about fifteen feet in width, extending around the shores, was thoroughly treated.

If a pool or pond had fish or frogs in it, we examined it very carefully until we were satisfied that it was not a mosquito breeding pool; for we found a number of ponds well stocked with fish and frogs that were, nevertheless, breeding places of *culex* and *anopheles*. We found that the film of light fuel oil did not kill either fish or frogs.

In treating ditches the amount of oil was calculated and distributed as evenly as possible; and, if necessary, the water was well agitated.

After the oil had been evenly spread upon the pond from the most favorable working points, a man styled the "puddler" violently agitated the



"PUDDLING."

water with a hoe. These photographs, kindly taken for us by Dr. Walter G. Chase, show very faithfully some breeding places of mosquitoes and our methods of treatment.

The treatment of pools, ponds and ditches where rank vegetation was abundant was begun by removing this vegetation with scythes as completely as possible for the distance of about fifteen feet from the edge of the pool to be treated. The shallow pools, if not large in area, we filled in. If a pool stood near a dump, we gathered into it accidental receptacles and covered them with sufficient soil. We drained or filled in a great many small pools.

Accidental receptacles.—We found on our public and private dumping places a great many small receptacles of water which proved to be important breeding places of mosquitoes, especially for *anopheles*. We gathered all metal receptacles that would hold water, and either used

them in filling up pools or buried them. Bottles and wooden receptacles we simply broke up.

Of course petrolizing is but a temporary expedient; only draining or filling in can result in a permanent removal of a mosquito breeding place. To this end the board directed Mr. Alexis H. French, the town engineer, to examine and report upon, with reference to their drainage, several sections of swamp land, and to furnish an estimate of the probable cost of the drainage. In this connection the following letter from Dr. Abbott, secretary of the State Board of Health, is of interest:

BOSTON, May 22, 1902.

DR. H. L. CHASE,

Agent Board of Health, Brookline:

Dear Doctor:—In reply to your further inquiry, on behalf of your board, there can be no doubt that wet lands and stagnant bodies of water constitute a serious nuisance, especially in thickly settled towns, since, when the question is considered both subjectively and objectively, the presence of human beings is essential to the existence of a nuisance. Wet lands in uninhabited districts are of course not dangerous, because there are no human beings to whom they may prove harmful; but in large towns the case is necessarily otherwise.

The statutes (Revised Laws, Chap. 75, §75) already provide that "land which is wet, rotten, or spongy or covered with stagnant water, so that it is offensive to residents in its vicinity or injurious to health, shall be deemed a nuisance"; and the recent discoveries relating to the dangerous nature of insects bred in such places only strengthen the statement expressed in the statutes.

Yours respectfully,

SAMUEL W. ABBOTT,
Secretary.

The final treatment for the season of all the catch-basins and other breeding places was given during the month of September.

RESULTS.

Our work had not been going on more than a month when many citizens noted and favorably commented on the marked diminution in the number of mosquitoes in the formerly infested districts, especially the Longwood district. The work went steadily on; and the results were such that the Board of Health increased the mosquito working force from one laborer to two, and provided a little more money. So great an improvement was noticed in every district that letters of commendation from many representative citizens were received, some of them from physicians.

The most important object of this work—namely, the prevention of malarial fever—should not be overlooked. In December, 1897, the agent of the board wrote to most of the practising physicians of the town, requesting each to report to him, as a favor, the number and location of his malarial fever cases, of tertian type only, seen by him during the previous season. The total number of typical cases reported was not less than fifty. Since May, 1902, the Board of Health has required the reporting of every new case of malarial fever, and received notice last year of only twelve cases.

The writer regrets that the latter part of the past season was unusually cool, thus making a

test of the work less severe than during the earlier part of the season.

The total cost of this work, up to the middle of September, in addition to the loss of time involved in its supervision, was \$625.57.

In our work we had assistance from our bacteriologist, Dr. Francis P. Denny, our town engineer, our superintendent of streets, our park commissioners and some other town officers.

For the work of the present mosquito season (1903) the sum of one thousand dollars has been appropriated, but the work will not be conducted in all respects as it was last year. By direction of the Board of Health, the owners of mosquito breeding lands have been sent letters informing them as to what should be done in order to abate the nuisance, and inquiring whether they are able and willing to undertake the work. The Street Department and the Park Department have received orders to attend to all street catch-basins, public dumping places, pools and ditches on the town lands throughout the season.

The board will decide later what it will do where land owners, for any reason, do not prevent mosquito breeding on their premises; it is possible that it may return to the policy which last season proved very satisfactory in its practical results.

Medical Progress.

PROGRESS IN OTOLOGY.

BY PHILIP HAMMOND, M.D., BOSTON.

ARLT¹ reports good results in cases of malformation of the auricle by the subcutaneous injection of small quantities of paraffin.

Where the auricles are unduly prominent, Pooley² advises operation, using cocaine anesthesia.

EXTERNAL AUDITORY CANAL.

In otitis externa, Randolph³ obtains the best results by filling the canal with a strong solution of nitrate of silver (gr. 30 to the ounce). This usually stops the intolerable itching of which the patients complain.

Wheclock⁴ reports a discharge of blood through the intact external auditory canal in a case of hystero-epilepsy.

Red cerumen has been shown by Pacinotti⁵ to be due in certain cases to the development in the external auditory canal of a fungus which he identifies as *Oospora constacea*, or *Monilia miniata*.

BACTERIOLOGY.

Phillips⁶ states that a search of the literature of the subject reveals the fact that some twenty odd distinct kinds of bacteria have been observed in the discharge from purulent ears.

¹ Monatsehr. f. Ohrenh., September, 1901.

² N. Y. Med. Journ., July 13, 1902.

³ Progress. Med., March, 1903.

⁴ Amer. Med., Aug. 3, 1901.

⁵ La Semaine Médicale, Nov. 13, 1901.

⁶ Trans. Am. Laryng., Rhin. and Otol. Soc., 1902.

Bacteriologic examination of the discharge is now considered to be a most important aid in diagnosis and also prognosis, but it is important that the culture be taken as early in the case as possible. Unless we examine immediately after opening the membrana tympani, we cannot be sure that the organism did not enter the ear from without. There is no specific germ of otitis media, nor is the disease invariably mono-microbial.

Funk⁷ is responsible for the statement that the organisms found in the frequency of their occurrence are pneumococci, streptococci, staphylococci, Friedlander's bacillus and diphtheria. He also points out that it is almost impossible to demonstrate the presence of the tubercle bacillus in the discharge from the ear, and recommends that bits of tissue removed by the curette be examined for organisms.

Albesheim,⁸ in a study of otitis media occurring during measles, found streptococcus once in pure culture; once the staphylococcus albus. In two other cases each of these bacteria was seen in conjunction with a bacillus which could not be identified.

Grimmer⁹ has succeeded in inoculating guinea pigs with tuberculosis from material obtained from the granulations of suppurative ears. He considers that intra-peritoneal injections in this manner are a most conclusive proof of the presence or absence of tuberculosis. He also states that the presence of cholesteatomatous material is positively opposed to tubercles being present.

Trow¹⁰ claims that tuberculosis of the ear may be acute or chronic. In the acute stages there is general diffuse cellular infiltration of the mucous membrane and proliferation of the cellular elements; there are few, if any, giant cells, but a large number of tubercle bacilli. The mucous membrane breaks down rapidly, with resulting great loss of substance. In the chronic form bacilli are not abundant, the mucous membrane has a tendency to granulate, and under favorable circumstances connective tissue may form, with healing as an ultimate result. It occurs much more frequently as a secondary infection than as primary, and generally takes place through the Eustachian tube. It is often insidious, sometimes occurring without rupture of the drum membrane, and without pain. As regards treatment other than general, it is of the utmost importance to keep the ear as dry and free from discharge as possible.

Goldstein⁶ firmly believes in the existence of primary tubercular infection of the ear, and quotes an exhaustive bibliography to substantiate his opinion that it is not only possible, but extremely likely, that it is more frequent than a first consideration of the subject would indicate. Four cases are reported in support of the author's views, in which positive microscopic evidence was obtained.

HEARING TESTS.

Andrews¹¹ calls attention to the possible sources of error in testing the hearing. They may arise from poorly adapted or imperfectly understood instruments, or the fault may lie with the examiner, or from the failure of the patient to promptly and accurately respond to the various tests. Although there are many tuning forks on the market, there are few or none absolutely free from defects. The advantage possessed by the weighted forks, rendering them free from overtones, becomes positively detrimental when they are applied to the bone, because of the jarring sensation transmitted through the handle. A very important objection to the use of the ordinary fork is the length of time during which its vibration may be heard. In making repeated tests for the sake of accuracy, not only is much unnecessary time wasted where the fork vibrates more than a minute, but the patient easily becomes tired, and does not respond readily to the tests. Many of the published records of hearings are absolutely valueless, because of the neglect to specify the length of time during which the normal ear could hear the fork in question.

Attention is called to the intimate relation existing between a diseased nose and audition by Crouch,¹² who reports two cases of unilateral deafness accompanied by suppurating maxillary antrum, which resisted all ordinary methods of treatment, but were permanently cured by relieving the sinus trouble.

MEMBRANA TYMPANI.

According to Lucae,¹³ the artificial drum does not act by increasing labyrinthine pressure, for in this case to obtain the desired effect it should always be placed against one of the two windows, whereas he has always been able to secure good results by placing it against the upper portion of the promontory.

Gomperz¹⁴ does not believe in the value of the artificial drum unless there is destruction of more than one quarter of the membrane. He has, however, observed patients who complained of buzzing in the ear and of a feeling of heaviness in the head improve markedly by the application of the artificial support. He has been in the habit of employing for this purpose a drum made of pure silver molded into the proper shape.

In the case of large perforations Bentzen¹⁵ has used a tampon made of cotton, shaped like a ball. This he presses up against the round window, obtaining the best results from this location.

To close old perforations of the drum, Gomperz¹⁴ applies trichloroacetic acid on a cotton stick to the edges. This method is somewhat

⁷ Pyogenic Diseases of the Brain and Spinal Cord.

⁸ Arch. f. Ohrenh., Bd. lili, S. 87-99.

⁹ Arch. of Otol., June, 1902.

¹⁰ Canada Lancet, January, 1902.

¹¹ Laryngoscope, April, 1902.

¹² Journ. of Eye, Ear, Nose and Throat Dis., January-February, 1902.

¹³ Archiv f. Ohrenh., Bd. liv, U. 3 u. 4.

¹⁴ Ann. des Malad. de l'Oreille, du Larynx, etc., October, 1902.

¹⁵ Monatssch. f. Ohrenh., January, 1902.

painful, but seems free from danger. He considers that the treatment is indicated in all kinds of perforations.

Randolph³ strongly urges the importance of an early incision of the drum membrane in cases of acute inflammation, as does also Meierhof.¹⁶ The latter regards it a safe rule to puncture when in doubt, especially in the acute exanthemata. Delay means breaking down of the tissue, perforation and a more or less lengthy siege of otorrhea.

Körner¹⁷ presents a table of statistics regarding paracentesis of the drum membrane, which shows conclusively that the earlier the incision is made in the drum the earlier the recovery. There seems to be no doubt that the best safeguard against mastoiditis is a prompt opening of the drum.

Frost¹⁸ mentions a case in which erysipelas spread from the throat through the Eustachian tube and middle ear to the face.

FACIAL PARALYSIS.

Harvey Cushing¹⁹ has succeeded in re-establishing the function of the facial nerve after it had been completely severed by a bullet wound in the mastoid region. Six weeks after the injury, and after the mastoid wound had completely healed, Cushing severed the spinal accessory and united it with the facial. Six months later the patient had very fair control of the facial muscles, with the characteristic droop of the shoulder seen in cases of an injury to the accessory nerve.

This opens a most promising field of surgery for the relief of some of our most disfiguring cases, and one of which we will undoubtedly hear more within the next year or two. Already Ballance and Stewart²⁰ have reported cases in which practically the same operation was done, the patient being subsequently treated by electricity. The results have been most encouraging.

Reik²¹ has considered the etiology of paralysis of the facial, which, although not dangerous, is a most disagreeable symptom, and has long been recognized as a complication of ear diseases. It may, however, occur with so slight a disturbance in the ear that the latter is scarcely perceptible. Such an instance is reported by Reik, who sums up the points in his paper as follows:

(1) If exposure to cold in one way or another is the cause of most cases of facial paralysis, it probably acts most commonly through the production of an otitis media, whereby the nerve becomes involved either in a direct extension of the inflammatory process to its exposed sheath, or through pressure upon it of an exudate.

(2) This being admitted, the form of treatment

which offers the most rapid and satisfactory results is a paracentesis of the tympanic membrane to free the cavity of its abnormal contents.

(3) We should never, in any case of facial paralysis, neglect to examine the ear.

SUPPURATIVE INFLAMMATIONS OF THE MIDDLE EAR.

In a consideration of the cause of purulent inflammations of the middle ear, Kuhnlein²² found that in the summer months, when nasopharyngeal troubles were less prevalent, there were fewer cases of ear involvement.

Urbantsehitsch²³ reports two cases where there was a small amount of muco-purulent discharge from the ear at regular intervals, which seemed to entirely recover as a result of inhalations of nitrite of amyl. He thinks the condition was evidently a tropho-neurosis.

Muller¹³ reports ten cases of chronic suppuration with various neuroses, such as epilepsy, chorea, etc., in which there was marked improvement of the nervous condition following a radical operation and cure of the otorrhea. The dura was freely exposed in all the operations, and Muller ascribes the amelioration of the symptoms to changes in the blood supply of this protective membrane.

The question of the influence of syphilis as a cause of inflammations of the ear is discussed by Parmentier,²⁴ who records the case of a woman who had an otorrhea of six months' duration, and on examination was found to have a large polyp springing from a perforation located at the superior and posterior portion of the tympanic membrane. In addition to this there were clinical manifestations of secondary syphilis. The patient refused to have the polyp removed, and was placed upon anti-syphilitic treatment. At the end of two months, during which this treatment was continued, the discharge had entirely stopped, the polyp had disappeared, and in its place was found a beautiful cicatrix of the drum membrane. Parmentier regards the aural trouble as distinctly one of syphilitic origin.

Grunert²⁵ cites two cases of otitis in which examinations of the urine previously made showed no sugar to be present, while during the height of the disease large amounts of sugar were excreted in spite of the fact that all carbohydrates were withdrawn from the food. Both were cases of chronic suppuration. One was complicated by a diffuse purulent meningitis, as was proven by lumbar puncture. In the other there was an extradural abscess. Operative measures were employed in both cases, and after recovery the urine was found free from sugar, although a mixed diet was given. One of the cases was under observation for nearly five months, and during that time the urine was always free from sugar.

¹⁶ Arch. of Otol., vol. xxxi, No. 2.

¹⁷ Arch. f. Ohrenh., Bd. lvi, H. 2.

¹⁸ Amer. Med., April 26, 1902.

¹⁹ Annals of Surgery, May, 1903.

²⁰ Brit. Med. Journ., May 2, 1903.

²¹ Bull. of the Johns Hopkins Hosp., April, 1902.

²² Monatschr. f. Ohrenh., November, 1901.

²³ Rev. heb. laryngol., d'Otol., etc., July 12, 1902.

²⁴ Progrès méd. Belge, Feb. 15, 1902.

²⁵ Arch. f. Ohrenh., Bd. lv, H. 3 u. 4.

Richards⁶ points out that one of the chief reasons for the existence of cases of chronic suppuration is the fact that many general practitioners do not yet appreciate the dangers which arise from the presence of pus in the ear. He advocates operation in cases which do not improve within a reasonable length of time, and emphasizes the danger of the formation of brain abscess. The possible influence of the operative measures upon the hearing power should not be reckoned a factor in these cases; the danger to the life of the individual is more to be considered than any possible loss of hearing as a result of operative interference.

That this danger is a well-recognized one was noted by the writer²⁶ in an article showing the importance of certain diseases of the ear with reference to life insurance.

Dench⁶ finds that intra-tympanic caries is the underlying cause of nearly all cases of chronic discharge, and believes that we must treat the cases surgically just as we would handle a similar condition with dead bone in any other portion of the body. There are two methods of procedure open to the operator: First, the removal of all dead bone through the external auditory canal; second, where the disease is extensive, we can accomplish our purpose only by removing the bony walls enclosing the ear cavity. In the early stages intra-tympanic caries is confined to the ossicles, and their removal is sufficient to constitute a cure. Superficial caries of the tympanum, even, may be removed in this way. The operation is an ideal one, and confines the patient to the house for only a few days. It is absolutely essential that the incus be removed.

Pearce⁶ has tried removal of the ossicles in some cases under a local anesthetic, but has lately always resorted to ether. In cases of granulation tissue, bleeding may interfere with the different steps of the operation to such an extent that the patient's endurance may be exhausted, and it may become impossible to complete the operation.

Packard⁶ observed a case of necrosis of the temporal bone following scarlet fever in a boy of four and a half years. The discharge had existed for a few weeks only, and when seen, there was a large sequestrum filling the left auditory meatus.

Fougeray²⁷ has for the past eight years been using medicated gauze for tamponing the canal in cases of otitis media suppurativa. Originally he experimented with iodoform gauze, but of recent years he has been obtaining his best results from the use of naphtholated crinoline gauze. His technique consists in cleaning out the canal, filling it with hydrogen peroxide, and without allowing this to run out, to tampon the canal with gauze.

Bezold²⁸ is absolutely opposed to the tamponing of the canal with gauze under any cir-

cumstances in cases of suppuration. He has been accustomed to filling the meatus with boracic acid powder, but this method seems to be open to the objection that the powder readily forms hard masses, blocking the drainage.

Gautier²⁹ has experimented with methylene blue as an antiseptic in the treatment of chronic otorrhea, particularly where there was much odor. His method was to first wash out the external auditory canal, and then instill fifteen or twenty drops of a lukewarm solution of 1:500 methylene blue. This was allowed to remain in the ear for five minutes. A serious objection to its use, however, was the difficulty of avoiding the staining of the face and parts adjacent to the ear.

Snydacker³⁰ has reported the results obtained from a microscopic examination of the discharge in chronic suppuration. He considers the presence of shreds of epidermis or of bone dust to be of more value as a diagnostic point than a bacteriological finding.

To facilitate the removal of large polypi, Bellevue³¹ is accustomed to inject into the substance of the growth 1 cc. of a 5% solution of cocaine. This spreads throughout the tumor, including its attachment, and apparently gives rise to no trouble from absorption, as most of the solution is removed with the polyp.

As the result of histological examinations, Bruhl³² found that out of 60 aural polypi 47 were polypoid granulations, 8 were fibromas and 5 myxo-fibromas.

(To be concluded.)

Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

TWENTY-FIFTH ANNUAL MEETING, WASHINGTON, D. C.,
MAY 12, 13 AND 14, 1903

FIRST DAY.—TUESDAY, MAY 12.

SOME CASES OF CANCER TREATED BY THE X-RAY.

DR. ARTHUR H. BLISS of Philadelphia read the above paper, being a report of two cases and comments on the method of treatment.

One case involved the ethmoid and sphenoid regions, both orbits and eyelids. Syphilis was excluded from the history, and a pathological examination showed the growth to be carcinoma. One operation had been done, clearing out the ethmoid and frontal region on the right side and taking out the right eye. The x-rays were used late in the case, with treatments three times a week for about five minutes at a sitting. The other case gave a history of syphilis twenty years previous; the growth was in the tongue, and the lymph nodes of the neck were enlarged and the floor of the mouth in-

²⁶ Bost. Med. and Surg. Journ., May 15, 1902.

²⁷ Rev. heb. de Laryngol., d'Otol., etc., 1902, No. 36.

²⁸ Zeitschr. f. Ohrenh., Bd. xli, H. 3.

²⁹ Echo med. du Nord, No. 41.

³⁰ Arch. of Otol., vol. xxx, No. 1.

³¹ Rev. heb. de Laryngol., d'Otol., etc., Dec. 20, 1902.

³² Arch. of Otol., August-October, 1901.

filtrated. Potassium iodide had no effect on the growth, and although no pathological examination had been made, the clinical aspect of the case was one of carcinoma. The x-rays were used as in the previous case. There was some slight improvement at first, with less rapid growth at the periphery of the mass, and a moderate degree of relief from pain; but no effect upon the mass of the tumor.

The author's conclusions were that no permanent improvement or cure was to be expected in these cases, although the x-ray was undoubtedly valuable in the treatment of purely superficial lesions, such as lupus; and that in such cases of deep involvement, early radical operation was indicated, and that valuable time should not be lost in the use of the x-ray.

DR. DELEVAN of New York, in discussing the paper, said that he agreed with the negative conclusions of the author; and reaffirmed his own conclusions, as stated in his own paper of a year ago, that no authentic case was yet on record of any permanent good results from x-ray treatment in deep-seated growths. He said he thought it might possibly do some good if used very early; but if no good resulted promptly it should not be continued so long as to allow the growth to get beyond legitimate radical operation.

DR. GLEITSMANN of New York, DR. SWAIN of New Haven, DR. COOLIDGE of Boston, DR. BIRKETT of Montreal and DR. SIMPSON of New York, all confirmed from their own experience the negative results from the use of x-rays in cases of deep-seated growths.

SOME FURTHER INVESTIGATIONS OF THE CHEMICAL PATHOLOGY OF THE SALIVA.

DR. D. BRADEN KYLE of Philadelphia read this paper. He detailed many laboratory and clinical experiments and observations of the changes in the character of the saliva, under different conditions of diet, hygiene, climate and medication, and spoke particularly of the frequent evolution of irritating substances, often gases, and their influence upon conditions of hay fever, either as causative or aggravating factors. He claimed that some cases of hay fever were directly caused by this irritating condition of the saliva, and could be properly treated only by changing the character of that secretion.

ADENOID VEGETATIONS, WITH SPECIAL REFERENCE TO ADULT CONDITIONS.

DR. JAMES E. LOGAN of Kansas City called attention to the importance, in all acute infectious diseases, of a careful examination of the naso-pharynx, and the thorough antiseptic cleansing thereof. He thought that neglect of adenoids in the adult was responsible for the frequent failure in the treatment of obstinate cases of affections of the middle ear and upper air passages. The author, though finding little reference in literature to adenoids in the adult, a fact suggesting either rarity or small importance of

the condition, said that in his experience this was not so, and as illustrating the importance of the condition, mentioned a case of complete deafness, excepting by bony conduction, in which the naso-pharynx was full of adenoids and both nostrils obstructed by hypertrophied turbinates, in which full hearing was recovered after the nose and naso-pharynx were cleared out.

As to the presence of adenoids in the adult, he quoted Raulin of Marseilles, and agreed with his conclusions, that when present they usually dated from childhood, not being developed after puberty when absent previously; and that when present they usually caused deafness, or chronic nasal or naso-pharyngeal catarrh. He also claimed that adenoids, when once pathologically enlarged, do not tend ever to atrophy, especially if during their existence any acute infectious disease has occurred.

In summarizing Dr. Logan called particular attention to the importance of: Early recognition and removal in children; care of naso-pharynx in cases of acute infectious diseases; the fact that large faucial tonsils usually indicate the presence of adenoids, though the reverse is not true; in adults, that the condition is not rare, and when present, has persisted since childhood and not developed since puberty; and that operation is warranted and indicated in every case, to relieve present conditions and to prevent future complications.

HOW SHALL THE DIAGNOSIS OF POST-NASAL ADENOID BE MADE IN YOUNG CHILDREN, WHEN RHINOLOGICAL EXAMINATION IS IMPOSSIBLE?

DR. CLARENCE C. RICE of New York read a paper with the above title. He said that a rhinoscopic examination was usually impossible in children under seven years of age. He spoke of two classes of cases, one in which there is respiratory obstruction only occasionally and intermittently, with a small quantity of adenoid tissue; the second class where there is permanent obstruction and continuous mouth breathing, with a large quantity of adenoids. He said that a small quantity of adenoid tissue was present in 95% of cases, and that in these cases, where a mirror cannot be used, a post-nasal curette is useful for examination and diagnosis, and if the adenoids are found, — for immediate operation without anesthesia. He claimed that the curette was better than the finger, and that by its use in the above way and in the above-mentioned class of cases, he avoided two attacks upon the frightened child, and made the diagnosis and did the operation at one time.

DR. FARLOW of Boston, in discussion of the foregoing two papers, said that he agreed with Dr. Logan that there were many cases of adenoids in the adult overlooked, that the condition was an important one, and should be operated upon in every case. As to Dr. Rice's use of the curette, he objected to it seriously as dangerous and painful. He spoke of and recom-

mended the inspection of the naso-pharynx in children through the nose, after the use of very weak cocaine or adrenalin, or both.

Dr. MAYER of New York objected to the use of the curette as Dr. Rice recommended, and called attention to the presence of small lymph follicles on the posterior wall of the pharynx, looking like the so-called follicular pharyngitis in adults, in most cases of adenoids, as a valuable aid in diagnosis, claiming that they were almost pathognomonic of the condition.

Dr. DELEVAN of New York, Dr. MACKENZIE of Baltimore, Dr. SWAIN of New Haven, Dr. MYLES of New York, Dr. SIMPSON of New York, Dr. NEWCOMB of New York and Dr. LOGAN of Kansas City all objected to the proposed use of the curette and to any operation without anesthesia.

Dr. NEWCOMB also called attention to the occasional prominence of the atlas projecting into the naso-pharynx so far as to interfere with use of the curette.

SOME CASES OF FACIAL ERYSIPELAS FROM EROSIONS OF THE NASAL SEPTUM.

Dr. JOHN W. FARLOW of Boston read the above paper, and spoke first of the frequency of cases of recurrent facial erysipelas, without apparent cause, that is, without evident wound on the face for the entrance of the infection. He noted the importance in these cases of a thorough examination of the nose, especially the septum, as that is the most common site of small nasal lesions. He detailed the histories of several cases of facial erysipelas, selected from a large number, in which an abrasion or erosion was found on the septum, and in which a thorough antiseptic cleansing treatment of the nose was the important part of the treatment of the case.

Dr. BLISS of Philadelphia, in discussion, said that he thought it very remarkable that of all the many operations upon the nose, both inside and outside, so few cases developed erysipelas. He said he knew of only one case.

Dr. KING of New Orleans and Dr. JOHNSTON of Baltimore each reported a case of erysipelas following operation upon the nose.

Dr. FARLOW in closing said that he presented these reports merely to call attention to the frequent small lesions of the nose as the probable point of entrance of the infection, and to urge the importance of a thorough routine examination and careful antiseptic local treatment of the nose in these cases of facial erysipelas.

SECOND DAY. — WEDNESDAY, MAY 13.

THE ARCH OF THE PALATE.

Dr. SWAIN of New Haven read the above paper. He referred to the usual explanations of the high-arched palate, such as lack of functional use of the nose from obstruction, differences of atmospheric pressure, etc., and the

extension of these causes as also determining deflections of the septum, and called attention to the fact that many children had a high-arched palate who had no nasal obstruction, and *vice versa*.

In the Flathead Indians, who deformed the heads of their children by depression of the vertex for the first year of their lives, the author found that the arch of the palate was very low (though the septum was not affected), showing that outside influences tending to alter the shape of the skull can and do affect the palate. He said that the deformities of the arch were due, not to any one cause, but to many and complex factors. The nose in these cases is usually a non-functionating organ. In the new-born babe the palate is above the level of the Eustachian tube, at puberty below it, — and consequently the palate has grown down away from the base of the skull, this being due to the downward growth of the superior maxilla, the septum and the pteregoid process of the sphenoid. From improper or no functional activity of the nose, this downward growth may be stopped; and perhaps because the nasal obstruction prevents the proper aëration of the maxillary sinuses, the lack of air causing non-development, or atrophy. The author also called attention to the added weight of the cheeks and inferior maxilla, dragging on the outer part of the superior maxilla, when the mouth was constantly open and relaxed, thus tending to pull the sides together and to narrow the arch. He said also that the shape of the adult palate, as well as the alignment of the permanent teeth, depends largely upon the preservation of the first teeth as long as possible. When noting the great results in adults of the comparatively slight force used by dentists in straightening teeth, and spreading them apart, the author thought it not unreasonable to grant that the forces mentioned above, when acting upon young, soft and pliant bones, might easily be sufficient to cause all the deformities found in these cases.

Dr. DELEVAN of New York, in discussion, called particular attention to what, he thought, were the two most important points of the paper; namely, the care and preservation of the first teeth, and the early attention to any nasal obstruction.

Dr. MAKUEN of Philadelphia referred especially to the importance of nasal breathing, and noted the estimate made by some observers, that 70% of all people breathe through the mouth at night, even when there is no obstruction to nasal breathing.

Dr. KING of New Orleans said that while he had not made any actual measurements in the negroes of the South, he had observed that deformities of the palate and adenoids were not so frequent as in whites; that adenoids, when present, were not often associated with palatal deformities, and that as a rule the palate was larger and the post-nasal space more roomy, and that therefore adenoids when present did not cause so much obstruction.

ACQUIRED CICATRICIAL DEFORMITIES IN THE
RESPIRATORY TRACT, DUE TO OTHER CAUSES
THAN SYPHILIS AND TRAUMATISM.

DR. G. HUDSON MAKUEN of Philadelphia presented this paper, and in opening the subject said that cases of this kind were rare. He had sent a circular letter to three hundred laryngologists all over the country asking for information and data, and had received notes of 447 cases, in only 167 of which, however, was a definite cause assignable. Of these 167 were due to diphtheria; 8% to scarlatina; 3% to lupus; 1.6% to tuberculosis; 1.5% to a combination of scarlatina and diphtheria; 1.1% to typhoid fever; and .5% to measles. The author gave histories of two cases of his own, and argued that, in these common acute infectious diseases, more care and attention should be given to the treatment of the throat and nose.

DR. FARLOW of Boston said, in discussion, that while diphtheria might cause moderate adhesions, between the tonsils and the pillars of the fauces, or between posterior pillar and the posterior pharyngeal wall, he did not believe that it could cause any very extensive adhesions or contractions. He had never seen a case, and thought that in many cases the history was defective, and that the real cause was syphilis.

In connection with the papers on sinus disease DR. GEORGE B. WOOD of Philadelphia showed a number of sections of a head of a six months' old child, which were of special interest as showing the size and relations of the sinuses in a child of that age.

MY LATEST IMPROVEMENTS IN THE RADICAL
TREATMENT OF CHRONIC SUPPURATIONS OF
THE ACCESSORY CAVITIES OF THE NOSE.

DR. H. LUC of Paris presented this paper, and considered in order the maxillary, frontal, ethmoid and sphenoid sinuses.

I. *Maxillary sinus*. — The author stated first that radical surgical treatment was to be limited strictly to the chronic forms. He noted the distinction to be made between two classes of cases; first, the properly so-called sinusitis, with a primary infection of its mucous membrane; and, second, cases where the pus does not originate in the sinus, but merely accumulates there, coming from a frontal or a dental abscess. In the latter cases washing out the sinus may effect a cure, in connection, of course, with proper treatment of the source of pus, namely, the frontal or dental inflammation.

In the former cases puncture and washing should be tried first, and if unsuccessful, should be followed by radical operation.

II. *Frontal sinus*. — Dr. Luc referred to the Ogston-Luc operation, and spoke of the frequent poor results from it in cases of very large sinuses, due to the closing of the nasal drainage opening before the complete healing and obliteration of the cavity of the sinus. This unpleasant

result had led many to go back to the old method of leaving the wound open, or to use the Kuhnt method of resection of whole of anterior wall, with its consequent great deformity.

Dr. Luc recommended and now uses the Kilian operation, a combination of the Ogston-Luc with the Kuhnt and the Jansen operations, thus getting the immediate closure of the wound and nasal drainage of the Ogston-Luc, the opening of the floor of the sinus of Jansen's, and the removal of a part of the anterior wall of the Kuhnt method, but preserving a bridge of bone between the two openings which lessens the deformity, and extending an opening to the ascending part of the maxillary bone, giving opportunity to enlarge the fronto-nasal opening, and also giving access to the ethmoid cells.

Dr. Luc recommends this operation for cases with large sinus and the Ogston-Luc operation for cases of small sinus.

III. *Ethmoid cells*. — These the author said were practically never involved alone, but always in connection with frontal or maxillary inflammation. They may be attacked through the nose, or as a sequel to operation on frontal or maxillary sinus; but the author claimed that it was impossible completely to destroy the ethmoid labyrinth through the nose, as the anterior cells cannot be reached without making an external bony opening. He spoke of one case in which, operating intra-nasally, he opened accidentally into the sphenoid sinus. This did no harm and suggested a new route of operation on that sinus, which he had employed frequently since that time.

IV. *Sphenoid sinus*. — Here Dr. Luc said that we could operate by intra-nasal or by external method, always the former if the sphenoid sinus alone is affected, and if there is room in the nose to work; always the latter if the maxillary sinus is also affected, or if we cannot get room to work in the nose. He noted that it was important to remove a large part of the anterior wall of the sinus.

(To be concluded.)

Recent Literature.

Lcs Obsessions et la Psychasthénie. Par les DRS. F. RAYMOND et PIERRE JANET. Tome ii. Svo. pp. xxiv, 543, with twenty-two illustrations. Paris: Félix Alcan. 1903.

The present volume is the only one of the work that has come to our hand, and therefore a satisfactory review is hardly possible. It contains reports of two hundred and thirty-six cases of various forms of obsessions, illustrating the detailed medical and psychological study of obsessions by Dr. Janet in the first volume of the work, but, without the introductory volume, the collection of cases, rich and varied as it is, loses most of its value.

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OBESITY IN YOUTH.

THE doctrines of diminished metabolism in obesity and excessive metabolism in youth have received decided opposition from the recent studies of Rubner,¹ who has investigated these questions under exceptionally favorable conditions. Two brothers, eleven and ten years of age, and approximately the same height, weighing fifty-four and eighty-nine pounds respectively, served as subjects for his experiments. Each of these boys spent four days in a respiration calorimeter, during which time detailed observations were made. As a result Rubner found that the normal boy ate proportionately more than his fat brother—fifty-two calories per kilogram body weight in contrast to forty-four calories. This apparent disparity, however, disappeared when the actual surface of both boys capable of radiating heat was taken into account. Making allowance for this, the diet was practically the same. The extent of body surface is quite as important in calorimetric observations as is the body weight, and disregard of this factor has been responsible for many erroneous conclusions concerning the food of fat people. An interesting, but only apparent, exception to this law is furnished by cachectic individuals and those rapidly emaciating. In such persons the number of calories required to maintain equilibrium is less than would be supposed. This is due to the actual skin surface and body surface in such individuals not being identical. The formation of folds of skin brings two surfaces into apposition, and the

heat-giving area is thus diminished. Instead of diminished metabolic activity in obesity, Rubner finds the evidence more in favor of the opposite condition. He calculated that thirty-five per cent of the weight of the fat boy in the experiment was composed of fat tissue. The cells in the remaining two thirds of the body were compelled to do the work for the whole body, and thus each cell was forced to do more than its natural share. This doubtless explains the fatigue which fat people usually feel on even moderate exertion.

Variations in the natural amount of bodily activity between childhood and adult life, in the duration and depth of sleep and in growth are other influences too often neglected in the inferences which are drawn from experiments in metabolism. When these are considered, it is found that the same laws which apply to metabolic activity in adult life are applicable in youth. Rubner furnishes proof for this statement by comparing the diet of a dwarf with that of an infant of similar weight. The dwarf, who was twenty years of age, weighed fourteen and a half pounds (six and six-tenths kilograms), and ate eighty calories per kilogram. This closely approximated the diet of a baby, weighing eleven and one-tenth pounds (five and four-tenths kilograms), who ate seventy calories per kilogram. The slight difference in favor of the dwarf is explained by the work which he performed during the experiment.

The causes of the obesity in the case of the boy above mentioned were, of course, not accurately known, but they appeared to be due to lack of exercise from disposition and to peculiarities in the diet from necessity. As nearly as could be ascertained, albumen formed an unusually small per cent of the total diet. Further, it was found that the fat boy failed to absorb twenty per cent of the albuminous food which he did eat, thus reducing the total available albumen still more. The natural result followed that he ate a proportionately large quantity of carbohydrate food. Such a diet, low in proteids and rich in carbohydrates, is known to favor the laying on of fat, and the boy's natural aversion to exercise increased this tendency.

NURSING AS A PROFESSION.

IN our issue of July 2d reference was made to the movement which is now well under way of providing further preliminary training for

¹ Beiträge zur Ernährung im Knabenalter mit besonderer Berücksichtigung der Fettsucht. Berlin, Hirschwald, 1902.

those who intend to take up the work of nursing. With this movement, as we then implied, has naturally come a tendency on the part of the leaders in the work of nursing and others to claim for their calling a distinct place as a profession. We suggested that it seemed to us questionable whether nursing, as ordinarily understood, could be placed in the category of the liberal professions, but implied that in the nature of its work it was rather to be regarded simply as a "calling." This question must sooner or later be definitely answered. If nursing is to be regarded as a liberal profession, it must naturally claim the privileges which go with this designation, the most natural of which is to advance very far beyond the stage which it has as yet attained.

In this connection, we are glad to call attention to a letter on this subject which appeared in our issue of July 16, in which the writer took the position that nursing from its very nature could not be regarded as a liberal profession. He alluded to the fact that the essence of a profession is progress and that the work of nursing does not permit of such development. We are inclined to agree wholly with this view of the question. While perfectly willing to grant that it is altogether probable that a class of persons will arise from the ranks of nurses who will occupy some sort of a middle position between the physician and his patient, we nevertheless are strongly of the opinion that these persons will not be nurses and will not represent the plain drudgery of nursing as is at present the case.

A man of much acumen, himself a physician, once remarked to us that the future of medical practice would probably be that physicians would become consultants and that nurses would become essentially practising physicians. That we are still far from this state of affairs is apparent; nevertheless there are many things pointing in the direction of the progress of nurses beyond the limits of their chosen calling into those which have heretofore been regarded as the domain of the physician. We are not inclined to regard this by any means as an unmitigated evil. On the contrary, it seems probable to us that many of the procedures which the physician in the past regarded as his prerogative may be as well, if not better, done by a carefully trained person of wide experience, whether man or woman, but what we do claim is that this function goes quite beyond our conception of nursing, which, as we understand it, is simply and solely to take care of the physical and mental wants of the sick under the direct supervision of a physician.

The present state of affairs is certainly in a measure due to the attitude of the profession itself. It has been shown that women trained as nurses are capable of taking medical responsibility, and physicians have not been slow to lay such responsibilities upon them. The natural and inevitable result of this has been that nurses have looked beyond the details of their work, and have been allowed to believe that nursing requires a semi-medical education. We are not in the least attempting to criticise this point of view, but we are convinced that it is desirable to face the facts as they are, and possibly to speculate regarding the future to which the present tendencies are likely to lead. We are sufficiently optimistic to think that on the whole the elevation of women who still regard themselves as nurses will be of general utility; but we are strongly opposed to the idea that the term "nursing" may still be used to designate this class of persons, and that nursing, as now understood, may be regarded as a profession. This does not deny that it may grow into a profession which will then have a far closer analogy to medical practice than to our possibly somewhat old-fashioned idea of nursing as such.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

WE are in receipt of the first number of an English journal with the above title, edited by Major R. H. Firth of the Royal Army Medical Corps. It is stated that this journal is the realization of a hope of many years. The necessity for such a periodical has long been recognized by the medical officers of the army, but in spite of various efforts it has not been possible to publish the journal until now. The object of the publication is to print original articles by officers of the Royal Army Medical Corps and others, to present bibliographical notes on articles of importance to the military services, to reproduce work done by other military and medical journals and to provide information bearing upon the army medical services. The need of such a journal in England is strongly felt, and it is with the hope that liberal contributions will be offered that the journal has finally come into existence. The first number discusses the question of hospital arrangements on board transports, and contains other articles and matter of general medical interest.

In spite of the rapid increase in the number of medical journals, we are inclined to think that any periodical which tends to elevate and bring

into greater prominence the medical branch of the army is desirable and should find a distinct place of usefulness. Experience has shown that many questions concerning medico-military matters are ripe for discussion, and it is both natural and proper that officers of the medical corps should desire to have their own medium of publication. We have no doubt that this journal will be a success and add something of positive value to the well-filled ranks of medical journalism.

MEDICAL NOTES.

CONTAGIOUS DISEASES IN CHICAGO. — According to the *Bulletin* of the Chicago Health Department, only 57 cases of contagious diseases — diphtheria, measles, scarlet fever, smallpox, etc. — were reported during the week ending July 18. This is the lowest number since September, 1901. In the corresponding week last year there were more than twice as many, — 119, — and the 34 cases of diphtheria and 11 cases of scarlet fever reported this week are one third and one half less than the respective number reported during the previous week. Measles, which has been epidemically prevalent for many months, is fast disappearing, as also is smallpox, the solitary reported case of which was that of an unvaccinated infant of six months.

GIFT TO MCGILL UNIVERSITY. — It is reported that by the will of the late James Cooper sixty thousand dollars is left to McGill University as a fund to establish a chair in the medical faculty for the teaching and study of internal medicine. It is to be known as the Cooper Endowment Fund, and will be paid two years after the death of the testator.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 29, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 15, typhoid fever 18, measles 12, smallpox 0.

DR. SIMON FLEXNER A GUEST OF THE BOSTON FLOATING HOSPITAL. — On one of the trips of the Boston Floating Hospital last week Dr. Simon Flexner of Philadelphia was a guest. He is in charge of certain work of a bacteriological sort being done under the auspices of the Rockefeller foundation, and is making a tour of inspection of those laboratories where the experimental work is being carried on, one of which is the Floating Hospital.

BERI-BERI ON A NEW BEDFORD WHALER. — Beri-beri is a sufficiently unusual disease to make the following report of interest: A whaling vessel from New Bedford is said to have had while on her cruise an outbreak of this disease. Seven men are reported dead, and ten more of the crew ill. The vessel has temporarily put in to St. Helena.

APPLICATIONS FOR REGISTRATION IN MEDICINE. — The recently held examination of applicants for registration in medicine in Massachusetts is said to have demanded the largest committee room in the State House, owing to the fact that upwards of two hundred applicants applied for the examination. Five examinations for several years past have been given annually, but it is likely that this number will be increased with the increasing number of applicants.

NEW YORK.

CARE OF MOTHERLESS INFANTS. — The joint committee on the care of motherless infants has just presented its fifth annual report to the State Charities Aid Association and the New York Association for Improving the Condition of the Poor, the two bodies which it represents. The number of infants received during the year was 178, of which 62 have been adopted by families, 26 died and 90 remain in the care of the committee. Although many of the infants had previously been subjected to exposure, neglect or ill-treatment, the committee reports that during the last two years the death-rate among their charges has been actually lower than the general death-rate among children of the same age in New York City. An innovation made has been the employment of wet nurses, and most of these have been Italian women. "There are a physical vigor and warmth of nature in the Italian mother," the report states, "which make her a most desirable nurse. She learns to love the 'bambino,' for whom she cares with a strength she does not appreciate until the parting." A considerable number of the infants received are those taken to Bellevue Hospital from police stations.

NOTES FROM THE PHILIPPINES.

PREJUDICE AGAINST BOVINE VIRUS. — An incident showing the different phases which sanitation assumes in the Philippine Islands is the recent request which the Board of Health has made to the sanitary authorities in India for some "Amil" vaccine virus. There are a number of East Indians in Manila, and these object to being vaccinated with bovine virus, as the cow is to them a sacred animal, and to be inoculated with lymph from it would mean a loss of their caste. They do not, however, object to vaccination with humanized virus taken from some

member of the Amil caste, to which they nearly all belong, and the Board of Health is now endeavoring to secure some of this virus in order to vaccinate them in a way which will not arouse their prejudices and opposition.

SIMULTANEOUS CHOLERA AND BUBONIC PLAGUE. —

Another interesting fact connected with the recent reappearance of cholera in Manila has been the simultaneous occurrence of cholera and bubonic plague in the same individual. This has happened in four instances during the past ten days, all the persons so affected being Filipinos. The double infection was diagnosticated during life in one instance, was shown to exist by the four autopsies, and the conditions were confirmed in each case by bacteriological examination. Such double infection, while unexpected, is readily explainable. The incubation period of plague may be nine or ten days, while that of cholera may often be only of a few hours' duration. Both plague and cholera are most liable to occur in those living under highly unsanitary surroundings, and who are most liable to contract anything in the nature of infectious disease which may be present, both as a result of their environment and habits. It is certainly quite possible that an individual with an incubating infection of plague, lasting a number of days before development, may acquire a cholera infection, having a comparatively brief period of development, during the incubation period of his plague infection, so that both may appear at about the same time.

DESTRUCTION OF LOCUSTS.— Another kind of opposition has been raised against the destruction of the locusts which swarm in countless myriads over the most fertile districts of the islands and do an almost incalculable damage to crops. The health authorities have been inoculating these swarms of locusts with the grasshopper fungus, which is proving an effective agent in their destruction. Locusts, dried, raw, baked, fried, stewed, ground into powder, etc., form a staple article of diet among the poorer class of Filipinos, who can collect them by the bushel with little labor. This class of natives is now violently opposed to the extermination of the locusts and loss of this food supply. The big land owners and "hacienders," however, are as strongly in favor of the destruction of these insect pests, and their wishes usually soon control public opinion among the surrounding natives. One who has never seen a swarm of locusts can form no idea of their vast numbers and the damage they do to crops. In the distance a flying swarm looks like a dense cloud of smoke or dust, and when such a swarm is passing overhead the sun is ob-

scured. Settling on a field of rice or cane, they work so swiftly that the field soon looks as if swept by fire. The appearance of a swarm is the signal for every native to turn out with large scoop nets, bags and baskets, and vast quantities of insects are caught for food. A single sweep of a scoop net in a flock often yields half a peck of the locusts. The natives say that they are very sweet and palatable, and are particularly fond of them when fried to a crisp in cocoanut oil.

UNSANITARY CONDITION OF "ESTEROS." —

There is some little popular complaint against the unsanitary condition of the "esteros," or sluggish creeks which are practically open sewers and ramify all through the city of Manila. As there is only about a two-foot rise and fall of tide in them, and at this season they lose the scouring effect of the daily rains, they have become very foul. Nearly all of them are shallow, and the falling tide exposes large areas of foul-smelling mud flats to fester under the tropical sun. A general scheme of drainage and sewerage for the city is being prepared, and no temporary expedient can place these "esteros" in a satisfactory condition. Many are choked up so badly that the tides do not flush them, and in the absence of heavy rains they become practically large cess-pools. The mere cleaning of them would be extremely laborious and expensive, even if proper apparatus were at hand for performing the work. It is possible that by the removal of boats, logs and similar obstructions, and by the dredging out of a few bars, the sluggish currents may be quickened and the "esteros" made to cleanse themselves more satisfactorily. Whatever can be done, the Board of Health proposes to do, and if cholera does not again become severe in the city it will be able to give proper attention to such work. Of course nothing short of dredging, straightening their course, building up the sides of the esteros with masonry, filling in the low places and bogs, and flushing on the ebb tide from tidal reservoirs placed above the head of navigation will ever be satisfactory — a scheme requiring much time, labor and money for its execution.

MEDICAL INSPECTION OF IMMIGRANTS.— Hereafter all immigrants arriving in the Philippine Islands will be subjected to a medical inspection by the surgeons of the Marine Hospital Service. The medical examinations will be conducted in connection with the regular inspections by immigration officers; and such aliens as may be certified to by the surgeons to be insane, idiots or suffering from a contagious

or loathsome disease, or whose mental or physical condition is such as to apparently affect their ability to earn a living, are to be excluded from the islands. This additional task will be hard for the Marine Hospital surgeons, who are already greatly overworked, and entirely too few in numbers to meet the conditions in the islands.

Miscellaneous.

MUNICIPAL SANITARIUM FOR CONSUMPTIVES.

COMMISSIONER FOLKS of the Department of Public Charities, New York, has officially presented to the Board of Estimate and Apportionment the following recommendations regarding the establishment of a municipal sanitarium for consumptives: That the board request the Board of Health to select a site for such sanitarium at the earliest practicable moment, and, in co-operation with the Board of Trustees of Bellevue and allied hospitals, secure the necessary consents therefor; that the board request these trustees to co-operate with the Board of Health in these matters and to establish and maintain thereon, when the use of such site has been secured, a sanitarium for consumptives; that an appropriation of \$30,000 be made, through the issue of special revenue bonds, to the trustees, to cover the cost of selection of site and maintenance during the remainder of the current year; that an issue of bonds to the amount of \$400,000 be authorized for the construction by the trustees of a suitable sanitarium.

The commissioner's recommendations were accompanied with a report on the general subject to the mayor, as chairman of the board. In it is stated that a sanitarium which would accommodate 500 patients could be established for \$407,000, and that the estimated expense of maintenance would be \$1 a day for each patient. It is believed, however, that if sufficient land were provided to permit dairying, poultry-raising and fruit and vegetable growing, a considerable income might be had from these sources. The commissioner deems it important that the hospital should be located as near the city as possible, and he is convinced that a satisfactory site can be procured within fifty, and probably within forty, miles of New York. Thus conveniently located, it would be possible for the relatives and friends of the patients to visit them at a comparatively small expenditure of time and money; and this consideration, it is believed, would have an important influence upon the willingness of patients to go to the sanitarium. Having referred to a number of requirements for location, which after consultation with eminent medical authorities he regards as essential, the commissioner goes on to say that for a hospital to accommodate 500 patients there should be secured not less than 250 acres (preferably 400), and that land of the character desired should not cost more than \$250 an acre. Regarding the type of buildings required, the report states that with the exception of administration and other service buildings, they need be only very inexpensive, as for dormitory

purposes cheap wooden structures and tent cottages would probably be better suited to the needs of most of the patients than more substantial buildings.

The Board of Aldermen has already expressed its approval of the project, but should the Board of Estimate and Apportionment decide to adopt the recommendations mentioned, it is quite possible that there may be considerable difficulty in securing a suitable site for the hospital. After the passage of the act which authorized cities of the first class to select and purchase sites for sanitariums for consumptives, the committee on tuberculosis of the Charity Organization Society waited on the president of the Board of Health, and requested him to exercise the power and authority conferred by the law upon his department. Opportunity for action was promptly afforded; ninety-five acres of land being offered in Orange County, at a point said to be an admirable site for the hospital, the scheme of which had been carefully mapped out. The plan fell through, however, as opposition immediately developed from a sporting club which owned territory adjacent to the proffered tract. The influence brought to bear upon the legislature was strong enough to secure the working through of a bill which, as has been mentioned in the JOURNAL, added to the restrictions on the establishment of such hospitals the consent of the county and local supervisors. In the city Tuberculosis Infirmary on Blackwell's Island, there were on July 1 three hundred and ninety-one patients.

Correspondence.

ALCOHOL VERSUS ALCOHOLICS.

BOSTON, July 26, 1903.

MR. EDITOR: Among several valuable points in the paper upon alcohol by Dr. R. C. Cabot, printed in last week's JOURNAL, one not least in value is the recognition that experiments upon well men are not exact indications of the action of alcohol upon the sick. Another is criticism of the attempts to judge of the effect of therapeutic doses by means of observations upon toxic doses.

Permit me to suggest yet another fallacy running through much of the current discussion upon this subject, one which Dr. Cabot suggests, but upon which he lays much less stress than upon the two already mentioned, — I mean neglect to consider the combinations in which alcohol is given. When a laboratory man says alcohol, he means alcohol. Clinicians, however, have formed an unfortunate habit of speaking of wines, spirits, etc., as alcohol, ignoring the presence of sugar, water, acids, ethers, hops, peat, smoke and so on. To assume without inquiry that these articles have no effect is unscientific. In some cases it is to assume that which is at least improbable. Whether true or not, it is a matter of common report that drunkenness differs somewhat according to the drink that has produced it. Again, there are patients who can drink brandy but not whiskey; others who can drink American whiskey but not Scotch; the penalty in each case being a disturbed digestion. It is at least possible that temperature, blood pressure and the rest may also be affected by the other ingredients of wines, for instance, as well as by the alcohol which they contain. Thus, for clinical purposes, the valuable work begun on alcohol must be supplemented by similar work on alcoholics. Above all, we must not confound the one with the other.

Yours truly,

EDWARD M. BECKINGHAM.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 18, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,503 | 676 | 38.12 | 8.58 | 2.86 | 9.11 | .73 |
| Chicago . . . | 1,885,000 | 519 | 169 | 31.33 | 7.51 | 1.72 | 15.21 | .77 |
| Philadelphia . . | 1,378,527 | 546 | 227 | 39.18 | 4.57 | 1.09 | 21.42 | .18 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 257 | 124 | 35.02 | 3.50 | 1.17 | 21.40 | .38 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 150 | 13 | 40.67 | 4.67 | 2.66 | 17.33 | 2.00 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 88 | 47 | 43.17 | 4.54 | .45 | 31.80 | — |
| Boston . . . | 603,163 | 215 | 67 | 25.58 | 13.02 | 2.32 | 12.56 | 1.39 |
| Worcester . . . | 132,044 | 43 | 25 | 25.57 | 11.65 | — | 20.92 | — |
| Fall River . . . | 115,549 | 104 | 80 | 62.50 | 2.88 | .96 | 56.73 | .96 |
| Lowell . . . | 101,959 | 52 | 27 | 38.46 | — | — | 28.84 | 1.92 |
| Cambridge . . . | 98,639 | 29 | 8 | 41.37 | 3.45 | 3.45 | 20.69 | 3.45 |
| Lynn . . . | 72,497 | 19 | 4 | 5.26 | — | — | — | — |
| Lawrence . . . | 69,766 | 32 | 22 | 53.12 | — | — | 43.75 | 3.12 |
| Springfield . . | 69,389 | — | — | — | — | — | — | — |
| Somerville . . . | 68,110 | 13 | 1 | 30.80 | 7.70 | — | — | — |
| New Bedford . . | 67,198 | 39 | 26 | 25.64 | 7.59 | — | 17.95 | 5.13 |
| Holyoke . . . | 49,286 | 22 | 15 | 50.00 | 9.09 | — | 40.90 | 4.54 |
| Brookton . . . | 44,873 | 10 | 4 | 10.00 | — | — | — | — |
| Haverhill . . . | 42,104 | 15 | 5 | 26.67 | 13.33 | — | — | — |
| Newton . . . | 37,794 | 6 | 1 | — | 16.67 | — | — | — |
| Salem . . . | 36,876 | 10 | 4 | 20.00 | — | — | — | — |
| Malden . . . | 36,286 | 6 | 3 | 16.67 | — | — | — | — |
| Chelsea . . . | 35,876 | 11 | 1 | — | — | — | — | — |
| Fitchburg . . . | 35,069 | 9 | 5 | 22.22 | — | 11.11 | — | — |
| Taunton . . . | 33,656 | 9 | 4 | 22.22 | — | 22.22 | — | — |
| Everett . . . | 28,620 | 9 | 3 | 11.11 | — | — | 11.11 | — |
| North Adams . . | 27,862 | 3 | 1 | 33.33 | — | — | — | — |
| Gloucester . . . | 26,121 | 7 | 1 | 42.90 | — | 28.60 | — | — |
| Quincy . . . | 26,042 | 5 | 1 | — | 20.00 | — | — | — |
| Waltham . . . | 25,198 | 6 | 1 | — | 16.67 | — | — | — |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — |
| Pittsfield . . . | 22,589 | 3 | 1 | 66.67 | — | — | — | — |
| Chicopee . . . | 21,081 | 9 | 4 | 11.11 | — | — | 11.11 | — |
| Medford . . . | 20,962 | 4 | — | — | 25.00 | — | — | — |
| Northampton . . | 19,883 | 5 | 1 | — | — | — | — | — |
| Beverly . . . | 15,302 | — | — | — | — | — | — | — |
| Clinton . . . | 15,161 | 4 | 0 | — | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 6 | 0 | — | 16.67 | — | — | — |
| Woburn . . . | 14,300 | 6 | — | 50.00 | 16.67 | — | 16.67 | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — |
| Adams . . . | 13,745 | 3 | 2 | — | 33.33 | — | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 4 | 0 | — | — | — | — | — |
| Melrose . . . | 13,600 | 4 | 1 | — | 25.00 | — | — | — |
| Westfield . . . | 13,418 | 9 | 3 | 22.22 | — | — | — | 11.11 |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 1 | 1 | 100.00 | — | — | — | — |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,344 | 3 | 0 | — | — | — | — | — |
| Southbrldgo . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 2 | — | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,800; under five years of age, 1,577; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,371, acute lung diseases 266, consumption 331, scarlet fever 31, whooping cough 19, cerebrospinal meningitis 4, smallpox 22, erysipelas 3, measles 25, typhoid fever 54, diarrheal diseases 792, diphtheria and croup 78.

From whooping cough, New York 2, Chicago 5, Philadelphia 5, Baltimore 4, Pittsburg, Boston and Lowell, 1 each. From erysipelas, Philadelphia, Boston and Worcester, 1 each. From smallpox, Philadelphia 14, Pittsburg 8.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending July 4, the death-rate was 11.4. Deaths reported, 4,169; acute diseases of the respiratory organs (London) 164, whooping cough 109, diphtheria 53, measles 106, smallpox 7, scarlet fever 37.

The death-rate ranged from 5.3 in Hornsey to 23.3 in Perthyr Tydill; London 13.9, West Ham 13.1, Brighton 11.2, Portsmouth 15.5, Southampton 12.3, Plymouth 17.2, Bristol 13.5, Birmingham 13.9, Leicester 11.6, Nottingham 16.5, Bolton 15.6, Manchester 17.1, Salford 13.8, Bradford 14.0, Leeds 14.2, Hull 11.8, Newcastle-on-Tyne 16.7, Cardiff 16.3, Rhondda 12.2, Liverpool 19.0, Coventry 17.9.

METEOROLOGICAL RECORD.

For the week ending July 18, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r *. | | Rainfall in inches. |
|-----------|-----------------|-------------------|----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|---------------|-----------|------------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . . 12 | 29.72 | 78 | 82 | 68 | 51 | 68 | 60 | NW | SW | 8 | 12 | C. R. T. |
| M. . . 13 | 29.71 | 70 | 75 | 66 | 79 | 68 | 74 | N | W | 8 | 10 | O. F. .02 |
| T. . . 14 | 29.80 | 72 | 80 | 63 | 52 | 73 | 62 | W | W | 15 | 7 | O. F. .04 |
| W. . . 15 | 29.78 | 67 | 75 | 59 | 66 | 53 | 60 | W | W | 6 | 10 | C. C. O. |
| T. . . 16 | 29.87 | 64 | 74 | 55 | 66 | 66 | 66 | W | W | 15 | 9 | C. C. .01 |
| F. . . 17 | 30.00 | 70 | 81 | 59 | 60 | 44 | 52 | W | SW | 9 | 9 | C. C. O. |
| S. . . 18 | 29.93 | 70 | 79 | 61 | 58 | 76 | 67 | S | S | 6 | 14 | F. R. T. |
| Mean | 29.83 | 79 | 62 | 63 | | | | | | | | .07 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. \bar{m} Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, WEEK ENDING JULY 25, 1903.

J. C. BOYD, medical director. Commissioned medical director, with rank of captain, from June 20, 1903.

E. O. HUNTINGTON, surgeon. Detached from the "Maine" and ordered to the Naval Hospital, Navy Yard, New York, N. Y., for treatment.

R. K. SMITH, A. W. DUNBAR, A. FARENHOLT, C. P. BAGG, E. J. GROW, M. S. ELLIOTT, surgeons. Commissioned surgeons with the rank of lieutenant-commander, from March 3, 1903.

R. W. PLUMMER, passed assistant surgeon. Ordered to the "Maine."

C. E. RYDER, J. A. RANDALL, assistant surgeons. Appointed assistant surgeons with rank of lieutenant, junior grade, from June 26, 1903.

C. P. KINDELEBERGER, surgeon. Ordered to the "Independence."

A. STUART, assistant surgeon. Granted sick leave for two months.

G. P. LUMSDEN, surgeon. Detached from the Naval Station, Port Royal, S. C., August 1, and ordered to the Torpedo Station, Newport, R. I.

R. M. KENNEDY, surgeon. Detached from the Torpedo Station, Newport, R. I., and ordered to the "Dixie."

A. H. WISE, C. T. GRAYSON, acting assistant surgeons. Appointed acting assistant surgeons, with rank of lieutenant, junior grade, from July 14, 1903.

P. L. COCKE, acting assistant surgeon. Detached from the "Chesapeake" and ordered to the Naval Hospital, New York, N. Y., for treatment.

BOOKS AND PAMPHLETS RECEIVED.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the general editorial charge of Gustavus P. Head, M.D. Vol. VII. Chicago, Ill.: The Year Book Publishers. June, 1903.

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Address.

THE SHATTUCK LECTURE.

THE SOURCES, FAVORING CONDITIONS AND PROPHYLAXIS OF MALARIA IN TEMPERATE CLIMATES, WITH SPECIAL REFERENCE TO MASSACHUSETTS.*

BY THEOBALD SMITH, M.D., BOSTON.

(Concluded from No. 5, page 118.)

ON the West Frisian coast, similar work was carried on by natives from 1888 to 1900 without the appearance of malaria. In 1899 to 1901 the work was done by Dutch laborers of the company furnishing the party above referred to and malaria appeared. These laborers came from a region in which malaria is endemic. Near the mouth of the Ems River malaria appeared during the construction of harbors and a lock on which one hundred Italian workmen were engaged. This subject is considered of so much importance that the government has established a special laboratory at Wilhelmshafen, where construction work is being carried on to prevent the outbreak of malaria among the workmen and the inhabitants. Anopheles is abundant in the localities referred to.

Among the outbreaks of malaria which are of more than usual interest are such as occur among the inmates of schools, prisons and institutions of one kind and another. Persons are now and then attacked who have been confined as prisoners.

The few instances which have come under my immediate observation were always near breeding places of Anopheles, and some of the inmates, gathered together from various localities, were evidently old cases of malarial infection or else from places where malaria is endemic. In several cases such persons would reveal their chronic infection by passing through an attack after they had left their home in the endemic territory and settled down in their new abode.

Martini⁵⁴ has recently given a very plausible explanation of the early and repeated occurrence of malaria in certain houses. The curves of malaria in the endemic region of North Germany show two maxima: one in April - May, the other in August - September. Last year Martini came to the conclusion, after a study of the local conditions, that the early cases are due to hibernating mosquitoes which are called from their hiding places by the great warmth of the dwellings. They feed upon the blood of persons who have passed through attacks the previous season and find sufficient warmth in the houses to mature and transmit the parasites to other persons in the same dwelling.

There are certain warm days in March and April when mosquitoes leave their hiding places and sting vigorously whenever the opportunity offers. This year March 14 was one of these

enticing days, and I was able to capture a considerable number of females. In a school not far from Boston, situated in a locality favorable to *A. maculipennis*, the first case appeared on April 8. The infection was probably carried by mosquitoes which swarmed March 14, and which infected themselves on that day or later from some latent case dating back to a former season. We should expect to encounter cases about three weeks after such early warm days, which allows for the ripening of the sporozoites and the period of incubation of the new case.

It might be supposed that malaria, once established in a house, can pass from one member of a family to another and that cases may be looked for every three weeks during the mosquito season. If this were true, the contagious character would have been recognized long ago. In the foregoing pages I have endeavored to show why this would not be likely to occur. The patients attacked are treated promptly and gametes cannot form. It may also occur that unusually susceptible persons, even if not treated, do not form gametes for a time. Occasionally, however, the successive illness of members of the same family is noticed. Thus, Dr. Bronson, in the report from which I have already quoted, made the following statement in 1871:

The frequency with which the several members of a family, in a previously healthy neighborhood, have sickened one after another when once the complaint was introduced, often suggested to Dr. Barker the old idea of contagion. It must be admitted that authority is opposed to this idea, but I do not think the question yet settled.

In looking over some records which I collected with considerable care about six years ago, in a town then recently infected with malaria as a result of extensive public improvements, I find that house epidemics did not figure to any extent. In one family, consisting of two adults and five children, the father was taken with quotidian chills, and a child three years old who slept with him was attacked with tertian fever three weeks later. Here there is some evidence of transmission, but it may have been an accidental coincidence.

In a family of six the father was attacked in May, but no other members subsequently. In a family of nine, consisting of the parents and seven children, the father and a child two and one-half years old were attacked in July, within a few days of each other. No other cases occurred later.

In a family of four, only the mother was attacked, in July. In a family of five, only the father was attacked, in August. In a family of eleven, mostly grown up, two daughters were attacked within a few days of each other, in August. About a month later one other member was taken ill.

A number of other illustrations might be given which would bring out substantially the same fact: large families of whom but one or two, rarely three, are attacked, and usually simul-

*Delivered before The Massachusetts Medical Society, June 9, 1903.

taneously. The houses do not become foci of the disease.

The facts which have been cited to show that houses do not necessarily retain malarial infection, probably because the blood of the diseased members does not produce fully ripe gametes, naturally leads to that very important phase of our subject which relates to the spontaneous disappearance of malaria.

A fact which stands out prominently in the eminently interesting chronicle of New England's ague spots is the disappearance of this malady after it had prevailed for a time. Tradition represents it very prevalent in the earliest colonial days, but the practitioners of the early quarter of the nineteenth century did not see much of it.

The testimony from various parts of the temperate zone seems to be the same, that places once malarial are now entirely free. Certain portions of England, France, North Germany, and the Netherlands have passed through periods of malarial endemicity. In such places *Anopheles* are still present, but the virus has disappeared. Farther south the process may have been the reverse of this. The territory about the mouth of the Tiber, now thoroughly infected, used to be a summer resort for the Romans. The Roman Campagna shows signs of former active cultivation and occupation. In our own state, the epidemics associated with public works have, as a rule, promptly subsided after the work was completed, and in some instances almost completely disappeared.

This transient visitation of intermittent fever may be ascribed, in our climate at least, to several causes, chief among which is the prompt treatment of the disease and the consequent incapacity of the patient to infect mosquitoes. The general conditions are also quite unfavorable. Among these are the thin population in the rural districts, the scattered homes, the general scarcity of mosquitoes of the genus *Anopheles*, the occasional cold summers and the seasonable interruption of the propagation of mosquitoes by winter. Where one or more of these conditions unfavorable to transmission are suppressed, as in years of drought, in a dense rural population near stagnant water, or among an illiterate, ignorant class of people among whom cases go untreated, endemicity may reasonably be expected. The longer it is allowed to proceed unchecked, the more difficult its final eradication.

The disappearance of malarial infection from large territories in European countries is probably due to the decrease of wars of invasion, and hence of camp life of soldiers in infected regions, and of infected soldiers from malarial regions in territory hitherto free from infection. The lack of any systematic use of quinine greatly aided the disease under these conditions.

The spontaneous disappearance of malaria is an indication that it was forcibly and overwhelmingly imported at one time, and that it cannot re-establish itself except under certain new industrial conditions, simulating camp life in

many respects, such as the laborers' camps, rural schools, prisons, hospitals and factories.

In the foregoing brief review of the incidence of malaria in our state, I have purposely avoided going into detail concerning local epidemics which I have examined more or less in detail. The reader may readily consult for himself the published documents referred to at the end of this paper, in which the essential data have been brought together.

Though much has been written upon this subject, the student finds great difficulty in utilizing past evidence because there is, as a rule, complete silence concerning the, to us, most important factor, the human carriers of the infection. It is for this reason that I have been induced to step slightly beyond the bounds of the severely critical treatment of evidence in this lecture. My object has been to stimulate physicians throughout our state to collect facts from the new standpoint, for only in this way can the views maintained in this paper be rigorously tested. All biological research of medical problems must finally meet its fate for good or ill by being confronted with the human patient, and this confrontation rests entirely in the hands of the physician.

PROPHYLAXIS.

It would be unfortunate if, after the tendency of our city population to spread into the country had been fully established, malaria should come to fasten itself upon such population and drive it back into the heart of the cities. There is at present no immediate prospect of such a calamity, yet the increase of rural population in density without adequate improvement in environment might lead gradually to endemicity of malaria.

The number of people in our state, living in an essentially rural environment is larger than is generally supposed. The twelfth census gives the total population of the State as 2,805,346. In eleven cities, having each a population of over 40,000, the total number of inhabitants is approximately 1,228,000. Of this number, many live in the outskirts in what is practically rural environment. This class may be allowed to offset those living in the heart of the smaller cities, not included in our estimate, leaving about one and one-half million inhabitants as country residents. Of the other half, the larger number visit the country more or less and are, to a certain degree, exposed to prevailing malarial influences.

The means to be resorted to, in preventing and suppressing malaria, will, without doubt, occur to those who have read the foregoing pages, and any special suggestions may seem superfluous. Yet, in view of the danger which is always likely to beset the awakening public sense and responsibility of going from one extreme to the other, from ignorance and apathy to a too vigorous, wasteful and often injurious campaign, it seems best briefly to summarize the conditions to be

met and the simplest means of attaining the desired end. The two things plainly to be done are to suppress *Anopheles* as far as possible and to shield the malaria patient so that *Anopheles* cannot become infected.

In localities where malaria is not known to exist, but where there are breeding places of *Anopheles*, the destruction of such breeding grounds is not essential from a public health standpoint. If, however, in such or similar localities, public works are to be undertaken, the situation is entirely changed. Great care must be taken to prevent the introduction of malaria. There should be, at the outset and before any digging or other open-air work is undertaken, a thorough biological survey by a competent person of the entire locality which may come under the aerial influence of such work. Breeding places of mosquitoes should be carefully noted and plotted on a suitable map. For this purpose the inspection should be made in the spring, the summer and the fall, as the conditions are likely to be quite different in different seasons. Allowance should be made for drought and the conversion into breeding places of bodies of water free from mosquito larvæ during seasons of ordinary rainfall.

The effect of the work to be undertaken upon drainage, either temporarily or permanently, should be carefully considered. Especially the building of embankments and roadways should be allowed only when their probable effect upon surface water is not favorable to stagnation. Excavations for brickyards, for material for roadways, trolleys, etc., should be forbidden if the ground water level will be exposed thereby and a stagnant pool created. The sins of railroad building, committed in the past, are numerous and practically irremediable. No new ones should be permitted. One of the richest breeding grounds of *Anopheles* about Boston with which I am acquainted is a triangular piece of marsh completely shut in by railroad embankments and converted into a fresh water pool.⁵⁵

The treatment of existing breeding places, before and during the progress of work by gangs of laborers, may be palliative or radical. The palliative method, now so well known, consists in covering the surface of stagnant, mosquito-breeding bodies of water with some grade of petroleum oil. The oil, which is scattered over the surface by pouring, by spreading with a broom dipped into the oil, or by the use of pump and hose with sprinkler, etc., forms a thin film which interferes with the respiration of the larvæ and kills them. The film disappears by evaporation and must be renewed every two or three weeks, according to conditions.* The amount of light fuel oil required is approximately one ounce to fifteen square feet, according to Howard. According to Kerschbaumer (60, p. 119) one square meter requires somewhat more than 0.5

liter of petroleum to completely cover the surface. This would be approximately 21 oz. to 15 square feet. Why he uses so much I am unable to explain. Palliatives in the shape of petroleum or its combinations should not be used upon water unless the larvæ of mosquitoes have actually been found in it. The interference with the normal aquatic life may lead to as yet unrecognized, undesirable results.

A vigorous campaign against all mosquitoes was waged during 1901 and 1902, in the town of Brookline under the local board of health, by Dr. H. L. Chase, and described by him recently.⁵⁷ This work done in our midst, and adapted to conditions prevailing in our state, may well serve as a model and guide for other towns where a destruction of all mosquitoes is desired.

Wherever the breeding can be suppressed by natural methods as contrasted with the artificial one of poisoning or asphyxiating the larvæ it should be done. In level meadows the open ditches, if more or less continuously filled with water, should be replaced by some form of covered drains. Shallow pools in which fishes cannot subsist should be filled up. Brooks should be kept free from débris washed down or thrown into them. Such débris provides quiet pools where larvæ are usually found if not elsewhere. The larger streams and rivers usually are free, but the banks should be searched for detached pools. In case of very small rivulets, ditches or brooks, some flushing device may be useful. The water may be dammed for a certain length of time and then discharged all at once. The larvæ will be swept into larger bodies of water and there destroyed.*

It is of interest to observe the want of topographical knowledge of suspicious bodies of water on the part of intelligent inhabitants. We may truly speak of the unexplored wilderness of the average town brook. The land is cultivated to within a certain number of yards of such a brook or stream and an impenetrable tangle of vegetation guards it from intrusion on both sides. Its presence even may be unknown to many who have frequently glanced at the line of bushes and stunted trees under which it is concealed. It has been claimed that mosquitoes will not breed in water thoroughly shaded by trees, shrubs and other vegetation. This may be true to a certain extent, but larvæ are certainly found in shaded pools. In any event, our brooks should be made accessible to inspection even though the vegetation on the banks be largely preserved. Even the greatest care in maintaining the bed of a brook free from obstructions may not avail in times of drought. Pools will form and larvæ will appear in them. Occasional petrolizing or flushing may then be necessary if malaria prevails.

Swamps are usually regarded as fertile sources of mosquitoes, and if actual inspection should prove that the suspicion is true, petrolizing, per-

* Recently a proprietary substance known as Plinotas oil has come into use. It is said to represent some combination of petroleum. It sinks to the bottom when applied and subsequently rises again. It is said to kill all life in waters treated with it.

* I found after writing this that Kerschbaumer has also recommended this device of periodic flushing, especially in dry seasons (60, p. 130.)

manent flooding, or drainage are the only remedies. Not all swampy ground favors mosquitoes, however. I have repeatedly been surprised in failing to find a single specimen in them.

The expansion of our systems of parks and reservations, and the increasing patronage which these open-air spaces are receiving from the public housed in the heart of our cities, make it more and more necessary to inspect for mosquito larvæ the bodies of water, usually artificial, which are scattered over these reservations. Neglect of this precaution might easily convert our parks into centers for distributing malaria to a population otherwise sheltered from it in the confines of the city. Squads of laborers are frequently employed in the reservations and may infect the mosquitoes. I recall one case in a child living near a large park whose infection could hardly have come from any other source.

Since excavation and other out-of-door work may be undertaken at almost any time in the suburbs of cities, the campaign against the mosquito in such territory should not be allowed to flag, but should be pushed vigorously until all breeding places have been destroyed or at least controlled by sanitary authorities.

The frequent appearance of malaria in the heart of cities at present is in many instances traceable to extensive excavations near by, but considering the summer exodus from our large cities, which includes almost every one nowadays, if only for a half holiday, the sources of urban malaria may be many, and impossible to locate.

In rural communities rain-barrels and open catch basins, which are usually inhabited by *Culex* larvæ, should also be searched to note any *Anopheles* larvæ which may have acclimated themselves. Privy vaults have been found to be good breeding places for *Culex* in regions farther south.

Fortunately for us, salt marshes, though very prolific in mosquitoes of the genus *Culex*, do not form breeding places for *Anopheles*. The immunity from malaria of our seacoast and the banks of estuaries under tidal influence has long been known, and it forms an agreeable confirmation of scientific studies which eliminate *Culex* as transmitters of malaria.⁵⁵ The late Dr. Greenleaf,⁵⁶ who had given much attention to intermittent fever about Boston, showed that the estuary of the Charles River as far as Watertown could not be regarded as a factor in malaria, as there were no cases along the river bank. He also found the park police along the estuary free from malaria.

The extermination of the hosts of mosquitoes bred in such marshes does not come within the scope of this paper. It may, however be said that if attempts made to drain such marshes of the salt water are successful, care must be taken to exclude fresh water from low places in them, otherwise *Anopheles* may move in where *Culex* was driven out.

During the progress of open-air work requiring the employment of large bodies of men who must live in camps, there should be in addition to a thorough control of the breeding places of mosquitoes an equally thorough sanitary supervision of the laborers.

Since much of the infection of mosquitoes and human beings goes on after dark, the camps should not be placed near the center of population nor near small bodies of water, unless the latter can be kept free from larvæ. The laborers should be inspected from time to time, and any suffering from malaria removed to some hospital or other place where they can be adequately protected from mosquitoes. Notification of the disease among the inhabitants should be insisted on at such times, and the sale of quinine by druggists reported to the local health authorities. Where the *Anopheles* mosquitoes cannot be satisfactorily controlled, the laborers' camps should be well screened and the latter forbidden to move about after dark. Whenever the mosquitoes are properly taken care of, the personal freedom of the laborers need not be interfered with to this extent.

It would be of interest to study carefully the health of any town where large public works are being carried on with foreign labor but where the workmen scatter after dark to different houses; also where native labor is being employed exclusively.

Where malaria has been prevalent for some years, and where it has assumed an endemic character by cropping out under various conditions in the inhabitants, as a result of latent infection, the difficulty of completely eradicating the infection is great, because the number of carriers of the parasite is large and mosquitoes may infect themselves readily. Under such circumstances, it will generally be found that the water-courses, swamps and ponds have been sadly neglected by an indifferent, indolent public. Streams are used as depositories for all kinds of refuse and the conduits are out of repair. Sometimes railroads are to blame for cutting off portions of ponds, lakes, etc., and converting them into stagnant swamps. In some places, improvements undertaken years ago have left the territory more favorable for mosquitoes. In one town I saw an abandoned portion of a river bed favorable for breeding mosquitoes which had been left by the artificial straightening of the course of the river. In almost any town signs of some past favor to mosquitoes, ignorantly bestowed, are found by the interested observer.

Vigorous effort to reduce the mosquitoes coupled with popular instruction concerning personal protection against mosquitoes, prompt treatment of individual cases and the necessity for concerted action, should succeed in every case in a climate like our own. Such success may not be realized for several years, because the people can only gradually rid themselves of latent infection.

In all efforts to suppress malaria by the destruc-

tion of mosquitoes it should be borne in mind that those breeding places nearest the bulk of the population should be attacked first and then, with increased means and assurance of success, the territory under surveillance should be gradually expanded. Breeding places over half a mile from dwellings are regarded by many observers as not likely to be of much consequence, yet they should be dealt with, if possible, for they serve as a source for the stocking of nearer territory.

The question naturally arises in our minds in reflecting upon this important subject whether, with increasing density of population, malaria will eventually succeed in fastening itself permanently upon the state in spite of efforts made to prevent and suppress it along the lines indicated. Fortunately no capital spent upon the radical extermination of the mosquito will be wasted. Whatever is done in this direction will redound to the general good of the people. The campaign against the mosquito will lead to a general cleaning up and to the cultivation of waste land; it will acquaint us with our own brooks now overgrown and concealed; it will tend to bring our dispersed and shattered streams back into their natural beds by the removal of unnecessary dams; it will prevent the private transportation interests from riding roughshod over the land, gouging out here and there unsightly holes and leaving them to choke up with water plants. Intensive cultivation will do much to repair the damage done by neglect of arable land. We shall be even more careful about permitting the pollution of our streams than heretofore if, as I believe, it tends to favor the mosquito larvæ.

The success of the struggle against an endemicity of malaria is favored by our climate, which is purified annually by frost. Only a comparatively small number of mosquitoes survive, and these must re-infect themselves again in the spring. Even under very favorable conditions it takes a whole summer for them to gather enough momentum to produce an epidemic in the late summer and early fall, when the frost again sweeps them away.

On the other hand, there are increasing difficulties to contend with, as the growth of population continues. The cosmopolitan character of our immigration and the steady stream of people from malarial foci in Europe tend to keep up the supply of infection in our midst. The tendency of gathering a fairly dense population in mill-towns, often in the midst of extensive breeding grounds of mosquitoes, makes them compare well in opportunities for infection with the migrating and transitory laborers' camp. Fortunately this *urbs in rure* population at present does not come from malarial districts to any extent, and hence they have been comparatively free from malaria with a few marked exceptions.

We must also bear in mind that we have arrayed nature herself against us in this struggle against a malarial climate. The great fluctua-

tion in the volume of water in our streams from season to season, the resulting tendency toward bringing down large quantities of silt during freshets, which gradually choke the currents in the low lands and cause the stream to widen as it grows shallower, are all processes in favor of the mosquito. The deforestation of the land feeding these streams is largely to blame for these conditions, and, as it continues, who may feel certain that our descendants living in the rich river valleys may not assume the sallow hue of malarial cachexia and drag along a miserable existence for which the greed of their forefathers is mainly to blame? It is safe to predict that there will not be enough physical vigor in these descendants of a highly conventionalized nation to successfully imitate the immunizing capacity of the African native. They will give way to more sturdy immigrants or else the land will be abandoned.

In sketching this future possibility, I do not wish to be discouraging, but simply to stimulate our people because we have still in our grasp the chances for ultimate success.

It is to be hoped that as our control over malaria increases, the paralyzing sensitiveness of communities upon this matter may give way to a more active co-operation with the investigator who is endeavoring to elucidate the local causes of the disease and who is powerless, without the assistance of the public and the medical profession, to make an adequate investigation. The hearty co-operation of the members of the medical profession is of special importance, since they meet the disease in its only visible manifestation, the paroxysm in the human subject. In nearly every community some one or more physicians may be found who are prepared to assist and give their time, who are personally interested in the scientific problems involved and their practical value, and who are prepared to meet the slow returns of science by adequate outlay of time and strength. To many of these I am indebted for valuable assistance given ungrudgingly. With the continued co-operation and assistance of these disinterested helpers, medical science may be able to solve the many minor problems which still surround this subject, and public health may be in position soon to deal more firmly and radically with local causes.

SUMMARY.

(1) There is no evidence that any but the tertian form of malarial fever can be propagated in Massachusetts.

(2) The original source of tertian infection must be looked for in the blood of individuals coming from permanently infected localities in our own country and in Southern Europe.

(3) There is no definite information as to the stage of disease or relative immunity in which mosquitoes may become infected, but analogy with similar diseases of animal life indicate that the gametes are not formed early in the disease, and that relatively immune persons are the most dangerous, especially after fresh exposure, be-

cause in them gametes form very promptly without causing much or any clinical disturbance.

(4) The dissemination of infection is most easily promoted in our latitude when people live in a crowded condition, unprotected from mosquitoes and near breeding places of *Anopheles*.

(5) The decline and disappearance of malaria after importation and epidemic prevalence is in part due to relative isolation of the inhabitants and protection by quinine and from mosquitoes, and in part to the absence of persons partially immunized by long exposure in endemic localities.

(6) There is some evidence that sewage pollution in surface waters favors mosquito larvæ directly, through increase in food supply; indirectly, by injuring their enemies.

(7) Since malaria may be latent and hence unrecognized, and since it is largely a disease of the lower classes whose movements it is difficult to control, the best method of reaching it is to suppress the mosquitoes whenever possible.

(8) Malaria is of sufficient importance to become a notifiable disease.

(9) Infants and children exposed should have their blood examined during any disturbance of health.

(10) In times of epidemic malaria it may become necessary to make special regulations governing infected persons.

(11) It is of great importance that the relation of the widely distributed species, *A. punctipennis*, to the parasite of tertian fever be accurately determined.

(12) It is also highly desirable to test the infecting power of fresh cases of tertian fever as compared with relapses and with individuals from malarial countries.

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Original Articles.

THE ELEMENT OF TORSION IN LATERAL CURVATURE OF THE SPINE: ITS PLACE IN THE CAUSE AND TREATMENT.¹

(Third Paper.)

BY ROBERT W. LOVETT, M.D., BOSTON.

IN spite of the present activity in orthopedic literature on the subject of rotary lateral curvature of the spine, our present knowledge of the mechanics of the affection is very inexact, and treatment for this reason is necessarily largely

empirical. The explanations of the phenomena of scoliosis and the study of its mechanism have been written from a study of the especial structure of the human spine, particularly the distorted scoliotic spine. The curves of the articular processes have been studied, the shape of the individual vertebrae has been analyzed, the physiological curves have been considered, and a large amount of work has been expended² upon this side of the question. This literature occupies a large space, but has proved of little practical value.

The present paper is an attempt to study the element of torsion in its relation to lateral curvature, a study not of the anatomy but of the movements of the spine.

The anatomical work was done at the Harvard Medical School, and the writer is indebted to Prof. Thomas Dwight of the Harvard Medical School for his anatomical material and for the benefit of his criticism, to Prof. I. N. Hollis of Harvard College for help on the mechanics of the problem and to Dr. H. O. Feiss of Cleveland for much help in the experimental part of the work.

If one considers the human spine from the point of view of its evolution, one finds that the spinal column in its simplest form (*Cyclostomata*) consists of a homogeneous non-segmented flexible rod. The articular processes first appear in some of the fishes (*Rays* and *Teleostei*), and are general in the *Amphibia* (*Gegenbauer*).

The spinal column in the lower fishes is a simple flexible rod consisting of a series of disc-like vertebrae bound together by intervertebrae elastic discs without articular processes. Higher in the vertebrate group one finds elaboration of structure and the formation of permanent antero-posterior ("physiological") curves, along with modifications of the shape of the vertebrae. But articular processes seem to have developed in the line of incidents rather than essentials, and in the higher forms have carried out rather than radically modified the behavior of the simple fish's backbone, which is in mechanical terms a straight, flexible rod.

Articular processes in the human spine from the point of view of their evolution are therefore to be regarded as the resultants of use rather than as factors determining of themselves the motions of the spine. They are the result rather than the cause of the behavior of the spine.

The questions at issue are these:

(1) Why does rotation of the spine on its vertical axis occur in lateral curvature?

(2) If lateral curvature is necessarily associated with rotation or torsion, may not the reverse be true, and may not rotation of the spine be necessarily accompanied by lateral curvature?

On theoretical grounds Meyer came to the conclusion, in 1865,³ that the articular processes were not the cause of torsion, but that torsion was due to the fact that the human spine was composed of two elements, the column of bodies and the column of arches; and that as the two columns

¹ Read before the American Orthopedic Association at Washington, May 14, 1903.

² Riedinger. *Morphologie und Mechanismus der Skoliose*, Wiesbaden, 1901.

³ Meyer: *Virch. Archiv*, 1865, Bd. 35.

possessed a different degree of elasticity, side bending must result in a torsion, since these two elements of the column did not respond in the same degree to side bendings. Since Meyer's view after long years of neglect has again come to the front,⁴ it becomes of importance to examine the following aspects of the question:

(a) Do the articular processes determine or cause torsion of the spine?

(b) Is torsion caused by the fact that the spine consists of two elements of different elasticity?

(c) Does the spine as a whole behave as would a flexible rod of the same size and shape independently of the two factors mentioned above, and may not torsion be explained by this fact alone?

In order to determine whether the articular processes cause torsion, and whether the united action of the two components of the human spine, the bodies and the arches, is necessary to produce torsion of the human spine in side bending, the following experiment was made:

The column of vertebral bodies was removed from an adult cadaver by cutting the pedicles of each vertebra, and the column of vertebral bodies was observed by itself. In all respects it behaved as does the intact spine with ribs attached. Rotations and twistings followed the same formulæ as in the flexible rod and also the same formulæ as in the intact human spine. Even the lack of torsion movement in the lumbar spine, supposed to be due to the close interlocking of the articular processes, existed in the column of bodies, entirely independent of articular processes.

This demonstrated that neither the articular processes nor the different elasticity of the bodies and arches was necessary for the production of torsion in side bending, but that such torsion occurred in the column of vertebral bodies alone, and that the column of vertebral bodies alone did not differ in its behavior from that of the intact human spine.

Since then the whole spine behaves as would the column of bodies alone, and since the history of the spine in its evolution is that of a flexible rod increasing in complexity of structure, an investigation was then commenced to see if the spine in its movements did not behave as would any flexible rod of similar size, shape and elasticity. If such is the case, it would obey the laws of physics governing flexible rods, and as a passive instrument under certain conditions it must assume certain positions and could not assume others so long as its structure was intact, just as a carriage will go backward or forward or may be turned to the right or left but will not go up or down or sideways. It does not matter whether the carriage is pushed or pulled or goes of its own motive power, there are certain things that it can be made to do and others that it cannot be made to do so long as its structure and equilibrium are intact. And however much one carriage may differ in details from others, it is like every other

so far as obeying certain general laws of physics. In the same way spines may be grouped together in obeying certain physical laws, however much they may differ in detail.

A flexible rod, as for example a quadrilateral rod of rubber, in bending or twisting follows certain definite mechanical laws, and these laws can be formulated in advance by any one familiar with mechanics. A straight flexible rod can be bent in one plane without twisting, but if such a rod originally curved in one plane be bent in another it must twist. It must always do this and can do nothing else. When the top is bent forward and to the right while the lower end is held, the front turns to the left and always to the left. A fixed combination of twisting and sidebending exists for every position. From a mechanical point of view a pure twist may be produced in a straight flexible rod without causing side displacement. There is a turning of each part of this rod in the horizontal plane, which is spoken of mechanically as *shear*, but no bending of the rod as a whole appears. But let this rod be bent already in the antero-posterior plane, and torsion of such a rod inevitably causes side displacement when viewed in the antero-posterior plane.

This was demonstrated by experiment in a quadrilateral rod of sponge rubber one inch square and eight inches long and in a quadrilateral rod of lead thirty inches long. In the latter series of experiments the lower end of the rod was fixed in a vise and the twist given by a monkey wrench at the free upper end. In both series of experiments a twist to the left was followed by one curve, and a twist to the right by the opposite curve. These results were constant in both series of experiments.

The following experiments were undertaken on the human spine:

The spine of an adult of about forty and the spine of the cadaver of a boy eighteen years old were observed. The pelvis was firmly fastened to a box and the cervical region twisted to the right and left by the hands and by a long brass rod fastened to the third dorsal vertebra. A lateral curve always accompanied the twisting, and occurred always to the left when the twisting was to the right and to the right when the twisting was to the left. The curve was to the same side and followed the same rules as that observed in the lead and rubber rods.

Observations were then made on the living model. The model was a woman of twenty-five, a professional model, who was very flexible. With the pelvis fixed, active or passive twisting with the chin to the left produced a marked lateral curve to the right, with side displacement of the body to the right. Twisting to the right produced the opposite curve. The curves were of the same character and followed the same rules as those observed in the lead and rubber rods and the spine of the cadaver. In twisting with the chin to the left the lateral curve begins at the dorso-lumbar junction and sweeps gradually out, returning in the cervical region to practically the median line. The lumbar region apparently

⁴ Albert: Die Mechanismus der Skoliotischen. Wirbelsäule, Wien, 1899; Riedinger: Morphologie und Mechanismus der Skoliose, Wiesbaden, 1901.

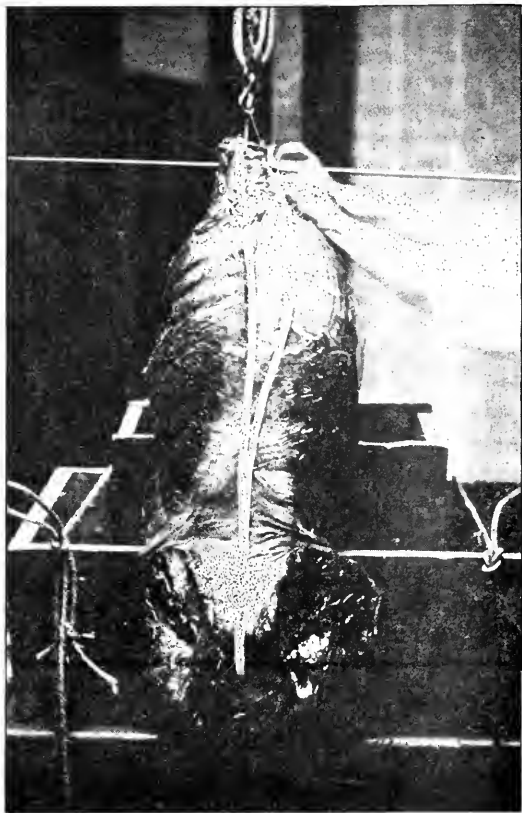


FIG. 1. — COMPOSITE PHOTOGRAPH OF CADAVER.

Straight and twisted to left. The white line is a strip of cotton cloth nailed to the spinous processes. The straight white line was before twisting; the curved white line to the right is the twisted portion.

takes little part in the lateral curve. It appeared at first as if there were a slight left lumbar curve accompanying this right dorsal curve, but careful observation and measurement on the cadaver and model showed that there was but little if any lumbar lateral curve. There is but little movement of torsion in the lumbar vertebrae normally, so that, in spines comparatively normal, it can be readily seen that any phenomena of torsion would be shown above rather than in this section of the spine.

Torsion may be carried to a much greater degree in both model and cadaver when the spine is erect than when it is fully flexed. In the erect position 90° of rotation of the top of the column was possible in both, while in the flexed position only 45° was allowed. When twisting is done in the position of full flexion of the spine, the lateral curve is located higher up than when it is done in the simple erect position, and its lower limit begins at about the seventh or eighth dorsal vertebra instead of at the dorso-lumbar junction.

The backbone of a fish and the backbone of a cat when placed in corresponding positions behave in the same way as the rubber and lead rods, the living model and the human spine, and lateral bendings and torsion preserve the same relations to each other.

The result then of these observations is as follows:

(1) An active or passive twist with the chin to the left in model and cadaver is accompanied by a dorsal curve to the right with displacement of the trunk to the right. In the erect position this lateral curve begins at the dorso-lumbar junction. In marked flexion the lateral curve begins at the seventh or eighth dorsal vertebra.

(2) An active or passive twist with the chin to the right is associated with a left lateral curve and a displacement of the body to the left.

It may be objected that this lateral curve is merely due to the fact that the whole thorax is twisted to one side and that the dorsal excurvation is thus seen from its side rather than from its posterior aspect, thus giving the appearance of a lateral curve where none exists. Observations on the bodies of the vertebrae in the cadaver twisted in this way showed, however, that there was a displacement of each vertebra on the one below it, making a real curve.



FIG. 2. — ILLUSTRATION FROM FORMER PAPER.

Model twisting to left.

Regarding the human spine, then, as a flexible rod already permanently curved in the antero-posterior plane by the three physiological curves, two propositions follow:

(a) It cannot as a whole or in any part be bent to the side without twisting, as demonstrated in a former paper.⁵

(b) It cannot be twisted or rotated without acquiring a side bending.

⁵ *Mechanics of Scoliosis*, Orth. Trans., vol. xiii, p. 251.

It is desired to formulate the last-named phenomenon of twisting or torsion for two reasons:

(1) To analyze lateral curvature by means of it to see if certain cases do not begin as a twist rather than as a side bending.

(b) To utilize twisting movements and manipulations in the treatment of lateral curvature.

In the application of conclusions drawn from such general laws to the treatment of scoliosis, it may be very properly objected that such laws may not apply to the movements of a twisted and stiffened spine. On the other hand, it may be true that the laws governing flexible rods, if properly studied and adapted to the especial conditions existing in such patients, may apply with especial force and may be one lacking factor in the more satisfactory treatment of scoliosis. Experiment alone will determine the fact. In any event no theoretical knowledge gained from the study of a flexible rod can be considered as applying to the human spine without confirmation by experiment on the living model and cadaver. The least objection to the application of such general laws to a specific spinal distortion would be found in beginning scoliosis, the so-called postural cases, but even here experimentation would be required to establish the similarity of behavior.

The application of these facts to the study of scoliosis is of interest. Since every side bending of the spine is necessarily associated with some degree of torsion, one would expect to find that in all cases of lateral curvature of the spine, however slight, the shoulders had twisted in their relation to the pelvis and that a line connecting two corresponding points in the shoulders was no longer parallel to a similar line in the pelvis.



FIG. 3. — COMPOSITE PHOTOGRAPH OF MODEL.
Twisting to left.

Looking down on a normal person in the erect position, the shoulders would not appear to be twisted with regard to the pelvis. In all cases of lateral curvature observed by the writer, such a twisting has been found. In cases of what appear to be at first sight purely lateral postural curves, beginning scoliosis of the kind where no rotation is supposed to exist, one will find on looking down on the patient standing at ease that the shoulders are noticeably twisted with regard to the pelvis and that one side of the shoulder girdle is carried forward and the other back. This is particularly noticeable in postural cases after they have been standing for a minute or two and muscular fatigue has commenced. Such patients if asked to bend forward until their trunk is horizontal (Adam's position) will appear to have no rotation or torsion present and it will also disappear in recumbency or suspension, but viewed from above in their natural standing position it is evident. It may also be demonstrated by placing long pieces of splint wood horizontally against the sacrum and the back of the chest above the spines of the scapulae. This torsion is the inevitable outcome of every side yielding of the spine. But it is possible that the lateral curvature may have originated in a twist and that the side bending is secondary.

If a child holds the head naturally twisted, as is often the case, from some inequality in the vision of the two eyes or in the acuteness of hearing in the two ears, or from some similar cause, the spine will inevitably be twisted. Again, the contact of the condyles of the occiput and the articular surface of the atlas is generally best when the head is held otherwise than quite straight, which is an established anatomical fact. The twisted position of children at school in consequence of improper school furniture is another factor leading to the acquirement of a twisted position of the spine. These factors all tend to induce a twist of the spine, and a twist of the spine must in all cases be accompanied by a lateral deviation, to the right if the twist is to the left, and a curve to the left if the twist is to the right. This etiological factor has been left largely out of account in considering scoliosis.

Since the association of torsion and side bending of the spine is a constant one, as has been seen in the preceding experiments, it may be worth while to study scoliosis in terms of torsion. That is, to study the obliquity of the shoulders in a given case in the erect position to see whether the right or left shoulder is carried forward and knowing then the twist of the shoulder girdle with relation to the pelvis, to see with what lateral curve a right or left twist of the shoulder girdle is associated in the given case. In this way it is possible that some light may be shed on the origin of an individual case of scoliosis and also possibly upon the general question of rotation.

In a former paper the following conclusions were reached by a series of experiments on the spine of the human cadaver and on the living model: ⁶

⁶ Lovett: *Mechanics of Lateral Curvature*. Boston Med. & Surg. Journ., June 14, 1900.

"Lateral bending, then, in both cadaver and model in position of marked flexion is accompanied by torsion, and this torsion is in this position always in one direction, and is of the same type as the rotation seen in scoliosis; that is, backward on the convexity of the curve, or, in other language, the bodies of the vertebræ turn towards the convexity of the lateral curve. Various attempts were made to reverse this torsion while making side bendings in the flexed position by pulling the vertebræ apart, pressing them together, etc., but in all cases in both cadaver and model the type of torsion described above persisted." . . . "In the intact spine of the cadaver, therefore, and in the model, side bending in the extended position is accompanied by torsion of the vertebral bodies toward the concavity of the curve; in other words, the rotation is backward on the concavity of the curve, which is the reverse of the condition ordinarily seen in life in scoliosis."

Proceeding in the light of this to investigate scoliosis one finds that —

(1) A simple postural curve if acquired in the flexed position of the spine will show a twist which may be predicted in advance. In such a curve to the left the left shoulder will be carried back and the right forward because in such a curve the bodies of the vertebræ turn to the left as shown in a former paper.

(2) If it is a curve originating in the extended portion of the spine, that is, occurring in the lumbar region, the twist will be reversed, and the right shoulder will be carried back.

That cases of single postural curves commonly show a type of torsion that is the reverse of that seen in double curves has been noted clinically by Schulthess⁷ and others (in one third of the cases of total scoliosis Jach.⁸) That is, in a left total curve the bodies of the vertebræ may turn to the right instead of toward the convexity of the lateral curve, which is to the left. This is explained by the existence of position (2) noted above. This in my experience seems to be the common type of torsion seen in the standing position in cases of total scoliosis of the postural type.

(3) If the curve originates in a twisting of the spine rather than a side bending the only twist that will cause a left curve is with the chin to the right and therefore the right shoulder is back.

In total left scoliosis, therefore, there are three conditions which make the shoulder girdle assume an obliquity with regard to the pelvis:

(1) A lateral curve to the left occurring in the flexed position of the spine with the left shoulder back.

(2) A lateral curve to the left occurring in the extended portion of the spine with the right shoulder back.

(3) A lateral curve to the left occurring as the result of a twisting of the spine with the face to the right, in which case the right shoulder is back.

Three reversed conditions exist, of course, for

right total curves. If one takes these six conditions and rearranges them in terms of right or left shoulder back, one may construct the following table for the interpretation of simple total curves:

- If the right shoulder is back it may be due to
- (1) Right total curve acquired in flexion.
 - (2) Left total curve acquired in extension.
 - (3) Left total curve from twisting to the right.

- If the left shoulder is back it may be due to
- (1) Left total curve acquired in flexion.
 - (2) Right total curve acquired in extension.
 - (3) Right total curve from twisting to the left.

So far as the purely postural cases of lateral curvature are concerned, the twist of the shoulders should be easy to decipher when the relations of torsion and side bending are understood. But in the severer cases of scoliosis where there are two curves or even three curves, a new and confusing element, that of equilibrium or adjustment, comes in, which seems to have received little attention in the consideration of the mechanics of scoliosis. The element of equilibrium must modify the behavior of the spine, because in addition to being a flexible rod it must be considered a flexible rod with a sense of balance and equilibrium; not only is there continually an instinctive attempt when in the upright position to keep the head in the middle line of the body over the base of support, but to keep the shoulders parallel to the pelvis and the head looking approximately forward.

Were it not for this instinct of adjustment, one would expect that as the lateral curve increased the shoulders would twist more and more in their relation to the pelvis until in extreme cases of lateral curvature they might be twisted to an angle of forty-five degrees with the pelvis. Because starting with a slight lateral curve there would be a slight twist of the shoulders and with more lateral curve a greater twist — but such is not the case.

In cases of more advanced scoliosis the shoulders are also twisted in regard to the pelvis, but not very much more than in the beginning cases, yet the lateral curve is much greater. To go about with the shoulders twisted forty-five degrees out of the lateral plane of the body would be an impossible condition, and although in a slight lateral curve the twist of the shoulders might be proportionate to the lateral element of the curve, it could not increase in the proper proportion as the lateral curve increased without resulting in an impossible and disabling condition. Consequently somewhere between the shoulders and pelvis some compensation has occurred and the nature and seat of this compensation constitutes one of the most intricate and perplexing problems in the question of lateral curvature.

It would seem as if the twisting on a vertical axis shown in the prominence of the ribs on one side, known as the fixed rotation, in cases of scoliosis, were the result of this compensation. The shoulders must be kept roughly parallel to the pelvis and the head looking approximately straight ahead. To accomplish this parallelism of the

⁷ Schulthess: *Zeitsch. f. Orth. Chir.*, vol. vi, p. 399; Kirnison: *Rev. d. Orth.*, vol. vi; Hless: *Zeitsch. f. Orth. Chir.*, vol. vi, p. 556.

⁸ *Zeitsch. f. Orth. Chir.*, 1892, 1.

shoulders and pelvis, compensating twists (rotation) must occur in both lumbar and dorsal region and they must be of an amount and character to keep so far as possible the top of the column pointing straight ahead. In the severe cases of right dorsal, left lumbar curve the left side will be prominent backward in the lumbar region, the right side backward in the lower dorsal region, but the axis of the shoulders again will be found backward on the left side. The instinctive sense of adjustment in keeping the atlas pointing in the same direction as the last lumbar vertebra is an important matter demanding compensating twists in a column which has once seriously curved to the side.

Rotation in severe lateral curvature, therefore, appears to be the result of the patient's instinctive effort to keep the shoulders square with the pelvis. A twist is necessitated by the beginning of every lateral curve, but this twist cannot carry the shoulder plane too far out of the pelvic plane. To get the shoulders back parallel to the pelvis a compensating twist must be added to the existing twist and the fixed rotation thus becomes the sum of the two. This is seen when one analyzes by the aid of the scheme furnished the condition where fixed rotation exists. The reading of the scoliosis in the light of the obliquity of the shoulders is not the same as in total curves of postural scoliosis, but apparently the reverse.

Fixed rotation is not, therefore, to be overcome by a simple untwisting, but must be regarded as a compound phenomenon induced by two twists, to be dealt with by local pressure in the usual way.

As to the therapeutic use of torsion of the whole spine, it is to be remembered that in the present treatment side bending and side pressure are practically the only unilateral or non-symmetrical movements used. Wullstein alone seems to have used torsion in forcible correction, but he has used it in connection with strong traction and as an accessory measure rather than to obtain its specific effect. Many complicated free standing movements involving torsion are used because they seem to place the spine in an improved position, but such movements when used are purely empirical and take but little account of the specific effect of torsion, which has never, so far as I know, been formulated or even studied from this point of view. Side bendings in the gymnastic treatment are of great value, but it must be remembered that side bending as such does not exist but always carries torsion with it. The trend of modern gymnastic treatment of late years has been toward laying more stress on symmetrical exercises and less on active side bendings.

The application of side force in the forcible correction of scoliosis has the theoretical and well-recognized objection that pressure must be communicated to the spine through the thorax. The ribs are movable at both ends and a certain amount of force must be expended on the ribs before acting upon the spine. Torsion, on the other hand, acts directly upon the vertebræ. Theoretically it has this point of advantage.

Torsion to the left with the spine erect causes,

from the dorso-lumbar junction upward, a marked right dorsal curve and the trunk is carried to the right of the median plane. If the spine is flexed before being twisted the right dorsal curve begins higher up at the seventh or eighth dorsal vertebra and has the same character. Torsion to the right causes a left dorsal curve which may be distributed through the whole dorsal region or located in its upper half as may be desired.

Moreover, it is by no means clear that many so called postural cases of early lateral curvature do not have their origin in a twist of the whole spine rather than in a side bending, and that the apparent side bending is only the result of the twist. For such cases corrective twists would seem to be more rational treatment than corrective side bendings.

The therapeutic application of torsion is therefore plain. A right dorsal curve should twist or be twisted to the right, which should curve the spine to the left; should it be a high dorsal curve the twist should be given in full flexion of the spine. So far as the writer's experience goes, the therapeutic problem has been worked out only with regard to cases without fixed curves, where it has seemed to have a proper application and a distinctly good effect. With regard to cases with fixed curves it is not possible as yet to say what is its therapeutic value.

All that can be said at present is that torsion in the normal spine causes a distinct and uniform lateral curve. That postural cases of lateral curvature represent so slight a departure from the normal that rules governing the normal spine may be applied to them, as has been demonstrated experimentally. That postural lateral curves may apparently originate in (a) the flexed position of the spine; (b) in the extended position of the spine; (c) in twisted positions of the spine in which the lateral curve is only symptomatic of the twist. That in these cases torsion movements and passive torsions are of therapeutic value. And that in general the normal intact human spine behaves as would any flexible rod of similar curve, shape, and structure.

It is to be hoped that a further knowledge of torsion may enable us better to understand severe cases of scoliosis with fixed curves, and it is not unlikely that torsion movements and forced torsion may be of use in the correction of such cases.

A CRITICISM OF KLEMPERER'S WORK ON THE CONDITION OF URIC ACID IN THE URINE.¹

FRANCIS H. MCCRUDDEN, BOSTON.

Laboratory of Physiologica Chemistry, Mass. General Hospital.

WHEN hydrochloric acid is added to urine the whole of the uric acid does not immediately precipitate. His² showed that that which remained dissolved is in the colloidal state, and that con-

¹ Read at the Boston Society of Medical Sciences, May, 1908.

² His, W.: Die Harnsäure Ablagerungen des Körpers und die Mittel zu ihrer Lösung. Therapie der Gegenwart. Neue Folge, iii, 434, 1901.

tinued shaking of the solution with the precipitated uric acid will remove it. This author showed further that formaldehyde combined with uric acid forms a compound which is not a salt, and that if urotropin be administered to a patient, it decomposes, giving formaldehyde, which is found in the urine combined with the uric acid.

Basing his assumptions on the work of His, Klemperer,³ at the last congress for internal medicine at Wiesbaden, said that the uric acid is found in the urine in four forms:

(1) The chemically dissolved part. By this he means the pure uric acid in ordinary solution.

(2) The physically dissolved uric acid. By this he means that portion of the uric acid in solution in the form of a colloid.

(3) The uric acid combined with bases.

(4) The uric acid in the form of an organic compound with some such body as formaldehyde.

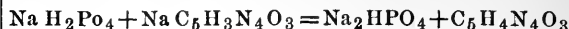
The chemically dissolved uric acid, as he admits, is very little, for uric acid is soluble only in 40,000 parts of water. The uric acid organically combined has been shown to exist only after administration of urotropin or chinotropin, so that this can usually be neglected.

Klemperer then undertook to determine the relative quantities of free urea and uric acid as a salt. He first determined the total amount of uric acid in 100 c.c. of urine by Ludwig-Salkowski method, and then shook another 100 c.c. of the solution with an excess of uric acid for forty-eight hours, filtered, and determined the uric acid in the filtrate by the Ludwig-Salkowski method. He says that shaking the urine with excess of uric acid precipitates the colloidal uric acid and that the filtrate contains therefore only the uric acid combined as salt. By subtracting the uric acid combined as salt from the total, he obtains the amount of free colloidal uric acid.

In the first place, His did not show, as Klemperer says, that a part of the uric acid in urine is in a colloidal state. His showed simply that when the uric acid in urine is set free from its salt by hydrochloric acid complete precipitation does not take place at once, owing to a retention of some of the uric acid for a short time as a colloid.

In the second place, Voit and Hofman,⁴ Camerer,⁵ Zerner,⁶ Mordhorst⁷ and Ritter⁸ have shown that when urine cools from the body temperature to the room temperature a chemical reaction takes place. Sodium acid phosphate reacts

with sodium acid urate to form alkaline sodium phosphate and free uric acid:



That is, the relative quantities of uric acid and urate change as the temperature becomes lower. Klemperer's determinations of the relative quantities of free and combined uric acid at the room temperature therefore do not show what he tried to show, that is, the relative quantities at the body temperature.

In the third place, Pfeiffer⁹ tried to show the relative quantities of free and combined uric acid in urine by pouring the urine repeatedly through a filter covered with uric acid. He assumed that the free uric acid was precipitated upon the filter and that the uric acid as urate passed through. Ritter¹⁰ repeated and explained the results of Pfeiffer. He showed that the amount of uric acid remaining after passing the urine through the uric acid filter depends upon a number of facts, but chiefly upon the relative amounts of alkaline and acid sodium phosphate present. Klemperer has simply repeated the work of Pfeiffer, using a slightly different technique to bring about his results, and therefore does not show the relative quantities of free and combined uric acid even at the temperature at which he carried out his determinations. From these experiments Klemperer concluded that a valuable part of the uric acid, usually, however, more than half, exists free and in the colloidal state in urine. Since the tendency of uric acid to become colloidal in pure water is but slight, he attempted to find what held the uric acid in a colloidal state in urine.

He carried out one experiment in which he found that the presence of urochrome, the coloring matter of urine, retarded somewhat the precipitation of uric acid from its salts by hydrochloric acid. From the result of this experiment the author concluded that urochrome is the agent which holds the uric acid in urine solution.

The precipitation of uric acid was retarded somewhat but not at all prevented by urochrome, so that if Klemperer's experiment is confirmed by other chemists we can conclude not that urochrome is the agent which holds uric acid in urine in solution, but that the slow precipitation of uric acid in Heinz' method of precipitation by hydrochloric acid may be due to the presence of urochrome.

A complete quantitative and generally applicable explanation of the behavior of uric acid when a urine cools cannot be given until more data are available. When urine cools from the body temperature to the room temperature the dissociation constants for the electrolytes present change. These constants, together with the

³ Klemperer, G.: Untersuchungen über die Lösungsverhältnisse der Harnsäure im Harn. Verhandl. des 20th Kongress für innere Med., 1902, 219.

⁴ Voit and Hofmann: Ueber das Zustandekommen der Harnsäuresedimente. Sitzungsber d. Kgl. Bayerischen Akad. d. Wissensch., i, 279, 1867.

⁵ W. Camerer: Zur Lehre von Harnsäure und Gicht. Deutsche med. Woch., 17, No. 10, 356 (1891).

⁶ T. Zerner: Ueber die chemischen Bedingungen für die Bildung von Harnsäuresedimenten. Wiener klin. Woch., 6, No. 15, 272, 1893.

⁷ Mordhorst, C.: Die Entstehung und Auflösung der Harnsäureverbindungen ausserhalb und innerhalb des menschlichen Körpers. Zeitschr. f. klin. d. Medizin., 32, 95, 1897.

⁸ A. Ritter: Ueber die Bedingungen f. die Entstehung der Harnsäuresedimente; ein Beitrag zur Theorie der Gicht. Zeitschr. f. Biol., 35, 155, 1897.

⁹ Pfeiffer, E.: Zur Aetiologie und Therapie der Gicht. Verhandl. des S. Kongresses f. innere Med., 444, 1886; and E Pfeiffer: Natur und Behandlung der Gicht. Verhandl. des VIII Kongresses f. innere Med., 166, 1889.

¹⁰ Ritter, A.: Ueber die Bedingungen f. die Entstehung der Harnsäuresedimente; ein Beitrag zur Theorie der Gicht. Zeitschr. f. Biol., 35, 155, 1897.

amounts of the different electrolytes, determine the concentrations of the various ions. If the change in equilibrium on cooling brings about an increase in the concentration of hydrogen ions these must combine with the negative uric acid ions from the sodium acid urate to form undissociated uric acid, for His¹¹ has shown that in a saturated solution of uric acid only 10% is dissociated. On account of the very low solubility of uric acid any undissociated uric acid formed will crystallize out.

In order to predict from its chemical composition whether on cooling the concentration of the hydrogen ions in urine will increase we must know, in addition to what is already known, at least the solubility and dissociation of uric acid at the body temperature and the dissociation of alkaline and acid sodium phosphate in solutions of different strengths at the body temperature and at the room temperature. We hope to determine these data and study the subject in detail. It seems probable that except the sodium salts the other bodies in the urine have only a lesser influence on the precipitation of uric acid.

Medical Progress.

PROGRESS IN OTOTOLOGY.

BY PHILIP HAMMOND, M.D., BOSTON.

(Concluded from No. 5, page 129.)

MASTOID DISEASE.

DURING the year several writers, in speaking of the mastoid operation, point out that the great danger consists in allowing the case to be neglected, and delaying operation too long.

Bliss³³ states that acute mastoiditis is a dangerous condition, and owing to the irregularity of its symptoms in different cases the question as to when one should operate is often veiled in uncertainty. Certain indications, however, continuing for several days, may be relied upon as of value in guiding the surgeon to favor an opening of the cells: First, steady, persistent pain over the mastoid process in the region of the antrum; second, the existence of edema; third, the temperature of the patient. In operating we should always aim to secure free drainage of the antrum. Although mastoiditis will, in some instances, develop during the most carefully conducted treatment of an otitis media, its prevention is undoubtedly very often due to proper care of the affected middle ear. It is especially urged that all acute inflammatory conditions of the ear be given early and appropriate treatment as the only safe means of averting a train of complications which may end in the patient's death.

Among the observations regarding temperature in mastoiditis during the year are the fol-

lowing: The writer³⁴ placed on record certain cases showing that the absence of temperature was of absolutely no importance as an indication of the necessity for operation.

In a study of a hundred cases, Harris⁶ found that after operation (1) a moderate amount of temperature is customary; (2) the cause of it has not yet been definitely determined; (3) without other symptoms it is devoid of significance, and should not be a source of anxiety.

Holt³⁵ reports a case in which, following the ablation of both mastoids, a young woman had remarkable variations of temperature, ranging from as high as 114° to 94°. These extreme variations were noted at the same time in different parts of the body. It was the opinion of those who saw her that the condition was due to hysteria.

Goldstein⁶ regards an infection of the ear during an attack of gripe as distinctly different from an ordinary acute catarrhal otitis media, in that the invasion of the ear and mastoid are practically simultaneous, and active treatment must be at once instituted to enable our patients to avoid mastoid complications. Stress is laid upon the importance of early and free incision of the drum membrane, and it is urged that conservatism be employed in cases where tenderness of the mastoid appears, as many of the symptoms of mastoiditis are accompaniments of influenza.

On the other hand, Dench³⁶ again asserts his belief that it is a most dangerous procedure to use the cold coil to abort the inflammation within the mastoid, on the ground that it masks symptoms and gives one a false sense of security. He tries it, however, in cases where he sees the patient from the very inception of the disease, combining with it free drainage of the tympanic cavity. At the end of forty-eight hours, if the case is not progressing toward recovery, operation is indicated.

Whiting⁶ calls attention to the cells at the base of the zygoma, believing that they are the cause of many cases of recurrent mastoiditis, and advocating their removal in all operations in this vicinity. Dench agrees with him, going even to the extent of advocating the removal of all the pneumatic cells in the occiput.

Injuries to the facial in tympanic exenteration is considered by Randall,³⁷ who has carefully outlined the course of this most important structure. In actual work it is not difficult to locate, as we can nearly always find the oval window, and we know that the upper margin of this niche is formed by the prominent facial canal. It goes forward but a few millimeters from this spot before disappearing into the depths of the petrous bone. Backwards from the oval window the nerve curves downwards, leaving the bone at the stylo-mastoid foramen. It is harder to recognize the nerve as we approach it through

¹¹ W. His: *Physikalische chemische Untersuchungen über das Verhalten der Harnsäure und ihrer Salze u. Lösungen.* Zeitschr. f. physiologische Chemie, 31, 1, 1900-1901.

³³ Internat. Clinics, vol. iii, 1902.

³⁴ Am. Med., April 12, 1902.

³⁵ Journ. of Med. and Sci., May, 1902.

³⁶ N. Y. Eye and Ear Inf. Rep., January, 1902.

³⁷ Laryngoscope, June, 1902.

the mastoid, but even here there are unmistakable bony landmarks which should indicate its presence to us. There is always the polished bony prominence on the inner wall of the antrum, which marks the protuberance of the horizontal semi-circular canal and the downward curving portion of the facial. A careful description of the organs adjacent to the middle ear is also given by Schmitt³⁸ and Stein.³⁹

In the after-treatment of the radical operation, Muehlen⁴⁰ closes the retro-auricular opening primarily. The posterior wall of the canal is slit, and the first packing of iodoform gauze remains for six days. Another tampon is then loosely introduced and allowed to remain for two or three days. Eight days are allowed for the flaps to grow into their new places. As soon as this is accomplished, all packings are omitted. Irrigations with warm water are then used daily. He claims to experience very little trouble from excessive granulations forming in this method of treatment.

A case of cholesteatome of the middle ear with loss of memory is recorded by Packard.⁴¹ The patient was twenty-three years old, and had had chronic suppuration for twelve years. Complete relief followed mastoid operation.

THROMBOSIS OF THE LATERAL SINUS.

In an article reviewing the history of this operation, Dench⁶ states that the thorough mastoid operation was not commonly performed until within the past ten years. At the time when it was customary to simply drill a small hole into the antrum, a perforation into the lateral sinus was looked upon as being almost necessarily fatal. Then, following the teachings of Schwartze and Gruening, more radical measures were adopted even in all acute operative cases, and practically all of the cellular structures of the mastoid were removed. As soon as surgeons became bold enough to do this, it was found that exposure or wounding of the lateral sinus became divested of the terror which it had formerly inspired, and affairs progressed so that from becoming an unwished-for accident, it was commonly done as a prophylactic measure.

Dench⁴² most emphatically believes in early operation in all suspected cases, and states that he has operated on twenty-two cases, with but two deaths. One of these was from a septic pneumonia, and the other from a nephritis induced by the anesthetic. In only four of the cases was it necessary to ligate the internal jugular, and all of these recovered. He believes that prompt surgical interference of the most radical kind is the only safe course. Ligation is demanded only in those cases in which the clot cannot be wholly removed from the sinus, and where there is undoubtedly a certain amount of infected material left in the venous canal.

Lederman⁴³ reports a case in which, after operating and tying the internal jugular, there was a relapse, with reinfection of the vein. This was again operated upon, and the patient made a good recovery. Lederman believes that the diagnosis must be based mainly upon the appearance of pyemic symptoms accompanying an acute or chronic purulent disease of the middle ear. He considers the most prominent symptom to be the rigor accompanied by profuse perspiration. He places little reliance upon the cordlike sensation in the vein, and has not been able to detect it, but considers as of more importance the presence of tenderness along the anterior border of the sterno-mastoid muscle. Opening or tapping the sinus should be avoided if possible, as cases of infection with fatal results have been reported by Linser⁴⁴ and others.

OTHER INTRA-CRANIAL COMPLICATIONS.

The importance of thorough operation in cases of mastoiditis complicated with cerebral symptoms is shown by cases reported by Broca and Laurens,⁴⁵ and Massier.⁴⁶ Several surgeons and neurologists who saw Broca's case pronounced it one of cerebral abscess. There were frequent chills, paresis of an arm, some aphasia and disturbances of vision. Massier's case is equally striking. Complicating the otorrhea there was violent headache and complete paralysis of the left arm with loss of movement of both legs. Here also a diagnosis of abscess of the brain was made. The radical operation in both cases revealed a meningitis due to infection from the ear, and the result was a complete disappearance of the symptoms.

Lewis⁴⁷ reports a case of chronic suppuration in which a cessation of the discharge from the middle ear was followed by chills, sweating and a rise in temperature. There was partial facial paralysis and amnesic aphasia, but no other paralyzes and no optic symptoms. At the operation the mastoid and middle ear were found to be filled with pus, and an extra-dural abscess was found beneath the squamous portion of the temporal bone. Gauze drainage was used, and the patient made a good recovery.

Jack⁴⁸ succeeded in saving a case of brain abscess following suppurative middle ear disease. The patient had had a discharge from the left ear for three years. There had been frontal headaches for six weeks, and there was tenderness of the mastoid. The mastoid was opened, and necrosed bone and pus removed. The lateral sinus was exposed for an inch, but as the dura was normal in color, and there was no bulging, it was not opened. The patient improved for a time, but on the eighth day passed into coma. The wound was opened up, the dura opened, and several ounces of pus and necrotic tissue removed. Good recovery.

³⁸ Am. Journ. Med. Sci., April, 1903.

³⁹ Laryngoscope, December, 1902.

⁴⁰ Arch. of Otol., April, 1903.

⁴¹ Med. News, March 8, 1902.

⁴² Am. Journ. Med. Sci., May, 1902.

⁴³ Laryngoscope, November, 1902.

⁴⁴ Beitrage z. Klinchirurgie, Bd. xxviii, H. 3.

⁴⁵ Ann. des malad. de l'oreille, du larynx, etc., January, 1902.

⁴⁶ Rev. heb. de laryng., d'otol., etc., June 25, 1902.

⁴⁷ Med. Rec., Mar. 15, 1902.

⁴⁸ Bost. Med. and Surg. Journ., Dec. 26, 1901.

Braunstein⁴⁹ suggests the extreme importance of lumbar puncture as a means of diagnosis in intra-cranial complications of otitis media. In a total of forty-eight patients he has made it sixty-seven times to establish an indication for operation by exclusion of diffuse purulent meningitis, or to establish an indication for omitting operative interference by proving the presence of the above form of meningitis. The fluid removed by lumbar puncture is turbid, or even purulent in inflammation involving the cerebrum, spine and meninges. This turbidity may be due to chemical changes, or to an increase of leucocytes and admixture of pus corpuscles and bacteria. In tubercular meningitis the fluid may be clear, although containing bacilli. In uncomplicated cerebral abscess the fluid is clear, but the amount increased in quantity.

CHRONIC CATARRH OF THE MIDDLE EAR.

After a thorough test of nearly all the new methods of treating this disease, Randolph has failed to find the agent which can be said to be pre-eminently satisfactory. He believes that catheterization is the most satisfactory of the mechanical methods. Although he does not believe in the value of internal medication in this disease, he admits that he has seen cases distinctly benefited by thiosinamin in half-grain doses three times a day. In larger doses it is apt to produce vertigo. It seems to be especially valuable in the treatment of tinnitus aurium. It is claimed for this drug that it causes absorption of cicatricial tissue. There is an increase in the amount of the white blood corpuscles while the drug is being taken.

Snow⁶ states that local intra-nasal factors must be taken into account before embarking upon the treatment of catarrhal deafness, but the mistake is often made that they are the whole cause, and too much benefit is expected from the correction of abnormalities there. He points out that there are many general diseases underlying the deafness, and that, if unrecognized, these prevent the fullest returns from thorough operations upon the nose. Disturbances of the skin, liver, stomach and other organs give rise to inflammatory changes in the head membranes. Much of the trouble to which we are subject is due to coddling and living in overheated apartments.

In a consideration of this subject, Harris⁶ concludes:

(1) That we have made very little progress in treating chronic catarrh of the ear.

(2) That our chief success to-day rests in our ability in setting aside the producing nasal catarrh.

(3) That tubal therapeutics and pneumo-massage are at the best too often of temporary benefit and in the hands of some even of decided harm.

(4) That all we can promise with safety is to check the deafness.

(5) And that prophylactic measures are of the greatest value, especially the removal of the ever-present adenoids.

Hopkins⁵⁰ advocates the use of super-heated compressed air in the treatment of chronic catarrhal otitis media, as does also Oaks.⁵¹ The former has obtained gratifying results in cases not benefited by other forms of treatment. He believes, however, that as an exclusive form of treatment it is rarely of much value, but that it gives the best results when used in conjunction with the recognized forms of treatment. He ascribes its beneficial effects on the ossicular chain to the fact that the joints have a very superficial covering.

Watson⁵² has administered bone marrow internally in the treatment of chronic aural catarrh, and he reports twenty cases in which this was tried. His theory is that bone marrow produces an internal secretion of vital importance to the economy, and that this substance is a prophylactic against the action of various bacteria.

Electrolysis of the Eustachian tube is mentioned by many writers, none of whom obtain the brilliant results at first reported by Ducl.

Melzi⁵³ claims to have relieved various obstinate chronic cases by the passage of a rubber sound into the Eustachian tube. He considers this to be a measure at once simple of application and devoid of danger.

Blake¹¹ believes that the various forms of pneumatic massage apparatus have greatly increased the number of patients with tension anomalies of the sound transmitting mechanism, because of the fact that they can be easily applied and in many cases at first seem to aid the hearing. He considers that unduly forcible inflation of the middle ear may cause extensive trouble by stretching the drum membrane. He is inclined to favor exploratory tympanotomy in cases of chronic non-suppurative inflammation of the middle ear, when treatment does not ameliorate the condition.

Harris⁵⁴ thinks the prognosis rather poor in most cases of tinnitus aurium, yet the results of treatment are not so unfavorable as is commonly supposed. In some cases treatment is directed to the ear locally, in some to the Eustachian tube, and various operations around the turbinates apparently affect the continuance of the noise.

Pyncheon¹¹ continues to advocate pneumatic massage for various affections of the ear. By means of a special electric pump which he has devised for the purpose, he claims to be able to overcome the objections to the use of the mechanical masseur, as he is able to regulate absolutely both the amplitude of vibration to be applied to the drum and the speed. As a result of his observations he concludes that slow vibrations (30 to 90) are generally best adapted to middle ear troubles; that more rapid vibrations

⁴⁹ *Annals of Otolaryngology, Rhinology, and Laryngology*, February, 1902.

⁵¹ *Laryngoscope*, September, 1902.

⁵² *Brit. Med. Journ.*, March 22, 1902.

⁵³ *Arch. Internat. de Laryngol. et d'Oto-Rhin.*, March-April, 1902.

⁵⁴ *Laryngoscope*, March, 1902.

⁴⁹ *Arch. f. Ohrenh.*, June, 1902.

(300 and over) have a more pronounced effect upon the labyrinthal nerves, and that improvement, of middle ear conditions will have a favorable effect on the labyrinth in those cases in which disease of both the middle ear and inner ear co-exist.

Randall⁵⁵ believes that no harm will result from a careful use of Seigle's otoscope with a rubber bulb or of massage with the finger tip, but does not think that this applies to the mechanical vibrators.

Schwabach⁵⁶ reports as a result of tests of the therapeutic value of vibratory massage of the drum head an improvement in only 4.9% of cases of sclerosis of the middle ear, and is not inclined to look upon it with favor.

A new form of massage has been suggested by Hamm,⁵⁷ who believes that the membranes can be softened by making the pressure stronger, at the same time lengthening its duration. This he accomplishes by seating the patient in a cabinet, in which he produces the requisite atmospheric conditions.

Bates⁵⁸ goes to the extent of advocating the removal of the posterior wall of the bony canal in intractable cases of chronic catarrhal deafness. He reports good results following this method, the main objection being the length of time required.

OTITIS MEDIA INSIDIOSA, OR STAPES FIXATION.

During the past few years improved methods of decalcifying, embedding and staining sections have materially advanced our knowledge relative to this most important disease of the ear.

The idea which prevailed for many years was that an interstitial inflammation of the mucous membrane of the tympanic cavity initiated the so-called sclerosis, which by extension involved the chain of ossicles and the oval and round windows. Clinically there was a high degree of deafness with open Eustachian tube and normal appearing drum. It was considered that the membranes closing the foramina were directly responsible for the deafness, by mechanically obstructing the sound conduction.

Hartz⁶ points out that microscopic sections reveal the location of the trouble as due to hyperplasia of the bony elements of the capsule of the labyrinth. This osseous process may be located simultaneously in the cochlea and the ossicular chain, and may also extend to the semi-circular canals. Politzer suspected years ago that capsulitis labyrinthi often began at an early age, progressing slowly toward complete fixation of the stapes. Bony deposits are most noticeable in that part of the ear which has the greatest functional activity, namely, around the base plate of the stapes. As to treatment, Hartz advises internally such medicinal agents as will promote absorption, as

iodine, mercury and phosphorus, but admits that the results are negative. Thyroid extract has apparently given good results in the early stages. Politzer strongly recommends large doses of potassium iodide. Mechanical treatment, as carried out by means of the various masseurs, apparently aids the patient temporarily, but carried to excess can only result in harmful stretching of the membrana tympani, as pointed out by Blake.⁶ This stretching occurs in the upper posterior quadrant of the membrana, and gives rise not only to an increase in the deafness, but may also cause a most annoying tinnitus. Surgical measures, such as stapedectomy, are followed by temporary relief only.

LABYRINTH.

Involvement of the labyrinth following or during an attack of the mumps is one of the rarer complications of the disease, chiefly important because of its serious prognosis.

Texier⁵⁹ gives a *résumé* of the literature of the subject, stating that the onset is sudden, somewhat resembling Meniere's disease, and the deafness permanent. It may involve one or both ears. The lesion is thought to be in the labyrinth.

Félix⁶⁰ insists that we should carefully examine all cases of labyrinthine deafness for evidence of syphilis.

In syphilis of the labyrinth Dench⁶ uses pilocarpine internally in conjunction with hypodermic injections of mercury. It may be necessary to give it for two or three weeks before its effect will be noticeable.

Bacon⁶ calls attention to the fact that pilocarpine is a marked depressant, and great care must be exercised in its use.

Scheyr²³ reports the case of a patient with involvement of the labyrinth following the ingestion of salicylate of soda for rheumatism. On the sixth day she was taken with very intense headache, vertigo and tinnitus in both ears. Although the medicine was at once stopped, the vertigo was persistent. The drums showed nothing abnormal. Bone conduction on the left was completely lost. Treatment apparently produced no relief.

TREATMENT.

Gruening lays stress upon the point that the ability to inspect the drum membrane is the first requisite for the general practitioner in the treatment of ear diseases. Meierhof⁶¹ also states that very few cases require major operations where the patient has had the benefit of early expert treatment.

Among the new drugs which have been used during the year is thiosinamin, which has been experimented with by Beek³⁷ as a solvent for cicatrices in the Eustachian tube and middle ear. It is stated by various authorities that

⁵⁵ Journ. A. M. A., Aug. 31, 1901.

⁵⁶ Arch. of Otol., August-October, 1901.

⁵⁷ München. med. Woch., Feb. 5, 1902.

⁵⁸ N. Y. Med. Journ., May 3, 1902.

⁵⁹ Rev. heb. de laryngol., d'otol., etc., November, 1902.

⁶⁰ Ann. des malad. de l'oreille, du larynx, etc., December, 1901.

⁶¹ Arch. of Otol., February, 1902.

this drug has the property of producing a local reaction when injected into any portion of the body where there is poorly nourished tissue, especially cicatrices or old inflammatory structure. As used by Beck, a 15% solution of thiosinamin is prepared and injected between the scapulæ or into the arm subcutaneously, starting with ten drops once a week, in some cases twice a week. This dose is gradually increased until an ordinary hypodermic syringe is used each time. This treatment is combined with ordinary local measures, and nasal obstructions and the general health of the patient carefully looked after. As the result of treatment in fourteen cases, he concludes, first, that the injection of thiosinamin without mechanical treatment did not improve the condition, except to relieve the tinnitus somewhat; second, that with the aid of electrolysis and injection of thiosinamin the simple bougie could be passed with much greater ease, and inflation was accomplished with greater facility after a short time than was experienced in cases where these were not used; third, that all the cases treated with thiosinamin and electrolysis improved in from two to eight months in all respects — hearing, tinnitus aurium, general condition, etc.; fourth, that before using the thiosinamin careful inquiry should be made for possible contraindications for its use, such as co-existing chronic tuberculosis, malignant tumors, scars which support the abdominal organs such as are formed after laparotomy, etc.

Richards⁶ has for several years been using soluble bougies for the relief of earache in children. They contain carbolic acid, opium, cocaine and atropine, and are to be inserted into the external canal, where they become liquefied by the body temperature.

Lederman⁶² reports that Argyrol has been found satisfactory in the treatment of granular conditions of the ear. It is used in solutions varying in strength from 5 to 50%, and no irritation was noticed even from the strong solutions.

Static electricity has been used in the treatment of tinnitus by Drs. Bayer and Pennineckx.⁶³ They apply the blunt point of the metallic conductor to within about 1 or 2 cm. of the tympanic membrane. The production of sparks should be avoided. They state that they have never seen any harm come from the employment of the method.

Stoker⁶⁴ records four cases of deafness with tinnitus, which he treated by pumping into the Eustachian tube ozone, which he generated from the electric current by means of a Ruhmkoff coil. In all the cases there was improvement of both hearing and tinnitus.

In using Lucae's pressure probe König⁶⁵ dips the little cup on the end into melted paraffin. When used in this way the massage is less painful.

Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

TWENTY-FIFTH ANNUAL MEETING, WASHINGTON, D. C.,
MAY 12, 13 AND 14, 1903

(Concluded from No. 5, page 132.)

SECOND DAY — (concluded).

DISEASES AND TREATMENT OF THE SPHENOIDAL CELLS, WITH REPORTS OF CASES.

DR. ROBERT C. MYLES of New York read this paper, first showing a number of special instruments for work on the sphenoidal and ethmoid cells. He called special attention to the frequent irregularities and anomalies of size and position of the sphenoid cells, and showed a very fine wet specimen of half the skull, with the spheno-palatine and internal carotid arteries injected, the former crossing the field of operation, the latter lying close against the very thin inner wall of the sinus. He considered disease of the sphenoid cells much more common than usually reported. He advised the removal of the posterior end of the middle turbinate, when necessary, as a diagnostic measure, and when diagnosis is made, advised making a free opening in the anterior-superior wall of the sinus, close to the septum.

OBSERVATIONS ON THE DIAGNOSIS OF NASAL SINUSITIS.

DR. WALTER J. FREEMAN of Philadelphia presented this paper. In regard to the maxillary antrum he referred to the frequent failure of trans-illumination as a test for disease of the antrum, and noted the fact that when only one antrum was affected it was usually on the narrower or more obstructed side of the nose. In cases of inflammations of the antrum, acute or chronic, he considered the presence of pus flowing over the upper surface of the posterior end of inferior turbinated bone as the most frequent and the most certain sign. Intermittent cacosmia was a frequent and valuable sign. If any of the molar or bicuspid teeth were capped, or were at all discolored, they should be very carefully examined.

The author claimed to be able to wash out the maxillary sinus, in most cases through the natural opening, and showed a slender, flexible hard rubber canula for the purpose.

In regard to the frontal sinus he mentioned the usual train of symptoms, but gave special weight to the appearance of pus in the upper angle of the vestibule, claiming that when persistent, this sign was practically pathognomonic.

As to ethmoid disease, the author expressed great scepticism as to the frequency of its occurrence and the number of cases reported, and thought that most of them were undiscovered cases of antrum, frontal or sphenoid suppuration. As to the sphenoid cells, the author seemed to think that excepting by process of exclusion or by opening the sinus by an external operation, a definite diagnosis was almost impossible.

⁶² Med. Rec., Nov. 22, 1902.

⁶³ Rev. heb. de laryngol., d'otol., etc., 1902, No. 34.

⁶⁴ Lancet, Nov. 1, 1902.

DR. BRYAN of Washington, in discussion of the papers on sinus disease, spoke of the frequent anomalies occurring in all of the sinuses, and showed a specimen in which the sphenoidal sinus was very large and extended far down into the pteregoid process. He expressed disapproval of the maxillary route for operation on the sphenoid sinus.

DR. MAYER of New York claimed that it was very seldom that the antrum could be washed out through the natural opening, but that it must be punctured through the outer wall of inferior meatus, a very simple matter.

He thought that the maxillary antrum route to the sphenoid was the best one, and would be the operation of the future.

DR. KING of New Orleans considered the Caldwell-Luc operation the best for most cases of frontal sinus disease; objected to the Kuhnt operation on account of the great deformity resulting; reported two cases done by a combination of Kuhnt and Luc operations with good results, and called attention to the frequent temporary infra-orbital neuralgia following the Caldwell-Luc operation.

DR. GLEITSMANN of New York spoke of a case of secondary hemorrhage, and said that he used liquid vaseline to loosen up the packing in all cases, thereby, he thought, lessening the tendency to hemorrhage when the packing was removed. He also spoke of the distance to which an instrument must be passed into the nose to reach the sphenoid sinus. This he had found very variable, in some cases $3\frac{1}{2}$ to 4 inches; in others $5\frac{1}{2}$ to $5\frac{3}{4}$ inches.

DR. LUC, in closing, said that he had not found any great difficulty in working through the floor of the frontal sinus; that the object of the operation was the obliteration of the cavity of the sinus, and that often it was a choice between complete success in that respect and a considerable degree of deformity, and when necessary we must choose the latter. He had found that the uprising of the fatty tissue of the orbit through the wound in the floor of the sinus helped to obliterate the cavity and to reduce the deformity.

As to the drainage opening into the nose it must be large enough to allow the finger to go up through the nose into the cavity of the sinus.

COMPLETE REMOVAL OF LEFT VOCAL CORD FOR MALIGNANT DISEASE. PRESENTATION OF THE PATIENT.

DR. WALTER F. CHAPPELL of New York reported a case as above. The patient had a small malignant growth on anterior end of left cord, with marked infiltration of whole larynx. In October, 1901, the case was operated upon, with preliminary tracheotomy, thyrotomy and total removal of left vocal cord and immediately adjacent infiltrated tissue. There was good recovery and there has been no recurrence to date. The patient has a husky voice, but articulates plainly and without effort. The author urged early diagnosis and early radical operation.

DR. MYLES of New York spoke of the relative value of the clinical and the microscopical aspects of these cases, and said that in many cases of removal with no recurrence, where the microscopical findings have shown malignancy, he often felt inclined to doubt the results of the microscopical examination.

PERICHONDRITIS OF THE LARYNX FOLLOWING TYPHOID FEVER, WITH REPORT OF A CASE.

DR. EMIL MAYER of New York read this paper. He stated that laryngeal inflammations due to typhoid fever were not very rare, and said that they were frequently important and valuable as a diagnostic point, as they may occur very early in the course of the typhoid. Marked stenosis of the larynx, the author said, was very rare; the ulcerations, when present, were usually caused by the ordinary pyogenic bacteria, and very rarely by the typhoid bacillus itself.

His conclusions were that the best general plan of treatment was early tracheotomy, with subsequent dilatation and intubation.

DR. DELEVAN of New York said in discussion that the condition was a rare one, and in about 94% of the cases was fatal.

He felt that the general consensus of opinion was that dilatation was usually not successful and that the use of O'Dwyer's tubes was the only rational treatment. He urged the importance of thorough care and cleansing of the upper air passages in typhoid, to prevent if possible this sort of complication.

DR. SIMPSON of New York advised the introduction of the tubes, under ether, as in that case we could use a larger tube and could probably use O'Dwyer's tubes and not have to use the Schrotter tube.

- (a) A CASE OF EARLY APPEARANCE OF PARALYSIS OF THE VOCAL CORDS, IN MEDIASTINAL TUMOR.
- (b) A CASE OF SARCOMA OF THE NASO-PHARYNX.

DR. WILLIAM K. SIMPSON of New York reported these two cases.

In the first one the author followed the course of the case in detail for several months, noting particularly the progress of the paralysis of the cords, the aphonia and the cough, and ending in the death of the patient. He then noted the findings at the necropsy, these being a large cancerous mass involving the mediastinal glands, and completely filling the posterior mediastinum, carcinoma of the left lung, carcinoma of the retro-peritoneal glands and an acute lobar pneumonia.

He presented the case to put on record an instance of complete bilateral paralysis of the vocal cords, which is the rarest form of laryngeal paralysis; to emphasize the early appearance of laryngeal paralysis as an indication of intrathoracic pressure, which is often observed in unilateral paralysis and often antedates any positive physical signs in the chest, and to note the difficulty in exactly defining the lesion in such cases, even when autopsy has shown it to be very extensive.

(b) In the case of sarcoma of the naso-pharynx, the patient was twenty-seven years of age; there was a large mass nearly filling the naso-pharynx, bleeding easily and looking like an ordinary adenoid growth, and giving no symptoms excepting moderate obstruction to nasal breathing and some trouble in one ear, which latter cleared up under local treatment, the patient for a time refusing operation upon the mass in the naso-pharynx.

Later he had frequent and copious nasal hemorrhages, and consented to operation. The mass was removed in January, 1903, by curette, under cocaine and adrenalin, with very little hemorrhage. There had been no recurrence to date, and the patient's general health was much improved.

Dr. THEISEN of Albany reported a case with adductor paralysis and dyspnea, upon which he did a tracheotomy for the relief of the dyspnea. A radiograph was taken later, and from that and other symptoms the diagnosis of an aneurism was made. After death, at the autopsy, a large mass was found behind the trachea and pressing upon it, and both the recurrent laryngeal and pneumogastric nerves were involved in the mass.

NOTES ON CASES OF NASAL SARCOMA, WITH EXHIBITION OF PATHOLOGICAL SPECIMENS AND MICROPHOTOGRAPHS.

Dr. J. PRICE-BROWN of Toronto presented this paper and gave notes of several cases of from one and one-half to eight years' standing without recurrence since operation. He advised removal of these growths in all cases, by snare if pedunculated, and by snare, electric or cold, and forceps and scissors when sessile, taking the mass out piecemeal and at many sittings if necessary rather than doing an open external operation, which caused much deformity.

He found the hemorrhage severe in all his cases, but fairly easily controlled by adrenalin and packing, and had had no secondary hemorrhage. He urged early diagnosis and operation, because then could operate more easily intra-nasally, and also of course would have less chance of recurrence.

Dr. SHURLY of Detroit said that he did not yet feel hopeful of permanent good results in these cases. All that he had seen had recurred.

Dr. CLARK of Boston also felt discouragement as to the final results. He thought that they should be kept under observation for a longer period before being reported as cured.

Dr. HARRIS of New York said that the hope of a final cure was a misplaced hope so far. He said that the prognosis rested somewhat upon the locus of the growth: if on the septum and pedunculated, so that the operation could be intra-nasal, the prognosis was good; but if diffuse and in the ethmoid region, it was bad. In the latter location he thought that the external operation was better than intra-nasal attempts.

Dr. MYLES of New York urged early and radical operation. He spoke of finding in dissections of normal cases a small cartilage, extending

from the basilar process to the sphenoid bone, and suggested this as the possible starting point of these sarcomata. He had noted also that in any case of tumor of this region, with a microscopical verdict of sarcoma, if it could be tided over to thirty or thirty-five years of age, it usually atrophied and disappeared — possibly due to the atrophy of this cartilage.

Dr. LELAND of Boston urged the importance of early operation, as most of these growths were fibrous and benign early in their history, becoming sarcomatous and malignant later.

Dr. GLEITSMANN of New York agreed with the protests against too early reports of cases as cured, but still thought that such protests should not be allowed to discourage operating, for even if it does not cure, the operation will frequently prolong life for one or more years and give relief from pain, and should therefore be done.

ADDITIONAL NOTES UPON THE TREATMENT OF NASO-PHARYNGEAL FIBROMA.

Dr. D. BRYSON DELEVAN of New York in this paper called attention to the high rate of mortality of the formidable methods of the older surgeons for the removal of these growths, and presented an extensive series of cases to prove the superiority of operation through the natural passages.

His statistics showed that the mortality rate of such preliminary operations as resections of the superior maxilla and of the nose and the like was very high, while removal through the natural passages by such methods as evulsion, or cold snare, or electrolysis, or galvano-cautery-snare, gave most brilliant results. A brief summary of 135 cases was as follows:

| <i>Fibroma</i> | <i>Total Cases.</i> | <i>Cured.</i> | <i>Died.</i> | <i>Recovered.</i> |
|--------------------------|---------------------|---------------|--------------|-------------------|
| Preliminary Operation | 27 | 16 | 7 | 4 |
| | | (59.25%) | (25.9%) | (15.4%) |
| Evulsion or Snare thro' | | | | |
| Natural Passages | 41 | 39 | 2 | 0 |
| | | (95%) | (5%) | |
| Electrical Methods thro' | | | | |
| Natural Passages | 66 | 66 | 0 | 0 |
| | | (100%) | | |

He noted the excellent work done in this field by the late Dr. Rufus P. Lincoln and by Dr. E. Fletcher Ingals of Chicago. He felt that the older method by preliminary operation would soon become obsolete, and that the newer methods by intra-nasal route would be the only operations of the future.

A METHOD OF RAPID EXTIRPATION OF NASO-PHARYNGEAL FIBROMATA, WITH REPORT OF CASES.

Dr. GORDON KING of New Orleans read this paper. He said that he had noticed that these growths continued to increase up to twenty-five or thirty years of age, and then generally atrophied. He had found that igni-puncture and x-rays and other methods of trying to make the tumor shrink up were unavailing, and he felt that radical and complete extirpation was the only satisfactory plan of treatment. The author noted three special difficulties in operating:

- (1) That of getting at the tumor.
- (2) Hemorrhage during operation.
- (3) Suffocative pneumonia.

He examined the growth digitally, and if it was pedunculated the operation was a simple one, merely snare it off; if sessile, he then operated with the finger in the naso-pharynx as a guide, and cut out the mass with long, strong scissors passed through the nose. The hemorrhage, though troublesome and sometimes dangerous, was readily controlled by pressure, and once stopped did not tend to recur. He advised preliminary tracheotomy.

DR. MYLES of New York reported a case which involved several operations both intra-nasal and external with recurrence after each one, but which finally after the patient reached twenty-eight years of age disappeared spontaneously.

THE REMOVAL OF CICATRICAL CONTRACTIONS OR OBSTRUCTIONS OF THE NOSE BY THE SUBCUTANEOUS PLASTIC METHOD.

DR. JOHN O. ROE of Rochester read this paper, and demonstrated several of the delicate operations by means of plates, and showed a number of special instruments.

After speaking at length of the usual causes and usual older methods of treatment, he said he had found the latter unsatisfactory in many cases. Then as showing his present method he said for anterior contractions of the external opening of the nostril he made a crescentic incision denuding the surface of the contracted or filled-in portion, leaving the skin attached at one end as a long flap, then after excising the mass in the angle of the nostril he used the flap to cover in the raw surface thus exposed, or as much of it as the flap could cover, leaving the small balance to granulate.

In many cases of internal "bands" he found it possible to dissect off the mucous membrane covering the upper surface of the band, and then after excising the mass of the band to cover the raw surface left with this flap of mucous membrane.

For collapsed alæ he recommended making two incisions into the lateral shield cartilage (on the inside of the nostril) at an angle with each other, excising the wedge of cartilage between them and then suturing the edges of the cartilage incision together, thus causing the cartilage to bulge outward and carry the alæ with it and hold it there.

DR. MAYER of New York suggested the use of the cargin membrane after operations in the nose which leave a raw surface exposed.

- (a) FACIAL NEURALGIA DUE TO DISEASE IN NOSE AND ANTRUM.
- (b) IMMEDIATE TRACHEOTOMY FOR FOREIGN BODY, WITH COMMENTS ON THE CASE.

DR. WM. PEYRE PORCHER of Charleston, S. C., read this paper (a). He noted that in very few instances in medical literature had any connection been observed, claimed or proved between facial neuralgia and conditions in the nose. He

claimed, however, that it is the rule rather than the exception in these cases that the neuralgia is a reflex neurosis due to pressure or inflammation in the nose or antrum, and he deprecated the many extensive operations on the nerve trunks and ganglia, and upon the teeth, when generally relief of the difficulty in the nose or antrum would cure the neuralgia.

DR. PORCHER then detailed several cases with the usual train of symptoms in which operations in the nose relieving pressure or obstruction stopped the neuralgia.

(b) He also reported an interesting case of foreign body in the larynx and trachea of a child eight months old, with immediate tracheotomy and recovery. The foreign body was a small green pine burr, which, after unavailing attempts to extract it from above, fell through into the trachea, from which it was extracted by tracheotomy.

DR. ROE of Rochester reported two cases of facial neuralgia cured, one by removal of a large spur from one nostril, the other by removing an irritating spicule or bone from the antrum.

Owing to lack of time and in two cases to the absence of the authors, the following papers were read by title only, but will appear in the published transactions of the association for the year:

- (1) BONY CYST OF THE ANTRUM; REPORT OF A CASE, BY DR. CORNELIUS G. COAKLEY OF NEW YORK.
- (2) REMOVAL OF NASO-PHARYNGEAL TUMOR; REPORT OF CASE, AND DESCRIPTION OF A NEW INSTRUMENT FOR THE OPERATION, BY DR. E. FLETCHER INGALLS OF CHICAGO.
- (3) A CASE OF GANGRENE OF THE TONSIL, BY DR. CHARLES W. RICHARDSON OF WASHINGTON.
- (4) NASAL POLYPI. A STUDY OF 145 CASES, BY DR. J. PAYSON CLARK, OF BOSTON.
- (5) CONGENITAL LARYNGEAL STRIDOR, BY DR. JAMES E. NEWCOMB, OF NEW YORK.
- (6) A STUDY OF CERTAIN ACUTE INFLAMMATIONS AT THE BASE OF THE TONGUE, BY DR. ALEXANDER W. MACCOY OF PHILADELPHIA.
- (7) MEDICAL TREATMENT OF ADENOIDS, BY DR. WILLIAM C. GLASGOW OF ST. LOUIS.

At the executive session of the association the following new members were elected:

To corresponding fellowship: A. Anodi, Budapest; P. McBride, Edinburgh; Herbert Tilley, London.

To active fellowship: Thomas J. Harris, New York; Clement F. Theisen, Albany; Francis R. Packard, Philadelphia; W. Scott Renner, Buffalo; William Lincoln, Cleveland.

The following officers were elected for the ensuing year: President, J. H. Hartman, Philadelphia; vice-president, J. H. Lowman, Cleveland; second vice-president, W. P. Porcher, Charleston, S. C.; secretary and treasurer, James E. Newcomb, New York; librarian, J. H. Bryan, Washington; member of council, Jonathan Wright, Brooklyn.

The next meeting will be held at Atlantic City.

Recent Literature.

Syphilis in Dentistry. By L. BLAKE BALDWIN, M.D., Chicago Ill., Professor of Dermatology and Venereal Diseases, Post-Graduate Medical School, etc., etc., and EZRA READ LARNED, M.D., Chicago, Ill. Chicago: E. H. Colegrove. 1903.

This is a valuable book which sounds a note of warning and directs the attention of dentists to a danger which they have never sufficiently heeded, if they have not ignored it altogether. It calls attention to the frequency with which extra-genital infections occur. It gives directions for recognizing these, and calls attention to the differential diagnosis between syphilitic and non-infectious lesions of the mouth and adjacent parts. It cites a number of interesting cases and presents several excellent illustrations which should serve to arouse the vigilance of the dentist and enable him to detect this loathsome disease whenever its physical signs are present.

The Essentials of Histology, Descriptive and Practical. By E. A. SCHÄFER, LL.D., F.R.S., Professor of Physiology in the University of Edinburgh; formerly Jodrell Professor of Physiology in University College, London. New (6th) edition, revised and enlarged. In one octavo volume of 426 pages, with 463 illustrations. Cloth, \$3.00 net. Philadelphia and New York: Lea Brothers & Co.

Schäfer's excellent manual has been greatly improved in the present edition, which is far better printed than any of the five previous editions. The illustrations have greatly benefited by the better presswork, and the new figures which have been added are especially excellent. The paper used is thin and opaque, so that the volume remains thin, despite the increase of the number of pages to over 400. The text exhibits a careful revision, and is much improved, notably in the account of the central nervous system. The author's style is so clear, and he brings out so well the points which are important to medical students that the book has become, so to speak, a standard favorite. The chapter on the kidney is the only one which seems unsatisfactory — it needs to be worked over, and we think that figures of typical sections of the human kidney should be added. In the next edition we hope the author will include an account of the blood sinusoids, and of the development of lymphatics from veins. As a whole the present edition deserves a cordial welcome, and the volume may be recommended as a reference work which includes many facts not considered in most manuals of histology.

C. S. M.

A System of Physiologic Therapeutics. Edited by SOLOMON SOLIS COHEN, A.M., M.D. Volume X, Pneumotherapy including Aërotherapy and Inhalation Methods and Therapy. By DR. PAUL LOUIS TISSIER. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

The tenth volume of this series on pneumotherapy has appeared in 479 pages, including a rather unusually complete index. We have

from the first had words of commendation for this excellent series of volumes on rational therapeutics, and we see no reason to change our attitude in looking over this last volume. Certain changes have been made in the details of this volume, in giving, for example, more space to the history of the development of the subject under discussion and to the details of physiological experiments and postmortem studies. In part second in Inhalation Methods certain aspects of pharmacology are given considerable attention. This is perhaps the first departure from the strict intent of the series to devote itself wholly to physiological therapy, but is certainly justified by the needs of the subject under discussion. In connection with each of the methods discussed considerable attention is given to special therapeutics, a plan which possibly detracts from system but adds to practical usefulness. In general we would recommend this book as an adequate presentation of a subject little understood by the ordinary medical man.

The American Year-Book of Medicine and Surgery for 1903. A yearly Digest of Scientific Progress and Authoritative Opinions in all branches of Medicine and Surgery, drawn from journals, monographs and text-books of the leading American and foreign authors and investigators. Arranged, with critical editorial comments, by eminent American specialists, under the editorial charge of GEORGE M. GOULD, A.M., M.D. In two volumes. Volume I, including General Medicine. Octavo, 700 pages, fully illustrated; Volume II, General Surgery. Octavo, 670 pages, fully illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

This now well known and excellent year book appears this year, as for the last two years, in two volumes instead of one. One of these volumes is devoted to surgery, the other to medicine, and it is of interest to note that in the opinion of the compilers these general subjects are of so nearly equal importance that the volume on medicine is but twenty pages longer than that on surgery. Through the death of Dr. Charles H. Burnett the departments of otology and laryngology have been united under the editorship of Dr. D. Braden Kyle, a change which the editor, Dr. Gould, regards as a proper logical and clinical combination. The object of these books, as implied in their title, is to epitomize the more important work of the year under proper sub-headings. This continues to be done by men eminently fitted for the work, which is a guarantee that the essential points of progress are brought out. We could wish that a further personal estimate of progress might be permitted space in the volumes. It would undoubtedly be of advantage to readers could a general summary with critical comment be made at the end of each of the sections. The binding and general appearance of the books are, as heretofore, wholly satisfactory.

THE BOSTON
Medical and Surgical Journal

THURSDAY, AUGUST 6, 1903.

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INVESTIGATIONS ON THE ACTION OF
 CHLOROFORM.

ON July 10, 1901, a special committee was appointed by the British Medical Association to investigate chloroform in its therapeutic uses. The ultimate aim of the research was to determine the minimum dose of chloroform capable of producing adequate anesthesia without endangering life. The practical importance of such an investigation, in view of the reputed danger from the use of chloroform as an anesthetic, especially in consideration of the suspicion with which ether is apparently regarded in Continental countries, is self-evident. The uncertainty of dosage, the varying methods employed in administering the anesthetic and the occasional fatal outcome of its use, together render such an investigation as that inaugurated by the British Medical Association most timely. The first report of the committee was published in the *British Medical Journal* for July 12, 1902, and a second report appears in the issue of July 18, 1903, the latter undertaken by Dr. C. S. Sherrington and Miss Sowton. An excellent editorial summary of the work done also appears in this issue of the *British Medical Journal*.

The task set the committee was primarily to determine what proportion of chloroform entered the blood and became stored in the tissues, how much left the body during expiration, and whether or not any of the specialized tissues showed selective power in retaining the drug. The question of personal idiosyncrasy was also naturally considered. A further practical step in the research was to determine whether the

ordinary methods of administering chloroform were trustworthy and safe. The general conclusion reached regarding this latter point is that it is absolutely necessary to regulate the dosage of chloroform, and that an apparatus is eminently desirable which will on the one hand permit the administration of a definite dose capable of providing anesthesia and on the other not endanger life. The committee has furthermore reached the conclusion that safety depends upon dosage, by which is meant the proper percentage mixed with air. Concentration has been shown to be fatal, even in small amount, whereas it is maintained that a vapor below 2% is wholly safe, and that in most patients as low as 1% will maintain anesthesia. In view of these facts it is suggested that it would be of importance to learn what the common percentage of chloroform is as given by the ordinary more or less inexact methods.

Having established this fact, a further step was to determine with scientific accuracy what the physical effects of various percentages were. This is the essential problem discussed in this last paper of Professor Sherrington and Miss Sowton. They worked with the isolated mammalian heart and reached certain conclusions of much theoretical and practical importance. They found, for example, that heart muscle takes up chloroform from fluid circulating in the coronary vessels and that its lethal effects vary according to the fluid used. In diluted blood, for example, the chloroform gives less effect than in saline solution. With the increase of chloroform in the circulating fluid, more is taken up by the heart muscle until finally toxic effects are manifest. With weaker doses an equilibrium appears to be established between the chloroform-containing fluid and the heart muscle, so that finally no further effect upon the muscle manifests itself, in spite of the continuance of the flow of the chloroform fluid. This in a measure controverts the idea that chloroform has a cumulative effect upon the heart. It was furthermore shown by these experiments that the ventricle is paralyzed in its action before the auricle when toxic doses are used. These effects and others, to which we have not space to allude, bring out clearly the extreme importance of restricting the dosage of chloroform to relatively weak percentages, and show that the size of the dose circulating in fluid through the heart is the important element rather than the length of time during which it circulates.

The final results of this important and too long-delayed research group themselves about dosage and cumulation. It has been shown that chloroform is fatal in certain doses, the limit of which is regarded as about 2%. Higher concentrations should be looked upon as potentially dangerous since their tendency is, other things being equal, to paralyze the heart muscle. The prolongation of the anesthesia with a dilution under 2% is not to be regarded as dangerous, although naturally individual susceptibility must be taken into account, and, as usual, arguments drawn from animals cannot be forthwith and without modification applied to man. The *British Medical Journal* expresses the hope that as the results of this and other similar investigations on the action of chloroform a method will be found whereby the strength of the anesthetic may be so absolutely regulated according to the requirements of the individual case that danger will be practically eliminated. It is urged that the danger of administering chloroform consists in giving an overdose, and that all precautions must be taken to provide that definite percentages alone are administered.

It is not our purpose here to take up the old controversy regarding the relative value of chloroform and ether as general anesthetics. The success attending the use of ether in this country, and its practical freedom from the dangerous effects which are admittedly present in the use of chloroform, continue to excite our wonder that the Continental countries have been so slow in adopting its general use. At the same time it must naturally be admitted that chloroform, if not always, is frequently a most desirable means of anesthesia, and that any researches which tend to the minimizing of danger in its use must be most heartily welcomed. The theoretical and practical importance of this work undertaken by the British committee must be very far-reaching in its effect.

MUNICIPAL HOSPITAL FOR TUBERCULOSIS.

IN 1901 the sum of \$150,000 was appropriated in the General Loan bill of Boston providing for a hospital for consumptives. Under an ordinance passed by both branches of the city council an institution was to be established to be under the supervision of a board of trustees similar in general character to the Boston City Hospital. The provision was made that no patient treated in this proposed institution should be allowed to pay. On this ground the ordinance was vetoed

by Mayor Hart, although he was in favor of the general proposition. Mayor Collins, on assuming office, declined to consider the matter, on the ground that the amount of money appropriated was too small for the establishment of such an institution. The matter was then allowed to remain quiescent, and it is only within two weeks that the question has again been revived by an order introduced in the Common Council amending the ordinance, whereby permission is given to the Board of Health to establish a city hospital for consumptives. This has been passed by the Common Council, and on Monday of this week was also passed by the Board of Aldermen without opposition. The matter is, therefore, now before the mayor for his approval or veto.

It has long been evident that the Boston Board of Health has been hampered in its fight against tuberculosis on account of the fact that there was no suitable hospital to which persons who were on account of their disease a menace to the community could be sent, excepting the special departments for tuberculosis at the Tewksbury Almshouse and at the Long Island Hospital. Owing to the somewhat unjust laws regarding declaration of pauperism before persons may be treated in these institutions, it is natural that a very great prejudice should have existed against entering either of them. This naturally has hampered the Board of Health in enforcing the somewhat rigid laws which have recently been enacted in accordance with the modern theories of the contagiousness of tuberculosis. It is apparent either that the stigma of pauperism should be removed from patients entering the state or city institutions, or else that other provision should be made for their proper care. In view of these facts, it is altogether desirable and, in fact, is rapidly becoming imperative that the city should provide for this class of persons. It is to be understood that the proposed institution is for the treatment of chronic cases, which are not necessarily past improvement, but which nevertheless cannot be admitted to the Rutland or to the Sharon Sanitarium. In the opinion of those who are qualified to judge of the matter it is felt that, although the amount of \$150,000 is small to effect marked amelioration in the present conditions, nevertheless it should serve as a means of demonstrating the future possibilities of relief which the further prosecution of the work will bring to pass. Certainly a hospital of one hundred beds would greatly relieve the immediate necessities which exist in the city at the present time.

PREVENTION OF TUBERCULOSIS.

THE New York Charities Committee on the Prevention of Tuberculosis has just issued a series of interesting charts, prepared under the supervision of Dr. H. M. Biggs, with explanatory data, which show something of the conditions relative to the disease on Manhattan Island and of the work accomplished by the Health Department, with the co-operation of the medical profession and various organizations, during the last twelve years, by means of which the death-rate from tuberculosis has been materially reduced. The reduction from 1886 to 1902 is from thirty-eight deaths per thousand inhabitants to twenty-two, and from 1889, when the department first took active measures along the lines now followed, from thirty-three deaths per thousand to twenty-two. In the last decade there is an indicated decline of nine points in the death-rate for Manhattan, as against a decline of six points for the United States at large. The following comments by Dr. Biggs, who has had exceptional opportunities for observation, are worthy of note: "On the charts comparing the death-rate for New York and for the country at large, I have no hesitation in saying that if our efforts are kept up and advances made which are in the line of development of preventive medicine, the time will come when New York City will be relatively more free from consumption than the country as a whole. I can say this because consumption is a disease which may be controlled absolutely, and it only depends on the efficacy of the measures taken to control it. It is, of course, impossible to predict the rate of decrease, because that depends entirely upon what advances are made. So it is impossible also to say that at any indicated time, or ever, consumption as a disease will be stamped out entirely; but this may be said, that there is no more reason for consumption in the community than there is for smallpox. The advances for the past fifteen years, and since the Health Department began its campaign, have been marked by a rapid decrease in the death-rate. This has probably been more rapid than will be the decrease in the next fifteen years, because such measures have to become more and more effective to produce the same degree of result when the general condition is improving all the time. A reduction of forty per cent would bring the death-rate very low indeed, but whether this is accomplished in the next fifteen years,

or the next quarter of a century, will depend entirely on the support that the public gives to the measures that are taken in fighting tuberculosis." It is stated that at the present time fully eighty-five per cent of all cases of consumption in New York are reported to the Board of Health, and that the inspectors of the board visit all tenement-house cases unless the attending physician requests that no visits be made. The department also has power to enforce the removal of patients to hospitals if required.

BISHOP BRENT'S WORK IN THE PHILIPPINES.

WE have on various occasions commented upon the active medical work which has been inaugurated in Manila through the energy of Bishop C. H. Brent, not long since sent as a missionary bishop by the Episcopal Church to the Philippines. Bishop Brent has apparently from the first recognized the absolute necessity of providing more adequate medical care for the ignorant and often superstitious natives with whom he has been called upon to deal. Largely through his efforts a general hospital for Manila is soon to open its doors for the treatment of patients. In other ways also he has shown his conviction that very much may be done toward the spiritual enlightenment of the natives by a preliminary care of their physical needs and diseases. In a private communication he dwells upon the very great desirability that missionaries in the Philippines should have a medical and surgical education, and expresses with regret his own deficiency in that direction. Speaking of certain natives at a distance from Manila, and work which he has undertaken among them, he says: "C. feels as I do about the importance of medical work, and he is fairly well equipped to begin it. Later on a nurse and a doctor are going up. I asked Mr. P. to give me a ton of Ivory soap for that region,—cleanliness is the hither side of Godliness, I think!—and he did so without a moment's hesitation."

The dispensary in Manila has up to this time been a success. About 250 patients of the poorest classes are under treatment, and other dispensaries are on the point of being opened. In general it is evident, from Bishop Brent's letter as well as from other news that has reached us, that he and the church which he represents is doing an excellent work in attacking in so rational a way the difficult problems which are

presented. It is fortunate for all concerned that so far seeing a man has been chosen to pioneer this difficult work. We cannot doubt, if the material wants of the natives with whom he is brought into contact are provided for as well as modern medical science permits, that the deeper problems which lie behind physical conditions will be far easier of solution.

MEDICAL NOTES.

IN HONOR OF THE LATE MAJOR WALTER REED, M.D., U.S.A. — A meeting will be held at the Hotel Louisburg in Bar Harbor, Me., on the morning of Saturday, Aug. 15, 1903, at eleven o'clock, to confer with respect to a memorial in honor of the late Major Walter Reed, M.D., U.S.A., to whom the world is indebted for most important services in the investigation and the suppression of yellow fever. Several committees in different parts of the country have already been appointed, and the object of this conference is to secure unanimity of purpose and concerted action. Addresses may be expected from gentlemen who are well acquainted with all the facts.

DEATH OF PROF. EDMOND NOCARD. — It is reported that Prof. Edmond Nocard, well known as a bacteriologist and former associate of Pasteur, died in Paris August 2.

A NEW JOURNAL ON CANCER INVESTIGATION. — A new journal under the auspices of the German Cancer Investigation Committee is about to be published under the title *Zeitschrift für Krebsforschung*, to be devoted to the publication of articles on cancer and abstracts on the subject appearing in various languages. It is to be published by Gustav Fischer of Jena, under the editorship of Professor Hansemann of Berlin and Meyer of Jena.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Aug. 5, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 34, scarlatina 15, typhoid fever 29, measles 22, smallpox 0.

VANDERBILT WARD OF THE NEWPORT HOSPITAL. — On Aug. 1 the trustees of the Newport Hospital formally received from Mrs. Vanderbilt a ward erected on the hospital grounds as a memorial to her husband, the late Cornelius

Vanderbilt. In addition to the gift of the building, it is said that a generous endowment for the conduct of the new ward has likewise been provided. The ward itself, which is said to have cost \$250,000, is naturally equipped in the most modern possible fashion, and is to be used for the needy poor and for those who are able to pay but a nominal sum for treatment. The gifts of several members of the Vanderbilt family to this hospital are said to amount to upwards of \$500,000.

EYESIGHT OF RAILROAD EMPLOYEES. — Examination of the eyesight of employees of the Boston & Albany Railroad has recently been undertaken, with the reported result that many of the older employees of the road have been superseded. Unjust as the rigid enforcement of this test may seem, it is nevertheless imperative, as shown by certain recent accidents, that employees whose duty it is to recognize signals should have absolutely no defects of vision. It is said that hereafter a semi-annual examination will be instituted.

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH. — By the invitation of the Boston Health Department the Massachusetts Association of Boards of Health was entertained at Gallops Island, Boston Harbor, July 30, the attendance being about one hundred and fifty. Mr. William Lyman Underwood of the Massachusetts Institute of Technology discussed the question of mosquitoes and methods of extermination. Mr. B. R. Ricards of the Boston Board of Health laboratory epitomized certain experiments on the comparative values of disinfectants.

APPOINTMENT OF DR. THEODORE CHAMBERLAIN. — At a recent meeting of the executive council Governor Bates of Massachusetts appointed Dr. Theodore Chamberlain of Concord medical examiner for the sixth Middlesex district. Dr. Chamberlain was a graduate of Harvard College and of the medical department of Columbia University. His experience since his graduation in 1895 justifies his appointment to this post of responsibility.

NEW YORK.

MORTALITY STATISTICS. — The Bureau of Records of the Health Department has just issued its report for the first quarter of 1903. The mortality in the city during that time represented an annual death-rate of 19.74 against a death-rate of 20.52 in the corresponding quarter

of last year. The corrected death-rates, excluding non-residents and infants under one week old, were respectively 18.73 and 19.63. Comparing the mortality with the average number of deaths and the death-rates of the corresponding quarters for the preceding five years, it is found that the number of deaths for the first quarter of 1903 was 18,156, which, on an estimated population of 3,732,903, gave a death-rate of 19.74 per thousand, as against an average number of deaths for the preceding five years of 17,773, which, on an estimated population of 3,448,567, gave a death-rate of 20.92 per thousand, a lowering of 1.18 points. The death-rates of the following diseases are compared because of their prominence from a preventive standpoint and as influential factors in the production of mortality rates: Average death-rate, 1898-1902, diphtheria and croup, 0.72; measles, 0.28; scarlet fever, 0.32; typhoid fever, 0.11; pulmonary tuberculosis, 2.52; influenza, 0.38; pneumonia, 3.92; cancer, 0.64; Bright's disease, 1.69. Death-rate, 1903, diphtheria and croup, 0.65; measles, 0.13; scarlet fever, 0.23; typhoid fever, 0.13; pulmonary tuberculosis, 2.42; influenza, 0.33; pneumonia, 3.63; cancer, 0.75; Bright's disease, 1.77. All the infectious diseases, especially measles, thus show a decreased death-rate, with the exception of typhoid fever, which shows a slight increase. On the other hand, cancer and Bright's disease show a considerably increased rate, in line with the views of competent observers as to the increase of these two diseases within comparatively recent years. There were 2,013 more births and 725 more marriages reported than during the corresponding quarter of last year.

A DAILY MEDICAL JOURNAL. — The Medical Publishing Company of America, an organization composed exclusively of physicians, has acquired from the Medical Critic Publishing Company the monthly journal *The Medical Critic*. Dr. Albert Warren Ferris has been appointed editor in the place of Dr. Frederic R. Sturgis, who recently resigned, and the staff of associate editors will remain the same as before. Dr. M. W. Curran also continues as managing editor. Encouraged by the financial success of the monthly, which has secured a large amount of advertising, the new company announces that, beginning with the first of October, it will publish a daily, to be known as *The Daily Medical Journal*, "which will unite energy and enterprise with a conservative regard for the ethics

which should govern our profession, as well as the absolute independence which has characterized the policy of *The Medical Critic*." The proposed daily will consist of six pages, each 12 x 15 inches, and made up of four columns, and it is stated that the necessary equipment to print one hundred thousand copies each day has already been purchased.

DEATHS FROM INFLUENZA. — The last monthly bulletin of the State Board of Health, reviewing the mortality of the last six months, devotes considerable attention to deaths from influenza as affected by age. The figures show that more deaths are ascribed to it in the first year of life than in the next twenty. With the exception of the susceptible age of infancy, however, the first decade, and, in fact, the first twenty years, seem to be almost immune to the effects of the disease, and the middle period of life, to the age of forty-five or fifty, is resistant to it, so far as the reported mortality is an indication. Only one fourth of the deaths occurred prior to the age of fifty, after which there is a marked increase in each decade, the greatest number falling between the ages of seventy and eighty. The months of December, January, February and March, during which influenza is prevalent, show a much larger mortality at seventy years of age and over than the remainder of the year. Except during the first year of life, there are considerably fewer deaths from the disease among males than females; this is the case in every decade, and the discrepancy is especially marked in old age.

NOTES FROM THE PHILIPPINES.

RELAXATION OF QUARANTINE DESIRED. — The natives of the Mariquina valley, through which flows the river from which the Manila water supply is drawn, have petitioned the health authorities for a relaxation of the quarantine that is being maintained over the river. It is urged by them that as there is no longer any cholera in the valley this restriction can be removed without danger. The Mariquina watershed was quarantined as soon as the first cases of cholera appeared here, and was maintained for some months by military guards and mounted patrols. When the epidemic abated the quarantine was relaxed; but a sharp recrudescence of the disease caused a second and even more stringent quarantine to be imposed, which is still maintained in all its rigidity. A zone has been established on both sides of the river from which the natives are

kept away by mounted patrols. This careful quarantine has been of the utmost value to the sanitation of Manila, since, although cholera foci are scattered all through the islands, only a few sporadic cases of the disease have occurred in Manila for the past four months, and these have occurred in new arrivals from the provinces or were apparently due to the use of food introduced from infected points. In view of the continued danger of cholera, particularly during the early part of the approaching rainy season, there is no chance that the Mariquina quarantine will be abandoned or relaxed to any great extent.

REPORT OF BOARD OF HEALTH.—The report of the Board of Health for the month of January, just issued, gives the average annual death-rate for the city of Manila, per thousand, for the month, as 23.46 for all nationalities. The death-rate for the Filipinos was 29.15, foreigners, 9.00; Chinese, 7.18; Americans, 6.05. There were 635 deaths, of which 319 were under one year of age. The birth-rate, as based on reports received by the Board of Health, was 5.61, but it is admitted that the returns in this respect were incomplete. Of the total number of deaths, 328 occurred with medical attendance and 307 without medical attendance. There were four deaths from cholera and but one from plague during the month. The number of deaths from cholera reported from the provinces during the same period was 1,180. These deaths occurred in 1,662 cases, giving a mortality of 70.99%. There were 77 towns reporting cholera during the month. In Manila there were 13 deaths from malaria, 27 from beriberi, 61 from pulmonary tuberculosis and 236 from eclampsia and convulsions of children. The annual death-rate for the month was lower than for January, 1902, with a rate of 30.16, and lower than that January, 1901, in which the rate was 36.22. Excepting during the cholera epidemic an almost steady decrease of the city death-rate has been the result of sanitary control by the Americans, and further improvements may be expected as the situation is bettered by the present improved sanitary organization and facilities. A total of 179,992 sanitary inspections of houses was made during the month; 17,078 houses were cleaned, repaired or destroyed under the orders of the sanitary inspectors, and 16,067 houses were disinfected; 1,382 cesspools were cleaned, 12,892 yards cleaned and 72 yards repaved. A total of 15,340 vaccinations were performed during the month—there were no cases of smallpox. There were 7,143 sanitary inspections of boats and water-

craft in the port of Manila. The leper census to date, for the entire islands, shows 3,307 cases of this disease known to the authorities.

PROPOSED NEW GENERAL HOSPITAL.—The proposed new general hospital will probably be located in the district of Malate, on a piece of property owned by the city. The committee in charge has made a formal request for that site. The ground is comparatively high and of sufficient area to meet the needs of the hospital for many years. It will also be very close to the government laboratories, which will be called upon to make the necessary examinations and analyses. The tract is a valuable one, but the city has no immediate need for it. If the request is granted, it will remove the necessity of starting a subscription for the purchase of a site. The resolution of the government to erect the hospital buildings and provide for their maintenance pronounced in favor of a site in the district of Santa Mesa, but expressly stated that the decision in that respect was not final. The Malate site is closer to the center of the city and quite as well adapted otherwise for hospital purposes as that at Santa Mesa.

Miscellany.

INFANT MORTALITY IN BOMBAY.

IN a paper read before the Bombay Medical and Physical Society upon Infant Mortality in Bombay, Dr. D. R. Bardi pointed out that in 1899 the infant mortality was 593 per 1,000 births, and 867.67 per 1,000 of population amongst children under one year. Comparisons show that matters are growing worse rather than improving. Twenty-two "tables" are given, and from an examination of those bearing upon the causes of death it is seen that debility is most potent under seven months, whilst respiratory and nervous diseases kill many more before two years of age. This is largely due to overcrowding, bad sanitation, poverty, ignorance and superstition. The remedies consist in the enforcement of sanitary measures, education in hygienic principles and the minimizing the ill-effects of the condition of the poor. The excellent results of the Vaccination Acts show the advantages of compulsory sanitary laws. Impure milk supply is another serious menace to infant life, and suggestions are made that dispensaries should be attached and nurseries built where infants could be left in charge of nurses while their mothers were at work. By authoritative measures much of the infant mortality in Bombay could be prevented and the causes of its high percentage to a large extent removed.—*British Medical Journal*.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 25, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|-----------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Disease. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,220 | 555 | 39.43 | 7.60 | 2.46 | 23.03 | .98 |
| Chicago . . . | 1,885,000 | 513 | 206 | 39.46 | 6.98 | 1.72 | 15.55 | .97 |
| Philadelphia . . | 1,378,527 | 500 | 216 | 37.20 | 4.80 | 1.00 | 17.50 | .40 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 220 | 100 | 40.45 | 5.45 | .45 | 20.90 | .91 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 142 | 81 | 38.02 | 7.75 | 2.81 | 19.00 | — |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 86 | 38 | 37.21 | 3.49 | 3.49 | 23.26 | — |
| Boston . . . | 603,163 | 188 | 58 | 37.43 | 5.32 | 2.13 | 17.55 | — |
| Worcester . . . | 132,044 | 35 | 16 | 25.71 | 5.71 | — | 11.42 | — |
| Fall River . . . | 115,549 | 59 | 34 | 61.02 | 1.69 | — | 44.07 | 1.69 |
| Lowell . . . | 101,959 | 36 | 20 | 47.21 | 2.78 | — | 44.88 | — |
| Cambridge . . . | 98,639 | 23 | 11 | 34.78 | 8.70 | 8.70 | 17.39 | — |
| Lynn . . . | 72,497 | 18 | 7 | 16.67 | — | 5.55 | — | — |
| Lawrence . . . | 69,766 | 32 | 13 | 46.87 | 12.50 | — | 34.37 | — |
| Springfield . . . | 69,389 | 21 | 7 | 23.81 | 4.76 | 4.76 | 9.52 | 4.76 |
| Somerville . . . | 68,110 | 10 | 1 | 30.00 | 10.00 | — | — | — |
| New Bedford . . | 67,198 | 32 | 17 | 50.00 | 3.12 | — | 40.62 | 3.12 |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — |
| Brockton . . . | 44,873 | 11 | 4 | 27.27 | — | — | — | — |
| Haverhill . . . | 42,104 | 9 | 1 | 22.22 | — | 11.11 | 11.11 | — |
| Newton . . . | 37,794 | 6 | 2 | 16.67 | 16.67 | — | — | — |
| Salem . . . | 36,876 | 15 | 6 | 46.67 | 6.67 | 6.67 | 26.67 | — |
| Malden . . . | 36,286 | 13 | 3 | — | 15.40 | — | — | — |
| Chelsea . . . | 35,876 | 10 | 8 | — | 20.00 | — | — | — |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 17 | 10 | 23.33 | 11.76 | 5.88 | 17.64 | — |
| Everett . . . | 28,620 | 4 | 3 | 25.00 | — | — | 25.00 | — |
| North Adams . . | 27,862 | 12 | 4 | 16.67 | — | — | — | — |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — |
| Quincy . . . | 26,042 | 3 | — | 33.33 | — | — | 33.33 | — |
| Waltham . . . | 25,198 | 5 | — | — | — | — | — | — |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — |
| Pittsfield . . . | 22,589 | 4 | — | — | 25.00 | — | — | — |
| Chilcopee . . . | 21,031 | 8 | 5 | 62.50 | — | 12.50 | 25.00 | 25.00 |
| Medford . . . | 20,962 | 2 | 2 | 50.00 | — | — | 50.00 | — |
| Northampton . . | 19,883 | 5 | 1 | — | — | — | — | — |
| Beverly . . . | 15,302 | 2 | — | — | — | — | — | — |
| Clinton . . . | 15,161 | 4 | 1 | — | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 7 | 0 | 42.90 | 14.30 | — | — | — |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — |
| Adams . . . | 13,745 | 1 | — | — | — | — | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 2 | 1 | — | — | — | — | — |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 9 | 5 | — | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 5 | 1 | 20.00 | 20.00 | — | — | — |
| Framingham . . . | 12,534 | 2 | — | 50.00 | — | 50.00 | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 6 | — | 50.00 | — | — | 33.33 | — |
| Weymouth . . . | 11,344 | 4 | 0 | — | — | — | — | — |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 2 | 1 | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,302; under five years of age, 1,438; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,262, acute lung diseases 213, consumption 332, scarlet fever 26, whooping cough 31, cerebrospinal meningitis 10, smallpox 18, erysipelas 4, measles 29, typhoid fever 52, diarrheal diseases 689, diphtheria and croup 65.

From whooping cough, New York 3, Chicago 7, Philadelphia 12, Pittsburg 5, Boston 2, Lowell 1, Lawrence 1. From erysipelas, New York 1, Chicago 3. From smallpox, Chicago 1, Philadelphia 11, Pittsburg 6.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending July 11, the death-rate was 13.7. Deaths reported, 3,969; acute diseases of the respiratory organs (London) 127, whooping cough 90, diphtheria 47, measles 89, smallpox 5, scarlet fever 53.

The death-rate ranged from 5.3 in Smethwick to 26.0 in Wigan; London 13.3, West Ham 12.9, Brighton 8.3, Portsmouth 13.9, Southampton 9.9, Plymouth 9.3, Bristol 10.9, Birmingham 14.6, Leicester 13.3, Nottingham 13.3, Bolton 17.7, Manchester 15.4, Salford 14.3, Bradford 12.7, Leeds 13.3, Hull 14.6, Newcastle-on-Tyne 18.3, Cardiff 11.8, Rhondda 17.0, Liverpool 17.0, Hornsey 7.3, Merthyr Tydfil 19.6.

METEOROLOGICAL RECORD.

For the week ending July 25, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- om- eter. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weth'r * | | Rainfall in inches. |
|---------|----------------------|-------------------|----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|-------------|-----------|------------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 19 | 29.66 | 60 | 61 | 59 | 100 | 100 | N E | N | 24 | 10 | R. O. | 1.00 |
| M. . 20 | 29.90 | 66 | 74 | 58 | 68 | 76 | N W | S | 2 | 9 | O. O. | .74 |
| T. . 21 | 29.97 | 62 | 64 | 59 | 97 | 97 | S E | N E | 10 | 3 | R. R. | .15 |
| W. . 22 | 30.06 | 62 | 65 | 58 | 97 | 97 | E | N E | 7 | 8 | O. O. | .15 |
| T. . 23 | 29.88 | 68 | 73 | 62 | 90 | 88 | N W | S E | 8 | 2 | O. O. | .26 |
| F. . 24 | 29.95 | 73 | 82 | 64 | 75 | 44 | N W | N W | 12 | 9 | C. C. | O. O. |
| S. . 25 | 29.96 | 74 | 87 | 61 | 55 | 60 | W | S W | 10 | 17 | C. C. | O. O. |
| — | 29.91 | 72 | 60 | — | 82 | — | — | — | — | — | — | 1.65 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. — Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY
FOR THE WEEK ENDING AUG. 1, 1903.

M. H. SIMONS, medical director. Commissioned medical director from June 9, 1903.

DRS. S. L. SCOTT, T. N. PEASE and F. G. ABEKEN appointed assistant surgeons from July 10, 1903.

E. MAY, hospital steward. Appointed pharmacist from March 28, 1903.

T. N. PHILLIPS, hospital steward. Appointed pharmacist from June 8, 1903.

E. M. BLACKWELL and G. F. FREEMAN, passed assistant surgeons. Commissioned as such from June 7, 1903.

C. E. RYDER, assistant surgeon. Ordered to the Naval Hospital, Chelsea, Mass.

RECENT DEATHS.

GORTON HERBERT RACE, M.D., M.M.S.S., died in Great Barrington, July 22, 1903, aged fifty years.

LAWRENCE STEWART EDWARDS, M.D., of Patchogue, Long Island, N. Y., died on July 25, at the age of forty-eight years.

ALBERT JEREMIAH SCHUREMAN, M.D., of Newark, N. J., who was a descendant of a signer of the Declaration of Independence, died on July 29, at the age of seventy-four. One of his brothers, Dr. Charles A. Schureman, is a practising physician in Newark.

BOOKS AND PAMPHLETS RECEIVED.

A Pharmacological Study of an Aseptic Preparation of Ergot devised for Hypodermic and Internal Administration. By E. M. Houghton, Ph.C., M.D. Detroit, Mich. Reprint, 1903.

Three hundred and sixty-two Vaginal Hysterectomies for Cancer, with 28 absolute cures; and Collection of 263 other cures by 76 operators in the Mississippi valley. By Emory Lamphear, M.D., LL.D., of St. Louis, Mo. Reprint, 1902.

Sight and Hearing in Childhood. By Robert Brudenell Carter, F.R.C.S., and Arthur H. Cheate, F.R.C.S. Illustrated London: The Scientific Press, Limited.

Plain Hints for Busy Mothers. By Marianna Wheeler. Illustrated. New York: E. B. Treat & Co. 1903.

A Manual of Obstetrics. By A. F. A. King, A.M., M.D. Ninth edition. Revised and Enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Diseases and Injuries of the Eye with Their Medical and Surgical Treatment. By George Lawson, F.R.C.S. (Eng.). Sixth Edition. Revised and in great measure re-written by Arnold Lawson, F.R.C.S. (Eng.). Illustrated. London: Smith, Elder & Co. 1903.

An Experimental Investigation of Trypanosoma Lewisi. By Edward Francis, M.D. Bulletin No. 11. U. S. Public Health and Marine Hospital Service. February, 1903.

A Statistical Study of the Intestinal Parasites of 500 White Male Patients at the U. S. Government Hospital for the Insane. By Philip E. Garrison, Bratton H. Ramson and Earle C. Stevenson.

Original Articles.

THE PRESENT STATUS OF THE SURGERY OF THE PROSTATE GLAND.¹

by PAUL THORNDIKE, M.D., BOSTON.

THE reader has been asked to give a short *résumé* of the present condition of prostatic surgery. It becomes evident at once that to do this in the fifteen minutes' time allotted for the purpose makes a detailed account of technical procedures quite impossible, and little more can be attempted than to mention briefly the various steps which have brought prostatic surgery where it is to-day, and to consider with equal brevity the class of cases best adapted to each of the operative procedures which are in use at the present time. If this paper serves to help the practitioner of medicine to formulate and arrange his ideas as to the treatment of cases of obstructive enlargement of the prostate which are so common in every physician's practice, its object will have been attained.

Bottini performed his first cautery operation over thirty years ago and continued the use of his instrument up to the time of his very recent death, but the operation never gained an extensive repute until within the last few years. Belfield of Chicago performed the first prostatectomy in 1885, but it was not until the publication of a series of cases of prostatectomy, by McGill of Leeds in 1888, and the communication of Mr. McGill and his colleagues of the Leeds Infirmary, at the meeting of the British Medical Association in 1889, that the surgical world realized the practicability of a radical operation for the removal of obstructing prostatic masses.

Even during the last fifteen years hypertrophy of the prostate gland has been a condition to palliate and not to cure in the hands of most surgeons, and the men who have added radical operations upon the prostate to their list of routine procedures have been few indeed. How is all this changed! Almost every surgeon has done his few prostatectomies, and has his own ideas regarding the Bottini operation, even if he has not had actual experience in the performance of it. The surgical literature of the last two years amply demonstrates the fact that the surgery of the prostate is one of the burning topics of the moment and shows that the surgeon who contents himself with guiding all the patients who come to him for relief from this obstruction through years of more or less painful and dangerous catheter life, without offering them the relief which a prostatectomy or a galvano-cautery operation has to offer, is often indeed remiss in his duty.

In the earlier prostatectomies the organ was approached through a suprapubic incision into the bladder, and its removal was attempted piecemeal by instruments made for the purpose. The operation was a prolonged and bloody one, and no surgeon acquired large experience in its

performance. Its mortality was something like 15%, and it was looked upon with enough dread by the profession at large to lead them to resort to a variety of other procedures of a less severe kind, all aiming at palliation without attempting the actual removal of the obstructing portions of the gland. Supra-pubic drainage, both temporary and permanent, incisions into and removals of portions of the gland through the urethra or through suprapubic or perineal incisions, castration, ligation of the vasa deferentia without castration, the galvano-cautery operation of Bottini and its modifications as instituted by Young of Baltimore and Chetwood of New York (the latter of whom performs the cauterization through a perineal incision with an instrument devised by himself), all will serve as examples of such procedures. Many of these palliative operations were so unsuccessful and others were so uncertain in their benefits that when it was realized that obstructing prostatic masses can be quickly and easily enucleated by the finger through a suprapubic incision, prostatectomy began to assume a real place in technical surgery, and a good many men acquired a considerable experience and skill with this suprapubic enucleation. In 1895 Nicoll of Glasgow, and in 1896 Alexander of New York, with a slightly different technique, demonstrated series of cases to show what Zuckerkandl in Vienna and Watson of Boston (1888) had pointed out as possible years before—that the prostate could be approached through a perineal incision. And as you all know, the perineal operation has become of late the one of choice in the minds of many surgeons. This fact has led to a very rapid improvement in the technique of the operation, an improvement which has been especially noticeable during the last year or two. Nicoll's perineal operation approached the prostate by a careful dissection between the urethra and rectum and opened the prostatic capsule from behind, thus making the operation a long and technically a difficult one. Alexander, while approaching the gland through a median perineal incision which opens the urethra but gives a quick and easy access to the organ, felt obliged to make a preliminary suprapubic cut into the bladder in order to push down the prostate from above into the perineal wound with a finger in the bladder. This involved two cuts instead of one, and the serious complication of opening the bladder, with the risks of suprapubic sepsis attendant upon that procedure. Guiteras endeavored to avoid this complication by making the suprapubic incision only into the prevesical space (and not into the bladder cavity), pushing down the prostate from there by introducing a finger between the bladder and symphysis pubis. At this time it became very evident that the future improvement in the technique of the perineal operation depended upon the omission of the suprapubic cut, and the accomplishment of the entire operation through the perineal incision. At the same time the difficulty of reaching the prostate

¹ Read before The Massachusetts Medical Society, June 9, 1903.

through a perineal wound without making large and extensive dissections became so apparent that various instruments were constructed to serve as tractors to pull down the prostate into the perineal wound, where it would be more easily accessible. Guiteras of New York devised an instrument of this kind, shaped a good deal like a sponge forceps with fenestrated blades, and designed to grasp the prostatic tissue through an opening in the prostatic capsule made for the purpose of enucleation through it. Syms of New York made an ingenious tractor of a different sort, which consisted of a rubber bulb on the end of a strong rubber tube. This bulb was passed into the bladder through the perineal wound and then inflated with air so that traction upon it served to bring the prostate down within easy reach. Ferguson of Chicago has devised retractors which he inserts into an incision into the posterior aspect of the prostatic capsule through a perineal wound, and so drags the prostate down within reach by traction upon its capsule and without passing any traction instrument into the bladder. Murphy of Chicago has devised similar tractors shaped like rakes; and finally Young of Baltimore has constructed what is perhaps the best of all these tractors, in the shape of a steel instrument with two fenestrated blades which can be readily inserted into the bladder and then opened out into a figure of eight behind the prostate. He thinks this instrument gives him firmer and better traction than he can get in any other way.

The last year or two, then, has demonstrated clearly the fact that the prostate can be readily approached through a perineal incision, and can be as readily brought within the reach of the surgeon without the necessity of a suprapubic incision. And now comes from Young of Baltimore the last development of the technique of the perineal operation. This consists in bringing the prostate well into reach and sight by traction made with his tractor just mentioned, and then removing the bulk of the obstructing glandular tissue through two lateral incisions in the prostatic capsule, leaving an intact urethra and also a narrow median zone of tissue just above the urethra, and containing the ducts from the seminal vesicles. So this operation aims to be a conservative procedure which leaves the generative powers of the individual unimpaired. This operation was described by Young at the last meeting of the American Association of Genito-Urinary Surgeons, held at Washington last May, but his paper has not yet been published. He has operated upon several cases recently and believes that he has succeeded in saving the generative apparatus unimpaired in a number of these cases.

During these years of the development of prostatectomy there have been always so many cases demanding relief which the catheter could not give, and yet cases which were obviously too infirm to be fit subjects for any severe surgical procedure such as is prostatectomy, that the need of other less severe and perhaps also

less radical measures has been almost as great as ever. This need was accentuated by the fact that castration failed to give the permanent relief to such cases which was claimed and expected from it, and also proved, as clearly shown by Cabot in his report to the American Surgical Association, to be almost as dangerous as the more radical operations attacking the prostate itself. These conditions led many surgeons to turn back to the Bottini operation, which now for the first time is having a widespread trial. It is proving so satisfactory as a palliative operation, and its attendant risks are so much less than those which prostatectomy offers, that when it became certain that this operation can be performed when necessary without the aid of a general anesthetic, it was small wonder that it acquired so many adherents. The operation consists, as you know, in burning grooves through the obstructing portions of the prostate by means of a galvano-cautery constructed for the purpose. It has always been claimed by the believers in prostatectomy that the Bottini operation is too uncertain in its results, and that it was often performed in the dark and for conditions of which too little accurate information could be obtained to be safe for general use; that if, on the one hand, the cauterizing blade be too superficially used, the results are bad, while if, on the other hand, they are made deeper, there is great danger of burning through into the periprostatic tissues and rectum. The reader has always shared these beliefs, and has never until recently employed this procedure; but when Young of Baltimore obviated this uncertainty of operation to a large extent by modifying the instrument in such a way as to provide different-sized blades for different-sized prostates, the accuracy of the operation was greatly increased; and now the reader believes firmly that with the knowledge which can be obtained by examination, and measurements with urethral instruments, by palpation (suprapubic and rectal) and by the cystoscope, which, when its use is feasible, will always give a fair idea of the conditions at the bladder outlet, the Bottini operation, as modified by Young's instrument, is sufficiently accurate to be safe in the hands of those familiar with its use; that it is applicable to perhaps a larger class of cases than any other single operative procedure; and that it can be performed without the use of an anesthetic other than cocaine should the necessities of the case require it. [Young's instrument shown.] The reader's own cases are too few in number to be worthy of tabulation, but they have encouraged him in his belief in the operation, and it is his hope to report before long a series of such cases to this society.

Now let us consider very briefly the class of cases in which these different procedures, both palliative and operative, are to be advocated:

Catheter.—The systematic use of the catheter has always been the chief means of palliating cases of prostatic obstruction. There are as

many, or more, cases to-day as ever when such palliation is possible and is to be advocated. Many of these go on throughout their lives in comparative comfort, and the danger from such a catheter life comes not during its proper continuance but through the hopeful efforts to continue it after its proper sphere of usefulness is past. Just at the moment when this becomes true, when, either through a lack of intelligence or a lack of proper surroundings on the part of the patient, or by reason of mechanical difficulties which prevent the easy and systematic use of the instrument such a catheter life becomes no longer easily feasible, then is the time for operative interference. The reader has operated in a few instances upon patients without advocating a catheter life at all, because in these individual cases, even though relief was sought early in the development of symptoms, the difficulties in the way of a proper catheter life were so manifest and so apparently insurmountable.

Prostatectomy. — A year ago the reader stated at a meeting in this hall that prostatectomy was *always* the choice for all cases which could no longer be palliated, and which were fair subjects for operation. This statement holds good to-day, and is based upon the fact that this operation is the only one which offers a cure for the condition with any considerable degree of certainty. It is, however, by no means proper to offer prostatectomy to all patients who have passed the stage of possible palliation, so long as other less dangerous expedients are at our command. Prostatectomy is an operation of considerable severity, and, when performed upon men past the prime of life, will always be attended with danger to life, no matter what improvements in its technique have taken or still may take place. Therefore, although its results are surest, it is adapted only to cases which are fair surgical risks, that is, to patients with fair heart and arteries, fair kidneys and a bladder which can be made clean and kept so. These conditions are not often present in patients over sixty to sixty-five years of age.

As to which operation shall be performed in cases where a prostatectomy has been decided upon this may be said: In spite of the great technical improvements which have lately been made in the perineal operation, improvements which have made the operation easier and more accurate of performance, and correspondingly less severe upon the patient, there is still a place for the suprapubic operation. This procedure offers and always will offer, as its great advantage, a visual inspection of the parts about to be attacked, which cannot be obtained in any other way. The cases especially adapted to its use are those of great enlargement, which involve the removal of enormous masses of glandular tissue. Such masses are always within easy reach of the enucleating finger, and their removal drops the bladder outlet, so that good drainage can usually be obtained through a catheter tied into the bladder through the ure-

thra, and a perineal incision for drainage can usually be dispensed with. The disadvantages of the operation are a slightly longer convalescence, the possibility of sepsis in the suprapubic and prevesical tissues, and occasionally a tendency to hernial protrusion through the suprapubic scar. Up to the present time it has always proved a shorter, less severe and less dangerous operation in the reader's hands than the perineal operation; but the constantly improving technique of the latter and its ever-increasing ease and accuracy of performance will probably change all that. The perineal operation should probably be done in most cases when a good idea of the existing conditions to be attacked can be had prior to operation, and especially when a successful use of the cystoscope has rendered the intravesical conditions a known quantity. Now that the perineal route is developing conservative possibilities, and also is making the operation less traumatic and more accurate in character, it will become the operation of choice for most cases in the hands of the average surgeon.

The Bottini Operation stands proven beyond dispute a less dangerous procedure than prostatectomy, and as it can always be performed without a general anesthetic, and as it has a very short period of convalescence, the reasons for this fact can be readily understood. Its results, though not so certain as those of prostatectomy, are sufficiently good to gain for it a constantly increasing confidence, and the reader believes that this procedure should be offered to all cases which can no longer be made comfortable by palliative means and which are too infirm to make the risks of prostatectomy justifiable. Such cases will be found to comprise a very large percentage of all prostates who present themselves to the surgeon for relief, and they are probably greater in number than any other one class of cases. The instrument as modified by Young unquestionably increases the accuracy of the cauterization and is, in the reader's belief, the best one to use.

Résumé. — To conclude, then, we may say:

(1) That no prostate should be allowed to suffer for lack of proper treatment.

(2) That there is still a place for the catheter in such treatment, and that many patients can be made comfortable and can be kept so by its systematic and proper use.

(3) That all those patients who cannot be kept comfortable by palliative means are fit subjects for some operation.

(4) That the time for such an operation is just as soon as the inadequacy of palliative treatment is demonstrated.

(5) That the operation of choice is always prostatectomy, but that this operation can be properly offered to those patients only whose general conditions make them fair surgical risks, and that such is rarely the case after sixty to sixty-five years of age.

(6) That to all other patients the Bottini operation can be fairly offered as one attended

with little risk to life, a short convalescence, and a good prospect of such a degree of improvement as will at least do away with any further necessity for the systematic use of the catheter.

DISCUSSION.

DR. F. S. WATSON of Boston: I can add very little, I think, if anything, to what Dr. Thorndike has said. I want to join most heartily in commendation of Dr. Thorndike's paper. It seems to me that it very fully covers the ground and is admirably well balanced, and weighs the value of different proceedings in very just light. Practically all that I can do is to emphasize some few points already spoken of. The most essential point is that of the selection of the patients for whom the prostatic operations are desirable and of applying the method best suited to each individual case. There is no hard-and-fast line to be drawn in this respect according to the patient's age. The question turns upon the condition of the kidneys, and in this respect some men of seventy-five are quite as young as others of fifty-five.

We are better able to estimate the condition of the renal function, owing to the introduction of some of the recent methods, such as cryoscopy and the phloridzin test, etc., than we were formerly. But even without their aid, the renal capability of sustaining the shock of such operations as are the radical ones upon the prostate was sufficiently well shown by the usual methods of urinary analysis, and especially by one of its features which is peculiarly significant in these particular cases,—I mean the specific gravity of the urine. If this is found to be constantly low—1012 or so—radical measures upon the prostate are fairly sure to be followed by serious or fatal consequences. The large majority of these patients die after operations of that sort from renal insufficiency, sepsis and other conditions playing but a relatively unimportant rôle in this respect.

But even in the absence of such danger signals all precautions should be taken against the occurrence of these fatal or alarming states in connection with operative procedures, and something may be done to avert them.

There is little that can be done with respect to guarding against the dangers arising from renal insufficiency. A suggestion made by Dr. MacGowan of California seems well worth following. He says that his dread of renal insufficiency in connection with operations upon the urinary organs has been greatly lessened owing to the employment of abundant subcutaneous injection of saline solution, which he employs as a routine measure at the beginning of every such operation, and which he credits with the power to avert subsequent failure of the renal function. Other than this and the usual precautions, such as guarding the patient from exposure to cold, etc., there is little to be done to ward off the danger from the defective renal action.

The risk from sepsis is very much less than

from the other element just referred to, and more may be done to minimize it.

The most important thing to be done in this connection is, of course, to reduce—to cure is rarely possible—the cystitis if present beforehand, and to keep the bladder and operative field clean subsequently. The agents which I have found most useful for the former object have been urotropin, and for local application solutions of methylene blue and argyrol as bladder irrigations.

The most essential point in connection with these prostatic operations is the proper selection of the time at which to perform them. The longer my experience of these cases the more do I incline toward early operation, and the greater my disinclination to postpone surgical intervention until the use of the catheter has become inadequate.

When the latter point has been reached, the patient is already in a condition unfavorable for operation, and it will be performed in the face of dangers which, had it been done prior to this time, would not have been incurred, or at any rate, when they would have been very much less. In fact, the risk attending the performance of Bottini's operation in the early stages of this disease is very little indeed, and one which I am confident I shall incline to advise patients to assume more frequently, and at an earlier stage of the malady in the future, than has been my custom in the past.

My position as to the choice of methods is practically the same as expressed by Dr. Thorndike.

The performance of the perineal enucleation of the gland is, in cases in which it is appropriate, usually very easy. The essential factors in the readiness with which it is done are fixation of the gland and the bringing of it as far down as possible on to the perineum. These may be secured by downward pressure from above the symphysis by the hand of an assistant upon the empty bladder, and by drawing it in the same direction by the tips of two fingers resting upon its upper border in the rectum, or probably better by means of such an instrument as that of Dr. Young, which Dr. Thorndike has just shown. I have not used the latter, and am therefore unable to speak more positively of it.

It is remarkable how easy the perineal operation may be in some cases—in one case I removed the whole gland in four minutes—and how difficult in others.

The choice of methods seems to me to be easily divided. In cases in which the cystoscope has shown it to be appropriate and adequate, the Bottini operation, though my personal experience with it is limited, is, upon the evidence in our possession, that of choice. In other cases the best plan to follow is, I believe, as I have frequently stated before, to open the perineal urethra by the usual incision, explore the condition of the gland with the finger, and then to remove it or its obstructing portions through the perineal incision when that is feasible, and

when it is not to proceed at once to the suprapubic operation.

One word with regard to the use of the cystoscope in these cases. It has one undoubted and great value, which is that it is capable of determining beforehand, as a rule, whether the case is appropriate for a Bottini operation or not, although it is possible to be misled even in this respect because of the inability to gauge the extent of the parts of the gland, and the degree of obstruction for which they may be responsible, which are not visible from within the bladder.

PRELIMINARY REPORT OF FIVE CASES OF RENAL DECAPSULATION.¹

BY J. BAPT BLAKE, M.D., BOSTON,

Second Assistant Visiting Surgeon, Boston City Hospital.

THE following cases have been operated during the past nine months on the First Service of the Boston City Hospital. Three of them are reported through the courtesy of Drs. H. L. Burrell and J. C. Munro.

It has seemed advisable to record the progress in these five patients at this time, reserving a final and more complete statement for a period of about two years after operation. What might be called the immediate results and sequelæ are available now. The ultimate results, however, cannot yet be fully prognosticated.

Two of the five are, for the practical purposes of business and occupation, well. Two have died, at intervals of four days and six months after the operation. One is not relieved.

All of the cases were operated by two surgeons simultaneously, one decapsulating the right, the other the left kidney. The assistants have usually stood next the operator and not opposite him; with previous planning and a little practice, the members of this double team need not necessarily interfere materially with one another. The time of the double operation is thus reduced by nearly one half, and it does not appear that the patient is subjected to a noticeably increased amount of shock.

The patient has been placed prone, face downward, the head projecting beyond the end of the table, the shoulders protected (and slightly raised) by sheets, the neck being, of course, absolutely shielded from pressure. This seems to be best accomplished by having the etherizer support the head, placing a hand under the forehead. If large pads, thick sand bags or the wide rubber bag be used, care must be taken that the action of the diaphragm be not interfered with. If the bags are placed high in the epigastrium this result followed in several instances, and was made evident by cyanosis and even threatened collapse; these symptoms began to disappear almost immediately after the removal of the bags. If, on the other hand, the bags be placed too low, the angle between pelvis

and thorax is not so well opened, and the kidneys may actually be displaced upwards. In a fat and edematous person, this may complicate the operation distinctly.

The technique of the operation is simple and sufficiently well known to render a detailed description unnecessary. We have endeavored to preserve the lumbar nerves; arteries have been secured before opening the retro-peritoneal space. Occasionally one of the larger branches of a lumbar artery, cut and retracting into the muscle fibers, has caused an annoying hemorrhage. In thin patients it was sometimes possible to complete the operation without tying an artery. In fat and edematous patients the depth of the incision was surprising; and in such patients it was sometimes thought advisable to mark the outer edge of the erector spinæ muscle before operation, for it is at times difficult, in the presence of much edema, to accurately fix this outer margin when the patient is in position on the operating table. If the incision is too far out, the colon may bulge in the field; if too far in, the sheath of the erector spinæ may be opened, or the fibers of the quadratus lumborum encountered. It is better to avoid both of these things.

The lower pole of the kidney is usually reached easily, but at times it was difficult to bring the upper pole well up into the wound. Sterile tape slipped around and under this upper end, acting like a lasso, facilitates this part of the operation, and was, I believe, suggested by Dr. Arthur Cabot. The incisions have been closed either in layers or by the through and through silk-worm gut sutures. In two incisions rubber dam or a bit of gauze was placed in the lower angle of the wound.

The actual decapsulation was usually done by splitting the capsule longitudinally with a scalpel and then peeling it off gently with forceps and fingers. In at least one case the capsule was found to consist of two distinct layers, and when the kidney had been apparently decapsulated, another complete layer was discovered and removed from it. This second layer would have escaped if attention had not been directly called to it. If it remained behind, at least part of the aim of the operation would have been lost.

As a rule the capsule separated without much difficulty. In contracted kidneys it is much more adherent, and occasionally carries with it morsels of the cortex. As it was separated it curled back towards the pelvis, and was removed with scissors. In one case where there was much difficulty in reaching the upper end of the kidney the capsule was simply pushed back over the upper pole, and left curled up beyond it. Small wedge-shaped bits of the cortex were taken at the operation from each case for pathological diagnosis. If there was persistent hemorrhage from the kidney wound it was closed by a carefully applied mattress suture of catgut.

In two cases patients were cyanotic and more or less collapsed on the table. As before stated

¹ Read at the Annual Meeting of the Suffolk District Medical Society, April 25, 1903.

this seemed to be due to interference with respiration produced by the large rubber air cushion. This cushion is better suited to the unilateral operation. These two cases did not, however, show signs of continued shock after the operation. In fact, with the exception of one case, the absence of post-operative shock was remarkable.

Two of the five cases complained simply of "soreness in the back" on the day after the operation.

The operation was always followed by a temporary diminution in the amount of urine, but this quickly disappeared, and within a few days the amount usually exceeded that passed before the operation. An increase of blood in the urine was always demonstrable by the microscope, and in one case the urine was mahogany colored for several days; in two cases the color was not changed, and in the others it was slightly high. One patient tore off the dressings and infected his wounds, which, as a result, granulated very slowly. There was a slight infection in the lower angle of one other incision. With these exceptions the wounds healed by first intention in from ten to fourteen days. There was not in any case a marked increase of pre-existing renal elements of the urinary sediment following the operation. As above stated, red corpuscles were invariably present afterwards, or if present before, were increased afterwards. But casts and cells did not show any material numerical change. It seems certain, therefore, that the so-called ether nephritis is largely a medical scarecrow; for if it were ever to appear, it would seem that pre-existing renal disease and actual operation on the kidney should favor its development.

The cases in detail are as follows:

CASE I. Male, forty-two years; cab-driver. Father and mother died of asthma. Patient has used alcohol to excess. Had gonorrhea fourteen years ago. For past five months increased nocturnal micturition, three to five times each night. Three weeks ago edema appeared, followed by anorexia, insomnia, epigastric pain, headache and diarrhea. He gave up work one week ago. Patient gave the above history on his first appearance at the Medical Out-Patient Department in June 1, 1902. He entered the medical ward on June 3. He was well developed and moderately fat; heart was negative, radial arteries sclerotic. A few moist râles were heard in the lungs, which were dull on percussion in the back, increasing to flatness at the bases. Free fluid was present in the abdominal cavity. There was marked edema of the legs, scrotum and penis, which later extended to the back, the abdominal parietes and the face. Temperature, normal; hemoglobin, 85%; leucocytes, 10,000; red cells, 5,470,000. The urine was smoky, neutral, 1,019, and contained $\frac{1}{2}\%$ albumen. The sediment consisted of some normal blood, fine granular and hyaline casts with many fat drops and fatty renal cells adherent, some fatty renal and compound granule cells, and triple phosphates. Urea was 1.82%.

On June 12, not having improved, he was seen in consultation and transferred to the surgical side. He was operated by Drs. Burrell and Blake two days later. Ether anesthesia. The operation was difficult on account of the edema of the back and the large amount of fat. Both kidneys were decapsulated. There was practically no post-operative shock. He began to feel better almost immediately. The edema began to diminish in ten days, and was entirely gone in six weeks. The urine increased in amount to 150 oz. The wounds healed

by first intention, except at the lower angle on the left side, which became infected and granulated. He sat up after five weeks, and was discharged on Aug. 2, 1902. At that time the urine was smoky, 1,012, acid, and contained $\frac{1}{10}\%$ albumen. In the sediment was an occasional cast with fat, a few renal cells, leucocytes and blood.

He gained strength steadily and resumed his occupation. Four months later his urine was pale, neutral, 1,004, and contained $\frac{1}{2}\%$ albumen. The sediment was practically the same as in August. On April 25, 1903, the patient reports that he is feeling better than ever, is strong and active; he drives a cab; his appetite is excellent. There is neither pain nor discomfort at the site of operation. He looks very well, but still takes several drinks each day. The urine is pale, with a very slight smoky tinge, acid, 1,020, and contains about $\frac{1}{10}\%$ albumen. Urea, 2%. Sediment slight, consisting of a few squamous cells. Some blood and fatty renal cells; a few leucocytes; a few hyaline, fine and coarse granular casts, some with degenerated renal epithelium adherent; a few calcic oxylate crystals. The diagnosis was chronic diffuse nephritis.

CASE II. Female, thirty-nine years; housewife.* This patient had been in the City Hospital several times since 1894. She had been operated once for fistula in ano, which communicated with an ulceration of the rectum, and later was operated for a tubercular proctitis, which soon returned and persisted until her death. The urine in 1894 was normal color, acid, 1,026, no albumen, but contained pus in the sediment.

She entered the medical side in July, 1902, suffering from chilly sensations, fever, dyspnea, increased frequency of micturition and edema. The symptoms had been increasing for months and continued to increase in the hospital. She was seen in consultation and transferred to the surgical side. At that time her urine was pale, acid and contained $\frac{1}{2}\%$ albumen. The sediment contained pus, a few hyaline and fine granular casts, a little free fat, a few small round cells, fatty renal cells and red corpuscles. Examination for bacillus of tuberculosis was negative.

She was operated on Sept. 12, 1902, by Drs. Munro and Blake; ether anesthesia. The operation was less difficult than the previous case. There was considerable shock, pain and post-operative weakness. The pain seemed to be in front of the kidneys, and was accompanied by tenderness. There was no rise in pulse or temperature; the wounds healed by first intention, and she sat up in two weeks. The pathological diagnosis of specimens taken at the operation was "marked acute degenerative nephritis; slight amyloid degeneration of glomeruli; slight chronic nephritis."

After the operation the percentage of urea increased from 1.13% to 1.64%, but the actual amount diminished from 13.90 gm. to 12.60 gm. She grew stronger slowly, and was discharged on Oct. 6, 1902. The urine at that time was pale, acid, $\frac{1}{4}\%$ albumen, the sediment containing a considerable quantity of pus, an occasional normal and abnormal red globule, small round cell, occasional hyaline and rare waxy cast. Two and one-half months later she reported that she had not improved much, save for a slight gain in strength and the disappearance of the edema. The urine contained $\frac{1}{4}$ to $\frac{1}{2}\%$ albumen; considerable pus, hyaline and granular casts, many renal cells and some blood corpuscles. She died on March 18, 1903. I am indebted to Dr. W. B. Bancroft, her physician, for the following notes: She was up and about her home, doing light work, until two days before her death; she had occasional edema of the face; she developed a moderate cough; her pulse became poorer, her strength failed, and she died without unconsciousness nor uremic symptoms. One month before her death the urine contained $\frac{1}{4}\%$ albumen and much pus; no renal elements seen. The clinical diagnosis at death was "tuberculosis of apex of right lung; tubercular ulceration of rectum; tuberculosis of kidneys." The latter was justified, in spite of the negative findings in relation to the bacillus of tuberculosis in the urine.

CASE III. Male, thirty-one years; teamster. This patient entered the medical ward of the City Hospital

on July 1, 1902, having had edema, headache and dark-colored urine for several days. His family history was negative, his previous history good; he was moderately alcoholic. After two weeks he was seen in consultation, and operation was considered inexpedient. He improved very slightly and left the hospital in September. Almost immediately the edema returned, accompanied by pain in the back and increased frequency of micturition. He was admitted to the surgical side on Sept. 17, 1902. Heart, lungs and abdomen were negative; pulse was good. Urine was pale, acid, 1.013, albumen $\frac{1}{4}\%$; the sediment contained numerous hyaline and fine granular casts of small diameter, with renal cells adherent; considerable blood free and on casts; some fat and many renal cells, occasionally fatty. The quantity varied from 40 to 60 oz. Urea, 14.52 gm. Operation Sept. 26, 1902. Drs. Munro and Blake; ether anesthesia. The urine was dark colored after the operation; the wounds healed by first intention; the edema was gone in two weeks; four days later he was up around the ward, and was discharged three weeks after the operation. At this time the urine was dark, acid, $\frac{1}{2}\%$ albumen; the sediment contained an occasional blood corpuscle and triple phosphates. One month later he reported that he was working hard and feeling well. The urine was pale, $\frac{1}{10}\%$ albumen; there was an occasional cast, hyaline and fine granular; considerable renal epithelium, some with fat adherent; occasional red corpuscle.

April 24, 1903, this patient reported again; he had done heavy work every night until three weeks ago; felt stronger than ever and could lift more. He then began drinking hard and continued to do so for two weeks. He stopped because edema of his face appeared; until that time his urine was clear and he was passing large quantities. While drinking, his urine became the color of Boek beer, but is now clearing. At this date (April 24) he looks well; he has slight edema of the ankles; his appetite is good and he has gained twenty pounds. The urine is smoky, acid, 1.005, albumen $\frac{1}{2} + \%$, urea .88%; the sediment contains considerable normal blood, a few leucocytes, some renal cells with fat adherent, an occasional compound granule cell and a very few hyaline and fine granular casts. The pathological diagnosis of bits of kidney taken at the operation was "chronic glomerulo-nephritis, so-called parenchymatous."

CASE IV. Male, twenty-six years; clerk. He entered the medical ward Jan. 13, 1903, having had for four days backache, edema of ankles and dark-colored urine. His family history was negative; he had suffered from malaise and indigestion for six months. There were râles over the entire chest; general edema, the heart being negative. Urine was high, acid, 1.029, albumen $\frac{1}{2}\%$; sediment contained many casts, hyaline and fine granular, with small round cells, blood corpuscles, leucocytes and renal cells adherent; a little fat and a few abnormal red cells. His edema increased and he developed nausea without vomiting; he was seen in consultation and transferred to the surgical side on Jan. 30, 1903. He was then pale, thin, the pulse poor in volume and tension; lungs dull at the bases; abdomen containing free fluid; he had also an albuminuric retinitis.

Operation, Jan. 3, 1903, Drs. Burrell and Munro; ether anesthesia. He was very cyanotic during the operation, the pulse being barely perceptible at times. He made a poor recovery from ether; his urine did not change after the operation save for the appearance of some red corpuscles. On the second day he passed 14, on the third day, 20 oz.; he was conscious; he vomited for twelve hours on the third day, but stopped after being given spirits of chloroform; he then retained milk and lime water and enemata. He lost strength and sank gradually, however, and died, without signs of uremia, on Feb. 4, 1903. Pathological diagnosis of operation specimens was "subacute glomerular (amyloid) nephritis."

CASE V. Male, twenty-nine years, admitted to the medical ward Nov. 19, 1902. His family history was good; no previous disease; he denied venereal, but admitted twelve "schooners" of beer and two whiskies daily. Two weeks before entrance he developed chilly sensations, fever, slight cough, headache, nausea and vomiting; his urine was scanty and dark; edema appeared

in the face, later in the hands, abdomen and legs; there was anorexia and some diarrhea; he had been in bed for three days. He was pale and fat; the heart was negative and there were râles at the bases of both lungs. The urine was smoky, acid, 1.026, albumen $\frac{1}{4}\%$; the sediment contained very many casts, hyaline and granular, with renal cells, fat drops and blood globules adherent, few squamous epithelium; neck of bladder, small round cells, leucocytes and red corpuscles. The white count varied from 8,000 to 12,000; urea from $2\frac{1}{2}\%$ to $3\frac{1}{2}\%$. The albumen ranged from $\frac{1}{4}\%$ to $\frac{1}{2}\%$, and the quantity of urine from 20 to 50 oz. He was a difficult patient to manage, refusing treatment at times. His condition did not improve; he was seen in consultation frequently, and was transferred to the surgical side on Jan. 21, 1903. At this time the urine was normal in color and about 50 oz.; otherwise practically unchanged since entrance. There was dullness in the back to the angles of the scapula; respiration and fremitus diminished; abdomen distended and containing free fluid; back and scrotum very edematous; albuminuric retinitis.

Operation Jan. 27, 1903, Drs. Burrell and Munro; ether anesthesia. The wounds were drained with rubber tissue on account of bleeding and free discharge of serum. He recovered well from the operation, but two hours later went into a moderate collapse, due to hemorrhage from the wounds; this was controlled by fresh dressings and a tighter swathe. For next two days he was very noisy and violent; he vomited frequently, and tore off his swathe; he then gradually improved. The amount of urine diminished and then increased, the sediment remaining unchanged; the edema gradually diminished. The wounds became infected as he continued to tear off the dressings from time to time. Five weeks after the operation he developed a broncho-pneumonia, which almost killed him, and which has left him with a cough and râles in his lungs. Later he was about the ward in a wheeled chair. On April 14 his urine was pale, acid, 1.020, albumen $\frac{1}{2}\%$; urea 1.70%, 18.87 gm; sediment, many fatty granular renal cells, normal and abnormal blood globules; fine granular casts of large diameter, with epithelial cells, fat drops and blood adherent; a few hyaline, epithelial and fatty casts. His face was pallid, his appetite poor and his edema considerable. He was discharged to Tewksbury four days later. The pathological diagnosis of the operation specimens was "subacute glomerular nephritis."

Edebohls' recent article appeared in the *Medical Record*, March 28, 1903. In it he reports 51 cases, of which he has been able to trace all but 3. There were 47 operations on both kidneys, and 4 on one kidney only. Seven died within seventeen days after operation; 7 died in periods varying from two months to eight years; 2 do not show satisfactory improvement; 22 are in various stages of satisfactory improvement at periods varying between two and fifteen months after operation; the urine of several of these is free from albumen and casts. Nine patients were cured of chronic Bright's disease and remain cured at periods after operation varying from twenty-one months to ten years. Edebohls says: "To be classed as a cure, the following conditions must be fulfilled: the urine must remain free from albumen and casts, and the output of urea be normal, or approximately so, for a period of at least six months after the verification of the disappearance of albumen and casts, and the patient must be free from the symptoms of chronic Bright's disease from which he or she formerly suffered."

This is a sufficiently rigid standard of cure. Judged by it, none of the five cases here reported are cured; two of them are free from symptoms

and doing hard work as well or better than before their attacks; abstinence from alcohol on the part of these men might be followed by the disappearance of albumen and casts from the urine. Unfortunately, however, such abstinence is not likely to occur, and these two cases must be described as much relieved but not entirely well.

RUPTURE OF THE QUADRICEPS EXTENSOR FEMORIS MUSCLE.¹

BY HALBERT G. STETSON, M.D., GREENFIELD, MASS.

IT occasionally happens that the country practitioner runs across something rare or at least unusual in a medical or surgical way — a condition which perhaps he recognizes, but for the description and relief of which he looks in vain in his limited library. He may, perhaps, find some mention of the particular condition with which he is called upon to deal, but for any real practical help or aid he may look in vain. His own library fails him because not sufficiently extensive and he is out of reach of the larger medical libraries of the city. He is then called upon to make use of his own talents and common sense, and his results will depend very largely upon his exercise of those qualifications.

Rupture of the quadriceps extensor femoris muscle is one of these unusual conditions. An accident at least not common, and many surgeons in large practice would, I believe, say rare. At least but little mention is made of the subject in modern textbooks of surgery, and many of them do not speak of it at all. Agnew, in his "Principles and Practice of Surgery," third edition, says he has met with but two cases, and his experience, even at the time he wrote that, was a very extensive one. Connor, in Ashhurst's "System of Surgery," speaks in a general way rather briefly of rupture of muscles, but does not go into the details of rupture of any particular muscle or group of muscles. Dennis does not mention the subject at all. The "American Textbook of Surgery" speaks in a general way of muscular rupture, as does Da Costa. Wyeth in his textbook, and Monks in the "International Textbook of Surgery," allude particularly to rupture of the quadriceps and to its etiology, symptomatology and treatment. On the whole, the knowledge to be gained by the general practitioner from those textbooks most likely to be in his library would be rather small.

As I have said, rupture of the quadriceps extensor muscle is not a common condition. It is most often of traumatic origin. That is, the patient is going down stairs, or down a steep incline, loses his footing, and in his effort to save himself strongly contracts his quadriceps, which was previously very firmly contracted, with the result that it ruptures, or the patella is broken; and the determining factor may be comparative weakness of the muscle or tendon. König, quoted by Klein, describes two ways in which

this rupture may be produced. Either the actively contracted quadriceps is suddenly strongly stretched, as when one descending a mountain slips and falls backward; or the passively stretched muscle undergoes an active contraction as when one falls over a step. The weight of the body presses the thigh against the leg, forming a very acute angle at the knee joint. The stretched quadriceps contracts to avoid overstretching, and a ruptured quadriceps tendon or fracture of the patella results. Cases of rupture of the quadriceps, as of other ruptures of the body, have occurred following typhoid fever and other prolonged pyrexias, from slight strain only, and without the knowledge of the patient; but of these I shall say nothing. Certain factors, however, have at times seemed to play a part in producing weakness of the muscle fiber, rendering the rupture easier than would seem to be normal. Alcoholism and arteriosclerosis would naturally be looked upon as such factors. Evidences of a diseased condition of the muscle itself have seldom been found. Maydl reports fatty degeneration of the muscle in one case. Hafeman found tabes dorsalis in two cases. Kohl and Wunsch saw cartilaginous bodies embedded in the tendon. Kohl found beside three solid masses in the tendon, also an analogous body free in the joint, and he considered the cause to be a chronic arthritis. Wunsch found a cartilaginous formation on both sides and diagnosed with probability an exostosis of the tendon. In a case reported by Vulpian there was very marked fatty degeneration of the tendon confirmed by microscopical examination; but these were only single and unusual cases. Most of the cases examined show no pathological or degenerate change whatever.

It seems to be most frequently met with in males. In ninety-eight cases collected by Walker, ninety-one were males and seven females. This great preponderance is no doubt due to the greater muscular activity of life followed by the male sex. It occurs slightly more frequently as age advances, the majority of the cases reported being over fifty years of age.

Concerning the location, there seem to be no factors which tend to make one limb any more liable to this rupture than the other. It seems to occur as frequently upon one side as upon the other. Cases have been reported where both muscles have been ruptured simultaneously; and both muscles have been ruptured separately, an interval of several months or several years intervening.

The point of rupture is most apt to be at the upper margin of the patella, although it often occurs higher up. In its relations, this muscle lies immediately over the joint cavity of the knee, and when the rupture occurs at the upper margin of the patella, the joint capsule is very apt to be opened. Walker says that the joint capsule extends upwards behind the rectus tendon for a distance of 5 cm.; and that rupture of the muscle at any point within this distance is very liable to involve the joint.

¹ Read before The Massachusetts Medical Society, June 9, 1903.

The occurrence of rupture is usually indicated by a sudden sharp, stinging pain, accompanied by a snapping sensation as of something giving way, and associated with complete loss of function if the rupture be complete; if not complete, if the lateral portions are still intact, or if a portion of the fascia is still intact, some power of extension will still remain. If seen soon after injury, the deformity is characteristic. The patient is unable to extend the leg, the upper edge of the patella is felt and is freely movable in every direction except upward; there is a marked depression above in which the condyles of the femur can be plainly felt. Above this depression is a tumor caused by the retracted muscle. There is but little pain usually, and only moderate tenderness. There may or may not be, coming on early or late, discoloration of the skin produced by extravasated blood. Extension and flexion of the leg to an angle of 45° cause little pain. Seen later, that is, from one to fourteen days after the injury, the gap so noticeable above the patella at the time of the traumatism has become filled in with extravasated blood and is much less noticeable.

The diagnosis should not be difficult in cases seen early. The loss of the power of extension of the leg, patella easily made out and movable in all directions except upward, a depression admitting one or more fingers above the patella; these objective symptoms, together with a history of muscular effort and the subjective symptoms of sudden pain and a sensation as if something had snapped, would, seemingly, make the diagnosis easy. McCosh believes, however, from a study of the reported histories of such cases, that in many of them the injury was overlooked because the examining physician was not alive to the possibility of such an accident.

And now comes the difficult problem of all to solve. How shall this injury be treated? Shall we rely upon mechanical means to bring about coaptation with the hope of a firm, fibrous union and a nearly functionally perfect leg? Or shall we invite the dangers attendant upon surgical manipulation of the knee joint, and cut down upon the ruptured muscle, bring the ends into opposition and stitch them with some suitable material?

Other things being equal, the operative method would seem to be the preferable method in the hands of the skilled surgeon and under favorable surroundings. Maydl, in fifty-six cases of complete rupture of the quadriceps, states the results in forty as follows: In twenty-four, or 60%, complete recovery followed; nine of the remainder acquired a useful leg; the other seven were unsatisfactory. Walker states that of twenty-three complete ruptures of the quadriceps in which he was able to give results, in sixteen, or 70%, complete recovery followed; in five a useful leg was obtained; and two cases were unsatisfactory. Compare this report with Walker's report of his operative cases—twenty-one cases so treated and nineteen, or 90%, complete recoveries.

Walker also compares the time occupied in bringing about complete recovery by the two methods. In speaking of his series of twenty-three cases of complete rupture, treated by the mechanical method, sixteen, or 70%, made a complete recovery. Of these sixteen cases, 18% recovered in three months, 31% in six months, and 50% in one year. Of his series of twenty-one cases treated by the operative method, nineteen, or 90%, made complete recovery. Of these nineteen cases, 56% recovered in three months and 100%, or the total number, recovered in six months, showing a large saving of time to the patient by the operative method in skilled hands.

Unfortunately, however, rupture of the quadriceps extensor muscle does not always occur in the young, strong, vigorous adult, the kind to whom you look for favorable operative results. I have before spoken of the fact that a large number of these cases occur after the age of fifty years. From that age on we look for degenerative changes—arteriosclerosis and its very common accompaniments, tense, wiry blood-vessels, cirrhotic kidneys, enlarged prostate, to say nothing of the greater liability supposedly of failure of union of the approximated ends.

Again, it is not always possible to bring about a meeting between the patient suffering from the injury under discussion and the skilled surgeon.

Under these circumstances it would seem to be perfectly proper treatment for the general practitioner to at least try the effect of the mechanical method of treatment. Many of us would certainly hesitate to molest the knee joint unnecessarily. McCosh, who cannot in any sense be accused of favoring the mechanical method of treatment, in his paper upon this subject advises against operative interference unless conditions are most favorable, believing that the non-operative plan of treatment should be tried, at least until more favorable conditions can be obtained. And he further says that a delay of several weeks does not contra-indicate the operation. I believe there is one danger from non-operative treatment which must be thought of, and which might become troublesome unless guarded against,—that is, inactivity atrophy of the quadriceps. But early massage and passive motion would probably, to some extent, delay if not prevent this change.

All agree that in cases of partial rupture in which the lateral portions of the muscle are still intact, the mechanical treatment is all that is necessary. Most men, I believe, are in favor of mechanical treatment in cases where the distance between the divided ends is not more than one inch, and where the joint has not been opened. In those cases where the distance between the divided end is more than one inch, or where the joint has been opened, operation would seem to be the proper course to pursue; but even here the general condition of the patient would be a large factor in finally determining

upon the proper plan of treatment. And in those advanced in years and presenting the changes incident to age, even there the mechanical method of treatment might be thought advisable.

Particular care should be given to the application of the mechanical method. The patella should be pulled up as far as possible, and held in place by adhesive strips. The leg should be bandaged from the ankle to the patella, care being taken to have the bandage reinforce the plaster strip as far as possible. Beginning above at the upper portion of the thigh, bandage downward firmly, the object being to push down the retracted end of the muscle into nearer apposition with the patella. A long, posterior splint extending from the ankle to the gluteal fold should be applied and the leg strapped firmly to it. Cold applications to the knee if there is much extravasation of blood, foot elevated about six inches above the level of the pelvis. After five or six weeks, massage. After eight weeks, passive motion of joint and crutches. The time of recovery based upon reported cases should be expected in from three to twelve months.

The operative method consists in cutting down upon the separated ends and uniting them, either with silk-worm gut, catgut, kangaroo tendon or silver wire. If insufficient tendon remain attached to the patella, then drilling through the upper portion of the patella and attaching the upper fragment to the patella. Elevated position of the foot for two or three weeks, passive motion, etc., as with mechanical treatment.

Walker concludes his admirable paper with six conclusions, four of which would seem to be most useful suggestions for the general practitioner in deciding upon the proper method of treatment for this particular injury:

"First. In recent cases in which there is not much effusion, where the joint is apparently not opened, in which the separated ends can be approximated and retained by suitably adjusted pads, the mechanical treatment may be favorably considered. In the hands of an intelligent practitioner, this method may be expected to bring about a complete recovery in the larger number of cases. From nine to twelve months will be required to re-establish fully normal functions.

"Third. The skilled aseptic surgeon who promptly resorts to the operative method in suitable cases, though age and vitality of each patient must be most carefully considered, may quite reasonably hope to obtain a better result in the larger number of patients, and save his patient three to six months' time.

"Fifth. Where the separation is greater than one and a half inches, or where the case has not recovered under mechanical treatment, the operative is indicated.

"Sixth. As the length of time required for treatment is a very important consideration, so the operative method, which has dimin-

ished this period and also succeeded in a large number of cases without increasing the danger, will be more often indicated and more frequently applied in the hands of the skilled surgeon."

My attention was particularly called to this condition by the following case: S. B. S., retired, seventy-one, married, never ill. On Sept. 7, 1902, in going down stairs his slipper caught on the stair and he was thrown forward. He made a strong effort to save himself, and felt something give at his knee. Upon getting up he was unable to stand upon the leg, although the effort did not cause severe pain. The knee was "wobbly," as he expressed it, and uncertain; slight swelling occurred at once about the knee. Seen one-half hour after the injury. Left knee somewhat swollen; swelling not confined to the synovial cavity. Patella drawn downward about half an inch. Immediately above the patella is a depression allowing two fingers to be laid in; condyles of the femur plainly felt; above the depression is a moderate enlargement of apparently muscular tissue. Flexion, extension, latero-flexion, not accompanied by much discomfort. Patient can flex, abduct and adduct, but cannot extend the leg. Treatment, posterior splint applied, with a compress of lead and opium wash, moderately firm bandage. On the 8th the patient was seen in consultation by Drs. Twitchell and Zabriskie of Greenfield in reference to the advisability of adopting the operative plan of treatment. In view of the fact that the patient was the victim of some arteriosclerosis, and had for some time had some urinary retention due to an enlarged prostate, it was deemed best to try the mechanical treatment for a time, having in view the operative plan of treatment at some future time, if satisfactory results were not obtained by the mechanical. The patient was allowed up in a wheeled chair. The leg was kept in splints until the last of October, when massage and passive motion were begun. On Nov. 1 the patient was walking about with the posterior splint still on. Without the splint he can bend the knee and has some power of extension. Ordered continuance of passive motion. On the 28th of January, 1903, examination shows extension to be strong and forcible. Is able to kick vigorously; motion is good and unimpaired. As compared with the opposite leg, it would seem that he had from 75 to 80% of normal function. Patient says that he can see improvement still going on. Patient shows no lameness, climbs in and out of carriage easily and attends to his usual duties apparently as easily as before the accident.

DISCUSSION.

DR. S. J. MIXTER of Boston: I should be happy to say something on this very interesting paper, but the fact is I have never had a case of rupture of the quadriceps extensor; that is, a complete one or anything near complete. I have had par-

tial ruptures. I have seen several ruptures in the practice of other men. None of these have been operated on; they have been treated mechanically with good results. A distinguished member of the Massachusetts Medical Society had such an accident at the time I was a student. He was treated by Dr. Bigelow, and got a very good leg. I think I am correct in saying Dr. Bowditch had that accident by jumping from a horse-car. At that time, of course, operative procedures were not so common as now, and on account of his age, at any rate, it was best to follow a conservative line of treatment. He made an excellent recovery. Slight ruptures I have seen. It seems to me that ruptures of the quadriceps extensor tendon are very like fractures of the patella. In certain cases of fractured patella we get excellent results without operation. Those are cases in which the fascia is not widely torn, where the fragments are not separated. It is not the fracture of the patella so much as tearing of the fascia which causes trouble, and if we have only slight separation of fragments either of the patella, which is only a sesamoid bone in the course of the tendon, or the tendon itself, mechanical means will be able to give good functional results.

DR. H. WARREN WHITE of Roxbury: This paper is very interesting to me now just, after having taken care of a case similar in many ways. A man of seventy in going down steps thought there was another step. He made an attempted step and recovered himself, but felt, as he described it, as if he had "torn his pants." There was a giving way of something, he looked down and found he could not manipulate his leg, could not extend it at all. He was completely incapacitated, and brought home and treated with plaster-of-Paris bandages. But the curious part of our case was, that at the end of ten weeks, after removal of the plaster-of-Paris bandage and what appeared to be a complete and satisfactory result, and wearing an ordinary rubber bandage, he was in the stable attending to some duties when with a slippery floor under him his foot gave way suddenly and the same accident happened again, absolutely the same as far as the gap was concerned; perhaps not quite as extensive, that is, the gap was not quite so wide as at the first time, but there was the same inability to extend the leg. He is at the present time lying in bed with a plaster-of-Paris bandage on and we are hoping, of course, for as good a union as before. I had a consultation in this case and the same conclusion against operation was arrived at that Dr. Stetson speaks of. Our patient was old. He also had urinary trouble, and there was the slight arteriosclerosis of which he speaks, and signs of the same muscular weakening or degeneration which probably permits such an accident to occur in these cases.

THE chair of anatomy of the Woman's Medical College of Philadelphia is vacant, through the recent death of Dr. Parish.

Clinical Department.

REPORT OF A CASE OF APHASIA AS A COMPLICATION OF MEASLES.

BY WARREN R. GILMAN, M.D., WORCESTER, MASS.

THE patient, a strong, healthy boy of nine years, was out of doors as usual Nov. 10. He complained of not feeling well that evening, ate little, and was rather restless during the night. About thirty-six hours later the rash was well developed, and it was evident that the disease was measles. The course of the disease was not remarkable in any particular during the next three days. There was a profuse eruption, moderate fever, but no delirium. On Nov. 15 the eruption was fading and the patient felt so well that he was allowed to sit up for a short time. During the night he became restless and delirious, and the nurse had some difficulty in restraining him.

When I saw him on Nov. 16 he was very dull, apathetic, and could not be roused to give any sign of intelligence. For twenty-four hours he was apparently unconscious of his surroundings. There were several brief periods of mild excitement, but there were no convulsions. There was no paralysis. He passed urine and had several evacuations of the bowels in bed without giving the nurse any warning, but these acts were accompanied by straining efforts and were not strictly involuntary.

In the afternoon of Nov. 17 he sat up in bed and looked about the room. He was confused and dull, and, although it was possible to attract his attention by speaking in a loud voice, he showed no evidence of any comprehension of words or signs. On the next day, Nov. 18, he tried to talk, but his efforts resulted only in the endless repetition of "Mother, mother, mother."

On Nov. 19 his expression was much more intelligent, although there was still some confusion and astonishment in his face. He saw the people in his room, but I think he did not recognize the individuals. An occasional, explosive "Gee!" expressed his feelings very well. The only other word at his command was "Mother"; and in the recurring utterance of this word his pauses and inflections indicated that he was trying to express ideas and thoughts. At one time the inflection indicated a question; at another, an assertion. The question was the more frequent form, and it seemed quite plain that he was trying to ask why we could not understand him. He evidently thought that he was talking intelligibly and did not notice his deficiency. He understood and obeyed the request to lie down. Used the bed pan. Examination of urine negative. Rash entirely gone. In drinking milk from a cup, he sipped slowly, filled mouth and then had difficulty in swallowing; several times the milk was belched from mouth but was not regurgitated through the nose. This accident made him angry, and he expressed his disgust very plainly by gestures and an emphatic "Gee!"

On Nov. 21 he was able to understand questions and orders very well, but was still somewhat dull. Had added several words to his vocabulary, but was not able to form sentences. On looking out of the window and seeing one of the housemaids, said, "Hello, Kate." Understood the account of a football game which was read to him. Passed his time in kicking a football about the room; made the nurse understand that he wanted his shoes for this sport; hummed a tune correctly; did not attempt to sing. Pupils equal and react normally. Knee jerks normal. Babinski reflex not present. No paralysis of any kind; swallowed food easily.

Nov. 23, bright and wide-awake. Understood everything read or spoken to him. When a column of several figures was added up incorrectly he detected the error at once. Wrote his name for the first time. Used more words and would get part way through a sentence before coming to grief. Did not use wrong words, but came to a stop when he could not get the word he wanted. Attempts to get him to repeat words and to write words from copy or dictation were not satisfactory. He was conscious of trouble, and would not expose his weaknesses. Nov. 28, read stories to a younger brother and hesitated very little. Wrote from dictation or copy very well. Improvement continued, and on Dec. 1 he was practically well.

The measles was not severe and the rash came out quickly. On the third day the temperature reached the highest point, 104.5. It declined quickly as the rash faded and on the fifth day was 100. During the night he became very restless, but soon fell into a dull, unconscious state. There were brief periods of excitement, but as a rule he lay in bed with eyes open, understanding nothing said to him and seeing nothing. There was complete inhibition of the auditory and visual centers and also of the higher speech center. There was no paralysis of the muscles of face, lips or extremities.

Restoration of function began in the visual and auditory centers, as is the rule, I believe, and he gradually regained the power of visual and auditory perception. The function of these sensory centers was completely restored before recovery of the higher kinesthetic centers. His first attempt at speech resulted only in the recurring utterance of the one word "Mother!" and an occasional exclamation, "Gee!" or "Oh!" For two or three days these were the only words he could utter. He received definite normal impressions on the visual and auditory centers, and very soon showed that he wished to express his ideas and wishes. This he was unable to do either in speech or writing. His vocabulary grew gradually and there were no mistakes in the use of words. When he could not get the word he wanted, he simply stopped. There was inability to read or write. He soon recovered the power to read and to understand figures, and could read a newspaper before he could write more than his own name. It is interest-

ing to note that he hummed a tune correctly before he used complete sentences.

Severe disturbances of the nervous system occur very frequently in nearly all the acute infectious diseases, coming on as a rule late in the disease or during convalescence. There may be a gradual development of a general peripheral neuritis or a sudden attack of unconsciousness from which there is speedy recovery, disclosing the presence of various forms and degrees of paralysis. The paralysis of muscles of the extremities, face or throat in diphtheria is the most familiar example. It is now generally believed that these palsies of diphtheria are due to a general or peripheral neuritis caused by the toxin of the disease.

In typhoid fever there are frequently severe nervous disturbances. Hemiplegia and facial and hypoglossal paralysis occur. Postmortem examinations have sometimes shown hemorrhage, embolism and thrombosis of cerebral vessels. At times aphasia has been observed in connection with these severe complications.

Some writers feel warranted in grouping certain cases of very slight peripheral paralysis with aphasia, or cases of aphasia alone, into a distinct class. These cases recover quickly and are said to be the result of some slight and temporary change in the cortex of the brain, probably congestion or edema. It seems to me more reasonable to say that such symptoms are caused by the direct action of a toxin upon the nerve cells in the sensory and motor centers of the cortex. There may be some gross change like congestion or edema as a result, or there may be no visible change whatever. In scarlet fever, paralysis of peripheral or cortical origin occurs less frequently than in diphtheria or typhoid fever.

Various forms of paralysis have been noted in whooping cough, and they have usually been looked upon as the result of vascular changes. In the *New York Medical Journal*, June 6, 1903, C. J. Aldrich reports a case of peripheral neuritis showing slight paralysis of legs, hands and palate. He considers the cause of the neuritis to be the toxin developed in the course of the acute disease.

It is stated in textbooks that severe or mild nervous disturbances may follow measles; but I have not found reports of any specific cases during recent years. Writers usually refer back to the monograph of Clarus written in 1874, and in that article very few cases are cited.

In the case which I have reported I believe that the sensory and motor aphasia was caused by the action of the toxin of the disease, measles, upon the centers in the cortex of the brain. Hemorrhage or embolism seem quite improbable. The measles was not severe and the cough was mild in character. The patient was a healthy boy whose heart, kidneys and blood vessels were normal. There was no paralysis of extremities or face; and the paralysis of the throat, if it was paralysis at all, was extremely mild and lasted but a few hours. Recovery from the aphasia was prompt and complete.

Medical Progress.

REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

TUBERCULOSIS OF THE PLACENTA.¹

WITHIN the past few years several cases of placental tuberculosis have been described. The first case, demonstrating the transmission of tubercle from mother to fetus, was described by Schmor and Birch-Hirschfeld. The patient was seven months pregnant, and died of acute miliary tuberculosis. A dead child was delivered by Cæsarean section. In the blood of the umbilical veins, capillaries of the liver, intervillous spaces and vessels of the chorionic villi, tubercle bacilli were found. Pieces of tissue removed from the fetus and introduced into rabbits produced typical tuberculosis. Lehmann² described a case where the placenta from a case of acute tuberculosis contained tuberculous nodules with typical bacilli, and similar cases have been recorded by Koekel³ and Kynoch.⁴ In all those cases the fetal portion of the placenta was chiefly affected. The surface and stroma of the villi contained granulation tissue with tubercle bacilli. The vessels of the villi were in some cases obliterated, and the bacilli were supposed to have reached the interior of the villi from the intervillous spaces through an epithelial defect on the surface.

Runge⁵ reports a case where tuberculous changes were found in the decidua serotina. Patient, aged thirty-two, died of general tuberculosis. On the posterior wall of the uterus, which contained a four months' fetus, gray nodules were found. The appendages were normal. Pieces of placenta were cut and stained. A few tuberculous masses with giant cells were found in the chorionic villi. In the decidua, and reaching as far as the glandular layer, there were well-defined tuberculous foci. No tuberculous change was found in either the decidua vera or reflexa. Necrotic changes and abundant hemorrhages, resulting in detachment of the villi, would account for early abortion in those cases as contrasted with the cases where the tuberculous changes were chiefly confined to the villi.

Warthin⁶ and Cowie report the case of a woman with acute miliary tuberculosis, in whom abortion at the seventh month occurred the day before death. Placenta and fetus showed no macroscopic lesions, but the microscopic examination showed that the placenta was filled with thrombi, composed of red blood cells or possibly of blood plates, which thrombi contained great numbers of tubercle bacilli. The thrombi occurred chiefly in the intravillous spaces. Of interest was the behavior of the syncytial cells, which seem to have been especially resistant to the tuberculous process, since in

many instances they had grown over and around the thrombi. The giant cells of the thrombi Warthin thinks were composed of leucocytes. Great numbers of the tubercle bacilli were found in the blood vessels of the liver of the fetus. The fetal tissues seemed especially resistant to the growth of the organism. Warthin believes that congenital tuberculosis is possible, and should be considered as a possibility. In this case the presence of the bacilli was demonstrated both in sections and in inoculation experiments.

INCARCERATED GRAVID UTERUS REPLACED BY THE COLPEURYNTER.

Albert⁷ reports five cases in which he has had marked success in replacing the retroverted incarcerated pregnant uterus by means of the rubber colpeurynter inserted into the vagina. He first empties the bladder by a catheter, and he emphasizes the importance of doing this in all cases before making a diagnosis of retroversion. The patient is placed on her side and the colpeurynter introduced, and slowly filled with sterile water. Usually a few hours only is necessary for replacement, but if improvement does not shortly occur, more fluid may be introduced to secure further distention. The uterus is slowly raised without pain or injury to the contents. The bag may be left in over night if necessary. One of his cases was replaced within two hours, but had been incarcerated for over three weeks. He has never yet failed to relieve the condition without difficulty. A pessary may be inserted to control the uterus after replacement if the pregnancy is under four months.

PREGNANCY AND LABOR FOLLOWING NEPHRECTOMY.

Bovée⁸ notes the infrequency of recorded cases of pregnancy and labor following upon nephrectomy. He mentions Steinheil's case, where the left kidney had been removed for tuberculous disease at the second month of pregnancy, associated with pus and blood in the urine. In this case the urinary symptoms improved, and the patient was delivered at full time of a healthy child. She died two years later from recurrent tuberculous disease.

Schramm reports the case of a woman, aged twenty-five, who had the right kidney removed for hydronephrosis. Five weeks later she was discharged from the hospital with a slight amount of pus in the urine. The left kidney was normal. She became pregnant four years later, and had a normal confinement, the urine being then free of pus. He refers to Fritsch's case, where nephrectomy for ureteral fistula had been performed on a patient who afterwards became pregnant and had a normal confinement, with subsequent good health.

Bovée's own case was one of complete nephroureterectomy for pyonephrosis, renal calculi and urinary abscess in the ureter. She was

¹ Edin. Med. Journ., June, 1903.

² Deutsche med. Wehnsehr., Leipzig, 1893.

³ Beitr. z. path. Anat. u. z. allg. Path., Jena, Bd. xvi.

⁴ Scot. Med. & Surg. Journ., Edinburgh, 1897.

⁵ Arch. f. Gynaek., Berlin, Bd. xlviii, Hft. 2.

⁶ Amer. Med., June 6, 1903, p. 897.

⁷ München, med. Woch., March 24, 1903.

⁸ Am. Gynæc., vol. i, No. 5, and vol. ii, No. 4.

confined a year later, labor being normal, the child weighing 10½ pounds. The third day after delivery she complained of great abdominal pain, referred chiefly to the course of the left ureter, associated with rise of temperature. Six months later the urine contained a considerable amount of albumin.

Baldwin⁹ also remarks on the frequency of nephrectomy and the infrequency of reported cases of pregnancy and labor following the operation. He reports two cases of his own, one of which became pregnant three years after nephrectomy and the other eighteen months. Both patients had normal pregnancies and confinements with normal urines. He concludes, therefore, that the prognosis of pregnancy following nephrectomy is by no means unfavorable.

The question of vital importance in these cases is the permanent effect of pregnancy and labor upon the remaining kidney. In the case of Steinheil the patient succumbed to the extension of the tubercular process to the remaining kidney. Whether pregnancy and labor caused this extension in part or entirely could not be determined. Certainly the woman had not suffered from renal trouble during the seven years following nephrectomy, but died one year and nine months after delivery. In Schramm's case no history of the patient subsequent to her discharge from the hospital was given. In Bovée's case the condition of the remaining kidney did not seem to be worse than before pregnancy. He has little doubt, however, that pregnancy and labor following nephrectomy seriously jeopardized the life of the patient; that the renal complications must necessarily be greatly increased, and therefore induction of premature labor is necessary.

SECONDARY PERINEORRHAPHY IN THE PUERPERAL PERIOD.¹⁰

Bohnstedt¹¹ reports ten cases of secondary perineorrhaphy, performed during the puerperium, within two weeks after labor. In eight of these cases sutures were applied immediately after labor, but no union was obtained. In the other two cases no sutures were applied after labor, and the patients were operated on on the fifth and the thirteenth days respectively. In no case was there a complete failure after secondary perineorrhaphy, although a relative failure resulted in four cases, of which three were referable to suppurative in the catgut sutures. The author operated upon all the cases of perineal tears that were found to be incompletely healed, and did not select cases in which the wound was covered with fresh granulations. He did not pay special attention to this circumstance, because he denuded the wounded surface very carefully, removing any false membranes that had formed. Evidently germs reached the denuded surface from these false membranes. Hence, the rule should be that

a secondary perineorrhaphy should never be performed until the wounded surface has cleaned up completely. The operation must also be avoided if the woman is showing even a slight elevation of temperature, as its success is not probable in such cases. The author recommends the use of cocaine as a local anesthetic in these operations.

His results are not sufficiently alluring to tempt one to operation at such early periods, unless unusual conditions appeared to demand it. It would seem better under ordinary circumstances to postpone the secondary operation for a few weeks until the tissues are in such shape that a cure could be reasonably assured.

ANESTHESIA IN LABOR.

Von Steinbuechel¹² thinks that the ideal anesthetic during labor is one which deadens all pain, yet does not influence the uterine contractions. If it be inhaled it must not be dangerous either to mother or child nor produce atony of the uterus after expulsion of the ovum, as frequently follows use of chloroform.

Such an anesthetic, he thinks, he has found in the scopolamin-morphin mixture. The value of this mixture lies in the action of small sub-toxic doses of these drugs, which possess antagonistic properties. Von Steinbuechel used scopolamin (hyoscyne) hydrobromate in doses of .3 mgm. combined with morphin muriate .01, injected subcutaneously. If he does not get the desired effect from the first dose in one half hour he repeats it. From his use he advises its acceptance as a means of allaying all nervousness. In some cases he combines it with inhalations of ether or chloroform if the pains are very severe. In no case has he had bad effects.

Among the agents employed for short general anesthesia in obstetrical practice the bichloride of ethyl has been greatly advocated. Von Hacker was the first to use this agent as a general anesthetic, and in a series of 66 cases he found that complete anesthesia resulted in sixty to ninety seconds and that vomiting and subsequent headache were lacking or very insignificant. Soon after Lotheisen reported a series of 170 cases in which vomiting occurred in 18 and the period of excitement in 13. Other observers have recorded similar results from its use.

Lepage and Le Lorier report fourteen cases in which they used chloride of ethyl as an anesthetic in obstetric operations, and from their experience they can recommend it highly. They found that they obtained anesthesia in thirty to sixty seconds. This continued for four minutes without a second administration. The return to consciousness, once begun, progressed rapidly, and was not followed by vomiting. They claim that it can be used very advantageously when a rapid and urgent extraction of the fetus is necessary, or where manual delivery of the placenta becomes necessary, or where a ruptured perineum must be sutured. Their

⁹ Cleveland Med. Journ., May, 1903, p. 213.

¹⁰ N. Y. Med. Journ., April 25, 1903, p. 762.

¹¹ Journ. Akouscherstva i Gienkich Bolesney, December, 1902.

¹² Obstetrics, Peterson, April, 1903.

method of administering this anesthetic is similar to that of chloroform or ether.

Wild¹³ reports the use of scopolamine and morphin for narcosis in eight operations. Anesthesia follows at varying intervals and lasts from seven to fourteen hours. In seven cases the effect was good. But there is danger of morphin intoxication, as the bad results in the last case show. Therefore Wild sounds a note of warning against the general employment of this method. The dosage is minutely described.

GLYCOSURIA GRAVIDARUM.

Ruoff¹⁴ says that this condition is not so uncommon as it is unrecognized, owing to neglect to examine for it. The condition or its treatment does not differ essentially from glycosuria in the non-gravid subject. Its frequency is purely a matter of speculation. It may develop during pregnancy, or pregnancy may occur during glycosuria. His conclusions are as follows:

Glycosuria gravidarum may arise at any stage of pregnancy. It is not so serious as when diabetes antedates pregnancy.

It may disappear in one pregnancy and reappear in another, and end fatally after successive attacks. It frequently arises during parturition, but is of no great importance.

Labor is not materially affected, other conditions being equal. Pregnancy is most likely to be interrupted. It is very destructive to the fetus—more so than syphilis. Maternal mortality is nearly 50%. Diabetics should not marry. Death is usually by coma, no case of eclampsia having ever occurred in a diabetic.

UTERINE ACTION.

Stephenson¹⁵ discusses the subject of uterine action in its bearing on the management of labor. He combats the statement that the first point in the prevention of post-partum hemorrhage is not to deliver in the absence of uterine contraction, on the ground that the main factor in preventing hemorrhage is retraction of the uterus, a force independent of contraction. He says that the term "retraction" was introduced by Duncan, and was held to be a useful term to designate the condition of the walls of the uterus whereby its capacity was permanently lessened in proportion to the diminution in bulk of its contents. But while Duncan believed retraction to be a force independent of contraction, although like it, dependent on the action of muscular fiber, the general opinion was and is that retraction was dependent on contraction, and was the permanent shortened condition of the muscle after contraction when the active contraction had passed off. On this theory, retraction without contraction is impossible, and to deliver except during contraction must be unsafe. Stephenson's view is

that retraction is a force small in amount, but continuous in its action, independent of contraction, dependent upon the muscle tone of the uterus, the retractility of the peritoneum and possibly on the action of the yellow elastic fibers. Retraction counteracts the force of the blood pressure, tending to expand the uterus, and must therefore be itself a force. The tonus of healthy muscle might be enough to counteract the blood pressure, but it is easy to show that a stronger force than this is in time exerted, either by attempting to turn after the liquor amnii has for some time drained away, or by trying to pass the hand through a retraction ring. The resistance offered is not of the nature of a contraction, tetanic or otherwise, for when once established it is permanent. The action of the peritoneum is considered. The peritoneum is closely applied to the uterus in the parts where active retraction is manifested, and itself retracts as the uterus diminishes. The expansion of the peritoneum with the gradual increase in bulk of the uterus is an example of the plasticity of inelastic substances whereby they spread out under the influence of a small force steadily applied. That it is not of the nature of elastic expansion is proved by the fact that the tension of the membrane is not increased. Nor can the diminution in surface extent of the peritoneum with the emptying of the uterus be considered as an elastic recoil; retraction describes the movement and implies no theory as to the nature of the force. This property of the serous coat enables it to take a share in the retraction of the uterus, and there is no reason to believe that its action is affected by exhaustion of the muscular tissue. The conclusion of practical importance is that retraction as a force is continuous and not intermittent, and that its action may be relied upon in the absence of contractions. Examples are given in which retraction reduces the cavity of the uterus in the absence of pains: (1) In Cesarean section, where both child and placenta are removed without waiting for a pain; (2) in various complications of pregnancy where it is deemed advisable to empty the uterus artificially without first inducing labor; (3) in excessive hydramnios the membranes are ruptured, and the author always finds that the uterus retracts steadily without any evidence of contraction; (4) in severe hemorrhage with retained placenta the author invariably introduces his hand into the uterus and removes the placenta, and the hand is kept in the uterus until contraction occurs, or more frequently until the cavity lessens by steady retraction.

(To be continued.)

It is stated that there were 702,083 paupers in England and Wales at the end of May, London alone claiming 105,277 of these. The ratio is 21.3 per 1,000 of the population, as against a proportion of 48.3 per 1,000 in 1863.

¹³ Berl. klin. Woch., March 2, 1903; Phila. Med. Journ., April 11, 1903, p. 625.

¹⁴ Amer. Med., April 25, 1903, p. 665.

¹⁵ Journ. Obst. & Gyn. Brit. Empire, May, 1903.

Reports of Societies.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

TWELFTH ANNUAL MEETING, HELD IN BOSTON, MAY 19, 20 AND 21, 1903.

THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES opened its twelfth annual meeting in Faneuil Hall, Boston, Mass., where addresses of welcome were made by the Hon. J. L. Bates, Governor of the Commonwealth, Dr. George E. Francis of the Massachusetts Medical Society and Surgeon-Gen. Robert A. Blood of the governor's staff. General Blood discussed the value of the Association of Military Surgeons in bringing into harmony the work of the medical officers of the Regular Service, the National Guard and the Volunteers, considering this in the light of his own practical experience during the War of the Rebellion and the Spanish-American conflict, and held that with the facilities afforded by the association for uniform conduct nothing but the failure of the government to make prompt, proper and ample appropriations could interfere with the highest efficiency of the medical service.

PUBLIC SERVICE MEDICAL SCHOOL.

LIEUT.-COL. J. V. R. HOFF, U. S. A., as chairman of the committee upon this subject, reported briefly on the work of the army and navy medical schools for the year, and described the recommendations of the surgeon-general of the army relative to the establishment of an army medical school in which a candidate, a medical graduate, should pass one year as a medical cadet and four years as a medical officer, during which period he should bind himself not to marry without permission from the Secretary of War. Colonel Hoff, however, proposes to go still farther and educate the government medical officers *ab initio* at an institution similar to the military academy at West Point, in which preparation shall be made for all branches of the medicomilitary service, and presented numerous cogent arguments in favor of the plan.

COL. R. R. DE WREDEN, Russia, described the Imperial Medical School at St. Petersburg, in which he was on duty. This school gives its students their entire medical as well as military education, and its graduates are assigned to hospitals or to regiments in accordance with their class standing; the seven highest are sent abroad to elaborate their studies and return as adjunct professors, the next highest men are assigned to hospitals and the remainder to regiments.

THE EDUCATION OF THE MEDICAL OFFICER OF THE ARMY.

MAJOR W. C. BORDEN, U. S. A., gave a succinct survey of the subject of postgraduate instruction in the United States army, especially dwelling upon the work of the army medical school,

and incidentally referring to the similar schools of other countries. He believed in the extension of the facilities of the army medical school to the medical officers of the militia.

SURGEON H. G. BEYER, U. S. N., would limit the work of the school to distinctly military medical study.

COL. G. S. RYERSON, Canada, appreciated particularly the necessity of training the medical officer in the administrative features of his duty, and described the Canadian method of attaining that end.

COL. W. J. CHARLTON, England, described the preparation of the young medical officer in the British service, beginning formerly at Netley and finishing at Aldershot. Since the Boer War the Netley School has been supplanted by the Royal Medical Staff College in London. He noted also that postgraduate work had been established for all officers up to the grade of lieutenant-colonel by detail at large London hospitals.

MEDICAL INSPECTOR J. C. WISE, U. S. N., dwelt upon the fact that a military medical officer is first of all a doctor, and urged that this fact be not lost sight of in technical training.

MAJOR W. C. BORDEN, U. S. A., admitted the necessity of thorough professional training in the military medical officer as a prime factor, but he recognized that in military service administrative work was also of great importance. The former the militia and volunteer officer had ample opportunities to acquire; it was not proposed to extend to him the opportunity of obtaining the latter also.

MAJOR AZEL AMES, U. S. V., did not deny the value of training in administrative work, but he feared that it would not be practicable to secure a considerable attendance of militia officers at a national military medical school.

LIEUT.-COL. C. C. FOSTER, Massachusetts, suggested the preparation of a published guide to the militia medical officer, and dwelt upon the value which such a work would have had in his own work in the Spanish War.

GEN. E. C. BRUSH, Ohio, remarked that in Ohio medical officers were appointed for life, and believed that if there were a military medical school at Washington adapted to their instruction, his young officers would attend it.

LIEUT.-COL. N. S. JARVIS, New York, commented upon the professional absorption of the young practitioners from whom the junior medical officers of the National Guard were to be drawn, and the difficulty with which they could get away to a military medical school.

MAJOR G. C. JONES, Canada, adverted to the evolution of the Canadian Army Medical Staff, during which the government sent a number of medical officers to England in order that they might become instructors of their comrades, which was done in the annual camps of instruction. He described his experience with the Canadian contingent in the Boer War, and referred to the need also of instruction by the non-commissioned officers of the medical department.

LIEUT.-COL. J. K. WEAVER, Pennsylvania, doubted the practicability of educating militia medical officers at a national school, and was favorably impressed with the idea of placing in the hands of medical officers such literature as may be necessary for their information.

THE ACTING ASSISTANT SURGEON.

MAJOR AZEL AMES, U. S. V., commented upon the anomalous position of the acting assistant or contract surgeon of the army, observing that he had all the responsibilities and shared all the dangers of his commissioned confrère without either the honors or rewards to which the latter may look forward. He can anticipate no promotion, he has no increase in pay for length of service, he has no retirement nor pension when he becomes worn out in the service. The author forcibly urged the improvement of the status of the civilian military surgeon in every respect.

THE DEGREE OF DOCTOR OF PUBLIC HEALTH.

MEDICAL DIRECTOR PAUL FITZSIMONS, U. S. N., emphasized the necessity for expert sanitary training for military and naval medical officers, and showing that their training and experience makes them *de facto* if not *de jure* doctors of public health.

THE UNITED STATES ARMY GENERAL HOSPITAL AT THE PRESIDIO OF SAN FRANCISCO, CAL., 1901-1902.

COL. ALFRED C. GIRARD, U. S. A., made an exhaustive report of one of the largest of the United States army hospitals during its most active period, which was divided into six parts: (1) General Administration, (2) Medical Work, (3) Surgical Work, (4) Bacteriological Work, (5) Eye, Ear, Nose and Throat Work and (6) X-ray Work. The enlisted force on duty averaged five hospital stewards, nine acting hospital stewards and one hundred and sixty-seven privates. During the year five hundred and six female nurses were on duty, the average per month forty-one. The total number of patients was four thousand five hundred and fifty-one, with ninety-two deaths. The surgical cases of the year numbered seven hundred and twenty-eight, of which one hundred and six were herniotomy, thirty-five were for varicocele, twenty-seven for appendicitis, fifty-eight for gunshot wounds, ten for bolo wounds, ten for hepatic abscess and twenty-seven for tumors. The paper followed with a concise description of the methods of operating employed in connection with hemorrhoids, appendicitis, hernia and varicocele. The pathological and bacteriological work of the hospital was of a specially high order and in charge of Dr. C. F. Craig. The blood and urine of every patient was examined in all cases of suspected pulmonary tuberculosis or diarrheal trouble, and the report included a valuable study of the results of his work, throwing much light upon malarial, estivo-autumnal and Malta fever and dysentery. The

report was accompanied by particularly valuable appendixes upon liver abscess and the mosquitoes of the Philippines.

AMBULANCE FOR MOUNTED TROOPS.

The author, LIEUT.-COL. H. G. HATHAWAY, R. A. M. C., was medical officer in charge of Cavalry Divisional Staff during the South African War and was greatly impressed with the difficulty of keeping the medical department in touch with the rapidly moving forces with which he was on duty. He endeavored to accomplish this in two ways: (1) By an appliance to be attached to the saddle for the use of men who were able to remain mounted with a suitable support. This saddle support consists of an encircling padded belt connected with the saddle by a metal leather-covered support behind. (2) By a light, strong platform cart with strong springs so arranged as to carry eight sitting or two recumbent cases. These appliances were carefully described and the equipment detailed with care.

QUARANTINES AS THE PICKET-LINE.

SURGEON P. C. KALLOCH, P. H. and M. H. S., gave an eloquent description of the work, privations and accomplishments of the quarantine officer.

THE SURGEON-GENERALS OF THE ARMY.

MAJOR JAMES EVELYN PILCHER, U. S. V., read a series of biographical sketches of the chiefs of the medical department of the army, from the Revolution to the close of the hostilities in the Philippines, illustrated by a complete series of portraits, many of them displayed for the first time.

NEW ENGLAND MEN IN THE MEDICAL CORPS OF THE NAVY OF THE UNITED STATES.

MEDICAL INSPECTOR F. B. STEPHENSON, U. S. N., presented a comprehensive historical sketch of the Navy Medical Corps, with a list of the natives of New England who had served as naval surgeons, and biographical sketches particularly full in relation to representatives from the Commonwealth of Massachusetts.

THE INSTRUCTION OF THE HOSPITAL CORPS IN COMPANIES AND DETACHMENTS.

The author, CAPT. F. P. REYNOLDS, U. S. A., had been in command of the U. S. Army Hospital Corp, Company of Instruction No. 1, for several years, and spoke with recognized authority on his subject. The points noted were: (1) Methods of maintaining discipline, (2) bearer drill, (3) anatomy and physiology, (4) diet cooking, (5) nursing, (6) care of animals, (7) first aid, (8) field work, (9) clerical work, (10) materia medica and pharmacy. The principles upon which the company work should be based appear to be: (1) To at once impart a thorough knowledge of discipline in the same way and by much the same methods as it is imparted in the line of the army, with which the hospital corps is always serving. (2) To teach men the principles

of order and neatness, both as regards themselves and their personal equipment, and also to familiarize them with the departments of a hospital and the articles with which they work. (3) After this, to impart to each man a knowledge, as far as his mental capacity will permit, of practical nursing, of preparation of diets for the sick, of first aid and transportation of the wounded, and of ambulance driving and care of animals. (4) To teach them to care for themselves and the equipment entrusted to them in field service, and to be familiar with the usual duties of hospital corps men on the march, in camp and during an engagement. (5) To instruct in clerical work, materia medica and pharmacy, those who have aptitude for such work.

SICK-BAY NOTES.

SURGEON G. F. STOKES, U. S. N., read a selection of a few cases from the medical journal of the steamship *Oregon* to show the varied character of naval practice, and comprised: (1) Pneumonia, (2) fracture of the base of the skull, (3) varioloid, (4) typhoid, (5) filaria sanguinis hominis, (6) malarial fever, (7) tuberculosis, (8) fracture of the tibia, (9) diphtheria.

SERVICE CONDITIONS IN RELATION TO RETIREMENT AND PENSIONS.

MEDICAL DIRECTOR JOHN C. WISE, U. S. N., stated that the medical officers of the army and navy are more directly responsible than any one else for the ultimate incidence of our vast pension appropriation. The author urged the highest care in diagnosis and record, with especial attention to the question of incurrence in the line of duty.

CIRCUMCISION AND FLAGELLATION AMONG THE FILIPINOS.

LIEUT. C. N. BARNEY, U. S. A., commented upon the prevalence of circumcision among the Philippine indios. A polished piece of wood, sufficiently curved, is driven into the ground so that the boy to be operated upon can squat upon his hands and insert the free end of the stick, which is pointed, between the glans penis and the prepuce; after the prepuce has been drawn over the point, the operator places a knife so that the edge rests lengthwise upon it and gives the blade a sharp blow with a stick, thus dividing the tissues and exposing the glans. The wound is dressed with guava leaves in poultice or in powder. The results of flagellation were also described and their treatment commented upon.

PREVENTION OF THE SPREAD OF INFECTIOUS DISEASES ON BOARD SHIP.

SURGEON HENRY G. BEYER, U. S. N., in reading this paper confined himself to the consideration of measles, an affection of singular importance in military and naval service, and recognized that the chief danger of infection in this and allied diseases lay first and foremost with the patient himself and only secondly with

persons and things with which he had been brought into contact. The author's practice then was, having diagnosed the disease, to spread out a clean white sheet upon which the patient stepped and left all his clothes including his shoes; all were sterilized by steam except the shoes, which were disinfected with a solution of bichloride of mercury. The patient received first a thorough scrubbing with soap and warm water and a complete sponging with bichloride (1:2000), and was put to bed wrapped in a sheet moistened with the same solution. The bichloride bath was repeated three times daily during the height of the eruption, twice a day thereafter. The mouth and nose were cleansed frequently with normal salt solution containing a minute quantity of carbolic acid or bichloride. Antiseptic cloths were provided for the secretions of coughing or sneezing. All excretions were immediately disinfected and all complications promptly treated. While the patient was in bed all his clothing was disinfected. By use of these precautions it was possible to readily control the spread of the affection.

THE PRESERVATION OF THE HEALTH OF THE SOLDIER.

BRIGADE-SURGEON LIEUT.-COL. WILLIAM HILL-CLIMO, A. M. S., concluded after an interesting survey of the subject, both from British and American standpoints, that a nation whose system of recruitment is voluntary should use every effort to improve the physical development of the people, so that all classes in an emergency should be equally capable of undertaking military service; that, after enlistment, the recruit should be prepared for training which he should not undergo until pronounced fit; that during training, and all through his subsequent service, his health should be carefully supervised; that these measures are specially required for countries whose army organization is not single but composite, that is to say, when the troops consist of regulars, militia, volunteers, etc., and are raised under different conditions of service; that these measures must be entrusted to the medical service, and that full power must be given it to carry them out.

THE RESULTS OF TWO SEASONS OF ANTI-MALARIA WORK.

LIEUT. F. F. RUSSELL, U. S. A., summarized in this paper the observations made at Fort Washington, Md., on the left bank of the Potomac, thirteen miles below Washington. The use of petroleum upon the stagnant breeding pools in the neighborhood was immediately beneficial, resulting in the first year in the diminution of the percentage of malarial cases from 19.53% to 8.63%, which was still farther reduced the following year to 4.18%. The oiling was soon regarded as merely a temporary resort, and a general drainage system was provided. He notes also the great increase in the comfort

of living due to the abolition of great swarms of culex, which formerly made life almost unendurable.

EPIDEMIC CATARRH ON SHIPBOARD.

PASSED ASSISTANT SURGEON DUDLEY N. CARPENTER, U. S. N., related a year's clinical observation on the battleship *Illinois*. Especial attention was directed to the evils of poor ventilation and overcrowding in accentuating the disease, while the etiology, clinical history and treatment were fully considered.

TREATMENT OF TUBERCULOSIS AT FORT STANTON, N. M.

SURGEON PAUL M. CARRINGTON, P. H. and M. H. S., spoke of the climate as characterized by extreme dryness, a large proportion of sunny days and great purity of the atmosphere, which appears to be free from pathogenic germs, — wounds of all kinds healing very kindly and without infection even with the most careless disregard of asepsis. On the appearance of winter, mixed infection cases invariably lose their mixed character. The rarefaction of the atmosphere makes deeper breathing necessary and the decreased barometric pressure induces a diminished liability to hemorrhages. The author is a sturdy advocate of tent dwelling for the consumptive. The spread of infection is controlled by the use of the spit-cups and periodical disinfection of apartments. While an advocate of exercise under favorable conditions, the author believes that the advice to "go West and rough it on a ranch" is responsible for many unnecessary deaths.

THE MEDICAL TREATMENT OF APPENDICITIS IN ACCORDANCE WITH THE MODERN PRINCIPLES OF THERAPEUTICS.

LIEUT. E. CASTELLI, the Italian delegate, believed the disease to be a closed wound in which the colonization of microbes and the action of toxins accomplished their work undisturbed. The therapeutic equation to be solved is the same as that reached by surgery, except that for the term "local antisepsis" must be substituted the term "general antisepsis," and internal antisepsis becomes the basis of action. The appendix must be considered as a tubular ganglion receiving germs either from the blood or the lymphatics, whence appendicitis may become a complication in cases of scarlet fever, pneumonia, erysipelas, parotitis, etc. The author is profoundly opposed to the internal treatment by opium or the local action of ice, but resorts to preliminary treatment by salicylate of sodium as a cholagogue and anti-thermic; three hours later he begins to administer calomel for its action as an intestinal antiseptic, cholagogue, laxative diuretic and stimulant of the pancreatic secretions. For the relief of pain he employs the warm bath and enemata of hot salt solution. The bacterial cause of the trouble, residing in the blood, is treated by subcutaneous injection of a dilute solution of carbolic acid.

THE PATHOLOGY OF LATENT MALARIAL INFECTION AS OBSERVED AT AUTOPSY.

LIEUT. CHARLES F. CRAIG, U. S. A., by latent infection means malarial infection, which is not manifested by any symptoms and in which an examination of the blood does not necessarily show the presence of malarial parasites. The pathology of latent tertian infection is confined almost entirely to the spleen, the liver being but slightly involved. The changes in the spleen consist chiefly in an engorgement of the splenic sinuses with red cells and leucocytes, the presence of infected red cells and of phagocytes and melaniferous leucocytes, an increase in the cells of the splenic pulp with more or less degeneration and karyokinesis and pigmentation of the organ confined to the edges of the Malpighian corpuscles and the splenic sinuses and trabeculae. In the liver the chief changes consist in slight pigmentation, more or less venous congestion and the presence of melaniferous leucocytes. The pathology of latent estivo-autumnal infection is also confined practically to the spleen, and it is observed that the parasite is capable of undergoing its entire human life cycle within the spleen, and in such numbers as not to be found in the peripheral blood upon repeated examinations. These facts go to bear out the time-honored theory that the spleen is the seat of malarial infection.

HYSTERIA IN THE MALE.

SURGEON S. G. EVANS, U. S. N., invited attention to the frequency of hysteria in the male in naval practice, and detailed an unusual case of the affection.

AN EPIDEMIC OF DIPHTHERIA ON SHIPBOARD.

MEDICAL INSPECTOR G. E. H. HARMON, U. S. N., gave a careful study of an epidemic diphtheria which occurred upon the United States training ship *Buffalo*, and was particularly noteworthy because of the large number of cases among male patients in early manhood otherwise in robust health, not a case being contracted by a person above the age of thirty. Eighteen percent of the ship's company of 750 men suffered from the disease, and of the 137 cases not a single death occurred after antitoxin treatment was begun. Great care was taken in the examination of the entire ship's company, and all those who showed the presence of the Klebs-Loeffler bacterium were immediately subjected to treatment. The disinfection of the ship and the crew was described with great care.

MAJOR FREDERICK SMITH, D.S.O., R.A.M.C., read a paper on

THE DIFFERENTIAL DIAGNOSIS OF TYPHOID FEVER IN ITS EARLIEST STAGES.

This was the Enno Sander prize essay, and the fact of its award to an officer of the military service of another country was greeted with hearty applause. Major Smith's essay was divided into thirteen chapters: (1) Introduc-

tory. (2) Subjective early symptoms illustrated by the author's personal experience. (3) Objective symptoms. (4) Temperature as an aid to diagnosis of typhoid. (5) Typhus and relapsing fevers. (6) Tuberculosis, diseases of the respiratory system and influenza. (7) Meningitis, septicemia, puerperal fever, pyemia, endocarditis, pericarditis, glanders. (8) Gastroenteritis, inflammation in the neighborhood of the cecum, dysentery. (9) Febricula, or simple continued fever. (10) Malta fever. (11) Malarial fever. (12) Plague and other diseases which have been mistaken for typhoid. (13) Chemical reactions and microscopical methods in relation to the earliest stages of typhoid. He concluded that in the field the medical officer must rely mainly upon his clinical acumen, and summarized his studies in that direction as: (a) There is scarcely any disease accompanied by fever which has not been at times mistaken for typhoid fever. (b) A good many cases are wrongly diagnosed owing to mere carelessness or to want of knowledge. (c) The disorders most liable to be confounded with typhoid fever are: typhus fever, tuberculosis, pneumonia, influenza, febricula or unnamed continued fever, Malta fever, malarial fever and paratyphoid. (d) It is frequently impossible by non-bacteriological methods to differentiate between typhoid and the diseases named above in four days or even a week and more. (e) Our safety from a public health point of view lies in regarding all doubtful cases as typhoid until they have been proved to be something else. (f) The anomalous cases are more numerous and the difficulties in the way of diagnosis greater in military than in civil life.

In his last chapter he discussed the diazo reaction and fecal, sputum and blood examinations, which, however, he considered hardly practicable in the field, although the serum test is the most reliable and generally practicable of these.

The second place in the prize competition was awarded to ASSISTANT SURGEON W. C. RUCKER, P. H. and M. H. S., whose paper may be epitomized as follows:

(1) There is no single symptom on which alone an early diagnosis of typhoid fever can be made. It is only by careful consideration of the symptom-complex that a clinical diagnosis can be arrived at. (2) The most trustworthy, as well as the earliest, sign of typhoid fever is the presence in the circulating blood of the bacillus of Eberth. (3) The demonstration of the bacillus of Eberth is found in the feces later than in the blood, but with comparative ease. The presence of the *B. typhosis* in the feces is of great value as a corroborative sign. (4) The presence of the bacillus typhosis in the rose spots is a trustworthy sign, but has no advantages over the examination of the blood from other localities. (5) The serum reaction of Widal is seldom demonstrable during the earliest stages of typhoid fever. It is of value only in the higher dilutions.

HISTORY, CAUSE AND MODE OF TRANSMISSION OF YELLOW FEVER, AND THE OCCURRENCE OF SIMILAR TYPES OF FATAL FEVERS IN PLACES WHERE YELLOW FEVER IS NOT KNOWN TO HAVE EXISTED.

LIEUT. JAMES CARROLL, U. S. A., read an encyclopedic paper tracing the yellow fever from its earliest history to the present time, beginning with the Barbadian epidemic of 1647 and closing with the decline of the disease in Cuba last year. The author was himself the subject of the first experimental case of inoculation with yellow fever by the *stegomyia fasciata*, and from this and numerous other experiments, reinforced by an exhaustive study of the subject in all its bearings, he concludes that yellow fever as we meet with it is contracted only through the bite of an infected mosquito twelve days or more after feeding upon a patient in the early period of the disease. Experimentally the disease can be produced by the subcutaneous injection of blood or even the unfiltered blood serum of a patient, provided the material can be obtained sufficiently early in the attack.

TREATMENT OF YELLOW FEVER AT LAS ANIMAS HOSPITAL IN HAVANA.

The author, COL. W. C. GORGAS, U. S. A., emphasized the desirability of receiving the patient during the first three days of the attack, and of maintaining him in a recumbent position absolutely without exertion. During the active stage, food was prohibited, and milk began when the temperature subsided unless contraindicated. Water and cracked ice was permitted *ad libitum*. Cathartics were employed as needed and phenacetine for headache or muscular pains. For urinary suppression or diminution saline enemata and local applications to the back were given. The convulsions were not so largely uremic as had been supposed, but were generally due to the yellow fever poison itself. Gastric hemorrhage is best treated by cracked ice and rest, without astringents. The drugging employed by the Spanish physicians is not approved of, and this view is endorsed by the lower mortality of the American hospital, in which twelve lives more per hundred were saved than in the most successful of the native institutions.

SOME OBSERVATIONS MADE IN THE PHILIPPINES.

SURGEON J. A. GUTHRIE, U. S. N., opened with a humorous picture of the germophobist of the Philippines, the author in happy vein calling attention to some important points to be observed by those going to our possessions in the Southern Seas. Of prime importance is attention to the skin both from a hygienic and entomologic standpoint. He notes the remarkable effect of a land leech in breaking soldiers down on a march. The liquor called "tuba," he describes as a fermented solution of more or less poison-

ous insects, while "bino" is another most dangerous alcoholic poison. Repression of energy, and rest during the heat of the day, are essential to physical welfare, and the American must give up and return home upon the first accession of tropical disease if he desires to save his life. The prevalence of the ever-present dhobie itch is commented upon and precautions against it detailed, while the use of frequent antiseptic washes, douches and gargles is advised.

SANITARY CONDITION OF THE TOWN OF SURIGAO, MINDANAO.

CAPT. HENRY DU R. PHELAN, U. S. V., submitted a report to the chief surgeon of the Philippines, by whom it was forwarded to the surgeon-general of the army, with the recommendation that it be laid before the association as a minute and accurate description of life in a Philippine village, with especial reference to the conditions requiring sanitary attention. It was accompanied by numerous photographs, and comprised a panoramic view of one of the most important phases of the work of the military medical officer in our island possessions.

NOTES FROM THE EXPERIENCES OF A MEDICAL OFFICER IN THE TROPICS.

MAJOR C. F. MASON, U. S. A., employed the term "Diseases in the Tropics" instead of "Tropical Diseases," because there are few if any diseases which occur only in the tropics, but diseases are modified by their occurrence in the tropics, and the relative prevalence of particular diseases is very different from that obtaining in temperate climates. He makes an interesting comparison of the relative frequency of certain diseases in Porto Rico and Panay—filariasis and ankylostomiasis being rare or absent in Panay, while beri-beri and certain fevers are rare or absent in Porto Rico. Gastro-intestinal disorders, especially diarrhea and dysentery, loom up as of overshadowing importance among diseases in the tropics, but he believes that a large percentage of these cases are preventable by the exercise of suitable hygienic precautions.

MALARIAL SCIATICA.

PASSED ASSISTANT SURGEON E. O. HUNTINGTON, U. S. N., read this paper. In view of the increased prominence given to malarial affections by the extension of tropical service, the author submitted a case of extreme sciatica, in which the presence of the quartan parasite was clearly demonstrated and in which recovery was secured by the exhibition of quinine in full doses both by the mouth and by injection directly into the sheath of the nerve.

SOME OBSERVATIONS ON FRACTURES OF THE SKULL.

CAPT. ROBERT E. BELL, M. V. M., read this paper, which was a valuable clinical study of cranial fractures, based upon extensive personal experience by the author,

SPINAL ANESTHESIA IN MILITARY SURGERY.

The delegate from the Mexican Army LIEUT.-COL. AUGUSTIN AGUIRRE, presented an interesting report upon the subarachnoid injection of hydrochloride of cocaine according to the method of Tuffier as practiced at the Mexican Military Hospital of Instruction. Colonel Aguirre makes an injection exactly in the middle line below the spinal apophysis of the third or fourth lumbar vertebra, or possibly below the second or first, in which case the needle passes perpendicularly through the skin, cellular tissues and ligaments at the widest portion of the intervertebral space. To obviate clogging of the needle it is provided with a mandril to be removed when the canal is penetrated. Care is taken to have the solution completely sterilized, to allow the exit of an amount of cerebro-spinal fluid equal to the amount of the solution injected, and to have the patient maintain a sitting posture so as to permit the cocaine to remain in the lower portion of the spinal canal. The advantages of the method are: (1) Ease of application; (2) the possibility of its being performed by the surgeon himself; (3) speedy action—ten minutes as a rule; (4) absolute safety; and (5) a small arsenal, easily carried and readily sterilized. The paper was accompanied by a report of two hundred and ten cases in which the method had been employed.

AN EXTERNAL SUTURE.

CAPT. THOMAS PAGE GRANT, Kentucky, spoke of an application consisting of strips of adhesive plaster with hooks on one end to be attached on either side of the wound, which are drawn together by rubber bands. The application was practically demonstrated upon the living subject.

MY FIRST AID TO THE WOUNDED.

LIEUT.-COL. HENRY O. MARCY, U. S. V., read an interesting description of the trip of the steamer *S. R. Spaulding*, transporting the wounded from City Point, Va., to Philadelphia after the seven days' battles, in 1862. The sufferings of the wounded due to insufficient surgical treatment were clearly brought out, the ultimate results of better care were shown and the methods applied to this end described.

TROPICAL ABSCESS OF THE LIVER.

LIEUT. E. W. PINKHAM, late U. S. A., gave a report of sixteen cases of hepatic abscess occurring in the Military Hospital at Hilo, Panay, from Aug. 5, 1900, to April 20, 1901, with operation and results. Of the sixteen cases there were seven recoveries, and the author attributes the high mortality to the failure to recognize the trouble at a sufficiently early period. He observes that the so-called abscesses of the liver are not abscesses nor are their contents pus; they are rather areas of necrosis or liquefaction of the liver tissues, and made up of liver cells in all stages of degeneration and disintegra-

tion, free fat globules, more or less of blood corpuscles and serum. He comments upon the freedom with which the liver may be examined without dangerous hemorrhage, and objects strongly to evacuation and drainage by means of the trocar and canula, urging free incision.

WOUNDS BY LEAD AND JACKETED BULLETS IN THE CUBAN INSURGENT WAR.

CAPT. E. C. POEY, U. S. V., was a brigade surgeon in the Cuban army, and afterwards a medical officer of the United States army in Cuba, the United States and the Philippines. He remarks that a ricochet shot is more injurious than a straight shot, and believes that in any shot wound the less surgical interference the better. The Mauser bullet is the most humane and the Krag is the next; the stopping power of both is *nil*. He has observed a number of cases of spontaneous recovery from abdominal wounds with small caliber bullets, and is an advocate of non-intervention in these as well as other cases.

DISLOCATION OF THE FIRST METATARSAL BONE.

SURGEON HENRY W. SAWTELLE, P. H. and M. H. S., reported a case of direct dislocation of the proximal end downwards and outwards into the plantar arch with a forcing upward and inward of the internal cuneiform. Reduction by manipulation having failed, an incision was made and replacement effected by direct force.

EARLY RADICAL TREATMENT IN ADENITIS INGUINALIS.

ASSISTANT SURGEON R. L. SUTTON, U. S. N., advocated prompt extirpation by the knife as a means of expediting recovery from inguinal adenitis, often so prolonged and intractable a cause of absence from a soldier's or sailor's duty. He gave a table of ten cases showing the rapid result of the treatment.

TREATMENT OF ANTERIOR DISLOCATION OF THE SHOULDER.

ASSISTANT SURGEON-GEN. G. TULLY VAUGHAN, P. H. and M. H. S., recommended the following methods in the order given: (1) Direct reposition. (2) Extension and counter-extension. (3) Kocher's method. (4) Arthrotomy — and related a case in which all were successively employed, free opening finally showing that reduction had been provided by a detached greater tuberosity; reduction was then easily effected by pressure in the axilla with adduction of the arm.

SUBDURAL HEMORRHAGE WITHOUT FRACTURE.

SURGEON F. W. F. WIEBER, U. S. N., reported a case of football injury in a midshipman at the Naval Academy. Intracranial clot and irritation over the motor area on the left side of the brain was diagnosed, and the brain exposed at the point located, verifying the diagnosis. The clot was removed, and the patient made a rapid and complete recovery. The operation was indi-

cated because: (1) the epileptic symptoms were on the increase; (2) it was feared that the respiratory muscles would become seriously involved; and (3) absorption of the clot might have been imperfect and permanent epilepsy might have become established.

THE INTEROCEANIC CANAL.

The following resolutions were presented by LIEUT.-COL. J. K. WEAVER, Pennsylvania, and unanimously adopted:

Whereas, It is well known that the previous excavations for an isthmian canal have been attended with a large amount of illness and a heavy mortality due mainly to malaria and yellow fever, and

Whereas, Recent discoveries as to the cause of these diseases have enabled medical officers to control their ravages to a marked degree, and

Whereas, The success which has crowned medical efforts in Cuba in abolishing yellow fever in the island, almost banishing malaria from Havana and entirely eradicating malaria as a factor of the death-rate of the army in Cuba, is conclusive evidence that, if proper hygienic precautions are taken at Panama and other situations along the route of the projected interoceanic canal, the death-rate of the past can be diminished and practically made to disappear; therefore be it

Resolved, That in the judgment of the Association* of Military Surgeons of the United States, in annual meeting assembled, the amplest power should be given to the medical officers in charge of the sanitation of the canal, and that, to attain this end, the medical officer in charge should be a member of the commission which the President of the United States is authorized to appoint to conduct the affairs of the canal; and be it further

Resolved, That the secretary of the association is instructed to forward this preamble and resolutions, properly attested, to the President of the United States.

THE INTERNATIONAL MEDICAL CONGRESS.

GEN. J. D. GRIFFITH, N. G., Missouri, made an interesting report on the International Medical Congress at Madrid, at which he was an accredited delegate from the association.

INCORPORATION BY CONGRESS.

The Committee on Incorporation announced, through its chairman, MAJOR W. C. BORDEN, U. S. A., that the association was incorporated by Act of Congress approved Jan. 30, 1903, and the association then proceeded to reorganize under the law. The act, among other things, officially recognized the insignia of the association and authorized it to be worn with the uniform.

OFFICERS AND PLACE OF MEETING FOR 1904.

The following were elected officers for the ensuing year: President, MEDICAL DIRECTOR JOHN C. WISE, of the United States Navy; First Vice-President, SURGEON-GENERAL WALTER WYMAN of the United States Public Health and Marine Hospital Service; Second Vice-President, MAJOR ALBERT H. BRIGGS of New York; Third Vice-President, GEN. ROBERT M. O'REILLY of the United States Army; Secretary and Editor, MAJOR JAMES EVELYN PILCHER of the army; Treasurer, MAJOR HERBERT A. ARNOLD, Pennsylvania. St. Louis was selected as the place of meeting for 1904, provided that suitable accommodations can be furnished.

Recent Literature.

Disease of the Pancreas: Its Cause and Nature. By EUGENE L. OPIC, M.D., Associate in Pathology in the Johns Hopkins University, Fellow of the Rockefeller Institute of Medical Research. Philadelphia and London: J. B. Lippincott Company. 1903.

In the list of names of those identified with the study of the pathology of the pancreas a conspicuous place is occupied by that of Opic, and the volume now under consideration gives ample evidence of the breadth and thoroughness of his work. The studies of the anatomy of the pancreas are noteworthy, since they include the results of the dissection of one hundred specimens with reference to the number and course of the ducts and to the presence of accessory pancreatic tissue. The importance of this inquiry is apparent when it is recognized that conclusions from experiments on the pancreas must be controlled by evidence that in the experiments concerned attention was directed to the possibility of accessory ducts and of detached foci of pancreatic tissue.

Opic's investigations with regard to the function and lesions of the islands of Langerhans make his assertion almost conclusive when he states that considerably more than one half of all cases of diabetes are due to injury of these islands.

The title of the book sufficiently indicates its scope. Without being a comprehensive treatise on diseases of the pancreas, it includes the consideration of some of the most important affections of this organ. It shows how they arise, what are the resulting disturbances, and gives evidence of value in their diagnosis, prognosis and treatment. The volume is of value to every student of pancreatic disease and will interest both physician and surgeon. It is gratifying to learn that the Rockefeller Institute of Medical Research aided the completion of the work.

A Textbook of Histology and Microscopic Anatomy of the Human Body, including Microscopic Technique. By DR. LADISLAUS SZYMONOWICZ. Translated and edited by JOHN BRUCE MACCALLUM. Illustrated with 277 engravings, including 57 plates in colors and monochrome. 8vo, pp. 435. Philadelphia: Lea Brothers. 1902.

In default of American textbooks of histology, we have come to rely mainly upon translations of German manuals of the science, two of which have already won general recognition for themselves. The new candidate for favor is really the most condensed and briefest work we have had, although it forms a bulky and heavy volume, being in large type and printed on heavy paper, so that it appears more than twice the size of Schäfer's "Essentials of Histology," although containing much less matter. It has two special merits—one the excellence of the illustrations,

which have for the most part been specially prepared for the work, the other the incorporation of many of the results of researches carried on in Professor Mall's laboratory in Baltimore, researches which have failed to receive the recognition they deserve. Very scant attention is given to other American work. Neither the author nor the editor shows a thorough mastery of the subject, although both have a sound knowledge of histology, so that while they have produced a textbook which will prove acceptable to students, they have not produced an authoritative manual of reference for advanced workers, because they have left many recent investigations unheeded,—such as those on the vitreous body, of Mingazzini on the intestinal epithelium, those on the circulation of the liver, on the structure of the placenta, etc. Students will appreciate the clear statement of the facts by the author and the idiomatic excellence of the translation by the editor, and we must all admire especially the beauty of the colored illustrations, which have been wisely chosen to show features less well to be demonstrated by mere black and white figures. The closing chapter on technique seems to the reviewer unsatisfactory. There is a good index.

The Medical and Surgical Uses of Electricity. By A. D. ROCKWELL, A.M., M.D. New [tenth] edition. 8vo, pp. xvi, 656, with two hundred and fifty-two illustrations. New York: E. B. Treat & Co. 1903.

In this new edition of a well-known book, chapters have been added on the x-ray, the Finzen light, vibratory therapeutics and high-frequency currents, and other chapters have been revised. The revision, however, is merely an example of putting new cloth into a very old garment which has outlived its usefulness.

Mechanical Vibratory Stimulation. Its Theory and Application in the Treatment of Disease. By MAURICE F. PILGRIM, M.D., First Vice-President of the American Electro-Therapeutic Association, etc. New York: The Lawrence Press.

The aim of the author in this small book of 152 pages is to indicate the therapeutic value of mechanical vibration, to establish a rational basis for this type of treatment and to make the method available to the practitioner. The result is a carefully written and well-illustrated book, which should at least call attention to this little-practiced form of treatment.

THE SPITTING NUISANCE IN PHILADELPHIA. — A vigorous attempt is being made in Philadelphia to abate the spitting nuisance, through frequent arrests. A few public examples should do much toward the abatement of this widespread habit. The mere exhibition of prohibition notices has been proved to be of small avail.

THE BOSTON

Medical and Surgical Journal

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SPOTTED FEVER.

WE have previously alluded somewhat briefly to the work which has been done in the study of so-called spotted fever of the Rocky Mountains. The general importance of the subject, and the very great interest attaching to disease transmitted as this appears to be, justify a somewhat more extended statement of the course of the work and the preliminary conclusions which those engaged in it have reached. The detailed account of the work appears in the first biennial report of the Montana State Board of Health. It is worthy of note that so unusual a piece of investigation should have inaugurated the publication of this report. As is perhaps generally known, the work of investigating the disease has fallen to the lot of Dr. Louis B. Wilson and Dr. William M. Chowning, both connected with the Minnesota State University in the capacity of pathologists.

Soon after the organization of the State Board of Health of Montana, the desirability of investigating a peculiar localized disease of the Bitter Root Valley, known in that locality as spotted fever, became apparent. The supposed causes—water, conditions of the soil, snow from the Bitter Root Mountains and various local conditions—were soon proved insufficient to explain the incidence of the disease. In view of the fatality of the affection, its curious localization in a particular valley, and the general interest attaching to an apparently new disease, the physicians we have mentioned were chosen systematically to prosecute the research. The investigation has now been in progress upwards of a year, and certain conclusions, although

acknowledged to be preliminary, seem to be of much practical and theoretical importance.

It was found that the first case of spotted fever in the Bitter Root Valley occurred in 1873, when there were but few white men resident there. It apparently had not occurred among the Indians, who continued to inhabit the valley until 1890. Since its appearance about two hundred cases of the severer form of the disease have occurred, with a mortality of 70 to 80%. Through the co-operation of the physicians of Western Montana a table has been drawn up including 114 cases, with a more or less complete clinical history, showing the important points connected with the course and outcome of the affection. It has been found that the disease is confined to the Bitter Root Valley in an area from four to ten miles by fifty miles long. It is doubtful whether any cases have originated outside of this territory, excepting eight in a small valley twenty miles east of the Bitter Root Valley. The practical limitation of cases to the west side of the valley is also strikingly shown by the investigations. The population of the valley is largely made up of ranchers, who are, as a rule, cleanly in habits and healthy. The greatest number of cases have occurred in May and June, and but little importance can be attached to the general health of the patient in determining his susceptibility to the disease. Age apparently, apart from other considerations, plays little part in predisposing to the disease. The onset of the affection is characterized by elevation of temperature, a generalized eruption beginning on the abdomen and gradually extending to other parts of the body, hence the name "spotted fever." In general, in the more serious cases, the disease runs the course of a highly acute infection with cutaneous manifestations.

During their stay in the valley Drs. Wilson and Chowning were able to perform a number of autopsies, the details of which are carefully registered in the report before us. The histological study of these cases showed fairly constant, but not altogether characteristic, appearances. Enlargement of the spleen and general congestions were noted, and in all cases small wounds of the skin were observed, due to tick bites. Various bacteria were found in careful routine examination, which did not tend to throw much light on the disease. A most thorough study of the blood was made and confirmatory experimental work done. From these various sources of information it was finally determined that

in all probability the disease was due to a hematozoön, of which the normal host was the gray gopher, indigenous and abundant in that region. The animal is averse to swimming, hence its practical limitation to one side of the river which runs through the valley. Early in the spring the gopher is said to harbor large numbers of ticks, which apparently later in the season is not the case. Of forty-three gophers examined, nine showed within their blood cells hematozoa, which were indistinguishable from the hematozoa found in patients suffering from spotted fever. Gophers examined from the unaffected side of the valley did not disclose similar hematozoa.

The general conclusion reached by this investigation is that in all probability the curious disease under consideration is due to an organism which has as its host the gray gopher, and which is transmitted to man through the bite of the tick. The writers naturally recognize that their work is as yet in a somewhat formative stage, and that further research must be undertaken before their ingenious hypothesis may be definitely established. Experience in other diseases, however, would lead to the assumption that the hypothesis, reinforced by the evidence already at command, is an extremely likely one. They insist that ticks must be most carefully studied; and particularly those on the west side of the Bitter Root Valley, which have actually bitten persons, should be preserved and identified. In general, the problem is one which already has its analogies, but we cannot too highly commend the scientific spirit in which it has been carried out and the positive addition to knowledge which the substantiation of the hypothesis will bring.

A DAILY MEDICAL JOURNAL.

It is announced, as stated in our issue for last week, that a medical periodical, to be known as *The Daily Medical Journal*, is to be published, beginning the first of October. The last few years have seen many changes in medical journalism, particularly in this country. Journals have multiplied beyond the demand. Many of the older established periodicals have increased the number of their reading pages, and the general medical activity of the times has been adequately reflected in the various weekly and monthly medical journals. In view of these facts we are not altogether surprised to be brought face to face with a daily medical journal. The need of

such a journal, so far as the further development of medical science is concerned, is not in the least apparent, but we suspect, from the statement which has been published, that the object of this new periodical is not purely medical and is not designed solely to further the needs of medical science.

If the statement published in our issue of last week be correct, it is evident that other motives than those ordinarily accepted in the best medical journalism are at work. This we regret. Possibly it is a sign of the times, but it is nevertheless to be deplored that within the last few years a certain departure from the recognized standards of medical publication, which had hitherto prevailed and been accepted, has occurred. We are quite convinced that there is not sufficient medical news of vital interest to the profession to justify a daily publication; nevertheless we shall await with interest this new venture in medical journalism.

LEGISLATION AGAINST THE TOY PISTOL.

EACH succeeding year sees the usual number of casualties resulting from the use of the toy pistol during the weeks about the Fourth of July. There has from time to time been a somewhat lukewarm effort to abate not only the nuisance which such pseudo-firearms produce, but also to check the positive mortality which inevitably results from their free use in the hands of the young. Noise may possibly be a necessity to be indulged in and condoned once yearly, but we certainly have not the right to condone also the really alarming death rate which apparently is an inevitable accompaniment.

We are glad, therefore, to note that the city of St. Paul has shown a disposition to attack the problem seriously through restrictive legislation. It is reported that the corporation attorney has drafted an ordinance which prohibits on the Fourth of July, and it is to be hoped on other occasions as well, the use of blank cartridges and pistols. The ordinance is designed not only to prohibit their use, but also to hold dealers responsible for carrying them in stock a month previous to July Fourth, infringement of the ordinance being punishable by fines.

It is needless to say that such local legislation can have but small effect upon the generally recognized evil, but it is none the less necessary that a beginning should somewhere be made in passing laws of so stringent a character that

evasion will no longer be attempted, and dealers in such objects will be prevented from exposing them for sale. No doubt if the suggested ordinance is a success in St. Paul, it will be adopted by other cities, so that in time the toy pistol will be tabooed in the same sense that violent explosives and, to a less extent, gunpowder are in the hands of the irresponsible. We see no other way than such widespread public sentiment, finding expression in law, to check the yearly harvest of tetanus, which is becoming increasingly menacing. It should certainly be the work of public-spirited physicians everywhere to urge such legislation.

MEDICAL NOTES.

TYPHOID FEVER IN PITTSBURG. — Pittsburg for some time has been suffering from an epidemic of typhoid fever, which still continues. The water supply of the city is held to be responsible for the disease, which has numbered as many as a hundred victims a week, at least during some weeks of the epidemic.

ABOLITION OF RIVER BATHS. — According to a statement in the *Medical News*, President Lederle of the New York Department of Health has expressed himself in favor of the abolition of free municipal baths along the river fronts, on the ground that a certain amount of infectious disease is contracted through their use and that they therefore are a public menace. The question of doing away with the river baths, which are often polluted, and substituting plunges and shower baths, is now under consideration by the Board of Health.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Aug. 12, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 20, scarlatina 20, typhoid fever 16, measles 36, smallpox 0.

IMPROVEMENTS AT THE BOSTON CITY HOSPITAL. — It is stated that a heating plant of an approximate cost of \$12,000 is to be installed at the Boston City Hospital to provide for the South Department.

SMALLPOX IN WAREHAM, MASS. — It is reported that three extremely mild cases of smallpox have appeared at Wareham, two in children and one in an adult, the disease presumably having been brought from a distance. The patients are not seriously ill, and there is appar-

ently absolutely no reason to dread any extension of the disease. Quarantine precautions have been taken.

PAVING OF ALLEYWAYS. — The Boston Board of Health has recently taken action under the act providing that the surface of any private passageway shall be paved or otherwise rendered sanitary at the owner's expense. A number of alleyways have been condemned as nuisances and orders have been issued to have them properly paved and drained, the expense to be borne by the owners and not by the city.

NEW YORK.

A SMALL INFANT. — There was recently admitted and placed in an incubator at the New York Post-Graduate Hospital a male infant which weighed only thirteen ounces, which is stated to be the smallest child ever met with there.

YELLOW FEVER ON A STEAMSHIP. — On the steamship *Basil* of the Booth Line, which arrived at quarantine on Aug. 1, four seamen died from yellow fever after the vessel left Para.

THE CARE OF SMALLPOX PATIENTS. — In a case recently decided in the Fourth Appellate Division of the New York Supreme Court the opinion was given, through the presiding justice, that it is the undoubted duty of a town board of health to take immediate and efficient steps, when smallpox develops within its jurisdiction, not only to furnish care and attendance to persons suffering from the disease, but to protect, as far as possible, the residents of the town from the danger to which they are exposed by reason of its contagious and malignant character. To this end the board of health is authorized to incur any reasonable expense, and the expense thus incurred becomes a charge upon the town. The court therefore held that when the health officer of the town, acting under the authority of the town board of health, orally employs a physician to treat and care for all patients who are then, or might thereafter be, affected with smallpox, assuring the physician that he would be well paid for his services, the town is liable to such physician for the reasonable value of the services rendered by him.

A CASE OF POSSIBLE POTASSIUM CYANIDE POISONING. — A remarkable case is reported from the Eastern District Hospital, Brooklyn. A man thirty-four years old, who is stated to have been deaf and dumb from birth, and who was found unconscious in his room by his

father, was admitted in a state of coma, in which he remained for many hours. It was thought that perhaps the patient had been poisoned by illuminating gas, but this was emphatically denied by the family, and the diagnosis remained obscure until he recovered consciousness, when, if the newspaper accounts are to be accepted, the man actually began to talk, and stated that he had inhaled the fumes of potassium cyanide, with which he was cleaning a bed.

NEW YORK HEALTH DEPARTMENT REPORT. — The weekly reports of the New York Health Department for the month of July show an annual death rate of 19.06 as against 16.51 in June and 21.35 in July, 1902. The corrected death-rate, excluding non-residents and infants under one week old, was 18.71. Among the diseases in which there was a decline in mortality were the following: The weekly average of deaths from diphtheria and croup decreased from 49 in June to 36½ in July; of deaths from scarlet fever, from 19½ to 11½; from whooping-cough, from 7½ to 4; from pneumonia, from 84½ to 58½; from broncho-pneumonia, from 52½ to 47; from acute bronchitis, from 20½ to 13½; and from pulmonary tuberculosis, from 139½ to 125½. Among the diseases showing an increased mortality were the following: The weekly average of deaths from diarrheal diseases increased from 84½ to 301½; from diarrhea under two years of age, from 82½ to 297½; from typhoid fever, from 7½ to 13½; from cancer, from 46½ to 50½; from Bright's disease and nephritis, from 93½ to 95½; and from organic diseases of the heart, from 87 to 98½. Although there was naturally a considerable increase in the mortality from diarrheal diseases, the number of deaths is smaller than the average for the season, and in the last week of July there were 274 in children under two years, as against 340 in the corresponding week of last year. During the month 1 death was reported from influenza, as against 5 in June.

Correspondence.

NURSING AS A PROFESSION.

Boston, Aug. 6, 1903.

MR. EDITOR: I am much interested in the subject of your editorial of July 30, upon "Nursing as a Profession." Not long since you published a short address made by me to a graduating class of nurses, in which I pointed out to them that it lay with them to choose whether they should practice nursing as a calling, contenting themselves with carrying out what they had learned during their novitiate and applying it to the sick under their

care, or whether they should regard their previous training merely as a preparation for further constant study and effort to widen their horizon.

I stated that if they chose the latter view and continued through life their search after knowledge, they elevated their nursing to the dignity of a learned profession.

A profession has been defined by good authority as "an employment requiring a learned education."

Applying this definition strictly, a young woman graduated at one of our better training schools may properly claim that she is educated for a profession. Graduation from such a school indicates that after obtaining a good "common school" education she has devoted three years to special studies applying to her future employment.

It seems to me, however, that a man or woman claiming to *practice* a liberal profession should be able to show that they are exercising their calling in a progressive spirit that is constantly carrying them forward and is keeping their minds open and receptive.

This spirit is what keeps a profession liberal, and a nurse having this spirit, coupled with sufficient education to properly direct it, is engaged in a liberal profession; while a physician or lawyer lacking this aspiration and disposition of mind may properly be regarded as merely following a calling, even though his education fitted him for a liberal profession.

When the education provided for the trained nurse finds or inspires this proper disposition and energy of mind in a good proportion of its students we shall find that nursing exists as a profession whether we wish to acknowledge it or not.

It remains for the trained nurse to bring the public to an appreciation of the professional worth of her calling by herself making it a profession. There are many individuals who are accomplishing this in the best way, but a full recognition of the high position of the nursing art will be won only when the majority of those practicing it adopt these advanced standards and act up to them.

Just what the limitations of this nursing profession will be, and what its proper relation to the medical profession, time will show.

Respectfully yours,

ARTHUR T. CAROT.

ARLINGTON HEIGHTS, MASS.,

Aug. 6, 1903.

MR. EDITOR: We have been much interested in the discussion going on in your JOURNAL regarding nursing as a profession, because we have the past year been training young women for the care of chronic cases, having found it almost impossible to obtain nurses competent for this work. "A profession must be capable of progress" (from a letter in your issue of July 16).

Along what lines could nursing progress except those which constitute a medical education?

Nurses might be taught more of anatomy and physiology, of dietetics and hygiene, of mechano-, hydro- and electro-therapeutics, etc.; but would they then be nurses? Suppose a person to be versed in all the branches of nursing which do now or might in the future be supposed to constitute an educated nurse, would it then be legitimate for that person to take the initiative in the care of the critically ill? If so, what would be the position of the physician? Possibly, that of consultant, as you suggested. But would not the person become the physician and be no longer the nurse? And is it not contrary to all good teaching of to-day for a nurse to prescribe or take the responsibility of the case unaided? Even the midwife assumes her charge through ignorance, and we would look askance at a trained nurse who took such a liberty.

We must feel that there can be only one profession whose duty it is to administer to the sick, and that the profession of medicine; and that nursing is a subdivision of this profession, its special function being "to take care of the physical and mental wants of the sick under the direct supervision of the physician."

Yours truly,

ARTHUR HALLAM RING

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 1, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Scarlet fever. |
| New York . . . | 3,785,156 | 1,363 | 601 | 38.71 | 5.04 | 2.80 | 21.82 | .59 |
| Chicago . . . | 1,885,000 | 506 | 200 | 35.54 | 7.87 | .98 | 23.90 | .59 |
| Philadelphia . . | 1,378,527 | 455 | 168 | 32.16 | 5.13 | 1.03 | 14.02 | .82 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 208 | 85 | 36.54 | 4.80 | .48 | 15.86 | 1.92 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 149 | — | 44.96 | 8.72 | 3.48 | 28.19 | 2.01 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 96 | 41 | 51.13 | 6.24 | 2.08 | 39.56 | 1.04 |
| Boston . . . | 603,163 | 205 | 78 | 38.04 | 8.29 | 2.43 | 18.05 | .97 |
| Worcester . . . | 132,044 | 47 | 30 | 34.03 | 8.51 | — | 25.52 | — |
| Fall River . . . | 115,549 | 47 | 29 | 48.92 | 6.38 | 2.12 | 42.54 | 2.12 |
| Lowell . . . | 101,359 | 64 | 48 | 53.10 | 1.56 | 1.56 | 45.30 | — |
| Cambridge . . . | 98,639 | 35 | 15 | 45.71 | 2.86 | — | 31.42 | — |
| Lynn . . . | 72,497 | 18 | 7 | 5.55 | — | — | — | — |
| Lawrence . . . | 69,766 | 33 | 20 | 51.51 | — | 3.03 | 45.45 | — |
| Springfield . . | 69,389 | 19 | 5 | 26.31 | 5.26 | — | 10.52 | — |
| Somerville . . . | 68,110 | 40 | 2 | 5.00 | — | 5.00 | — | — |
| New Bedford . . | 67,198 | 48 | 28 | 56.24 | 6.25 | 2.08 | 37.49 | 8.32 |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — |
| Brockton . . . | 44,873 | 10 | 3 | 20.00 | — | — | — | — |
| Haverhill . . . | 42,104 | 11 | 2 | 27.27 | — | — | — | — |
| Newton . . . | 37,794 | 7 | 2 | 14.30 | 28.60 | — | 14.30 | — |
| Salem . . . | 36,876 | 14 | 3 | — | — | — | — | — |
| Malden . . . | 36,286 | 16 | 4 | 6.25 | — | — | 6.25 | — |
| Chelsea . . . | 35,876 | 10 | 4 | 10.00 | — | — | — | — |
| Fitchburg . . . | 35,069 | 9 | 5 | 11.11 | — | — | — | — |
| Taunton . . . | 33,656 | 14 | 6 | 35.70 | — | — | 28.56 | — |
| Everett . . . | 28,620 | 8 | 4 | 62.50 | — | — | 50.00 | — |
| North Adams . . | 27,862 | 14 | 9 | 64.26 | — | — | 57.12 | 7.14 |
| Gloucester . . . | 26,121 | 5 | 1 | — | — | — | — | — |
| Quincy . . . | 26,042 | 9 | 3 | 33.33 | — | — | 11.11 | — |
| Waltham . . . | 25,198 | 6 | 2 | 16.67 | 16.67 | — | — | — |
| Brookline . . . | 22,608 | 5 | 2 | — | — | — | — | — |
| Pittsfield . . . | 22,589 | 6 | 3 | 16.67 | — | — | 16.67 | — |
| Chicopee . . . | 21,031 | 11 | 10 | 72.72 | 9.09 | — | 54.54 | 9.09 |
| Medford . . . | 20,962 | 7 | 3 | 14.30 | 28.60 | — | — | — |
| Northampton . . | 19,883 | 8 | 2 | 12.50 | — | — | — | — |
| Beverly . . . | 15,302 | 6 | 1 | 66.67 | — | — | — | — |
| Clinton . . . | 15,161 | 3 | 0 | 33.33 | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . | 14,478 | 2 | 1 | 50.00 | — | 50.00 | — | — |
| Woburn . . . | 14,300 | 6 | — | — | — | — | — | — |
| Hyde Park . . . | 14,175 | 6 | 4 | 33.33 | — | — | 16.67 | — |
| Adams . . . | 13,745 | 5 | — | 40.00 | — | 20.00 | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 6 | 3 | 50.00 | 16.67 | — | 33.33 | — |
| Melrose . . . | 13,600 | 3 | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 6 | 3 | 16.67 | 16.67 | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 6 | 4 | 33.33 | — | — | 16.67 | — |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,344 | 4 | 0 | 25.00 | 25.00 | — | — | — |
| Southbridge . . . | 11,268 | 4 | 1 | 50.00 | 25.00 | — | 25.00 | — |
| Watertown . . . | 11,077 | 3 | 2 | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,387; under five years of age, 1,450; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,357, acute lung diseases 243, consumption 243, scarlet fever 32, whooping cough 26, cerebrospinal meningitis 8, smallpox 6, erysipelas 3, measles 30, typhoid fever 55, diarrheal diseases 773, diphtheria and croup 68.

From whooping cough, New York 4, Chicago 1, Philadelphia 7, Baltimore 2, Pittsburg 1, Providence 1, Boston 1, Lowell 3, and Lawrence, New Bedford, Brockton, Haverhill, Fitchburg and Revere 1 each. From erysipelas, New York 2, Chicago 1. From smallpox, Philadelphia 3, Pittsburg 2, Fall River 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending July 18, the death-rate was 13.5. Deaths reported, 3,894; acute diseases of the respiratory organs (London) 115, whooping cough 86, diphtheria 49, measles 95, smallpox 6, scarlet fever 31.

The death-rate ranged from 5.4 in Bury to 22.6 in Wigan; London 13.0, West Ham 11.3, Brighton 10.0, Portsmouth 13.6, Southampton 13.3, Plymouth 14.0, Bristol 12.5, Birmingham 14.1, Leicester 9.7, Nottingham 14.6, Bolton 18.6, Manchester 17.8, Salford 15.0, Bradford 12.7, Leeds 15.5, Hull 11.1, Newcastle-on-Tyne 17.6, Cardiff 10.9, Rhondda, 15.7, Liverpool 18.0, Smethwick 8.0.

METEOROLOGICAL RECORD.

For the week ending Aug. 1, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | Ther- mometer. | | Relative humldity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | | |
|---------------------------------------|---------------------------------------|---|--|--|--|--|--|--|---------------------------------|---------------------------------|-------------------------------------|--------------------------------------|--|---------------------------------------|
| | Daily mean. | Daily mean. | Maximum. Minimum. | 8.00 A.M. 8.00 P.M. | Daily mean. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | 8.00 A.M. 8.00 P.M. | | | | | |
| | | | | | | | | | | | | | | |
| S. M T. W. T. F. S. | 26 27 28 29 30 31 1 | 29.80 29.92 30.04 29.90 29.78 29.98 30.27 | 75 64 65 70 80 70 68 | 83 74 74 79 90 76 78 | 67 57 56 62 70 63 58 | 72 49 49 70 86 88 58 | 62 61 55 49 91 88 49 | 67 55 56 76 82 78 54 | W N N S S W N | W W W W W W W | 12 15 9 12 24 8 5 | 12 15 5 8 F. C. C. | C. C. F. O. O. O. F. | .20 0 0 T. 56 .02 0 |
| 30 | 29.96 | 78 | 62 | 68 | | | | | | | | .78 | | |

O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. 30 Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING AUG. 8, 1903.

L. W. SPRATLING, surgeon, C. H. DELANCY and E. M. BLACKWELL, assistant surgeons. Detached from the "Columbia" and ordered to the "Hancock."

C. E. REYNOLDS, pharmacist. Detached from the "Columbia" and ordered to the "Hancock."

H. L. BROWN, assistant surgeon. Detached from the Naval Proving Ground, Indian Head, Md., and ordered to the Navy Yard, Washington, D. C.

K. OINESORG and J. T. KENNEDY, assistant surgeons. Ordered to the Naval Academy.

C. T. GRAYSON, acting assistant surgeon. Ordered to the Naval Proving Ground, Indian Head, Md.

J. COWAN, pharmacist. Detached from the Navy Yard, Boston, Mass., and ordered to the Naval Magazine, Iona Island, N. Y.

E. T. MORSE, pharmacist. Detached from the Naval Magazine, Iona Island, N. Y., and ordered to the Navy Yard, Boston.

E. MAY, pharmacist. Ordered to the Naval Hospital, Norfolk, Va.

J. A. GUTHRIE, passed assistant surgeon. Detached from the "Vicksburg" and ordered to the "Solace."

R. H. MICHELS, assistant surgeon. Detached from the "Solace" and ordered to the "Wilmington."

G. M. MAYERS, assistant surgeon. Detached from the "Isle de Cuba" and ordered to the "Vicksburg."

RESIGNATION.

DR. EDGAR GARCEAU has resigned the position of surgeon to out-patients at the Free Hospital for Women, Boston.

RECENT DEATH.

GEORGE W. ROLERTFORT, M.D., a well-known negro physician of Newark, N.J., has died at the age of forty-three. At the time of his death he was officially in charge of the Newark Almshouse and had a considerable reputation also as a politician. He was born in Virginia, was graduated in the Medical Department of Shaw University in 1890, thereafter studying at the University of Pennsylvania Hospital in Philadelphia. He was a member of various medical societies and was well thought of by his colleagues.

BOOKS AND PAMPHLETS RECEIVED.

A Nurse's Handbook of Obstetrics, for use in Training-Schools. By Joseph Brown Cooke, M.D. Illustrated. Philadelphia and London: J. B. Lippincott Company. 1903.

Hyosine in the Treatment of Morphism. By T. D. Crothers, M.D., Hartford, Conn. Reprint. 1903.

The Exact Science of Health Based upon Life's Great Law. By Robert Walter, M.D. Vol. I. New York: Edgar S. Werner Publishing Company; London: Kegan Paul, Trench, Trübner & Co., Ltd. 1903.

The Principles of Obstetrics, a Practical Manual for the Student and General Practitioner. By Stanley Perkins Warren, M.D. Illustrated. New York: William Wood & Co. 1903.

Addresses.

MEMORIAL MEETING TO MORRILL WYMAN, M.D.

ADDRESSES BEFORE THE CAMBRIDGE MEDICAL IMPROVEMENT SOCIETY AT A MEETING HELD AT THE COLONIAL CLUB, CAMBRIDGE, MARCH 23, 1903.

HENRY P. WALCOTT, M.D., CAMBRIDGE, MASS.

I HAVE lately been looking over the work upon which Dr. Wyman had busied himself during the last year or more of his life — a memoir of Dr. William J. Walker. The reasons he gives for undertaking the work are thus stated: "Dr. Walker was a man of great and varied abilities; he was my father's friend; he was my friend and benefactor. I cherish his memory as a sacred trust; and as my medical father, would hold towards him the true spirit of the oath of Hippocrates." To some of us these words come home with special meaning, for we were pupils of Morrill Wyman, and know that the Hippocratic oath and the law were to him as sacred things. To all here he was teacher, friend or example of the good and wise physician. Born at Chelmsford on July 25, 1812, he died at his home in Cambridge on Jan. 30, 1903. He was the second son of Rufus Wyman and Anne Morrill. With his younger brother, Jeffries, he was prepared for college at Phillips Exeter Academy. Both entered Harvard and were graduated with the class of 1833. The class of 1833 was a noted one. It gave six professors and four overseers to Harvard University and a president and four professors to other institutions of learning. This intimate association of the brothers lasted through life, and until Jeffries Wyman's death in 1874, the brothers were never far apart, and each exercised a strong influence upon the other.

Rufus Wyman, graduate of Harvard College in 1799, was a favorite pupil of Dr. John Jeffries of Boston. Resisting a flattering invitation from his teacher to establish himself in Boston, he settled in the town of Chelmsford and began the practice of medicine. His abilities were soon recognized, and he gained a reputation which extended far beyond the limits of the town. He was chosen in 1817 to be the head of the McLean Asylum for the Insane. After a most faithful and successful service there of seventeen years, he resigned his place and passed the rest of his life in Roxbury, where he died in 1842. He was president of the Massachusetts Medical Society, and universally respected. It is not easy now to realize what a task Rufus Wyman undertook. One of the greatest of his successors, Luther V. Bell, uses these words: "Entering on his duties with no similar undertaking for an exemplar to guide him in interior arrangements or general management, the weight of difficulty and responsibility which necessarily fell upon him must have been far greater than any of his successors in such trusts, who have had the aids of his ingenuity and labor, can have experienced. What is due to his memory as a public benefactor can

never be realized or appreciated, except by the small number whose opportunities and duties enable them to judge of the difficulties he encountered and the measures he projected to meet them." Dr. Bell also adds: "There was in his character not only this strict integrity, but a hatred of ostentation, an avoidance of anything that could be construed into self-laudation, which was carried perhaps to an extreme actually prejudicial. He had such a dislike to newspaper notoriety, such distrust of any form of reputation higher with the public than with his professional brethren, the sole adequate judges of character in a medical man, that perhaps the light of his good works was too much hidden under a bushel to serve its proper end as an example." Forty years later Lowell wrote of the younger Wyman: "The wisest man could ask no more of fate

"Than to be simple, modest, manly, true;
Safe from the many; honored by the few;"

and later still, in his own extreme need, experienced from the elder brother, then seventy-nine years old, a devotion and tender care which he did not tire of commemorating in his letters to his friends.

Brought up in such surroundings, the brothers naturally turned to the study of medicine, but not until Morrill had spent several months as a member of a party of engineers who were employed in laying out the route of the Boston & Worcester Railroad. This experience was one that he was fond of reverting to, and nothing pleased him more in later life than to get out his surveying apparatus and show that he had not lost the skill acquired in the occupations of his youth. Under the direction of his father and his father's friend, William J. Walker of Charlestown, he began the study of medicine, and received his medical degree in 1837. Dr. Walker, a graduate of Harvard College in 1810, had had also the advantages of a medical education in France and England during the years when Corvisart, Pinel, Laennec, Dupuytren taught in the one capital and Sir Astley Cooper in the other. Walker's success in his profession was great, and until he suddenly abandoned his practice in 1846 he was one of the leading surgeons of the state. Whatever may have been Walker's failings in any other direction, his relations to his favorite pupil were such that the latter cherished for him an admiration and devotion that never wavered.

For a year Wyman was house physician in the Massachusetts General Hospital, where he had the good fortune, never forgotten, of serving under James Jackson, "the model of the good and wise physician," and Jacob Bigelow, "the most accomplished man of our profession." The house surgeon of the year was Samuel Parkman, an intimate and much-loved friend, whose death in the prime of early manhood took from our profession one of its brightest ornaments. Upon leaving the hospital, he at once established himself in Cambridge, and remained

here to the end. The struggle which the young physician usually has in the first years of his practice to make both ends meet was not his. Prudent habits, an indomitable industry, the family name, an engaging presence, the good will of the leaders of his profession, which he had fairly earned,—all these stood him in good stead, and he never had from the beginning any reason to be anxious about his money affairs, nor, indeed, did he ever pay much attention to them. He had all the qualities which make successful men of affairs, and he might have rivaled the wealth of Walker; but his ambition never led him in that direction. Throughout his life he was indifferent to the luxuries which money could procure. The utmost simplicity pleased him best, and his property grew because he had a large income and did not waste it. The investment of it never occupied much of his attention. He was generous, but he was too frugal in his own habits not to demand the same care of others. He was one of the large contributors to the Cambridge Hospital, and many a house in this city cherishes the memory of the silent benefactor, who also gave them something far beyond the perfunctory contributions of money which often pass for charity. Though his early professional life was a busy one, he found time to compete for the Boylston Medical Prize, which he received in 1846 for an essay on ventilation. This was published in the same year, increased to a volume of 400 pages. It is a thoroughly original treatise, illustrated by a number of original experiments. Dr. Billings, one of the best authorities upon the subject, says of this book that it is one of the most valuable that we have; that it states the general principles of ventilation in a clear, concise style and in a form which as a manual of instruction for the ordinary reader can hardly be surpassed, and is one of the few books on heating and ventilation which advocates no patent or proprietary apparatus. One of the most valuable and extensive series of experiments upon the effect of various forms of outlet cowls for chimneys was made by a committee appointed for that purpose by the American Academy of Arts and Sciences. The report of this committee was prepared by Dr. Wyman, and will be found in the proceedings of the Academy for 1848. It is still quoted in the best treatises upon heating and ventilation. The interest which he thus early showed in a subject of prime importance to both the sick and the well remained with him through life. A few weeks only before his death he was busy measuring with his Casella anemometer the air currents in the basement of the Cambridge Hospital. For years he was consulted upon all important questions of ventilation in this vicinity, and probably nothing could distress him more than some violation of the principles of ventilation, for which some might wrongly suppose him to be responsible.

At a later day he again entered the field as a competitor for a prize offered by the Massa-

chusetts Medical Society, and made possible by the liberality of one of its fellows. The prize was for an essay which should describe in plain language an effective and ready method of ventilating sick-rooms; one that can be put in operation at once at the needed moment, with least difficulty and expense, in houses of ordinary construction. Twenty-six essays were received, and to one marked "X Y Z" the prize was awarded, this having met all the requirements of simplicity, cheapness, effectiveness and readiness of application. "X Y Z" declined to reveal his name and requested that the prize money be expended in the publication of the essay. For those familiar with his language and his methods, the letters were only a thin veil before the man who made it his business at all times to use a phraseology so plain that all might understand it.

This capacity for clear statement made him one of the most effective of expert witnesses in the courts of law; a position, however, which he never sought, and only occupied when he thought some gross act of injustice might be averted by his intervention.

Both his father and mother and other members of his family in his own generation suffered from pulmonary affections. Before 1850, two slight hemorrhages from the lungs warned him that he, too, was in danger. His family and his friends were urgent that he should take some respite from his severe labors. Beyond a short vacation, the first that he had taken since entering upon practice, followed two years later by a few months in Europe, he could not be induced to yield to his own safety, but returned to enter again upon a practice larger than before. An active life of exposure in all weathers, in which he wholly disregarded regularity of habits in eating and sleeping, so far from confirming his malady, seemed to bring him a cure, and he lived to his ninety-first year with fewer apparent disabilities than fall to the lot of the majority of men.

An operation for opening the chest, in order to remove accumulations of fluid there, had been known to medicine from the days of Hippocrates. It was dangerous in execution and uncertain in its results. With the greater knowledge of all diseases of the chest consequent upon the discovery of modern auscultation and percussion, it had seemed to many men that a safer operation than the one in use might be devised. This had not, however, been accomplished. Dr. Wyman had thought much upon the subject, and on the 23d of February, 1850, put into use the simple operation which he had invented. His patient was a lady in Cambridge, suffering much from a collection of fluid in the chest, which showed no tendency to absorption. She was in a critical condition. He called in consultation his friend, Dr. John Homans. It was agreed that the patient's condition was most serious. Dr. Wyman proposed a puncture of the chest. The older physician was reluctant,¹ but finally offered to return to Boston and

to consult with some of his medical brethren upon the subject. Later in the day he returned and announced that though none of his Boston friends could from experience advise it, he was willing to take his share of the responsibility for an operation. Dr. Wyman accordingly punctured the chest with an exploring needle and canula, and drew away twenty ounces of a straw-colored fluid. The patient improved. Two days after the operation she had occasional paroxysms of dyspnea, and at her earnest solicitation the canula and exploring needle was again inserted. This time the canula was fitted to a pump so contrived that fluid was continuously drawn through it without the possibility of the entrance of air. Ten ounces of clear fluid were drawn, with immediate relief to the patient. The recovery was uninterrupted. Dr. H. I. Bowditch had bestowed much thought upon the same problem. He heard with pleasure of his friend's success, and asked him to perform the same operation upon a patient of his in Woburn, who had consulted Dr. Bowditch in similar circumstances to the Cambridge case. Accordingly, on the 17th of April, the second operation of thoracentesis was done and Dr. Bowditch at once recognized its value. With characteristic modesty, Dr. Wyman felt that his task, so far as it related to the general publication of the merits of the new operation, was complete. He knew that his friend would see to it, as he did, that the medical world should be fully acquainted with the discovery. He knew, also, that no credit to which he had a claim would be taken from him, and it would have been an undeserved indignity to both to have even hinted at the possibility of it.

From 1853 to 1856 he was adjunct Hersey Professor of Medicine in Harvard College, for the purpose of relieving Dr. John Ware, whose infirm health required assistance in his duties. During the year of Dr. Ware's absence, Dr. Wyman gave all the instruction in this department. In 1856 he resigned his office. The methods of the medical school of that day do not appear to have been altogether congenial to him, and he was always inclined to be restive under restrictions which did not commend themselves to his reason. But whatever may have been the causes of his early withdrawal from a professorship in which he had been eminently successful, they never led him to lose his interest in the teaching of medicine in the university. In the early part of 1857, in connection with his brother Jeffries, Hersey Professor of Anatomy, Dr. John Ware and Prof. J. P. Cooke, he became a teacher in a school of medicine in Cambridge, he giving the instruction in *materia medica* and midwifery. The school had a fair measure of success, and a list of students whose names are well and favorably known to-day in many parts of the country. Few schools of this description have contained a more distinguished body of instructors than did this one. Besides the four names above mentioned are those of Profs. Lovering, Gray and Agassiz.

When Jeffries Wyman assumed the curatorship of the Peabody Museum, the school came to an end. In fact, the real inducement that led Morrill Wyman to take part in this school was probably the desire to give to his brother a somewhat larger field for the teaching of anatomy than that offered by his college professorship.

In 1860 Dr. W. J. Walker offered to give to the college, under conditions which do not seem to have been unreasonable, all that remained to him of the earnings of his professional life, for the purpose of improving the condition of medical education. Dr. Wyman was greatly interested in the proposal and did all in his power to promote the undertaking which lay so near to the heart of his loved and honored master. The medical school, however, was not ready to follow a great leader, and ten-years more were to pass by before there came to the administration of all the affairs of the university a mind that could fully appreciate Walker's grand conceptions. Walker, however, was dead, and five other educational institutions had profited by the munificent gifts which Harvard had rejected. A succession of reports made by Dr. Wyman to the board of overseers upon the affairs of the medical school, even down to the last years of his life, are evidence of his continued interest in it. It was an unending regret, however, to him that Walker could not have been permitted to see the new day, and to contribute to the support of a teaching of medicine which accorded so well with his own ideas. In one of these reports made in 1898 he records his final opinion of the methods of medical teaching. No one preparing for the medical profession can overestimate the value of laboratory training. Anatomy, the study of the machine; physiology, the machine in action,—are the work of the laboratories. The art of observation, the medical education of the senses, as it has been called, is more valuable as a mental training than all didactic lectures put together. It is the best training for the practice of medicine as an art, as a science and for research. Laennec made and carefully recorded nearly four hundred autopsies before the sounds heard on the chest by his educated ear were properly connected with the morbid changes within. Auscultation could have been invented in no other way.

Upon no work of his life did he bestow more thought than upon the annual address delivered before the Massachusetts Medical Society in 1863. His father had received the same honor in 1830, and had made it the occasion for a statement of the great work of his life. The son took the same serious view of the opportunity offered to him. Three years before, the orator of the society was O. W. Holmes. His exposition of the state of medicine was, it is needless to say, brilliant in the highest degree. He himself said at a later day that he had somewhat too epigrammatically for some of his friends of the Massachusetts Medical Society denounced the practice of drugging for its own

sake, and it is undoubtedly true that a mischievous use was made of the orator's seductive eloquence. It was in any case the effort of one who had viewed the practice of medicine somewhat from the outside. Dr. Wyman undertook the defence of his art as one who knew it thoroughly and believed in it, and there is not one in that long series of anniversary addresses more worthy of notice and faithful study.

With some other members of his family he had been a lifelong sufferer from an autumnal catarrh, corresponding in its symptoms to the affection described by Bostock in 1819 as *catarrhus estivus*, rose, hay, or June cold. The form of the disease from which Dr. Wyman suffered had not hitherto attracted the attention of medical men and was first accurately described by him in his lectures to the students of the medical school in 1854. In 1866 he brought the subject to the attention of the Massachusetts Medical Society, and gave to the malady the name of autumnal catarrh, adopting the general nomenclature of Dr. Bostock, a title which commended itself much to his favor because it involved no theory as to the cause of the disease. In 1876 he published a volume of 900 pages upon the subject. The quality of the book may be inferred from the quotation from Sydenham which he prefixed to it: "In writing the history of a disease, any philosophical hypothesis whatever that has previously occupied the mind of the author should be in abeyance. This being done, the clear and natural phenomena should be stated; these and these only."

In 1859 there occurred in eastern Massachusetts some cases of pleuro-pneumonia in cattle, which were supposed to have their origin in an infected animal brought from Holland to a farm in this neighborhood. Much alarm arose in consequence among the farmers of the state, and the public authorities dealt with the epidemic in much the same fashion that has lately been the case with the foot and mouth disease. Dr. Wyman was convinced that the extreme measures adopted were not justified by the existing knowledge upon the subject, and urged, as he always did, the need for accurate observation and intelligent experiment. Then, as now, the authorities believed observation and experiment to be sources of danger, and Dr. Wyman was only enabled to carry out a very modest series of experiments upon diseased and healthy animals upon his own estate in Cambridge by authority of a resolve of the Massachusetts Legislature. For this purpose a shed was erected upon his own grounds on Sparks street, and two cows suffering from the disease were procured and placed here with five others apparently sound. They were all kept under careful observation for three months and then killed. The post-mortem examination showed extensive destruction of the lungs of the two cows known to be diseased and a similar morbid process in one of the animals believed to be sound. The remaining animals were in healthy condition. From his experiment, admittedly incomplete,

he draws several conclusions, one of them so characteristic that I quote it: "In a commercial point of view, it would have been unwise, so far as the herd was concerned, to kill all the animals as soon as exposed, whether we have regard to the value of the animals recovered or the number which apparently became diseased in consequence of exposure. These are the conclusions to which a believer in the contagious nature of the disease would assent. These experiments have been undertaken not without considerable expense and trouble; they are offered as a contribution to our knowledge of a most important disease among cattle, with the hope that they may be continued until definite results shall be arrived at, not only as to its contagion or non-contagion, but also with regard to other points interesting in an economical point of view, and not less so as it bears upon the study of comparative pathology."

In 1871 sufficient interest had been excited by Miss Emily Parsons' efforts to establish a hospital in Cambridge to induce a number of citizens to procure an act of incorporation for the Cambridge Hospital. In 1874 Dr. Wyman became interested in the plan, was elected president of the board of trustees, and the establishment of a hospital was assured. In 1883 the land was bought, and in 1886 the hospital was opened for the reception of patients. At the age of eighty he resigned the office of president of the board, but continued his interest to the last. Many good citizens have labored for the establishment and maintenance of this charity, but they would all, I think, admit that Dr. Wyman's presence upon the board — and that inevitably meant ceaseless activity — was the most valuable contribution made to the hospital. His work in connection with the plans for the hospital revealed one of the most remarkable characteristics of his later life. He was chairman of a committee of the board appointed for the purpose of preparing plans for the buildings. He had arrived at certain results, and was satisfied with his plan. It was then suggested that a visit be made to the buildings then in course of erection for the Johns Hopkins Hospital, under the direction and in accordance with the plans of that great master J. S. Billings. The visit was made, and after a day spent in the critical examination of the hospital, this clear-seeing brain, though in a body seventy years old, rejected all its own carefully elaborated conclusions and at once set to work to devise improvements in the new scheme which he had substituted. I know of no more striking feature in his wonderful old age than the absence in both brain and body of the defects consequent upon long life. The past was full of pleasant thoughts, and he delighted to recall it at times, but he looked towards the future with all the confidence of youth, and though he had lived through a period which had seen all the great discoveries in medicine, with the exception of vaccination, he was firm in the conviction that greater things even were yet to come.

One substantial addition he did make to the ventilation system of the hospital which can be applied to any plan for the removal of foul air at or near the floor level. It is extremely ingenious and, like most of his contrivances, quite simple. The invention consists in the connection of the inside of the bed with the outlet ducts by means of a flexible tube. The porous bedclothing offers a sufficient obstacle to the free passage of air to prevent any sensation of draft on the part of the patient. A paper entitled "Some Experiments and Observations on the Summer Ventilation and Cooling of Hospitals," presented to and published by the American Academy in 1894, is also founded upon work done in connection with the hospital. This, his last communication to the Academy, was published at the expense of the Rumford fund. Early in his career he was elected member of the Academy, and was for many years the most active member of the Rumford Committee of that body. I will read the concluding sentences of this last paper. "The experience of the Cambridge Hospital leads to two conclusions: first, that fresh air directly from the open, in the quantity and manner thus supplied, can be made to give great comfort to the sick during the heat of summer; and secondly, that previous cooling of the air so supplied is difficult and practically useless. To this may be added, what is of much importance to charity hospitals, that the method here adopted is the least expensive of the cooling processes hitherto made generally known."

He prepared and presented to the Academy in 1887 an elaborate memoir of his friend Daniel Treadwell, of some two hundred pages, which appeared in the series of publications of the Academy. Treadwell probably has had less popular recognition than any other great inventor, yet to this comparatively unknown man the country owes the first prosperity of its railroad system. On printing presses originating from his invention nearly all our books are printed; machines of his device revolutionized the art of rope-making as completely as those of Arkwright revolutionized cotton-spinning; the most effective artillery of modern warfare is made upon principles which he first discovered and applied. In 1825, acting under the authority of the mayor and Board of Aldermen of the city of Boston, Treadwell investigated the subject of a general water supply for the city, and submitted a report, the first public one made on this important subject. Valuable as the report was, the community was not yet prepared to enter upon so considerable an undertaking, and nothing was done until Mayor Eliot in 1837 energetically brought the matter to the attention of the city government. Mr. Treadwell was made chairman of a committee to consider the subject anew, and the movement ended for the time being in the construction of the Cochituate water works in 1848. Treadwell had many of the qualities which were peculiar to Dr. Wyman. The tendency of his mind was

essentially experimental. He had the ingenuity of the mechanical inventor and the philosopher's passion for truth. In May, 1865, Treadwell received from the Academy the Rumford medals, one of gold and one of silver. These medals, during the preceding thirty years that the Academy had been charged with their award, had been given to but two persons; never before to a member of the Academy. To him they were given for "Certain Improvements in the Management of Heat." Dr. Wyman was an active member of the Rumford Committee of the Academy, and took great satisfaction in helping to obtain for his friend this well-earned and grateful reward.

He was interested in all the affairs of the community in which he lived, but he never allowed them to interfere with the real business of his life—the care of the sick. In 1866 the whipping of a girl of sixteen in one of our public schools attracted the attention of the citizens and filled Dr. Wyman with a righteous indignation. The school committee declared the punishment to be strictly within the rules established for the government of the schools, and were unwilling to change those rules. By all reasonable means a number of citizens, among whom he was foremost, endeavored to secure from the committee some regulations sufficient to prevent the corporal punishment of a young woman of this age. All efforts were in vain and, as a last resort, Dr. Wyman carried in a Republican caucus a resolve that the corporal punishment of girls should be abolished in each and every public school in this city. The next city election changed the character of the school committee, and a more humane rule was established. His efforts in this cause were always remembered by him with great content, and rightly so, for to him, more than any other man, belonged the credit of the reform. He had through it all, and much appreciated, the cordial support of his old, close and tried friend, Dr. Wellington, to whom the public schools of Cambridge owe so much. Two of the public schools of this city now bear the names of Wellington and Wyman.

In 1857 he had acquired the collection of books which Tiedemann of Heidelberg had brought together. Tiedemann was one of the great anatomists and physiologists of the world, and his library was of great scientific value. Dr. Wyman was led to purchase it, not only for the aid that it might be to himself, but also from the feeling, never absent, that his brother Jeffries could profitably use this at that time unrivalled collection of original works upon comparative anatomy and physiology. In 1893 Dr. Wyman gave this library, with some additions from his own medical books, to the Cambridge Library. He hoped that the collection might be soon supplemented by publications containing the recent discoveries, and the most valuable current literature. It now appears probable that the city cannot, with a due regard to the other claims necessarily made upon a public library,

provide for so expensive a development of one department, even so important a one as this. The gift, however, remains an evidence of his loyalty to the place of his residence, and to the highest interests of his brother practitioners of medicine there.

At eighty-five he regarded himself as no longer subject to the calls of those seeking medical assistance. As a matter of fact, he recorded in his case book the attendance upon a limited number of patients as late as June, 1902. Rest in the sense of inactivity was impossible for him, and his activities had always some definite and useful object in view. It might be an observation upon the ventilation of the hospital, or possibly he was busy over some disabled mechanical contrivance which his deft hand could still correct. He was a member of the board of consultation of the Massachusetts General Hospital at the time of his death, and was much pleased by the earnest desire expressed upon one occasion by its trustees, that he should assume the care of the McLean Asylum. If he had consulted his own wishes alone, it is not unlikely that he might have accepted the offer of a position which would have compelled him to sacrifice a very large and remunerative practice. He was always active in the council of the Massachusetts Medical Society, and by an interesting coincidence an important measure proposed by him at a previous meeting of the council was unanimously adopted at the meeting to which the president of the society announced his death.

The Cambridge which he first knew was a village; when he died it was a great city. He had lived through great events in country and state and city; had watched them all with eager eyes, sometimes inclined to blame, but more often to improve. He was a good citizen and interested himself in the first duties of a citizen. On the cold, bleak morning of our last municipal election he quietly walked over to the polling place and cast his vote before most of his neighbors were astir. Among the various interests that centered in Cambridge, no one was greater, next to his patients, than the college and his friends who were in charge of it. Intimately associated with all the great men who during the past sixty years and more have taught here, he had himself served the university in many useful capacities. Professor from 1853 to 1856, he was elected member of the Board of Overseers in 1875 and reelected in 1881. In 1885 the college bestowed upon him its highest honorary degree, and he was a member of the overseers' visiting committee to the medical school and active there until his death.

He attended through life the services of the Unitarian Congregational Church, but he found it impossible to attach great weight to any ecclesiastical authority in matters of religious belief. His professional life had brought him into contact with men and women of many beliefs, and he had found in all of them so much to respect that he would have hesitated to criticize what after all seemed merely a question of

form. He was a profoundly reverent man. Nothing which his fellows deemed sacred was capable of being turned to a jest by him. The motto on the seal of the Cambridge Hospital was chosen by him: "Man tends; God mends," and the belief was as real to him as to the great surgeon from whom he borrowed it. The record of his services to medicine and our medical charities will remain, but for us, his friends, there is something more than this. We shall long remember the well-built, well-kept figure, the serious but kindly and always impressive face, the alert and vigorous movements of the body that never grew to be infirm, and above all, the man, tender-hearted, tireless in service, sagacious, full of courage, impatient of opposition perhaps with regard to questions upon which his mind was made up, and sometimes aggressive, but never forgetful of the rights or interests of his brother physicians. He went out of his way to help the young beginner, and was the first to bring comfort to his older associates when in trouble or in suffering. With no thought of his own renown he believed himself under a sacred obligation to defend the fair fame of those who could no longer speak for themselves. No person in the wide circle of his acquaintance ever doubted that he would speak the truth that was in him, or fail to acknowledge the truth that was in another; and lastly, in his own words, taken from his address before the medical society, I find him well portrayed: "Half way between the extremes in his profession, those who have an unbounded faith in imaginary remedies and those who reject all medicinal agents, stands the rational physician. Removed from the credulity of the first and the scepticism of the second, he feels that his profession is a noble and a glorious one; and inspired with a just confidence, he looks forward to the time when some of its high aims and aspirations shall have been accomplished. He sees in remedial treatment a blessing vouchsafed to the human race. Whether this blessing shall reach those who commit themselves to his care, he believes depends in a good measure upon the ability with which he has searched out the secrets of nature and the faithfulness with which he learns her powers, both those within the body and those which have been accumulated and stored up in the various remedial substances against her hour of need. With the Hippocratic oath he declares, 'With purity and with holiness I will pass my life and practice my art. I will follow that course of treatment which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous.' Cheered by such hopes and sustained by such faith, he seriously and thoughtfully girds up his loins for his work. He meets firmly and uncomplainingly the labors, privations and dangers inseparable from his calling, feeling in his inmost soul that no life can be better spent than that devoted to the relief of his suffering fellow beings."

DAVID W. CHEREVER, M.D., BOSTON.

So complete and so perfect a memorial account has already been given of Dr. Morrill Wyman that I may be permitted to be more discursive in my remarks; and his death at an age so advanced will afford me a theme for a few words on the older members of our profession. While I have been practising medicine in Boston, one hundred and thirty-six physicians, whom I have personally known in this community, have died. Of these, three attained the age of ninety years; while one honored member, Dr. William Ingalls, still survives beyond that term. Dr. James Jackson reached his ninetieth year. The three nonagenarians are Dr. Walter Channing, Dr. Jacob Bigelow, Dr. Morrill Wyman.

We may confidently say that Drs. Jackson, Channing, Bigelow and Wyman, to place them in the order of seniority, were leaders in the medical profession. No men of their time were more prominent. They began life early, and they lasted long. Simple habits, less luxury, out-of-door life, a more quiet age, conduced to longevity. These men accomplished much, but they wrought slowly. What has been better brought out than Jackson's "Hints to a Young Physician"; Channing's "Bed Case"; Bigelow's "Self-limited Diseases"; Wyman's "Hay Fever" and "Ventilation"?

These lives cover the greater part of the nineteenth century. What changes in knowledge and in practice during that time! Bleeding and drugs: expectant nihilism: germs and antitoxines, mark three epochs in that century. These old observers, these clear thinkers, these medical philosophers can well teach us a lesson of patience, tolerance, thoroughness. Jackson, Bigelow and Wyman were pure types on the general practitioner. Dr. Channing was an obstetrician.

Before hospitals existed, their memory was undisturbed by the hasty diagnosis of a hundred cases seen in a single morning. Their observant powers were concentrated on a few cases. Problems were simpler; differentiation less; there were no specialists; blood was drawn, but not examined, save for the "cupped and buffy coat" of inflammation; urine was inspected, but not analyzed; sputum was considered, but not microscopied; and during their earlier years auscultation was unknown. Fever was an entity, and suppuration the rule. There were no alkaloïds ready to hand; there were very few proprietary medicines; remedies were slowly and laboriously compounded, and pharmacology was their daily study.

Beginning very young, and studying under one master, they imbibed his traditions and his experience. These older men were strong in well-focussed powers of observation, in the "tactus eruditus," in prognosis, in the art of speech which conceals opinions; cautious, deliberate, guarded, slow to promise, faithful in attendance, as a rule uncommercial, considerate; the family physicians, as advisers, friends, confessors.

The tardy messenger called at their office to

summon them forth on foot, on horseback, with a horse and chaise. The telephone, the trolley car, the automobile concerned them not. They slowly spelled out their thoughts on paper without a stenographer, a phonograph or a typewriter. What was done was done slowly, thoroughly and stood permanently. The stethoscope, the thermometer, the microscope were either unknown or in their infancy. The use of the unaided senses sharpened them to an acumen not now common.

Now all is detail, precision, differentiation. The modern is best, but it is sometimes hasty. The older is to be respected for what it did in preparing the way for a newer philosophy. Neither must it be forgotten that these, our medical fathers, and their contemporaries laid the cornerstone of our hospitals; formed and developed our medical schools; originated our medical societies, our rules of ethics and our fee-tables; and passed through and left behind many periods of mysticism and superstition in medical theories.

R. H. FITZ, M.D., BOSTON.

In paying tribute to the memory of Dr. Wyman it has seemed to me fitting to say something relative to his connection with the medical school, in which for a short time he was a valued teacher in the department of theory and practice. It is evident that he regarded this position as one of honor, since in 1872, sixteen years after his resignation, there is imprinted with his name on the title-page of his work on autumnal catarrh, "Late Hersey Professor Adjunct of the Theory and Practice of Medicine in Harvard University." In August, 1853, Dr. John Ware, then at the head of this department, asked for assistance on account of the state of his health. In November of the same year, it is stated in the records of the faculty that Morrill Wyman, recently appointed adjunct professor of the theory and practice of medicine, was present at a meeting of the medical faculty. From that time until the fall of 1856, when he resigned his position, he was a frequent attendant at the meetings of the faculty, served on its committees, and in 1854 was appointed to give the introductory address at the commencement of the annual course of lectures. It would seem, also, that during the following winter he took entire charge of the instruction in this department, for it is recorded that Dr. Ware was then in Europe.

It has not been my fortune to have learned from any of the students of that time what were the characteristics of Dr. Wyman's teaching. It must have been earnest, honest, logical, practical and thorough, for these were his qualities. He was the rational physician who, to paraphrase his own words, had devoted his time and his talents to a laborious preparation for the duties of his calling. He was imbued with a sense of its dignity and of his own responsibility. He knew when to refuse remedies that are useless or dangerous. He was familiar with the ways by which nature brings health from disease, and by weight

of his character he imparted confidence and commanded respect. We know that he attached especial importance to a knowledge of pathological anatomy as the foundation of the study of disease, and took every opportunity of illustrating this part of his teaching by models, drawings and recent morbid specimens. Several years ago he gave to the medical school his diagrams especially prepared, evidently at considerable cost, for the above purpose. A recent examination of this collection shows that it consists of numerous colored, much-enlarged reproductions of plates representing the diseases of the various organs of the body, and selected from the classical works of Cruveilhier, Carswell, Bright and Hope. The interest thus shown in morbid anatomical changes and the importance of a knowledge of them as a means of controlling errors of observation or laxity of judgment, remained throughout his life. Whenever possible he availed himself of the opportunity of applying the test of a postmortem examination to clinical observations, and thus qualified himself for that thoroughness of investigation and correctness of inference which made him a model of caution and wisdom in his numerous medical consultations. His interest in physical and physiological subjects and the practical bent of his mind led him to recognize therapeutic possibilities, and a considerable part of his teaching related to the treatment of disease. The doctrine announced in his annual discourse before the Massachusetts Medical Society in 1863 on the "Reality and Certainty of Medicine" could not have been widely different from his teaching of the previous decade. "If the disease proceeds regularly and safely, the duty of the physician is to hold his hand, be cautious and watchful, see that all dangerous complications are avoided, pains relieved, comforts increased, the strength husbanded, and the disease brought to a happy termination."

Unfortunately for the medical school, Dr. Wyman felt impelled to withdraw after three years of interesting and satisfactory service. This action was contrary to the wishes of his colleagues, who formally expressed their great personal regard and esteem for him and their respect for his abilities as a teacher. Dr. Wyman's professional career then came to an early close, in the fulness of his powers, and at a time when larger opportunities were near, for two years later the Hersey professorship was resigned by Dr. Ware. Nevertheless his interest in the medical school and in medical education was lifelong. Among the last words spoken to me a few hours before his death, with remarkable clearness and emphasis, were those relating to proposals many years ago, which had they been accepted, would have richly endowed the medical department of the university and doubtless have added largely to its usefulness.

WM. T. COUNCILMAN, M.D., BOSTON.

I have known Dr. Wyman since 1892 and in the last few years have seen him frequently and had numerous conversations with him on sub-

jects in which he was especially interested. He was much interested in methods of teaching; and the modern laboratory teaching, in which a student acquires knowledge of objects from having seen, handled, measured and compared them, strongly appealed to him. He several times came into the medical school, went into the laboratory among the students, looked at their drawings and showed great interest in their work. He said to me, "These men are using their senses and that is the only way by which knowledge can be acquired." He was also interested in photo-micrography, and the use which could be made of this in teaching by projecting lantern slides made from the negatives. He regarded it as a further extension of the study of the object." "The student should always see things," he said,—"see what actually takes place in disease and not merely be told about it." On these visits he met the assistants in the laboratory, talked with them about the work they were doing and they received stimulus and encouragement from him. I shall always remember a delightful visit which the entire pathological department made to him one afternoon last November. He had arranged on a table in the drawing-room a number of books containing classical articles in medical literature. Among them was the volume of Guy's Hospital Reports which contained the articles of Bright on typhoid fever and diseases of the kidneys; the monograph of Jenner on vaccination, Laennec's work on phthisis, John Hunter on inflammation. He talked to us of the books and their authors, of his early studies, of the influence which his old preceptor had upon him. We told him what we were doing, and with each he entered fully into the interest of the particular subject. In this intercourse he sought to give the impression that the advantages were his, not ours.

A few years ago a small monograph on diphtheria was published from the laboratory and a copy was sent to Dr. Wyman. A number of letters were received about the work, but from no one came such kindly and intelligent appreciation as from Dr. Wyman. He came to the laboratory shortly after this and left with me the memorandum which he made while reading the work, and which served as the basis for his letter. In the memorandum he had noted what was new in the work and what was of importance. He noted the mixed infections between diphtheria and purulent infections, and wrote: "On such cases antitoxin can have no effect." He also noted the frequency with which tuberculosis, unsuspected clinically, was found in the autopsies on children. Many of the tuberculous lesions could be regarded as healed, and he wrote, "This is interesting and most encouraging in view of the present efforts for improved treatment." On the changes in the Malpighian bodies in the kidneys, he wrote, "I love to see the name of Harvey's great demonstrator. He had no one to teach him where to look for the confirmation of theory. It required seven years' search of his own."

Of late I think his chief interest lay in the study of the structure and function of the placenta. It seemed to me that this interest was partly a reminiscence of his early days as a student under Dr. Walker. Last summer he wrote me, saying he had traced the development of our knowledge of the placenta by the work of the two Hunters, Owen, Dalton, Michael Foster and Vuchow, and desired me to add what I now taught about it. As the placenta hardly comes within my province, I had had no occasion to look up the recent literature and had no special knowledge on the subject. I finally wrote out as clear an account as I could and took it out to him with some diagrams and preparations. We spent two hours on the subject, for in explaining the functions of the organ it was necessary to go at some length into the subject of serum and immunity. No young man could have been more eager, and have shown more readiness in grasping new information. In his medical reading, Dr. Wyman always selected the best things by the best men, and few had such a knowledge of the medical classics. He knew and appreciated the great men of the past and he is now one of them. He sought knowledge by careful observation and sound reasoning. He had what is so often found in great men, a simple, kindly nature. He gave help and sympathy to those who were trying to increase knowledge. Men were better students and better men from having known him.

J. T. G. NICHOLS, M.D., CAMBRIDGE, MASS.

It has been well said that the qualities which mark the good physician are learning, sagacity, humanity and probity. All who knew him will say that Dr. Wyman bore these marks.

For nearly fifty years I was in close association with him as a student and a fellow-practitioner, and would say a few words of him as a teacher. It was for a few years only that he found time to give instruction to medical students. Those who were so fortunate as to have this privilege placed him in the front rank of teachers of medicine.

His great field as a teacher, and one that he cultivated faithfully and never abandoned as long as he lived, was among his fellow-physicians. He had an extensive consultation practice which brought him in contact with a great many. This gave him an opportunity which he used faithfully and wisely. Always mindful of the rights of others, he had the confidence of his professional brethren. When he had to point out errors or shortcomings of the attending physician he did so frankly, but in a way not to arouse his antagonism but to inspire him with the desire to do better work.

He took great interest in our medical societies. He was a regular attendant at their meetings, and the records show that he was a frequent contributor to their proceedings. In these ways he did more than any one in our community, as I believe, to raise the standard of our profession.

This line of Lowell's, written of his brother Jeffries Wyman, applies to him, "Wisely to teach,

because more wise to learn." Dr. Wyman even to his last days kept abreast with the advances in medical knowledge. With him education was a life-long business. He was conservative in the best sense of the word, proving all things and holding to that which is good. His judgment as to the probable truth of new theories was singularly good. I give one illustration of this judgment. In 1843 Oliver Wendell Holmes maintained in an essay entitled "Puerperal Fever a Private Pestilence," that this disease was often carried by the physician from one patient to another and that any foul discharge might be carried in like manner and cause this disease. This doctrine, now universally accepted, was strenuously and bitterly opposed. The professor of midwifery in the then leading medical school of the country told his students that they could "never convey in any possible manner a horrible virus, so destructive in its effects and so mysterious in its operation, as that attributed to puerperal fever." Dr. Wyman investigated the subject, and becoming convinced of its truth, taught it by precept and example. He had the power which Hippocrates commends in saying, "I look upon it as a great part of the art to be able to judge properly of that which has been written."

All honor to the memory of the man who so fully paid the debt which Lord Bacon says every man owes to his profession, by leaving it better than he found it.

Original Articles.

THE SURGICAL TREATMENT OF GASTRIC ULCER.¹

BY JOHN C. MUNRO, M.D., OF BOSTON.

IN accepting the flattering honor of discussing the treatment of gastric ulcer before your section, I must plead, as a partisan, for the more intimate association of the internist and the surgeon in the study of this large class of cases. What I shall say will be for the general practitioner. Without hesitation, I venture to predict that within five years my plea will be considered mild and conservative by those of you who would put me down as too radical at the present time.

In the first place, there are certain fundamental facts recognized by the surgeon, but not yet fully appreciated by the physician. An operation as performed on the average patient with a mortality so small that it may practically be disregarded becomes serious or even unjustifiable if done in the presence of persistent hemorrhage, prolonged sepsis, starvation, absorption of ptomaines, etc. These facts are so persistently overlooked by the general practitioner that it seems worth the while to bring it up in connection with the subject of gastric ulcer. Let me, in this connection, repeat a

¹ Read before The Massachusetts Medical Society, June 9, 1903

statement that I made not long ago before one of our section meetings: that a careful analysis of over a hundred consecutive laparotomies that came to my care at the City Hospital demonstrated that at least 60% came too late from a surgical point of view. Is it fair to lay at the door of surgery all the failures, the tedious recoveries, the inevitable sequelæ, or the deaths that must obtain in such a group of cases?

In the treatment of gastric ulcer, where surgery is indicated, if we grant that in our earlier work, hesitating technique, errors in the selection of cases and in the after treatment, give discouraging or fatal results, we must not lose sight of the fact that eventually we are to look to surgery for the relief or cure of ulcers incurable by medical means, for the prevention or cure of the malignant degenerations and for relief from the thousand and one distressing sequelæ that do not kill, but that make life worse than death.

Up to the present time surgery has by no means solved the whole question of the treatment of ulcer or its complications. There is much still to be learned before we can fairly say that a beginning has been made, but the process of learning must go on with the internist and the surgeon working conjointly in practically all cases of ulcer or suspected ulcer. Later, when both surgeon and physician are educated sufficiently, as is the case in appendicitis for the most part, to enable each to recognize what types are medical and what are surgical, the combined observation will be demanded in a small proportion only of all cases. This is the ideal for which we must strive.

Without hesitation I would agree that the majority of cases are medical theoretically from first to last. To determine where the line should be drawn in the remainder demands a most careful and persistent collaborated study in all cases of ulcer, at least for a while.

It is not my purpose to quote statistics. One can safely state that the results, as regards mortality, from operation are improving almost month by month. If we take the published reports of the operators of largest experience, like Mikulicz, Robson, Mayo, Moynihan and others, we find that both their immediate and remote results are far better than the results as given by internists. And yet, these surgeons of large and selected experience recognize the limitation, appreciate the failures and are as conservative in their judgment as one could wish. Through it all, and in spite of failures, the one great fact remains that ulcer of the stomach is more and more becoming a disease to be treated by the surgeon, not late but early; not as a last resort, but before the starvation, the long suffering from pain, dyspepsia and fermentation-absorption have reduced the patient until he is beyond surgical help; before he is anemic from persistent bleeding or peritonitic from culpable delay.

A discussion of the technique that so interests the surgical world has no place here. Each ad-

vance means more lives saved. Much of the complicated technique could be eliminated were it possible to give the surgeon his cases when he wishes and not when the physician is compelled. No one but a surgeon especially interested can keep pace with the phenomenal advance in this line, always for the better, within the last three years.

Compare the oft-quoted statement of Greenough and Joslin, that every other patient with gastric ulcer that one sees in the hospital is either to have a recurrence or never to be well again, with the results of the hundreds of cases reported by the various surgeons mentioned above. One must thereby be convinced of the value of surgery in this class of cases.

Another plea that I would make is for the internist in the present transitory stage of stomach surgery to found his pathological knowledge on living as well as upon postmortem dissection; in other words, let him see in the living that which the surgeon sees, and correct his views by these findings, not relying entirely on the limited knowledge obtained at the autopsy. Let me illustrate by a parallel example. A number of years ago, when there had been but one or two interval appendectomies in this neighborhood, I ventured to remove an appendix from a patient who had suffered for a long time from colics and indigestion. The appendix appeared normal, and one of our most eminent pathologists, who had obtained his knowledge entirely from postmortem findings, scored me severely for performing a meddlesome, unjustifiable operation. I will venture to say that within the last year there have been thousands of operations under similar conditions, failure to perform which would now be considered unjustifiable.

Are the present methods of diagnosis by chemical analysis of any value? I am sure that at least three fourths of such diagnoses are of no practical value, when it comes to cases that would be classed as surgical by a surgeon. In my own limited experience the analyses have been interesting but much less reliable than general clinical data. The important thing for the patient and the surgeon is not to know that there is an ulcer, but to know that that ulcer is doing harm where it is situated; whether single or multiple (though that is of less importance); whether the ulcer symptoms may or may not be due to adhesions; what contractions there are consequent upon its healing; whether the base of the ulcer is already undergoing malignant degeneration; whether the ulcer is on one side or the other of the pylorus; whether the next hemorrhage may not be fatal, as I have seen so many times, comparatively, in ulcers medically treated. In other words, the internist may or may not be able to state that there is an ulcer; beyond that he cannot go. To determine whether there is a condition amenable to medical treatment he must experiment to a certain extent. If he succeeds, well and good; if he fails he must be willing to seek the co-oper-

ation of the surgeon, or better, he should have sought it early in order that both should study the case, and both should learn, each from the other's findings.

I will quote an oft-repeated statement by Mikulicz, who has had unusual and very great experience. He says: "The danger to life from gastric ulcer is at least not less but probably far greater than the danger of a complete modern operation." It is fair to say that gastric surgery has so rapidly progressed since that was written that the application is still more pertinent.

What cases are medical and what are surgical? No hard and fast line will be drawn for years to come. Many patients with first attacks, without serious hemorrhage, who can give up the time, and who realize the importance of prolonged rest, as so well emphasized by Shattuck, will recover permanently under medical treatment, but the following types are best considered as surgical: Probable cases of relapsing acute hemorrhage. Cases with hemorrhage if persistent and causing anemia. Perforation. Recurrent ulcer, pure and simple, attended with dyspepsia and starvation. Pyloric obstruction. Adhesions following ulcer or independent of it. Scar contraction of the body of the stomach. Some cases of intractable dyspepsia, perhaps originating in an ulcer, and for which no definite pathology is known.

Let us consider each of these types a little in detail. In relapsing hemorrhage various surgeons are already obtaining satisfactory results from a simple gastro-enterostomy.

In chronic hemorrhage, although all surgeons realize the imperfection in their results,—that is, occasional relapses, operative deaths, jejunal ulcers, etc.,—yet the benefits are so much better than from medical treatment, and the improvement in results is so steadily and surely advancing, that I have no hesitation in placing this type in the surgical list.

In perforation no one will deny the wisdom of early operation, and yet in this city there are physicians still who allow the first twelve hours to slip by before they summon surgical advice, unable or unwilling to make a diagnosis, and thus reduce the patient's chances of recovery from seventy in a hundred to practically nothing. Is there any valid excuse for this?

In cases of simple ulcer with dyspepsia and starvation, surgery has a wide field before it; far wider, I venture to predict, than medicine. Let me read that most graphic description of Moynihan's, published in the last issue of the *BOSTON MEDICAL AND SURGICAL JOURNAL* [June 4, 1903]: "There are few beings so abjectly miserable as those who are the victims of intractable dyspepsia. The meal time, which should be a delight, is a time of despair and foreboding. The keen relish of good food, which the man in physical health should appreciate, is a joy unknown or long forgotten to the dyspeptic. A patient who has misery written in every wrinkle of a thin and haggard face, who by reason of long

suffering and bitter experience has felt compelled to abandon first one dish and then another, till fluids alone can be taken, and these not always with impunity, a patient, to say the truth, whose whole life becomes embittered by the pangs of a suffering which he must inflict upon himself, this patient will find if a gastro-enterostomy be done for the chronic ulcer, which is the source of all his trouble, that his return to health and appetite is at first almost beyond belief."

In cases of pyloric obstruction we have a purely mechanical problem with which to deal. No amount of medicine can overcome this condition, and no amount of argument by the internist can convince the surgeon that such cases are best treated medically.

Cases of adhesions from chronic ulcer, gall-bladder disease, appendicitis, etc., cannot be accurately diagnosed without the aid of surgery, and very few of them can be relieved without operation.

Cases of beginning malignant degeneration cannot and probably never will be diagnosed *in time* by the internist. What surgeon ventures to definitely say that a chronic mastitis is or is not starting a malignant focus? Even the pathologist may have to examine hundreds of sections. How much less likely are we able without operation to make a similar diagnosis in a chronic ulcer, situated we know not where in the stomach, of whose size and condition we are absolutely ignorant, and of whose actual presence we may be unaware!

In gastric neuroses of uncertain origin, but with a history of ulcer, many mistakes will be made by the surgeon. This class needs much study by specialists in all branches, but undoubtedly in a small proportion, on the theory of chances, surgery will be of some benefit.

In conclusion I would urge a more intimate co-operation of the physician and surgeon in the observation of patients with ulcer of the stomach. The surgeon must willingly grant that a majority of simple ulcers are best treated and cured by the internist, but on the other hand, the latter must as willingly consider surgical advice in the obstinate or serious types of cases, and learn in the living a pathology that it is impossible to learn in any other way.

DISCUSSION.

DR. E. P. JOSLIN of Boston: Six cases of ulcer of the stomach treated surgically have come under my observation. The reports of the cases are as follows:

CASE I. Miss E. F., forty-four, was seen March 7, 1902. Entered Boston City Hospital, Sept. 11, 1901. For the three years previous, dyspepsia. In March, 1900, vomited 6 oz. blood. Winter, 1900-1901, pain in epigastrium, which increased during the summer. Ewald test breakfast, September, 1901, showed 50 cc. or 0.18% hydrochloric acid. Hemin crystals.

Sept. 19, 1901. Gastro-enterostomy.

A pale, indurated, round area the size of a silver dollar was observed, which was situated midway on the lesser curvature upon the anterior wall.

Oct. 1. Phlebitis in left leg. Discharged Oct. 28.

March 7, 1902. Cramplike pain in region of stomach. Pale and rather thin. Fasting stomach showed lower bor-

der at navel and no tumor. It contained 12 cc. slightly greenish fluid. No free hydrochloric acid. Total acidity, 5. Mucus. Many leucocytes and a few red blood corpuscles. Died of cancer of the stomach, May, 1903.

CASE II. Miss K. M., fifty-one, was seen for the first time Oct. 21, 1902. Digestion never strong. In July, 1901, vomited, almost for the first time in her life, at midnight and again on the street five days later. Three days after this was strong enough to ride a bicycle from Buffalo to Niagara. Since this time has had vomiting spells every month until four weeks ago a vomiting spell lasting for two days. This was repeated four days and three days ago. In the last attack the quantity was two quarts and some of it was dark brown. Weight in 1893, 160, one year ago 143, now 123. Examination showed a fairly nourished woman with good color. Pulse 76.

Stomach—upper border 2 cm. below ensiform, lower at navel. No tenderness. Fasting stomach contained 240 cc. coffee ground material. Free hydrochloric acid present.

Oct. 22 to Nov. 18. Steady improvement, but on this day vomited. Free hydrochloric acid 0.1%. Total acidity 0.15%. The stomach was washed out Nov. 19, 20, 22, at which time the patient was taking but little under the normal quantity of food, but the second improvement did not continue. Several mild attacks of tetany occurred. On Nov. 29, Dr. Pfaff concurred in the diagnosis of ulcer and in advising operation. A gastro-enterostomy was done with an enterostomy by a Murphy button. At the operation the surgeon erroneously supposed that there was a cancer at the pylorus. Circular vomiting ensued and lasted till the death of the patient sixteen days later, Dec. 16, 1902. Tetany did not reappear after the operation.

Autopsy.—Dr. Hoag of the Boston City Hospital.

Gastro-intestinal tract. Mucosa of the posterior wall of the stomach is finely mottled by many conspicuous red points usually less than 1 mm. in diameter. Pylorus normal. One cm. below pylorus, upon the posterior surface of the duodenum, there lies an oval ulcer 1 cm. x 6 mm., entirely perforating the coats of the duodenum; margin, narrow, firm, inelastic, level and gray. The duodenum at this point is nearly occluded, admitting but the tip of the little finger. The margins of the ulceration are lightly attached to the anterior surface of the head of the pancreas so that no leakage occurs posteriorly.

The orifice of the gastro-jejunal anastomosis admits the tips of two fingers, and is bounded by a slightly elevated margin, unaccompanied by injection or other inflammatory sign. There is free communication between the two arms of the jejunal loop at the gastric opening. The second anastomosis, jejuno-jejunal, is perfectly patent and patulous, easily admitting the finger. Thus the anastomoses are perfect; no lack of infection is evident.

CASE III. Mr. M., sixty-two. First visit April 30, 1902. For thirty years pain in the epigastrium with heartburn. For one year has vomited frequently, and daily since April 26, two quarts at a time. Three weeks ago hemorrhage from the bowels sufficient to cause fainting. Alcoholic history. Vomitus—free hydrochloric acid 0.16%. Total acidity 0.32%. Sarcinae. Examination showed fair color. Weight one year ago, 160; April 30, about 135. Lower border of stomach at navel.

May 12. No improvement under diet and lavage. Diagnosis—gastric ulcer and dilatation of the stomach. "Surgeon said in the consultation that he had never had a more favorable case for operation."

May 14. Operation.

May 15. Death with distended abdomen. Autopsy absolutely refused.

CASE IV. Miss S. D., twenty-seven, gave the following history on Oct. 24, 1902: Always had had stomach trouble. Vomiting from seven years to four years ago. March 18, 1898, vomited a hand basin full of blood, and this was repeated on the following day, notwithstanding that she had lived on milk for the preceding three months. July 6, 1898, perforation of the ulcer and emergency operation in the country, which was completed in August of the same year at the Boston City Hospital.

January, 1901, vomited one-half a cup full of blood, and on April 5, 1902, one half as much more, at both

of which times she returned to the hospital for an ulcer cure. Appetite good. Weight, 1896, 98; April 27, 1903, 121. Occasional attacks of vomiting and pain after eating, similar to the pain before the perforation five years ago. Diet is extremely simple. At present is a telephone operator.

CASE V. Mr. H. D. S., thirty-one, consulted me March 4, 1901. Stomach always has been his weak point. In the early part of December, 1900, began to have faintness between meals with pain and hunger, and since that time has vomited on six occasions. Best weight, 157; weight to-day 151. Hemoglobin 80%. Pulse good. Splashing in abdomen easily obtained, but the stomach distended with air was $\frac{1}{2}$ cm. above the navel though 3 cm. below the ensiform. Ewald test breakfast, 90 cc. free hydrochloric acid present, 10 cc. blood.

March 7. Entered the Deaconess Hospital and underwent a typical ulcer cure. During the first week several severe hemorrhages, but by April 20 had improved so much as to be allowed to convalesce out of town. Weight 118½.

May 2. Hemoglobin 80%. Weight 134½. Patient evidently was eating too much, though of simple food, and the diet was curtailed.

May 9. Weight 138.

May 11. Vomited blood and was sent to the Boston City Hospital, where he underwent a second ulcer cure, but at the end of a few weeks again vomited blood. Operation on June 15. Excision of an ulcer which partially narrowed the pylorus. Convalescence was slow but steady, and patient resumed work in nine months. June 24, 1903, reports himself very well.

CASE VI. Mr. A. H. H., fifty-nine, was seen May 30, 1903. His father was a chronic dyspeptic, vomited for fifty years and died at eighty. The patient has had for three years distress and gnawing pain in the stomach, which has been relieved by food and soda. In October, 1902, gave up work. Since October he has frequently vomited, and on a few occasions food which was eaten two days previously has been recognized in the vomitus. As a rule the vomiting has been voluntary. The patient has drunk large quantities of water and washed out the stomach in this manner. Involuntary vomiting has occurred only within a few days. On the morning of May 30 the patient vomited nearly two quarts of coffee-ground material, which contained free hydrochloric acid. Total acidity 74. No lactic acid. Sarcinae present. Weight two and one-half years ago, 228; weight one year ago, 206; weight four months ago, 155; at present time about 135 pounds. Color, fair. Pulse 78 and of fair quality. No tumor felt in the stomach. Two days after the first hemorrhage another occurred. On the following day Dr. Pfaff, for whom I had made the single visit, saw the patient and advised operation, which was performed the next morning, June 3. An ulcer was found near the pylorus, which was nearly occluded by the inflamed mucous membrane. Gastro-enterostomy. To-day, June 9, uninterrupted recovery.²

SUMMARY AND RESULTS.

Case I. Hemorrhage. Gastro-enterostomy. Recovery from operation. Death twenty months later from cancer, which probably existed at the time of operation.

Case II. Hemorrhage and dilatation. Gastro-enterostomy. Entero-enterostomy. Death with circular vomiting sixteen days after operation.

Case III. Hemorrhage and dilatation. Gastro-enterostomy. Entero-enterostomy. Death within thirty-six hours.

Case IV. Operation for perforation. Recovery. Two subsequent attacks of hematemesis in following five years. Patient able to do light work, but has indigestion.

Case V. Hemorrhage and dilatation. Excision of ulcer. Recovery, and is well two years after operation.

Case VI. Hemorrhage and dilatation. Gastro-enterostomy. Recovery. (Operation June 3, 1903.) Died July, 1903. Colloid cancer.

Excluding the first case, the mortality in these five operations is 40%. Of three patients who recovered from the operation, one has had two

² Patient died July, 1903. Colloid cancer of pylorus.

relapses in five years, one has remained well two years and one is doing well fourteen days after operation.

If ulcer of the stomach is to be operated upon successfully in Boston, a change must take place in present methods. There is an abundance of good surgeons, but few have had extensive experience in stomach surgery. In a ball game the members of a team always play their respective positions, but the surgical nines in our large hospitals play in any position that offers and the substitutes do the same. It is to be expected that each surgeon will have a number of failures while acquiring experience. When it is remembered that there are thirty or more surgeons, any one of whom may be called upon to operate upon ulcer of the stomach, the number of individuals destined to be offered up on the altar of experience becomes rather appalling. Until some agreement is reached whereby stomach surgery is limited to a few men, better statistics are not to be anticipated.

DR. F. M. SHERMAN of Newton: I find myself, for the most part, in accord with the reader of the last paper. His advice that the physician and surgeon co-operate in the treatment and in the study of these cases seems to me timely, because I believe that the knowledge to be gained in the future through surgical experience will decide many of the questions now open concerning gastric ulcer.

The definite and positive opinions I have formed on the treatment of this affection are: *First.* That the majority of cases properly belong to the domain of medicine rather than of surgery. *Second.* That the best medical treatment is that long ago recommended by Wilson Fox and by Foster, which is rest in bed, no food by the mouth and rectal alimentation. If water is freely supplied most patients can stand a lot of starvation. In addition, water made alkaline with bicarbonate of soda may be administered, with the idea of diminishing the acidity of the gastric juice and irrigating the ulcer with a bland and slightly antiseptic fluid. Favorable results sometimes follow this treatment, even when imperfectly carried out; but the gravity of the affection is enough to warrant its rigid enforcement, and under it I think we may expect many patients to recover, and to recover more quickly and more easily than under any other treatment. *Third.* Nevertheless, in spite of any medical treatment, there will be a certain proportion of cases not benefited. These cases should be offered surgical treatment, not only because of the suffering, the disability and the ever-present dangers of hemorrhage and of perforation, but also because of the possible grave sequelæ, those, for example, resulting from perigastric adhesions, caused by a local peritonitis over the ulcer, or that very serious condition, cancerous change at the seat of the ulcer, which many believe to be common. *Fourth.* Cases of dangerous hemorrhage from gastric ulcer should have surgical treatment. *Fifth.* In case of perforation, surgical intervention is im-

perative, and the sooner the better. Early operation here offers a good chance for success.

DR. J. H. JACKSON of Fall River: I can add but little to the evidence as to the seriousness of the disease discussed, or to the methods of forwarding recovery. The papers have been wholly admirable and it is difficult to add to them. There may be some little things which may be of interest.

One thing I think has not been emphasized sufficiently, although it has been touched upon by four or five of the speakers and writers: The absolute necessity, in ulcer of the stomach, of rendering not only the stomach and bowels less acid but the condition of the blood less acid. Though we must consider the method of attack of acids upon the stomach, whether pepsin or hydrochloric acid or anything which attacks the stomach and causes the ulcer, these are secondary causes; behind them as a primary cause is lack of alkalinity of the blood, which promotes the condition favoring ulcer. Were the blood more alkaline, the acids would destroy the tissues less. Were it more in the condition of normal alkaline blood, it would not permit the peculiar provocative elements which attack the whole of the stomach; ruptured capillaries, embolism, infarctions and blood clot would be impossible. Hence the necessity of some addition to the blood to prevent the conditions which may induce the ulcer. If these conditions exist before the ulcer forms, they certainly exist in an accentuated degree after the formation of the ulcer. If acidity exists, why must we not overcome the tendency by methods that have been so well suggested in the discussions that have taken place? I feel sure that these things lie behind the condition which produces the ulcer. The ulcer is the cause of other troubles, coming out of its deep delving among the coats of the stomach, even puncturing them and causing adhesions.

Very little has been said about adhesions. Here comes in, if you have ascertained adhesions (as you may by various methods of physical examination) and a distended stomach, this question: What can we expect from medicine to establish a permanent cure? We may do much temporarily, and our patient recovers temporarily, with the remaining condition of a stomach which induces a recurrence of the trouble. Here comes in the need of the surgeon. These operations promise a great deal more in the future than is suggested by the past statistics. By all means, welcome the surgeon early in these cases.

As to the treatment, I have only a few words to say. All the things spoken of in the preceding papers and discussions need to be thought of in connection with it. The medical man is simply the one who meets the emergency for the time being, and if he is a wise man he will call in a surgeon, and he and the surgeon will lay their heads together, that they may accomplish the return of the patient to health.

In a distended stomach, with adhesions and an ulcer in it, with a band running around its

middle, making of the stomach an hour-glass or conical, with an ulcer an inch long,—if the pressure of food is aggravating this, what can pills and powders do that will permanently stop the hemorrhage? Welcome all efforts for cure of the disease by medicine, but by all means hand over the case in adhesions, stretching and dragging on the pylorus, or distention of the stomach, to the surgeon. Let us add to our medical treatment that of the surgeon

THE MEDICAL TREATMENT OF GASTRIC ULCER.¹

BY HUBERT G. WILBUR, M.D., FALL RIVER.

PROPHYLAXIS.—From statistics obtained by Professor Welch, open ulcer of the stomach or cicatrix was found in 5% of persons dying from all causes. The average frequency of open ulcer was about 2% in persons dying from all causes. Judging from these and other postmortem records, gastric ulcer is of more frequent occurrence than is commonly supposed.

Now that so much of medical effort and energy is directed towards the prevention of disease, gastric ulcer should at least be guarded against in cases of anemia.

It has been proven by experiments on animals that when they were rendered anemic gastric ulcer developed from much slighter irritation and healed more slowly than when the blood was in its normal condition.

Traumatism and localized pressure may also cause ulcer. In chlorotic females it would be wise to regulate the diet to avoid very hot things, coarse foods, highly acid and highly seasoned foods; also avoid corsets and tight clothing.

Occupation has its effect in the causation of ulcer. Seamstresses, typewriters, tailors and clerks, who lean against the machine or desk, producing pressure against the stomach, are all liable to ulcer.

Welch reports a case of ulcer in a carpenter who leaned heavily against his chisel while at work; and another case in a shoemaker who cut leather while holding it firmly against his stomach.

Hyperacidity and hypersecretion of the gastric juices, especially if they be associated with altered blood condition, demand appropriate treatment, lest they too prove to be the forerunners of gastric ulcer.

TREATMENT.—The diagnosis of ulcer once established by local tenderness, pain, vomiting after taking food and hematemesis, the treatment indicated is: First, to secure rest in bed that the strength may be saved; second, to obtain absolute rest for the stomach until pain, vomiting and hemorrhage are relieved, relying on nourishment by bowel to maintain the vital force.

PAIN AND VOMITING.—Indigestion of food is usually attended with pain and vomiting. Food acts as an irritant to the sensory nerve at the abraded or ulcerated surface. Vomiting is also produced by the presence of food which the stomach is unable to take care of, and which it tries to eject. Food causes excessive secretion of the

gastric juice, which in itself aggravates the ulcer; at the same time peristaltic action of the muscular coat is stimulated, thus increasing the liability to hemorrhage by the erosion of some of the small blood vessels. Hence pain, vomiting and hemorrhage demand absolute rest for the stomach for at least three or four days.

A case of chronic ulcer, under my observation for a period of eight years more or less, was of such peculiar interest that I may be pardoned if I briefly mention it here. The patient suffered from indigestion about all the time, but kept at his business. When I saw him at first I used lavage, with relief from pain and distress, and some improvement followed. After several months, however, the old symptoms returned, and he siphoned his stomach himself to get relief from pain and hyperacid condition. During the past three years the patient has had several attacks of vertigo, attended with a feeling of extreme weakness. Once I found him very pale, with small thready pulse, complaining of sickness of stomach, feeling very weak, and covered with a cold perspiration; this was followed by diarrhea, with dark, tarry stools.

During one of the acute attacks, in October, 1901, I sent him to Dr. H. F. Hewes of Boston. Dr. Hewes gave him an Ewald test breakfast, after washing his stomach out. After examination of the contents, Dr. Hewes reported: Acid in reaction; free hydrochloric acid present; also pepsin and renin. His diagnosis was gastropnoia, dilatation, decreased motor power, with a tendency to stasis. He suspected ulcer and possibly cancer.

The patient continued in a fair condition of health, keeping nearly his usual weight, although the condition of his stomach allowed him to take very little nourishment. His appetite was very good; anything but the simplest food, however, was followed by great distress, pain and the formation of gases. His wife frequently siphoned out his stomach at night, because of severe pain, so that he might sleep.

In March of the present year, becoming perhaps a little more involved in business, and getting more than usually tired, his stomach refused to digest anything. The stomach was siphoned out repeatedly. At one time the result was a considerable amount of dark, granular fluid, coffee-ground in appearance; this was followed by dark, tarry stools.

I was called to see him at this time, and gave ergotole m. xxx to relieve the hemorrhage, with saline enemata and stimulants subcutaneously to sustain the pulse. On the following morning I gave a mild saline laxative to relieve acidity and cleanse the stomach of whatever of food or debris from the ulcer was there. Bismuth subnitrate in half-ounce doses stirred in a glass of warm water was given once daily, with some relief of pain and fermentation. No food was allowed by mouth for three or four days. Cracked ice was given to relieve thirst. Patient was fed by bowel. The nutrient enemata were at first egg and peptonized milk beaten well together, to which was added $\frac{3}{4}$ ii of claret. This was

¹ Read before The Massachusetts Medical Society, June 9, 1903.

given about three times in the twenty-four hours. This nourishment was not retained well, and caused a good deal of distress and gas, and the subsequent cleansing enema showed that it was not well absorbed. Predigested beef and Bovine were tried, but they did not seem to be well taken up by the bowel. The patient became weaker day by day, he developed fever and mild delirium; nothing was retained, whether taken by mouth or by bowel, and he died after ten days' sickness.

A postmortem was obtained. A large ulcer, with shelving edges, about one and a quarter inches in diameter, was found near the pylorus. About one inch in towards the pylorus a scar was found, about one inch in length. Dr. Mallory examined the stomach, and pronounced it a case of simple ulcer.

If thirst be a troublesome symptom in these cases, small pieces of cracked ice may be tried or an enema of water be given. Violent pain and continued vomiting call for external applications of laudanum fomentations. A mixture of chloroform \mathfrak{z} i, alcohol \mathfrak{z} iii, applied on flannel will relieve pain. In obstinate vomiting I have used gr. 80 of sodium bromide with ext. cannabis indica gr. $\frac{1}{2}$ by enema, with excellent results. This failing, opium by suppository or morphin subcutaneously will give relief, but they should not be tried until other remedies have failed.

FEEDING BY THE BOWEL.—In most cases rectal feeding is disagreeable to the patient and liable to be irritating at first to the bowel; hence it is best to begin with comparatively small doses, and at intervals of about eight hours. The tendency has been, I think, to give the nourishment by bowel too frequently. The usual enema is absorbed slowly; hence a sufficiently long interval between the feedings is desirable, until we establish tolerance on the part of the colon. Once the bowel is educated up to taking food at regular intervals, then we can feed the patient for at least ten days or two weeks, until the more aggravated stomach symptoms have subsided, when we can gradually resume regular feeding by mouth. In all cases the rectum must be cleansed with one pint or more of warm salt water about an hour before each enema. We can then determine to what extent the food has been absorbed. If we find that it has not been well taken up by the bowel, it will be advisable to change to a more simple form of nourishment.

The anemic condition must be remedied by iron in some form. The ideal nutrient, then, to sustain strength and renew the impoverished blood would seem to be blood itself. We know from experiment that defibrinated blood is wholly absorbed by the bowel when given in small amounts, \mathfrak{z} 5 or 6 at a time. There may be some difficulty in obtaining blood, since it is not so readily accessible as the other foods.

Stewart's formula is one that should meet the condition; namely, a heaping teaspoonful of somatose is dissolved in as little water as possible; two eggs are thoroughly whipped with it; and \mathfrak{z} 4 of peptonized milk gruel added to it; the

whole not to exceed \mathfrak{z} 8. Papain is given for the digestion of the egg. If the enema is well borne, he adds some form of the albuminate of iron (preferably Dree's), \mathfrak{z} $\frac{1}{2}$ to 1.

To combat anemia and improve the general condition, Ewald used \mathfrak{z} j of a 3% solution of ferri chlorid in a wineglassful of egg water (one part white of egg, two parts of water), taken through a glass tube to protect the teeth. He maintains that chloride of iron is one of the best and most easily assimilable preparations that there are. With the iron he gives arsenious acid gr. 1-30 in pill form; this treatment he continues for months.

Since rectal feeding is not sufficient to sustain strength very long, we should try feeding by mouth as soon as we think it safe to do so. After two or three days' rest the stomach will admit of gradual resumption of food. Begin with very small doses of milk and lime water, a teaspoonful at a time; liquids in a predigested form; peptonized milk gruel; matzoon; and milk thickened with partially digested starchy foods, such as Nestle's, Mellin's, Malted Milk or Imperial Granum, to prevent the coagulation of the milk. If foods prepared with milk disagree, give beef juice in teaspoonful doses, either peptonized or pancreatized, or egg albumin beaten and prepared with sherry wine.

If a bland diet is tolerated, we gradually add to it broths, eggs, light puddings, sweetbreads, minced chicken and finely scraped beef, being careful to eliminate all foods likely to irritate the stomach, such as brown bread, oatmeal, coarse vegetables and fruit. As the gastric symptoms disappear we may give toast, rusks, rare roast beef and beefsteak. Any serious departure from a strict diet carefully laid down may bring about a return of the old symptoms.

Hemorrhage occurs in about 50% of all cases. In repeated and profuse hemorrhage Dreschfeld advises turpentine and considers it to give great relief. He administers it in capsules, or in emulsion \mathfrak{z} ii thoroughly beaten up with the white of one egg. The dose is m.xx or xxx of the mixture.

He cites several cases of hematemesis in which the patient was pulseless and blanched to an extreme degree, in which ice, gallic acid, ergotin injections and other styptics were tried in vain, and in which the first dose of turpentine completely stopped the hemorrhage. It is well borne by the stomach.

In case of hemorrhage with symptoms of collapse, flood the colon with hot salt solution, \mathfrak{z} 1 to the pint, and give digitalin gr. 1-30 and strychnia gr. 1-30 subcutaneously.

In case of perforation radical surgical interference is at once demanded. If the surgeon is not at hand, give morphia subcutaneously to quiet peristalsis and relieve pain, and brandy and coffee by enema to sustain the heart.

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REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

(Concluded from No. 7, page 181.)

THE SURGICAL TREATMENT OF PUERPERAL PYEMIA.

MICHEL¹⁶ in his contribution limits pyemia to that form of puerperal infection which is propagated by way of the venous circulation, and is characterized by rigors with high rises of temperature, and usually leads after an acute course to a fatal termination by septic emboli in the lungs or other organs.

He cites five cases operated and reported by Trendelenburg, four of which proved fatal, and one less acute, which recovered after ligation of the right internal iliac and right ovarian veins.

Michels then reports a case of puerperal pyemia in his hospital practice, in which through the usual methods of treatment the local conditions had been greatly improved, the uterus had contracted and the fetid uterine discharge ceased, but the general condition continued very alarming, with very high temperature and repeated rigors. A distinct fullness was noted in the left inguinal region, which suggested a thrombosis of the ovarian vein. Accordingly an operation was performed, and the ovarian vein, which was thickened and dilated, was ligated in two places about half an inch below the renal vein, and then divided between the ligatures. The vein was then exposed to its point of exit from the broad ligament, slit open and a fetid mass of softened thrombus with small accumulations of pus removed. The effect of the operation was surprising — no more rigors occurred, the general condition improved rapidly and, although the wound healed slowly, it healed completely, and the patient left the hospital strong and well.

RECURRENT ABORTION.

Taylor¹⁷ says that the usual term of "habitual" abortion is objectional, as the theory that the uterus can without any exciting causes form a habit of aborting at a certain period is only an idea, and that there is no longer any real justification for its continuance. He includes under the title of recurrent abortion only those cases where from the beginning or from some definite epoch the patient has aborted with each succeeding pregnancy.

Of the rare causes of recurrent abortion a few are due to intraperitoneal adhesions, to chronic kidney disease with albuminuria and to deep lacerations of the cervix. When all these rarer causes of recurrent abortion are accounted for, and when syphilis can be rigidly excluded, there still remains a definite group of cases of very nearly equal importance to that belonging to syphilis. The distinguishing features which bind these cases together are (1) indications of a low vitality on the part of the mother or father, or both; (2) a strumous family history; and (3) what he calls the remarkable result of an essentially antistrumous treatment when carried on for a long period of time or throughout the whole of the pregnancy. Twelve of the latter type of cases are tabulated. In syphilitic cases each succeeding abortion, if the patient's general condition remains satisfactory, tends to occur at a later period, until the pregnancy goes to term. At this stage dead children are usually born, but finally living children may be expected. In the strumous class, unless something is done to improve the general health, each abortion tends to further weaken the patient, each succeeding abortion tends to occur at an earlier period, and finally in some untreated cases the power of conception is lost. In the majority of these cases there is a fairly clear family history of strumous disease.

He attaches chief importance to the defective vitality of the mother in these cases of recurrent abortion, and everything which tends to improve the general health of the mother and child is of the utmost importance in successful treatment.

PELVIC LESIONS FOLLOWING LABOR.

Hill,¹⁸ in discussing the pelvic lesions following labor, says that in the occipito-anterior position it is of the very greatest importance that the nape of the neck be well under the pubes before the forehead is allowed to glide over the perineum. To insure this he often makes pressure on the perineum between the anus and coccyx. He would abstain from all rectal manipulations for this purpose, as he should not only fear injury to this organ, but also septic infection. At times he would advise to push the soft parts of the mother, anterior to the head, back under the pubes and thus favor the birth of the occiput. The patient should be directed to cease all voluntary efforts at expulsion. This is much helped by talking sharply to the patient and by delivery in the lateral-prone position, as the activity of the abdominal muscles is thereby lessened to a marked degree. Elevation of the lumbar region, when the patient is on her back, so as to increase the inclination of the pelvis, is strongly recommended by that master of obstetrics, Professor Schultze of Jena. The occipito-posterior position presents almost unlimited chances for destruction of the soft parts at the outlet. The careful obstetrician can, in a majority of cases, avoid this position by early assistance, rotating the head so that the occiput

¹⁶ Lancet, January, 1903, p. 1025.

¹⁷ Brit. Med. Journ., January, 1903, p. 835.

¹⁸ Am. Journ. Obst., January, 1903, pp. 81, 82.

will turn forward. Slow dilatation is of immense importance in avoiding perineal as well as cervical lacerations.

In speaking further of the avoidance of injuries, he refers to those extensive lacerations of the cervix occurring from application of forceps with an undilated and non-retracted cervix. He says we must first bear in mind that the operation is an exceedingly serious one, and that the avoidance of the injury lies in the fact that it must never be undertaken unless the indication is a most important one. When we are forced to it the prognosis should be a guarded one and every means exhausted to obtain a normal dilatation and retraction. At times it will be wise to incise the anterior or lateral lips of the cervix.

In speaking of the results of birth injuries, he refers to the immediate and the remote. The immediate is summed up by the likelihood of sepsis. The remote results are of the greatest importance and deserve our closest study. Too much stress cannot be laid upon the seriousness of some of these injuries, especially those produced by the forceps on the unretracted cervix. Some of the patients remain invalids for years; others never regain their health. The latter cases are those where there is great destruction of the cellular tissue in the base of the broad ligament and beneath the vagina. He insists that this condition is much more frequent than is ordinarily supposed and very serious to the well-being of the individual.

MECHANISM AND INSTRUMENTAL DELIVERY IN TRANSVERSE POSITIONS OF THE HEAD AT THE BRIM.

Gillespie¹⁹ remarks on the great difference between low forceps and high forceps operations. Instrumental assistance with the head at the inferior strait is a safe procedure for any one who possesses reasonable operative judgment; forceps at the superior strait requires as much judgment for its proper performance as any obstetrical or gynecological operation with which he is acquainted. The intelligent use of forceps at the superior strait presupposes an exact knowledge of mechanical relations of the head to the pelvis and a careful differentiation of the cause of delay. If we may judge from textbook descriptions of the operation, this exact knowledge is seldom possessed, and the advantages of a differentiation of the cause of delay are frequently not appreciated. The rule generally followed of applying the blades to the sides of the pelvis, without regard to the diameter of the head grasped, is in his opinion as unscientific as would be an unvarying technique in hysterectomy for fibroids regardless of the shape and direction of the growth. Many have such a wholesome fear of the high forceps operation that they invariably perform version when the head is impacted in the brim. He says we cannot do better in the beginning than is stated by Robert Barnes: "In proportion as

the head is low in the pelvis, high in the pelvis or above the brim, the necessity, utility and safety of forceps diminish."

Gillespie states that there are many conditions which render it advisable or necessary to apply forceps at the superior strait. He considers those conditions only which cause transverse positions of the vertex, such as flat pelvis. In these cases the head is not only transverse in the brim, but approaches that side of the pelvis toward which the occiput is directed, leaving the other side comparatively free. As the concave edge of the blade must be turned toward the occiput, it follows that the blade, which must find lodgment under the pubes, passes upon this comparatively empty side. There is, therefore, much less likelihood of the blade being nipped and held firmly between the side of the pelvis and the head than in the more normal oblique positions in which there is disproportion. So long as the sagittal suture is drawing nearer the pubes we should keep hands off; but when it begins to recede, showing that the point of contact with the promontory has become fixed, assistance comes within the range of possibility. Gillespie describes the method of applying the blade under these circumstances. A frequent cause of transverse position at the brim is an increased tilting of the brim as a result of excess of the sacrovertebral angle. Lack of flexion is another element in the problem of posterior rotation, which is intimately associated with abridgment of the conjugate. Three cases are reported.

PUBIOTOMY — LATERAL SECTION OF THE PUBIC BONE.

Gigli²⁰ has proposed and performed lateral section of the pubic bone by means of his chain saw, in place of the usual operation for symphyseotomy, in which the ligaments of the pubic joint are severed for obstructed labor. He has performed the operation several times, and the patients have all recovered with good results. He claims there is less hemorrhage, and the union of the bones is firmer and surer than at the joint, and that it is well known that many patients have loose pelvic articulations after section of the symphysis.

A number of cases of lateral section have been reported, two by Pistalozza,²¹ who favors the new procedure. Two cases are also reported by Van de Velde,²² who also warmly advocates the operation.

An incision is made from the left pubic spine downwards and inwards to the outer border of the labia majora, at the level of the vestibule. When the bone is reached, a cord is passed round it by means of a specially curved needle, and by this means a Gigli saw is drawn into place, and the pubis divided. A separation of the fragments to the length of about 5 cm. is obtained. After the child has been extracted, the periosteum is sutured with strong silk, and the lower

¹⁹ *Zeitschr. f. Geburt. u. Gynäk.*, No. 4, 1903.

²¹ *Centralbl. f. Gynäk.*, No. 37, 1902.

²² *Peterson: Obstetrics*, 1903.

¹⁹ *Am. Journ. Obst.*, January, 1903.

end of the wound is left open to allow for drainage. A pelvic bandage should always be employed. The stitches can be removed on the seventh day. Van de Velde prefers pubiotomy to symphyseotomy for the following reasons: (1) The wound is not near bladder or urethra. (2) The soft parts round the divided bone are thicker than round the symphysis, so a laceration extending from the wound to the vagina is less likely to occur. (3) The distance of the operation site from the clitoris lessens the risk of hemorrhage. (4) The adductor longus and gracilis muscles prevent too great separation of the fragments. As a result, healing is more rapid and the chances of infection are less.

TREATMENT OF PLACENTA PREVIA.

De Lee,²³ basing his judgment upon thirty cases of placenta previa which he has had, says he feels justified in making the following statements:

(I) A woman with placenta previa ought not to die, except in rare instances, such as air embolism or the hemorrhagic diathesis.

(II) A case of placenta previa should not be half-heartedly treated. If the child is viable, labor should be induced. When the hemorrhage is very moderate one may wait, provided that the patient remains in bed and is in a well-appointed hospital.

(III) No one method of treatment will meet all cases. The accoucheur should have all known measures at his command.

(IV) The young practitioner should follow Schroeder, who says: "That accoucheur will have the best results in placenta previa who has the least regard for the child."

Medical writers whose words are read by the general profession, and medical teachers whose precepts are followed by, at first, blind and inexperienced hands, should be careful what they recommend for universal practice. One should recommend to those of less skill only such measures as in such hands may lead to the best results. The man with his first case of placenta previa, therefore, should direct his efforts to saving the mother. Later on, when the parturient canal is no longer a blank space, when dexterity has been acquired and, rarest and most difficult of attainment of all, obstetric judgment has become a possession of the accoucheur, he may make an earnest effort to improve the mortality of the child.

(V) Placenta previa is a formidable condition, more formidable than most laparotomies, and to insure the best results the patient should be in a well-equipped obstetric operating room.

(VI) The best way to induce labor is to puncture the bag of waters and to put a colpeurynter in the uterus, resting on the placenta and pressing this against the cervix, and then to put traction on the tube.

(VII) After labor is inaugurated, or should the case be received when it is already begun and hemorrhage more or less severe has occurred, the treatment should be pursued with vigor, and

the doctor must not leave his patient till she is delivered and all danger is past.

(VIII) The treatment, then, is as follows:

The objects are: (1) to stop the hemorrhage; (2) to empty the uterus; (3) to secure contraction and retraction of the uterus; and (4) to ensure complete hemostasis. The state of the cervix and the degree of hemorrhage indicate the course to pursue.

INTRAVENOUS INJECTIONS OF FORMALDEHYDE FOR PUERPERAL SEPSIS.

Much has been printed during the past six months on the subject of intravascular antiseptics, a large portion of which has no doubt been inspired by the publication of Barrows' case of puerperal sepsis, recovery of a very sick patient following the intravenous injection of 1,250 cc. of a 1 to 5,000 solution of formalin in normal salt solution.

The intravenous injection of drugs and even of formalin solutions for their antiseptic action is by no means a new suggestion or procedure, although the publication of Barrows' case, appearing as it did first in the lay press, produced rather an unusual amount of interest.

If Barrows' case had been published in the usual manner in a medical journal, without having first been widely advertised in the daily press, it is highly probable that it would have created no unusual interest or comment. This is true because cases quite as much *in extremis* as Barrows' have been known to recover under simple supportive treatment, or after the injection of normal salt solution, the use of antistreptococcus serum, Crede's ointment and various other forms of treatment which have from time to time been lauded as specifics for septicemia, but all of which have subsequently proved disappointing.

It is perhaps too early to pronounce at the present time a final verdict on the use of formalin as described, but what clinical evidence we possess points to the conclusion that the favorable result in Barrows' case may have been merely coincident or may have been due to several other factors.

In the *Lancet* of Jan. 10, 1903, three weeks before the publication of Barrows, Fortesque-Brickdale, in a paper on "Intravascular Antiseptics," from the Bacteriological Department of the Jenner Institute of Preventive Medicine, says that the idea that drugs might advantageously be administered by direct injection into the circulation was first started by an English mathematician, and had its latest exponent in an Italian cabinet minister. Sir Christopher Wren in 1656 was the first to carry out the experiment, and the medical profession has coquetted with the method ever since, exaggerated enthusiasm for it alternating with absolute neglect. He gives the results of a number of laboratory experiments upon animals in the injection of various drugs, and in conclusion says that at present there is no experimental evidence which would warrant the

²³ Am. Gynec., August, 1902, vol. i, No. 2, p. 152.

assumption that the course of a septicemia in animals can be influenced favorably by the intravenous injection of antiseptic substances, and that in view of his results and those obtained by former investigators, it seems useless to continue trying to apply clinically a method which, while not free from special dangers, is at present unsupported by any experimental evidence either as to its present advantages or future prospects.

Park and Payne in the *Medical News* for April 4, 1903, report the results of their experiments on the intravenous injection of dilute formalin solution in septicemic rabbits. Their work was done at the Research Laboratory in New York after the report of Dr. Barrows' case. Their results agree with those of Fortesque-Brickdale quoted earlier, and their conclusions are essentially the same with regard to the dangers and inutility of formalin injections, while they also demonstrated that even after large doses of formalin the streptococci can still increase in the blood.

Barrows²⁴ in a recent communication defends the use of intravascular antiseptics, claiming that experiments made on rabbits with unfavorable results do not necessarily represent the conditions in the human subject. He reports a number of cases successfully treated. He says he does not wish to stand as a champion for the single chemical element which has given such satisfaction in his hands, but he believes that from a study of his cases other lines of treatment in this direction may be stimulated.

Reports of Societies.

FIFTY-FIRST ANNUAL MEETING OF THE MAINE MEDICAL ASSOCIATION.

THE fifty-first annual meeting and semi-centenary celebration of the Maine Medical Association was held in Portland, June 3, 4 and 5, 1903. On the recommendation of the president for the preceding year, Dr. F. H. Gerrish, the exercises throughout partook of a special character. The only papers presented were of an historical character, but the reports of special committees were of unusual interest and called out a very free discussion.

FIRST DAY — MORNING SESSION.

The meeting was called to order by the president, DR. HIRAM HUNT of Greenville, at 10.30 o'clock.

DR. AUGUSTUS THAYER of Portland read his report as treasurer, showing a balance of \$2,378.91, notwithstanding the fact that \$1,000 had been appropriated during the year for the proposed Maine Sanatorium for Consumptives.

DR. ADDISON S. THAYER presented the report of the Committee on Change of Laws Governing the Commitment and Discharge of the Insane.

"According to present law in Maine, a person who desires the commitment of another person alleged to be insane, must sign in writing a formal complaint. A copy of this complaint must be given in hand to the person alleged to be insane. The alleged insane person must also be notified of the time and place of a hearing, and that he has the right and will be given an opportunity then and there to be heard."

Judge Walton in 1888 in the Knox County Court ruled:

"When an adjudication is to be made which will seriously affect the rights of a person, he should be notified and have an opportunity to be heard." "We do not find any decision in this state or Massachusetts which holds directly and positively that such a notice is necessary."

To avert doubt as to the legality of future commitments the last legislature amended the statutes so that they conform to the principles laid down by Judge Walton.

The committee expressed the belief that the commitment of persons who are not insane rarely occurs. They advised firmness on the part of hospital authorities to prevent the premature discharge of insane patients.

DR. B. T. SANBORN, superintendent of the Maine Insane Hospital, in discussing the report said that he wished to call attention to a new law passed by the legislature relative to the admission of patients to an insane hospital.

There must be *legal* evidence that two reputable physicians have testified to the fact of insanity, and no person shall be deprived of his liberty without legal commitment. Regarding the premature discharge of insane patients, Dr. Sanborn spoke of the formerly overcrowded condition of the Maine Insane Hospital and the necessity of always receiving and retaining the more dangerously insane, and this had made it necessary to discharge others whose condition was not so bad.

It was voted that the committee be retained to secure suitable laws, if possible, from the next legislature.

The Committee on Legislation Regarding Victims of Drug Habits reported progress, and was retained for another year.

In discussing the subject DR. W. L. HUNT said that he would like to have the insane law stretched over the inebriate, somewhat similar to the Massachusetts law, and spoke of the difficulty of committing an individual insane through drink. He believed that such patients should be admitted to the insane hospital.

DR. F. H. GERRISH of Portland suggested that the committee endeavor to obtain from the next legislature an adequate and proper law.

DR. B. T. SANBORN spoke of the difficulties attending voluntary commitment, and expressed his opinion that an insane hospital was not the proper place for inebriates and drug habitués. He expressed the hope that a suitable institution for the care of such patients might be established by the state.

DR. S. C. GORDON favored a law enabling a

²⁴ N. Y. Med. Journ., Jan, 31, 1903, p. 177; *ibid.*, July 4 and 11, 1903, pp. 5 and 65.

drunkard to be confined in an insane hospital or similar institution.

DR. F. H. GERRISH of Portland said: Patients addicted to the use of drugs have their moral sense completely blunted, and it is extremely difficult to manage such cases. I believe that a law should be framed by which a man might voluntarily relinquish his liberty for a stated period. In this way the physician could control his patient and not be liable for false imprisonment.

DR. WALTER ELWELL, superintendent of the National Soldiers' Home at Togus, endorsed Dr. Gerrish's views.

DR. B. B. FOSTER of Portland spoke of the necessity of absolute control by the physician of inebriates and drug habitués, but believed that it would be extremely difficult to secure such a law.

It was voted that the committee be continued to the next annual meeting.

DR. G. M. ELLIOTT of Brunswick presented the report of the Committee on the Expediency of Adding Venereal Diseases to the List of those reported to the Board of Health.

The committee proposed a legislative act:

(1) To add syphilis and gonorrhea to the list of diseases to be reported.

(2) To provide free treatment for patients with these diseases.

(3) To restrict the marriage of such as have a communicable form of either disease.

(4) To penalize the wilful spreading of either of these diseases.

(5) To have the State Board of Health prepare a circular such as is now prepared for some of the other diseases, and require each physician to give the patient a copy in each newly seen case, and certify to the local board of health that such patient has been given a copy.

DR. F. H. GERRISH said: This deals with an important subject, though an old one. Twenty-five years ago I made similar suggestions regarding prostitution, and brought the subject to notice again a year ago, and this matter has been conducted with the utmost deliberation. We should add gonorrhea and syphilis to the list of reportable contagious diseases. An effort to obtain the venereal morbidity in New York showed 225,000 cases as against 41,145 reported diseases in one year. In our meeting last year Dr. Oakes referred to gonorrhea as "this most hideous disease," and yet spoke against securing legislation. Some of the objections urged against the passage of this law are: That it could not go through the legislature on account of the sympathy of members who may have been afflicted; that it would drive these cases to druggists and quacks for treatment; that doctors would not report cases since cases of tuberculosis are not reported; and that it is bad to have a law on the books that is not enforced.

The law against fornication is not enforced, and the law against theft only brings to justice a fractional part of the offenders; but they should remain laws to apply when possible.

It is said that to report these cases would be a violation of professional secrecy; but, if the law compelled, there would be no ground for complaint. The proposed law would have an educational value, as the law against spitting in public places has a salutary effect. The law does not contemplate isolation and is for the advancement of public welfare. We do not hesitate to enforce the law in scarlet fever; why should we in these diseases? The medical profession needs education on these points.

DR. GUSTAV PUDOR advised licensing brothels, as the plan had worked well in Berlin and afforded protection from contagion. He believed that pupils in the upper classes of grammar schools should be instructed on the dangers of such matters.

DR. B. B. FOSTER said that in his judgment the proposed law could not be enforced if adopted. It would certainly drive the treatment of these diseases into the hands of the druggists. He spoke of the great prevalence of gonorrhea and syphilis, and showed that the former was much the more serious disease. He believed that young men should be educated in these matters, and favored legislation that would limit the treatment of these diseases to competent physicians. He estimated that 70% of the male population over the age of thirty-five had had gonorrhea.

DR. WALTER B. ELWELL of Togus said: I think that Dr. Foster has overestimated the extent of venereal diseases. I have examined thousands of men and believe that, counting both syphilis and gonorrhea among old soldiers, 52% is a high estimate.

DR. JOHN F. THOMPSON, Portland, said: The administration of drugs by pharmacists is to be especially condemned. Patients of this class should be treated by qualified physicians and specialists rather than by general practitioners. The proposed law, I believe, is too radical; and I hold that we must approach the desired end gradually. I do not believe that the simple reporting of cases will do any good.

It was voted that the committee be retained for another year and that it appoint a delegate or delegates to the Congress of Venereal Diseases at St. Louis in 1904.

FIRST DAY — AFTERNOON SESSION.

The delegates to other societies and institutions presented their various reports, after which DR. HIRAM HUNT of Greenville delivered the

PRESIDENT'S ADDRESS.

Dr. Hunt called attention to the special character of this meeting, and said: "As it is fitting that everything connected with the association should be reviewed, so it will be profitable to study all things medical, to note the progress of surgery since the organization of this association and before, to note, also, the progress in every branch of medicine." He spoke of the great value of medical societies, with special

reference to their contributions to education and mutual professional improvement. He called attention to the various legislative acts that the Maine Medical Association had been instrumental in securing. Regarding county societies, he said: "During the past year one condition has been forcibly brought to my attention, and that is the absence of union between this association and the county societies. If a satisfactory plan could be adopted which would unite this association and the county societies, it would probably result in a large membership in both, a better organization of the profession of the state and be mutually advantageous."

"The American Medical Association plan for organizing the profession has been adopted in eighteen states. I am not convinced that this plan is advisable for our association, but any plan, especially one recommended by the American Medical Association, with whom our association has always been affiliated, should have careful and respectful consideration. I suggest that a committee be appointed to consider the plan advised by the American Medical Association, to report at the next annual meeting."

DR. CHARLES O. HUNT of Portland then read a paper on

THE HISTORY OF THE ASSOCIATION.

The association gave Dr. Hunt a vote of thanks and also voted that the paper be published in the Transactions.

SECOND DAY.

Instead of a business session in the morning, an exhibition of Curiosities and Anomalies of Medicine was held in the amphitheater of the Maine General Hospital. Physicians from all over the state brought patients afflicted with rare diseases and unusual deformities. The list included many congenital malformations, some of the rarer diseases of nutrition and a collection of remarkable skin diseases.

The following cases were among those exhibited: General ankylosis, cretinism, congenital absence of fingers, fibroma of nose involving entire face, congenital dislocation of hips, acanthosis nigricans, ichthyosis, psoriasis, general eczema and sycosis.

The exhibition, which was under the charge of Dr. Frederic H. Gerrish for the Business Committee, lasted over two hours, and was greatly appreciated.

SECOND DAY — AFTERNOON SESSION.

The president introduced as delegate from the New York State Medical Association, its president, DR. FREDERICK HOLME WIGGIN, who made a brief address referring to the work of his association.

DR. T. F. GARTLAND of the Vermont Medical Association was introduced as its delegate.

The Committee on the President's Address

recommended that "a committee of organization be appointed to act on the plan proposed by the American Medical Association." By vote of the association, such a committee was appointed.

The Board of Censors advised the management of the medical exhibit by the association, or that investigation be made regarding its control. A committee was appointed for this purpose.

DR. J. L. M. WILLIS of Eliot read a paper on

THE HISTORY OF MEDICINE IN MAINE PRIOR TO 1853.

DR. WILLIS B. MOULTON of Portland read a paper on the

HISTORY OF MEDICINE IN MAINE OUTSIDE THE ASSOCIATION SINCE 1853.

Both papers were referred to the committee for publication.

DR. CHARLES D. SMITH spoke in favor of a national act of incorporation of the American Medical Association, and it was voted that the delegate favor this act.

DR. S. H. WEEKS spoke for the Maine Sanatorium Association, reported progress and called for a motion that the association appropriate fifty dollars a year for the benefit of the institution. The motion was put and called out some discussion, as the association at the previous annual meeting had donated one thousand dollars. It was finally voted that fifty dollars be appropriated annually for ten years.

The president called attention to the presence of two of the charter members, and introduced DR. ALONZO GARCELON of Lewiston and DR. CYRUS KINDRICK of Litchfield Corner.

The officers for the next year are: President, Dr. Augustus S. Thayer, Portland; Secretary, Dr. Walter E. Tobie, Portland; Treasurer, Dr. Arthur S. Gilson, Portland.

In the evening a banquet was held at the Lafayette Hotel. There were present two hundred members and guests of the association.

The third day, June 5, was devoted to a sail in Casco Bay and a shore dinner on Long Island. The physicians and their wives, to the number of two hundred, took part in this event, which concluded the program. A special effort had been made to have as many physicians as possible attend the meeting accompanied by ladies. The visiting ladies received every possible attention. Many were entertained by the wives of the Portland doctors, and a committee of ladies called on all visitors whose addresses could be obtained. Mrs. John F. Thompson held a reception on Wednesday afternoon. Thursday morning the ladies enjoyed a trolley ride about Portland, finishing with a lunch at Riverton.

On the evening of June 8 the association had reserved for them two hundred seats at the Jefferson Theater, and with their ladies attended a performance of "The Conquerors."

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PROGRESS IN THE TREATMENT OF THE DEPENDENT POOR.

A FEW days since an editorial appeared in the Boston *Herald* calling attention to the improved public spirit prevailing in New York toward its dependent poor, commonly known as paupers. The term "pauper" has acquired a most unenviable reputation, and the first step apparently in an amelioration of the condition and the elevation of the self-respect of these dependent persons is to change this term to one perhaps having a similar significance, but less unpleasant associations. In New York the word "ward" has been substituted, and possibly, owing to this fact, the dependent class is undergoing a distinct change for the better. A so-called farm colony has been established on Staten Island, and in the course of time an administration building, chapel and an adequate number of cottages are to be erected for the comfortable housing of the poor. Aged married couples are to be permitted to live together until one or the other dies, whereas in former times such persons, having become dependent upon the city, were separated. By these general means it is suggested that a beginning may be made toward the realization of Mr. Jacob Riis' hope that ultimately the charitable institutions on the East River Islands may be removed to make way for island parks for the poor.

A similar idea to that described above had been suggested also for Boston, as may be seen by reference to the report of 1902 of the pauper institutions' trustees, wherein the following statement is made:

The difficulties of classifying an almshouse population seem to be inherent where so many feeble persons are housed, fed and cared for together. A plan which

has been suggested, and which might tend to obviate some of the disadvantages of the congregate system of housing, would be to provide a number of cottage almshouses, with separate establishments, where each household could fulfill the duties of caring for the building and adjacent grounds without requiring so much assistance from officers as is necessary in a large institution.

The *Transcript*, in an editorial, comments on this suggestion, and accounts for the fact that the change has never been carried out in Boston owing probably to the fact that the institutions are established on a different basis, and that such a change would involve a very considerable expense. It is, however, worthy of mention that the plan which has apparently been carried to a successful issue in New York, had already been suggested for the poor of Boston.

It is in general of very great interest to note from time to time the change in public sentiment which is going on in regard to those who through misfortune or illness, or even through their own fault, are forced into public institutions. We have frequently enough commented upon the change of the word "asylum" to "hospital," and we may look forward with confidence to a gradual awakening of public opinion to the injustice of the situation which condemns persons suffering from chronic disease to the declaration of pauperism before they may be cared for by the city or state of which they may chance to be citizens. The distinction should most certainly be drawn between that class in the community which is able-bodied and which simply, through lack of initiative or viciousness, refuses to work and that increasingly large class of individuals who through illness is condemned to a life of idleness. These latter should be forthwith regarded as sick persons, and any social stigma attaching to them should be removed, so long as they remain in the condition of invalids. In time, no doubt, the idea of hospitals for chronic disease will gain weight and strength sufficient to set right many of the injustices which now prevail.

ETIOLOGY OF YELLOW FEVER.

LITERATURE on yellow fever is becoming abundant. We have before us one of the most recent contributions to the general subject, being the Report of Working Party No. 1 of the Yellow Fever Institute, published under the auspices of the Treasury Department of the Government. This party consisted of Assistant Surgeon Herman B. Parker and Acting Assistant Surgeons George E. Beyer and O. L. Pothier. The work was

undertaken at Vera Cruz, Mexico, and was continued from May until October, 1902, with the assistance of the Mexican Government. The object was to investigate particularly yellow fever and other diseases common to Mexico and the United States. The report which has been submitted to the Government of the work accomplished is an admirable, brief presentation of what has already been learned regarding the relation of the mosquito to yellow fever and of the added knowledge which this special investigation has brought.

To persons unfamiliar with the extremely interesting history of the development of our knowledge regarding the etiological rôle of the mosquito, this pamphlet may be read with great profit. A brief description is given of the *Stegomyia fasciata*, its natural breeding places and its importation into this country. It may not be generally known that this species of mosquito is not native to the United States, but has become domesticated largely through the medium of commercial intercourse. As a result of this invasion, certain infected regions may be marked out with a considerable degree of accuracy, and this has been done with much benefit to future students of the disease. The chief aim of the working party to which we have alluded was the identification and classification of the specific organism of yellow fever, a matter which has hitherto remained undecided.

The writers of the report give an excellent synopsis of previous investigations, giving very justly much credit to Major Reed, whose work in connection with the scientific proof of the mosquito theory, earlier advanced by Finlay, is now universally known. In carrying out the further investigation, Dr. Parker and his colleagues studied with much care fresh blood microscopically and bacteriologically, made bacteriological examination of organs at autopsy and conducted various experiments relating to the transmission of the disease by mosquitoes. All of these facts and very many others of much interest are given in a space of forty-eight pages, to which are added forty-three very beautiful illustrations of the mosquito *Stegomyia fasciata*, both in its macroscopic and microscopic relations. These illustrations are by far the most elaborate in color and execution that we have seen on this subject, and should be given wide circulation in connection with the accompanying text. The general conclusions which the writers reach on the subject are included in the following four statements:

That the bacteriological examination of the blood of cases of yellow fever during life and the blood and organs at autopsy performed immediately after death in uncomplicated cases is negative.

That *Stegomyia fasciata*, when contaminated by feeding on a case of yellow fever forty-one and a half hours after the onset of the disease and subsequently fed on sugar and water for twenty-two days one and a half hours, can, when permitted to feed on a non-immune individual, produce a severe attack of the disease.

That *Stegomyia fasciata*, contaminated by feeding on a case of yellow fever and after varying periods killed, sectioned and appropriately stained, presents with regularity a protozoan parasite, the *Myxococcidium stegomyia*, that can be traced through a cycle of development from the gamete to the sporozoite.

That *Stegomyia fasciata* fed on blood from a case of malarial fever, on normal blood or artificially fed, does not harbor the parasite.

The importance of this work and the addition which it brings to our knowledge of the subject can hardly be questioned.

THE DIAGNOSIS OF INSANITY AT SIGHT.

A PAPER which departs very widely from the usual type presented at medical meetings was read by Dr. Steven Smith of New York at the meeting of the American Medico-Psychological Society recently held in Washington. The subject of this communication was "How Dr. Brigham Met the Challenge to Diagnose Insanity at Sight." This paper was regarded as having so large an element of popular interest that it has been republished, we presume in full, in a recent number of the *Outlook*. We question somewhat whether this contribution should lay claim to medical value, but we are nevertheless of the opinion that such a variation of the routine of medical meetings, when told in the delightfully graphic style of this paper, must be welcome in the sometimes gloomy waste of so-called scientific productions.

The story narrated by Dr. Smith simply is that during the period toward the end of the first half of this century, when the negro question was already under active discussion, a negro was suspected of the crime of murder. He later confessed to the crime, but showed such signs of mental alienation that the incensed public feared his escape from justice on this ground.

When his trial finally took place, after threats of lynching had been successfully met, William H. Seward, Esq., impressed with the belief that the negro was insane, and also eager to stand between him and the popular clamor for his death without trial, undertook the defence. The details of the trial are told with much vividness, but the climax was reached when Dr. Amariah Brigham, then superintendent of the Asylum for the Insane at Utica, was called as an expert for the defence. He believed in the man's insanity, and, after undergoing with much composure a cross-examination of great severity at the hands of the prosecuting attorney, he finally was asked the question whether or not he could diagnose insanity at sight. Dr. Brigham replied emphatically that he could. He was then called upon by the attorney-general to point out to the court and jury an insane person in the audience. Rising from his chair, Dr. Brigham scanned with keenest scrutiny row after row of those who were witnessing the trial. After five hundred faces had been studied, he finally fixed his attention upon a certain person, stretched out his arm, pointed his finger toward one of the rear rows of seats, and said, "There is an insane man." The event justified his diagnosis, and the lunatic—for such he was—was finally removed with difficulty from the court room. This practically ended the trial, but the issue of the case was the conviction of the criminal for murder in the first degree. It was a concession to public opinion. He died later in prison, completely demented.

The final statement of the account, as given in the *Outlook*, is "an autopsy confirmed the correctness of the defence—insanity." All of this is most entertaining as a story which should be kept alive, but as a contribution to medical literature we are compelled to feel that it overshoots the mark. Even now the diagnosis of insanity, as ordinarily understood, by a study of the brain, is often impossible, nor have we reached that stage of perfection in observation which permits us to detect the signs of insanity in many a person who has passed beyond the bounds of reason. This, however, occurred in 1846, and it may be that our more refined methods of diagnosis have detracted somewhat from the powers of observation which Dr. Brigham is claimed to have so fully developed. This, at least, is a charge which is occasionally brought against the modern physician, and possibly this entertaining story may give it weight.

DR. MORRILL WYMAN.

IN this issue of the *JOURNAL* we offer a contribution to the memory of the late Dr. Morrill Wyman of Cambridge. The physician, however great his professional reputation may have been, usually receives at his death but scant acknowledgment from the world at large unless his life work has led him quite beyond the bounds of medical science. Dr. Wyman was a man whose personality and good citizenship, as well as his conspicuous contributions to medical knowledge, make such a memorial as this which we publish to-day peculiarly fitting. The writers, all prominent in the professional life of this and the neighboring city of Cambridge, knew Dr. Wyman personally, and each in his own way adds something of appreciation to the brilliant record of the great Cambridge physician. No doubt such a tribute, coming from his colleagues, would have been far more welcome to Dr. Wyman than a more fulsome, but less appreciative, because less well-informed, estimate of his character and work.

MEDICAL NOTES.

THE ENGLISH CANCER RESEARCH FUND.—The first annual meeting of the committee of the Cancer Research Fund was held in London, July 13, under the chairmanship of the Hon. A. J. Balfour. The work has been prosecuted for so short a time that nothing definite in the way of progress was given out at the meeting. It was, however, stated that the scheme of investigation proposes wide study in the various lines which may lead to a solution of the ultimate problem. To carry out this proposed plan Mr. Balfour very wisely places much stress upon the fact that in a research of this character immediate results may not be expected, and that to carry out such an investigation to its end requires a very large financial backing. It was further stated that £43,000 are still needed for the completion of the endowment.

REGISTRATION OF CONSUMPTIVES.—An ordinance has become law in Kansas City, according to the *Journal of the American Medical Association*, without the approval of the mayor, which provides that all persons suffering from consumption in an infectious stage must be registered with the board of health and must follow the instructions as to isolation and treatment made in each case by the city physician. The lay press says that the law is aimed primarily at the negroes, a large percentage of whom have con-

sumption, and who in their conduct on the streets and in crowds show no care for the danger to public safety from the germs of the disease.

INTERNATIONAL GOLF. — The *British Medical Journal* informs us that the annual golf match between members of the British Medical Association was played on the links of the Swansea Club. The course is very sporting and although the weather was showery the round was most enjoyable. It was agreed to make the sides England v. the Rest of the World. The game ended in favor of England by 8 matches to 2.

BEQUESTS TO IRISH HOSPITALS. — One result of the visit of King Edward to Ireland appears to be a bequest of \$250,000 from Lord Iveagh for the benefit of both Catholic and Protestant hospitals in Dublin. This amount of money is given in memory of the King's visit.

HOSPITAL BUILDING IN NEW YORK STATE. — The *New York Medical Journal* makes note of the following activity in the construction of hospitals in New York State: At Albany a hospital for contagious diseases is about to be built, the ground for which has already been broken. Improvements are also being made in St. Peter's Hospital of the same city. At Buffalo \$125,000 has been appropriated for a new marine hospital, of which \$100,000 are to be expended for the building. In New York City, Bellevue Hospital has acquired additional land, which will be used for the enlargement of its buildings. The cost of this work is estimated at about two million dollars. Under the auspices of Dr. Peterson, president of the State Commission in Lunacy, it is also announced that a site in Washington County will be purchased for the erection of a new insane hospital, the necessity for which is brought about by the overcrowding at the King's County Institution. The final cost will probably exceed one million dollars, although the commission at present has but \$50,000 appropriated by the last legislature.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Aug. 19, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 24, scarlatina 9, typhoid fever 20, measles 9, smallpox 0.

BOSTON MORTALITY STATISTICS. — The number of deaths reported to the Board of Health for the week ending Aug. 15 was 207, as against 201 the corresponding week last year, showing

an increase of six deaths and making the death-rate for the week 17.88. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 22 cases, 4 deaths; scarlatina, 19 cases, no deaths; typhoid fever, 19 cases, 5 deaths; measles, 12 cases, no deaths; tuberculosis, 16 cases, 15 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 10, whooping cough none, heart disease 13, bronchitis 2, marasmus 7. There were 13 deaths from violent causes. The number of children who died under one year was 66; under five years, 69; persons over sixty years, 35; deaths in public institutions, 62.

TYPHOID FEVER AT LOWELL. — It is reported that since Aug. 1 about twenty-five cases of typhoid fever have appeared in Lowell as contrasted with none during the same period last year. The outbreak is attributed to the fact that by accident river water gained access to the city mains during the excitement consequent upon a fire. Measures will probably be taken to prevent the recurrence of such an accident.

NEW YORK.

REGISTRATION OF BARBERS. — The registration of barbers, in accordance with the act passed at the last session of the Legislature, was completed in New York on August 15, and the President of the Board of Health has announced that the rules for barbers carrying out the provisions of the Sanitary Code required by the act will be rigidly enforced after Sept. 1. Among them are rules prohibiting the use of sponges and of powder puffs. Other rules are the following: Combs, razors, clippers and scissors must be thoroughly cleansed by dipping them in boiling water or other antiseptic after every separate use thereof. No alum or other astringent shall be used in stick form. If used at all to stop the flow of blood, such application must be made in the form of powder.

A NEW DISPENSARY. — The Sydenham Society, a new organization which is apparently composed of Jewish physicians, has opened a dispensary and small hospital in East 116th Street. The lower floor of the building is used for the outpatient department and on the upper floors are accommodations for twenty patients.

A CENTENARIAN. — Mrs. Alice Baudette, whose two brothers served as soldiers in the War of 1812, died at Glens Falls, N. Y., on August 13, at the reputed age of one hundred and three years.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 8, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . . | 3,785,156 | 1,333 | 525 | 40.55 | 6.59 | 1.78 | 21.57 | .10 |
| Chicago . . . | 1,885,000 | 514 | 212 | 41.82 | 5.64 | 1.56 | 26.45 | 2.13 |
| Philadelphia . . | 1,378,527 | — | — | — | — | — | — | — |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 159 | 75 | 37.98 | 3.91 | — | 17.57 | 5.59 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | — | — | — | — | — | — | — |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 74 | 35 | 37.82 | 8.10 | — | 25.66 | .13 |
| Boston . . . | 603,163 | 170 | 77 | 22.25 | 7.65 | .58 | 13.53 | 1.76 |
| Worcester . . . | 132,044 | 42 | 24 | 40.47 | 2.58 | — | 35.71 | — |
| Fall River . . . | 115,549 | 54 | 36 | 35.33 | 5.55 | — | 27.78 | — |
| Lowell . . . | 101,959 | 66 | 35 | 37.87 | 1.51 | — | 33.33 | — |
| Cambridge . . . | 98,639 | 18 | 8 | 61.10 | — | — | 44.44 | 5.55 |
| Lynn . . . | 72,497 | 21 | 7 | 14.28 | — | 4.76 | — | — |
| Lawrence . . . | 69,766 | 19 | 10 | 47.37 | 5.26 | — | 36.84 | — |
| Springfield . . . | 69,389 | 24 | 7 | 25.00 | 12.50 | — | 16.67 | — |
| Somerville . . . | 68,110 | 16 | 8 | 25.00 | 12.50 | — | 12.50 | — |
| New Bedford . . | 67,198 | 46 | 27 | 52.17 | 2.17 | 2.17 | 43.48 | 4.35 |
| Holyoke . . . | 49,286 | 22 | 13 | 27.27 | 9.09 | 4.54 | 18.18 | — |
| Brocton . . . | 44,873 | 6 | 1 | 16.67 | — | — | — | — |
| Haverhill . . . | 42,104 | 9 | 6 | 22.22 | — | — | 22.22 | — |
| Newton . . . | 37,794 | 9 | 2 | 55.55 | — | — | 22.22 | 11.11 |
| Salem . . . | 36,876 | 10 | 6 | 60.00 | — | 20.00 | 30.00 | — |
| Malden . . . | 36,286 | 11 | 8 | 54.54 | — | — | 54.54 | — |
| Chelsea . . . | 35,876 | 17 | 8 | — | — | — | — | — |
| Fitchburg . . . | 35,069 | 8 | 4 | — | — | — | — | — |
| Taunton . . . | 33,656 | 8 | 5 | 37.50 | 12.50 | — | 37.50 | — |
| Everett . . . | 28,620 | 7 | 1 | 28.00 | — | — | 14.30 | — |
| North Adams . . | 27,862 | 8 | 5 | 62.50 | — | 12.50 | 25.00 | — |
| Gloucester . . . | 26,121 | 6 | 2 | — | — | — | — | — |
| Quincy . . . | 26,042 | 10 | 2 | 50.00 | — | — | 20.00 | — |
| Waltham . . . | 25,198 | 6 | 1 | 16.67 | — | — | — | — |
| Brookline . . . | 22,608 | 5 | 2 | 60.00 | — | — | 40.00 | — |
| Pittsfield . . . | 22,589 | — | — | — | — | — | — | — |
| Chicopee . . . | 21,031 | 7 | 5 | 42.90 | — | — | 42.90 | — |
| Medford . . . | 20,362 | 4 | 4 | 25.00 | — | — | — | — |
| Northampton . . | 19,883 | 8 | 4 | — | — | — | — | — |
| Beverly . . . | 15,302 | 3 | 1 | 33.33 | — | — | — | — |
| Clinton . . . | 15,161 | 1 | — | — | 100.00 | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . . | 14,478 | 4 | 0 | — | — | — | — | — |
| Woburn . . . | 14,300 | 8 | — | 62.50 | 12.50 | — | 25.00 | — |
| Hyde Park . . . | 14,175 | 6 | 3 | 66.67 | — | — | 33.33 | — |
| Adams . . . | 13,745 | 8 | 2 | 37.50 | — | — | 12.50 | — |
| Attleboro . . . | 13,677 | 3 | 2 | 66.67 | — | — | 66.67 | — |
| Marlboro . . . | 13,609 | — | — | — | — | — | — | — |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 11 | 8 | 9.09 | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 1 | 1 | — | — | — | — | — |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | 5 | 4 | 80.00 | — | — | 20.00 | — |
| Weymouth . . . | 11,344 | 5 | 1 | 80.00 | — | — | — | 20.00 |
| Southbridge . . . | 11,268 | 2 | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 2 | — | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 2,696; under five years of age, 1,183; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,039, acute lung diseases 153, consumption 272, scarlet fever 21, whooping cough 21, cerebrospinal meningitis 18, smallpox 1, erysipelas 4, measles 11, typhoid fever 42, diarrheal diseases 611, diphtheria and croup 38.


From whooping cough, New York 10, Chicago 5, Baltimore 3, Providence 1, North Adams 1, Hyde Park 1. From erysipelas, New York 1, Chicago 1, Woburn 2. From smallpox, Fall River 1. From scarlet fever, New York 13, Chicago 1, Baltimore 4, Providence 2, North Adams, 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending July 25, the death-rate was 13.4. Deaths reported, 3,874; acute diseases of the respiratory organs (London) 132, whooping cough 74, diphtheria 49, measles 111, smallpox 5, scarlet fever 40.

The death-rate ranged from 5.7 in Tottenham to 21.1 in Great Yarmouth; London 12.7, West Ham 10.4, Brighton 12.5, Portsmouth 10.4, Southampton 10.4, Plymouth 15.4, Bristol 9.7, Birmingham 14.1, Leicester 13.0, Nottingham 11.2, Bolton 19.2, Manchester 16.0, Salford 15.7, Bradford 12.9, Leeds 16.6, Hull 13.0, Newcastle-on-Tyne 12.4, Cardiff 12.7, Rhondda 14.4, Liverpool 18.0, Bury 20.6, Wigan 14.3.

METEOROLOGICAL RECORD.

For the week ending Aug. 8, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- om- eter. | Ther- mometer. | | Relative humidly. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | | |
|---|----------------------|-------------------|----------|----------------------|-----------|-----------------------|-------------|----------------------|-----------|--------------|-----------|---------------------|----|------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. . . 2 | 30.38 | 68 | 78 | 58 | 53 | 75 | 64 | N W | E | 8 | 12 | C. | F. | 0 |
| M. . . 3 | 30.34 | 64 | 69 | 59 | 79 | 89 | 84 | N | E | 6 | 6 | O. | R. | 0 |
| T. . . 4 | 30.23 | 59 | 64 | 54 | 83 | 85 | 84 | N E | E | 3 | 8 | O. | R. | .11 |
| W. . . 5 | 30.02 | 58 | 59 | 56 | 91 | 96 | 94 | N E | N E | 14 | 16 | R. | R. | 1.00 |
| T. . . 6 | 29.95 | 60 | 62 | 58 | 96 | 97 | 96 | N E | N E | 11 | 9 | R. | R. | .32 |
| F. . . 7 | 29.84 | 68 | 78 | 58 | 97 | 64 | 80 | S W | W | 6 | 10 | R. | C. | .12 |
| S. . . 8 | 30.02 | 60 | 67 | 52 | 59 | 71 | 65 | W | S W | 7 | 10 | C. | C. | 0 |
|  30.11 | | 68 | 56 | | 81 | | | | | | | | | 1.55 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. — Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE FOURTEEN DAYS ENDING AUG. 6, 1903.

PETTUS, W. J., assistant surgeon-general. Granted leave of absence for twenty days from Aug. 10. Aug. 5, 1903.

AUSTIN, H. W., surgeon. Granted leave of absence for one month from Aug. 6. July 30, 1903.

CARTER, H. R., surgeon. Granted leave of absence for one month from Aug. 4. Aug. 1, 1903.

STONER, J. B., surgeon. Granted extension of leave of absence for one month from Aug. 1. July 28, 1903.

NYDEGGER, J. A., passed assistant surgeon. Relieved from duty at Sault Ste. Marie, Mich., and directed to proceed to the Immigration Depot, New York, N. Y., and report to Surgeon G. W. Stoner for assignment to duty. Aug. 3, 1903.

ANDERSON, J. F., passed assistant surgeon. To proceed to Marietta, Conewago and Swiftwater, Pa., and Baltimore, Md., for special temporary duty. Aug. 5, 1903.

DECKER, C. E., assistant surgeon. Granted extension of leave of absence, on account of sickness, for fifteen days from July 15. July 20, 1903.

APPOINTMENTS.

Norma Roberts of Pennsylvania, George L. Collins of Massachusetts, Harvey G. Ebert of Washington, William M. Wightman of California, Herbert M. Manning of the District of Columbia and Frederick C. Smith of Minnesota, commissioned as assistant surgeons (recess) in the Public Health and Marine Hospital Service. July 25, 1903.

PROMOTION.

G. W. Iltis, pharmacist of the third class, promoted to be pharmacist of the second class, effective April 24, 1903.

REINSTATEMENT.

William C. Phillips reinstated as pharmacist of the third class. July 15, 1903.

Pharmacist H. E. Davis suspended from duty and pay for a period of thirty days from July 27, 1903.

RECENT DEATHS.

MICHAEL F. McGRATH, M.D., died at Fishkill-on-the-Hudson on Aug. 11, of pulmonary tuberculosis. He was thirty-five years of age and a graduate of St. Francis Xavier College and the College of Physicians and Surgeons, New York.

BOOKS AND PAMPHLETS RECEIVED.

Handatlas der Anatomie des Menschen mit Unterstützung. Von Wilhelm His, Professor der Anatomie an der Universität Leipzig bearbeitet von Werner Spalteholz ao. Professor an der Universität Leipzig und Custos der anatomischen Sammlungen. Dritter Band, 2. Abtheilung. Leipzig: Verlag von S. Hirzel. 1903.

Verhandlungen des Vierten Nordischen Kongresses für Innere Medizin. 1902.

Ureteritis in the Female. By Edgar Garceau, M.D., of Boston. Reprint. 1903.

Some Therapeutic Uses of the X-Ray. By W. P. Spring, M.D., Minneapolis, Minn. Reprint. 1903.

Original Articles.

THE INVALID'S EGYPT.

BY F. GORDON MORRILL, M.D., BOSTON.

EGYPT of the invalid and Egypt of the tourist differ essentially in many respects; and while I have defined the intention of this paper by its title, there are portions of it which apply to the robust "globe trotter" — for there are certain precautions which should be observed by all who visit the country, whether for health or pleasure.

One's preconceived notions of the Egyptian climate are seldom correct; for notwithstanding all that has been said and written about it, the average person still fancies that it never rains in the Land of the Pharaohs, that the air is everywhere balmy, and pictures himself as dressed in white ducks and being borne up the Nile by gentle zephyrs (or steam power) from Cairo to Wadi Halfa.

Now as a matter of fact there are two Egypts, an Upper and a Lower, and these two sections differ as much in temperature and relative humidity as do Boston and Washington, or Paris and Nice.

It can rain as hard in Cairo as in New York (though far more seldom), and as for the Nile, it is often very cold during the season when foreigners are likely to be on it, and those who remain on deck after sunset often have cause to repent.

Lower Egypt has but one station which has genuine claims to consideration as a resort for invalids during the *entire season*, and that is Helouan. If for any reason it is necessary to pass the winter near Cairo, there is no other place where the temperature is so even and the air so dry.

It is literally surrounded by desert, and there is no vegetation near enough to produce any perceptible effect upon the atmosphere.

It rains there (usually a shower) about as frequently as in Cairo, — say once a fortnight during the season, — but it is entirely free from the mist which usually hangs over the capital until 10 A.M.

The mean average maximum temperature is 71.5° F. and the like minimum 50° F., with absolute extremes of 97° F. and 37° F.

These figures and all which follow in this paper apply to what is usually recognized as "the season" — Dec. 1 to April 1.

The drop in the temperature immediately after sunset is slighter and less abrupt than in Upper Egypt; but the thermometer during the daytime is 10° and during the night 5° lower than at Assouan.

The relative humidity is 55.5%, which is 14.5% greater than at Assouan, but rather less than that of Mena House or Ghezireh. There is a golf links, two good hotels and two or more comfortable *pensions*.

The facilities for walking and riding are excellent. The large and modern bathing establishment is well installed, but lacks an efficient heating apparatus.

An occasional *khamisin* (sand storm) consti-

tutes an unpleasant feature in the spring, and flies and mosquitoes are persistent and more or less abundant.

Cairo is within easy reach by good trains, and while Helouan can hardly be compared with Assouan as a health resort, it is certainly the best in Lower Egypt, and a good place of residence for any one not quite strong who wishes to see something of Cairo between Nov. 20 and Christmas, by which time he ought to go further south.

Again, in the spring there prevails a certain amount of malaria of a mild type from which no place in Lower Egypt is entirely exempt, and to which an invalid should so far as possible avoid any chance of exposure.

Cairo the Fascinating, while not suitable as a residence for such as visit the country for reasons of health, is safe enough for invalids during the daytime, provided certain precautions are observed. The City of the Caliphs has no comprehensive system of drainage, and in the *native quarters* Oriental customs permit filth of every description to soak into the ground.

Mosques, bazaars, workshops and houses are as bad as possible from a sanitary point of view; and yet the abundant sunshine renders life possible under conditions which would rapidly kill off the population in a damp climate. In the European quarter one finds modern plumbing and carefully supervised cemented cesspools. A prudent resident of this section stands as good a chance of keeping well during the winter months as in other large cities.

The climate of Cairo is better than that of any place on the continent of Europe during the winter months, but is not ideal.

None of the hotels are provided with a really efficient heating plant, and open fireplaces in bedrooms are rare exceptions. There are many fairly cold (and a few rainy) days between Dec. 20 and March 1 (I am speaking of an average season), and the complaints of those who "thought that Cairo was always warm" are frequently heard.

There are certain special dangers to guard against — the bazaars should not be visited after a rain until the surface of the ground at least is thoroughly dry; no refreshments should be taken in any shop, and the night air must be avoided so far as possible.

Perhaps the safest and most comfortable place for one who does not care for Helouan, or to whom a desert climate is not a prime necessity, is Ghezireh Palace Hotel, which is well heated, surrounded by an extensive and beautiful garden, opposite a club for outdoor sports and within twenty minutes' drive of the center of the city.

Mena House, near the pyramids, may be considered a desert station after the annual inundation of the Nile (which floods the golf links and surrounding territory) has subsided; but the climate is not so good as that of Helouan, as the prevailing wind blows directly from the delta, which is composed of rich cultivated lands, numerous canals and other water surfaces.

The only other place worthy of consideration in

Lower Egypt is Ramleh, which is situated on the sea coast a short distance from Alexandria, where a person in delicate health may find comfortable quarters after April 1 and remain a fortnight or more before leaving the country, or in case of early arrival may stay until the good hotels of the other resorts are opened. The climate here is good at such times and *khamsein* winds infrequent.

Alexandria, Port Said and Ismailia are mentioned only as ports of entry and departure, and one's stay in any of them should be as brief as possible.

In Upper Egypt there are two stations only where comfortable hotels may be found — Luxor and Assouan.

The former may be reached by an excellent *train de luxe* in thirteen hours, or by "express boat" in four and a half days.

The air here is both warmer and dryer than that of any part of Lower Egypt, and the wonderfully preserved temples and tombs afford a boundless field for the enjoyment of such as are at all interested in Egyptology.

Before Assouan became well known, Luxor was the only health resort in Upper Egypt, and many invalids have recovered health or passed comfortable winters there.

It has not a *desert climate*, for its immediate surroundings consist of rich farming lands. The rainfall is slight (some seasons almost *nil*), and the relative humidity is 52.2° during the winter months and during the daytime 36.3° only. It is warmer here both by day and night than in any place in Lower Egypt; but the mean temperature range is large — 28.4°, with an abrupt decline at sunset.

Sand-storms are rare and flies and mosquitoes are fewer than they are in Lower Egypt, but more plentiful than at Assouan.

The facilities for walking and riding are good, and malaria is unknown. Luxor is a good half-way station for those who are en route either to or from Assouan, and a capital place for invalids who require the sort of mental exercise which Egyptology, even in a mild form, so readily induces.

Just below the First Cataract, and seven hours from Luxor by a narrow-gauge road, over which roll phenomenally dirty cars, is Assouan, which is far away the warmest, driest and cleanest place in all Egypt. Aside from actually camping in the desert there is no way of breathing so pure an air as by staying here, and the climate is nearly perfect, taking the season through.

The average mean maximum temperature is a fraction over 80° F. and the like minimum (6 A.M.) 54° F. The relative humidity between 10 A.M. and 6 P.M. averages 30.5° F., while that of the twenty-four hours is not quite 41°. There is an almost complete absence of cultivated land in the neighborhood of the best situated hotel (the Cataract), which is due to the fact that the banks at this point are so steep as to absolutely preclude any inundation of the Nile. A refreshing wind blows from the north and northwest and

gives life to the air, and seldom blows too hard for comfort.

One notices here an agreeable absence of the howl for *backshish*, flies and mosquitoes. Walking, riding and boating facilities are excellent; good police and sanitary regulations are well enforced, and everything is done by the authorities for the comfort and safety of visitors.

In April, 1900, there was a shower which lasted nearly ten minutes; but since then there has been no rain so far as I have been able to ascertain.

During the past season (1902-3) there were three days when the sun was hidden and the wind so strong as to preclude riding in the desert; but with these exceptions there prevailed the perfection of fine weather, with a clear blue sky which stretched from horizon to horizon. Between Christmas and Feb. 1 one may expect some fairly cool days (in the shade) and a few really cold nights. Open fires, if not too large, are grateful in the evening at this time of the year.

The night air is harmless if one is well wrapped, and steel shavings fresh from the lathe show absolutely no signs of rust after weeks of free exposure.

The apprehension that closing the gates of the great dam above the cataract, and consequent holding back of an immense body of water during the winter months, might prove detrimental to the climate has proved groundless, and Assouan as a health resort remains without a rival in Egypt.

Malaria is unknown, and there has been no case of enteric among visitors during the past three seasons.

One is frequently asked as to what sort of clothing should be taken to Egypt, and the answer depends upon what part of the country is to be visited and during what months. For Lower Egypt between Christmas and March 10 one should dress as he would in New York or Boston in the late autumn or the month of April. In Upper Egypt the same rule obtains in January and the first two weeks of February, while before and after this period summer garments are worn.

Among the precautions to be observed (most of which apply to the well and weak alike) is not to move about the country too rapidly and try to see too much. Dr. F. M. Sandwith (of London and Cairo) tells me that he is constantly meeting with cases of nervous exhaustion, particularly among Americans, who have come to grief in this way.

It is just as well to avoid drinking Nile water everywhere excepting Assouan, where it can be safely used (filtered), coming down as it does through that sparsely populated waste of rock and sand known as the "Military Soudan," where it is free from the constant pollution to which it is subjected further down stream.

Milk from the ordinary sources of supply is not always safe unless boiled, and should pure milk be required for drinking purposes it must be obtained from a good dairy, of which there are several near Cairo and (on a far more modest scale) one at least at most of the other stations.

Moreover, this special milk is the product of

the cow, not the buffalo, which latter, while rich in cream and very nourishing, does not suit all palates.

Eating or drinking *anything* outside reputable hotels and restaurants is attended by a certain amount of risk, as any one familiar with native habits and customs can testify.

Egypt is a particularly easy place to "take cold" in, or as the English say, "for taking a chill." The contrast in temperature between sunshine and shade is great, and the delightful experience of lunching in the shadow of a picturesque ruin after a long excursion is likely to be followed by unpleasant results. Drafts, *even of warm air*, are to be avoided, and the least perceptible drop of temperature is a signal to the prudent for putting on overcoats or wraps.

In the matter of diet nearly all visitors fall into the error of eating too much and in too great variety. This often proves to be a grave mistake; and while they can scarcely be expected to adopt the *regime* of the natives,—whose diet consists principally of cakes made of an inferior flour of sorghum or maize, beans, dates, sesame (or linseed) oil, buffalo (or goat's) milk, and occasionally a little fish or the flesh of the goat,—avoidance of the richer sorts of food and restriction in the use of red meat and alcohol certainly tend to keep one well.

As I have previously said, the Nile is a cold river at times, and particularly so at night. Moreover on the lower part, say between Cairo and Assiut, mists are by no means uncommon, and every precaution against colds must be observed. Invalids ought never to sit on deck after sunset, and well people who do so should be warmly clad. Between Luxor and Assouan the river is far less chilly and one can easily arrange to make close connection with a steamer after reaching Luxor by train. So far as making the regular tourist's excursion up the Nile is concerned, the exposure and fatigue involved are enough to test the endurance of the most robust.

Any prolonged exposure to the sun's rays, particularly while riding or walking, is exhausting to one not acclimated; and the statement that a two hours' excursion in Egypt is fully equal to a half day's similar exertion in a temperate climate is quite true.

Many are inclined to laugh at those who wear solar topees and carry sun umbrellas; but I have seen one scoffer (who insisted upon making long excursions with no protection for his head save a black derby hat) fall insensible at the dinner table and require repeated hypodermic injections of brandy and strychnia before he could be revived.

For invalids and semi-invalids the Mecca is undoubtedly Assouan, unless some very potent reason exists for remaining within touch of Cairo, in which case they have the choice of Ghezireh Palace or Mena House after Jan. 1, or Helouan for the entire season in case a *desert* climate is indicated.

I have had a considerable personal experience of most of the stations, and am quite convinced

that Assouan — where I have seen numerous cases of cardiac, renal and pulmonary troubles, rheumatism and nervous exhaustion, show radical improvement after a few weeks' sojourn — is by far the safest and best. It can be reached from Cairo in twenty-two hours by train, one week by "express" boat, or two days and a half by combination of both. The natives here enjoy better health than those in Lower Egypt, and during the late cholera epidemic not a case occurred in the town.

Further up the Nile is Wadi Halfa, but the climate there is neither so warm nor dry as Assouan, and as for Khartoum and Omdurman, one finds cold weather and blustering winds in winter, and, so far as I can ascertain, the chief pleasure of the journey is the opportunity to get rid of one's accumulations of dust and sand in the baths of Abu Hamed.

An invalid who wishes to obtain the best results from the climate of Egypt should arrive in Cairo not later than Dec. 1 (Nov. 20 would be better) and go directly to Assouan, to remain until the middle of March or even later, when he may safely go to Cairo by river if he so elects, and after a short stay at any one of the three stations (Ghezireh, Helouan or Mena House), make his way to Ramleh, where the hotels open April 1, to remain until the time arrives for leaving the country.

The common mistake made is that of choosing too early a sailing date. About the middle of April is the best time; for if one reaches the continent (or Sicily or Corfu) before the 20th, the weather will very likely be found too cold for comfort. Palermo and Taormina are both charming half-way stations, and Corfu (while a little damper) may be regarded in the same light. Of the three places Taormina is the best, for its elevation is sufficiently great to raise it above the mist which prevails in the spring along the entire coasts of Sicily and southern Italy.

THE TREATMENT OF DEGENERATIVE DISEASES OF THE NERVOUS SYSTEM BY MASSIVE DOSES OF STRYCHNIA, WITH SPECIAL REFERENCE TO TABES DORSALIS, PROGRESSIVE MUSCULAR ATROPHY, OPTIC NERVE ATROPHY AND PSEUDO-MUSCULAR HYPERTROPHY.¹

BY GRAEME M. HAMMOND, LL.B., M.D., NEW YORK, N. Y.

I HAVE selected for my subject to-night the medicinal treatment of some of the degenerative diseases of the nervous system. I am aware it is an unusual subject and that the neurologists generally concentrate their energies in investigating and interpreting the remarkable changes that take place in the nervous system from disease, the relation of these changes to the symptoms evinced and the localization of the disease in the nervous system. The study of these subjects is of vital importance. They are not only of absorbing interest in themselves, but they lead up to the final goal, — the application

¹ Read before the Boston Society of Psychiatry and Neurology, April 16, 1903.

of the sum total of our knowledge to the intelligent treatment of disease. Each new discovery in regard to the structure, the development, the nutrition of the cell body, and every addition to our knowledge relating to the manner in which disease processes degenerate and destroy the cell bodies, must necessarily instruct us in regard to the best methods of preventing and arresting degenerations, which when they once begin so vitally affect the welfare of the individual.

Those of you who can look back a few years to the time when the lesion of tabes was considered to be an inflammation of the spinal cord can readily comprehend why all remedies brought to bear against it failed, and why because of our helplessness it was considered to be an absolutely incurable disease. Later, when the close relationship of syphilis to tabes was demonstrated, and it was seen that the most energetic anti-syphilitic treatment failed to arrest the advances of the morbid process, the belief in the incurability of tabes became, if possible, more fully established. But with the acceptance of the neuron doctrine, the knowledge of the structure of the cell bodies,—incomplete as it probably is,—the manner in which the cells degenerate and the relation of toxins to this degeneration, the conception of tabes has materially changed. With a clearer understanding of the nature of this disease, and a more intimate knowledge of the process of degeneration, it does not seem either illogical or presumptuous to believe that some remedial agent will be found capable of overcoming toxic influences and arresting the consequent degeneration, or of arresting degenerations due to other causes at present imperfectly understood, such as that which occurs in the muscle elements in pseudo-muscular hypertrophy or in the optic nerve in simple retinitis pigmentosa.

I was led to consider the use of massive doses of strychnia in degenerative diseases by the beneficial effect produced in the treatment of certain cases of *tic douloureux* by comparatively large doses of that drug. In more than one case of this disease it has been clearly demonstrated that the symptoms depend upon a more or less profound degeneration of the cell bodies with their axons in the trigeminal nucleus, the ganglia and the nerve. In some cases the primary lesion seemed to be in the vascular system supplying the trigeminal mechanism, and the degeneration of the nervous elements seemed to be the direct result of the consequent deprivation of nutrition.

It seems probable, in the light of our present knowledge, that all degenerations result from one or more of the following causes: (1) Some toxin which, acting in a chemical manner, destroys the substance of the neuron, or by acting upon its metabolic mechanism prevents the assimilation of nutrition upon which its life depends; (2) some disease of the blood vessels causing their partial or complete obliteration or some other obstruction to the blood current which so deprives the neuron of its nourishment that its vitality must necessarily fail; and (3) some trau-

matism causing hemorrhages, lacerations or compressions.

The treatment of degenerations due to the latter cause has no place in this paper, as it does not seem probable that medicinal treatment can either eradicate the cause or arrest the disease under the circumstance. It occurred to me that possibly strychnia in doses far in excess of those generally administered, and continued for a long time, might favorably influence, in some instances at least, the degenerative process of tabes (from the other causes), and so improve the nutrition of the neurons that degeneration might either be arrested or at least delayed. There was little or no precedent for my guidance, except for the hint given me in the cases of *tic douloureux* already alluded to. I began a series of experiments, selecting a few cases from several diseases. My results I purpose to present to you this evening. The cases presented do not comprise all of the series. I have purposely refrained from including in my report all cases that have not been under observation for at least a year, with the exception of one case of retinitis pigmentosa and one case of progressive muscular atrophy. The former case has been under observation nine months and the latter case I report because the treatment had apparently no effect at all in arresting the progress of the disease. I have excluded all cases who have not been a year under treatment, because my experience has led me to believe that the prolonged administration of the remedy is essential before any definite conclusion can be reached in regard to the efficacy of the treatment and because I wished to exclude the possible hypothesis that any improvement obtained was only apparent and due to the influence of suggestion, which in some instances seems for a time to benefit patients who, when suffering from an incurable malady, undergo some new and unusual form of treatment.

The present paper is based on the results obtained in the treatment of eleven cases. There are four cases of tabes, three cases of optic nerve atrophy, three cases of progressive muscular atrophy and one case of pseudo-muscular hypertrophy.

TABES DORSALIS.

The first case of tabes in which large doses of strychnin were administered came to my clinic at the Post-Graduate Hospital in March, 1900. He was in an advanced stage of the disease, and could only walk with the assistance of a person on each side of him. The disease had progressed rapidly during the past year. The general symptoms of tabes were well marked. He had contracted syphilis about fifteen years before, and the symptoms of tabes had been in evidence for about six years. It was decided to give the strychnia hypodermatically in increasing doses. In order that this plan might be successfully carried out, Dr. Altman, one of my assistants, visited him daily, and personally gave him one injection each day. The dose at first was the 1-50 of a grain. This was gradually increased

until daily doses of 4-5 of a grain were reached. There never were at any time during which the treatment was continued any symptoms of strychnin toxemia.

The result of the treatment was not encouraging at first. The disease advanced apparently unchecked until he was totally unable to walk at all. At this time the dose had been increased to about 1-3 of a grain daily. From this time his locomotion improved until he was able to walk with very little assistance. None of the symptoms entirely disappeared, but it is equally true that he was benefited in many ways. The improvement consisted in a complete arrest in the advancement of the disease, a marked diminution in the severity and frequency of the attacks of pain and in a noticeable improvement in the power of locomotion. He became able to walk about the house alone by taking hold of different pieces of furniture, and could walk in the street with the assistance of a cane and one person to assist him. He has had no treatment for about year, but so far has not suffered any relapse.

The second case was sent to me by Dr. Troxell of Pittston, Pa., in March 14, 1900, — about two years ago. He was about forty years of age, and had contracted syphilis about eight years before. For the preceding two years he had suffered in a slight degree from the characteristic pains of tabes and from peculiar indescribable sensations in the legs, which would come on suddenly and always caused him to fall. A physical examination showed the Argyll-Robertson pupil. The knee jerks were absent. Romberg's symptom was present in a slight degree. He walked well and without any noticeable ataxia in gait, though he admitted he had to exert unusual care in walking over slippery surfaces. There was slight incontinence in urine. His general health was not good and his nutrition was much below par.

Here was a case in the early stage of tabes in which it was possible to begin treatment before the sensory neurons were in a state of advanced degeneration.

The initial dose of strychnia was 1-40 of a grain three times a day. The dose was gradually increased to 2-3 of a grain three times a day.

During the first three months of treatment there was little or no change in his condition, except that his general nutrition and health were greatly improved.

After the third month the pains ceased; the peculiar sensations in the legs and the consequent falls no longer troubled him, and he regained control over the bladder.

As the disease ceased to advance the dose of strychnia was never increased beyond 2-3 of a grain. After the first year it was reduced to 1-4 of a grain, and now he takes 1-8 of a grain.

At the present time, over two years after treatment began, it may be safely said the disease has ceased to advance. He still has the characteristic pupils and the loss of the knee jerks, but the other symptoms have entirely disappeared. In this case there was certainly very little improve-

ment before the end of the first three months.

The third case began treatment March 25, 1901. She had contracted syphilis ten years before. The symptoms of tabes had been observed for about two years. She suffered severely from pains in the legs. The Argyll-Robertson symptom was present, the knee jerks were absent, Romberg's symptom was well marked. The gait was ataxic, so much so that it was decidedly noticeable. There were also numbness in both hands, with some loss of finger dexterity, and paralysis of the left levator palpebrae and internal rectus muscles. Her general health was not good. She was anemic and had lost a great deal of flesh, her weight then being one hundred and eleven pounds.

She was at first given strychnia in 1-40 gr. doses three times a day. The dose was gradually increased until a maximum dosage of 2-3 of a grain three times daily was reached. During the first two or three months of her treatment no amelioration in her condition was noticeable, except that her general health improved and her weight increased. After this some of her symptoms gradually improved — the numbness in her hands entirely disappeared; the severe pains diminished, until finally they seldom troubled her; she could stand better with the eyes closed, and her powers of locomotion increased quite remarkably. At the present time — over two years after treatment began — the third nerve is still paralyzed; the pupils remain unchanged; she has no knee jerks, and Romberg's symptom can be elicited, though it is less marked than it was. But her pains have almost entirely disappeared. She has gained twenty-nine pounds in weight. The numbness in the hands no longer troubles her; she can use her hands as well as ever in her business (dressmaker); and her walking has improved so much that her disability is only apparent to a close observer. A week ago I saw her walk a plank sixteen feet long, one foot wide, and elevated eight inches above the floor level.

CASE IV. This case was sent to me by Dr. A. C., Combes on April 28, 1902. He had contracted syphilis twenty years previously. He had been treated with the usual anti-syphilitic remedies for a number of months without benefit — in fact, the disease was rapidly advancing. He suffered severely from pain. The Argyll-Robertson symptom was present; the knee jerks were absent; Romberg's symptom was well marked, and the gait was decidedly ataxic. There was numbness in both hands and both feet, the left side of the face, the left half of the penis and left half of the anus. Physically he was very weak. He weighed one hundred and twenty-nine pounds. The initial dose of strychnia was the 1-50 of a grain three times a day. The dose was gradually increased until at the end of three months he was taking 1-6 of a grain at a dose. During this time there was no noticeable improvement. On the contrary, the symptoms generally were more pronounced than when he began treatment. But shortly after he began to improve. At the present time, — about one year after beginning

treatment, — he weighs one hundred and forty-four pounds, a gain of fifteen pounds. The pains have entirely ceased, the numbness is seldom appreciated. He walks well and can even run and jump. There is no change in the pupillary symptoms, the knee jerks are still absent, and there is slight unsteadiness in standing with the eyes closed. He attends to business daily. The maximum dose reached was 2-3 of a grain three times daily. He now takes about 1-2 a grain at each dose.

In this case the degeneration was progressing rapidly and continued to do so for three months after treatment began. At the end of that time he was almost unable to walk at all, and could only do so with the aid of a cane for support. The improvement in locomotion is quite remarkable. He is, of course, not well, but the degenerative process seems to have been arrested.

In none of these cases of tabes was there ever any attempt made to teach them to perform purposive co-ordinated movements according to Fraenkel's method.

OPTIC NERVE ATROPHY (RETINITIS PIGMENTOSA).

The first case had been under the care of Dr. Greuning for the past seven years. Her sight from the very beginning of the disease had steadily failed and the visual field had contracted to about one-fifth of the normal range. When I first saw her she could not read type smaller than No. 13, the letters of which measure 1-8 of an inch in length. I first saw her on Nov. 30, 1901. For the past six months her sight had failed rapidly. She also suffered from frequent attacks of absolute blindness, which, however, lasted only a few minutes. Her treatment began with the administration of strychnia in doses of 1-50 gr. three times a day. The dose was gradually increased until the daily dose was 3-4 of a grain three times daily. Repeated tests made after the first month of treatment showed the disease was making no further advance. On the contrary, slight improvement in the visual power was observed after the first six months, and progressed up to the point where she could read test type No. 9, the letters of which are 1-16 of an inch in length. Her visual field has not expanded and there has been no further improvement in vision, but it may be positively said that the atrophic process ceased after treatment began, and has not shown any tendency to resume its course during the past seventeen months. She is still under treatment and is taking about 1-2 a grain three times a day.

The second case — a young woman twenty-four years of age — was sent by me to Dr. Roosa in March, 1902. She had been under his observation for several months, and he reported that both optic nerves were in an advanced state of degeneration. Her visual fields were greatly contracted. She could not read any of the type on the test card, though some of the letters were nearly an inch long. She could distinguish parts of the face of a person standing before her, but her field of vision was so contracted that she

could not see the entire face. Large objects not too far off could be distinguished.

Her treatment was similar in every respect to that of the previous case, except that the maximum dose reached was 2-3 of a grain three times a day. A recent examination made by Dr. Roosa shows that the disease has not progressed since treatment began. She cannot see any better than she could, but her sight is no worse than it was.

The third case is that of a lady about forty-two years of age, who consulted me July 18, 1902. She had suffered from retinitis pigmentosa for several years. Her sight was very defective and the visual field was greatly contracted. Her father died of dementia, and a brother, nearly her own age, has become entirely blind as a result of optic nerve atrophy. The initial dose of strychnia administered was 1-50 of a grain three times a day. The maximum dose reached so far has been 1-2 of a grain three times a day. The degenerative process has ceased to progress. Her vision has not improved, but her sight is as good to-day as it was when treatment began.

PROGRESSIVE MUSCULAR ATROPHY.

The first case — a young man eighteen years old — came to my clinic Jan. 25, 1901. About a year previously he began to develop the Aran-Duchenne type of progressive muscular atrophy. When I first saw him the atrophic process had invaded the muscles of the hands, forearms, arms and scapular muscles. He could not raise either arm above his head. Fibrillation was plainly in evidence. Strychnia, beginning with a moderate dose, was given and gradually increased until 1-2 gr. doses three times daily were reached. Now, over two years after treatment began, it may positively be stated that the atrophic process has ceased. His muscular movements are stronger and wider in range. He can now elevate both arms above the head. The atrophy is still noticeable in the affected parts. I can only claim in this case that a rapidly advancing atrophic process rather suddenly ceased to advance and that slight improvement has taken place.

The second case — a man forty-two years old — presented himself at my clinic in October, 1901, suffering from progressive muscular atrophy. He was a miner and had been exposed to many hardships. He had also acquired syphilis about twelve years previously. His disease was of the Aran-Duchenne type, and had existed about two years. Atrophy was well marked in the hands, arms and shoulders.

He was treated with gradually increasing doses of strychnia, the maximum dose reaching a little over 2-3 of a grain three times a day. His treatment extended during a period of a little over a year under my supervision. After remaining a few months at my clinic and finding the disease showed no tendency to advance, he returned to his home in Butte, Mont., and continued his treatment under the care of his physician, who wrote to me from time to time.

I ceased to hear from him in a little over a year. At the expiration of that time there had been no advance in his disease. On the contrary, his strength had increased to a slight but appreciable degree.

The third case — a woman seventy years of age — came under my care Oct. 3, 1901. She had always enjoyed good general health until about one year previously she contracted a severe case of gripe. Three months after her recovery she first observed difficulty in articulation. This was followed by difficulty in swallowing. Subsequently weakness, accompanied by atrophy, appeared in both hands and forearms. Fibrillation was a prominent symptom. On account of the steady development of the symptoms, the strychnia was increased rather more rapidly than was customary, and soon half-grain doses were reached, three times daily. The disease, however, became more and more pronounced, and the patient died in about nine months.

I feel quite certain that the treatment did not even delay the progress of the degenerative process to any appreciable extent. Whether her age militated against her recovery or not is a matter of conjecture, but I am inclined to believe that it did.

PSEUDO-MUSCULAR HYPERTROPHY.

The patient, nine years old, consulted me in January, 1902. There was no history of any other similar case in the family. The patient walked as early as most children, but never walked strongly. When he was three years old his mother noticed he had frequent falls, and when he arose from the ground it was accomplished with difficulty and in the peculiar manner characteristic of the disease in question. The disease has advanced steadily, and now involves the legs, arms and back. Pseudo-hypertrophy was present only to a slight degree. During the past year he had lost flesh rapidly. His weight was forty-nine pounds in winter clothing. He could not go up stairs without assistance, and was unable to get up from the floor at all. The initial dose of strychnia was 1-100 of a grain three times a day. The dose was gradually increased until at the present time he takes 2-3 of a grain at a dose.

His general health is good. He has gained six pounds in weight. The measurements of his arms and legs all show a slight increase in muscular development. He walks better, and can even run, but often falls while doing so. He can ride a bicycle, and mounts and dismounts unaided. He can mount the stairs one foot after the other, by holding the rail with one hand.

A decided improvement in muscular development is perceptible, but the main point of interest is that the rapid degeneration of the muscular system has ceased. The increase in volume of muscle and bodily weight is not due to pseudo-hypertrophy, because with the increase in size of the limbs he is able to perform better muscular movements than before he began treatment.

It has never before been my good fortune to see these results in any other case, though one case is, of course, inadequate to base any positive deduction on.

My purpose in regard to the treatment was, in the first place, to administer the strychnia in such gradually increasing quantities that large doses could be reached without submitting the patient to the dangers of strychnia toxemia, and, in the second place, to continue the use of massive doses for months at a time. My practice has been to begin treatment with a very moderate dose, usually the 1-40 or 1-50 of a grain three times a day, and to increase the daily dose by about the 1-500 of a grain. Sometimes in the beginning I have increased the dose by the daily addition of 1-200 of a grain, but always diminish this dose to the 1-500 of a grain after doses of 1-8 grain were reached. In the first case and in a few others, I have given the medication hypodermically once a day. I cannot perceive that the method possesses any advantages over giving it by the mouth three times a day, and it is certainly not so convenient. In my first case a daily dose of 4-5 of a grain was reached, and yet the patient showed no evidence of toxemia. That is the largest dose I have ever given. The maximum dosage varied in other cases according to the severity of the disease — from 1-4 of a grain to 2-3 of a grain three times a day.

In analyzing these cases the criticism may with justice be advanced that there are too few of them to warrant any definite conclusions. That this would be so of diseases in general cannot be gainsaid, but with the class of diseases under consideration any improvement or arrest in the degenerative process is so rare that when it occurs even in a single instance it becomes a matter of importance. This is particularly true for such diseases as tabes, optic nerve atrophy and pseudo-muscular hypertrophy. Certain cases of tabes have perhaps been benefited by other means, but I know of no cases of retinitis pigmentosa and pseudo-muscular hypertrophy which have ever been arrested by any means whatever. In regard to the case of progressive muscular atrophy so much cannot be said. There are rare cases which advance to a certain point and then the degeneration seems to stop spontaneously. The case reported may be one of these, yet the patient has regained some muscular power, the parallel of which I cannot ascertain has ever occurred in those cases of spontaneous limitation.

It would seem, therefore, taking all these cases together, that the massive doses of strychnia employed for a long time had undoubtedly been instrumental in arresting degeneration. In conclusion I would point out that in not a single instance was any patient restored to a normal condition. Such a result was not anticipated. Neurons once destroyed cannot be recreated, and hence perfect recovery can never be achieved.

I have never seen any improvement in the pupillary symptoms, the knee-jerks have never been restored, and Romberg's symptom, though

diminished, never disappeared completely. But it will be recalled that in several of the cases a certain amount of improvement followed the treatment. It may be argued from this that a certain degree of the symptoms depends upon partial degeneration of the cell bodies, and that if this degeneration has not passed beyond a certain point, the partial or complete restoration of the cell amounts to more than a possibility.

It certainly seems possible, in some instances at least, to arrest degenerative processes in diseases which have hitherto been regarded as hopeless. If this is so, the importance of early treatment cannot be too strongly insisted upon. I confess I do not yet know whether the cessation of the degeneration will be permanent or not. It may be that the treatment has only checked the morbid process and that in two or three years' time, or even less, the degeneration may resume its progress. Time only can elucidate this point. I do not yet know how long treatment should be continued in order to permanently arrest the degeneration, if such a result can be accomplished. Further investigation is necessary before this question can be determined.

A BRIEF SUMMARY OF THE SURGERY OF THE ESOPHAGUS.¹

BY SAMUEL J. MIXTER, M.D., BOSTON.

THROUGHOUT a considerable part of its course, the esophagus is more difficult of access than any other part of the alimentary canal, and hence the surgical procedures resorted to in other situations for the relief and cure of malignant and other growths are not available here. In the neck, however, its upper part is easily reached, and through the stomach something may be done to its lower part.

The chief causes calling for surgical interference are:

- (1) Congenital malformations, such as double esophagus or pouches.
- (2) Impacted foreign bodies.
- (3) Malignant disease.
- (4) Syphilis.
- (5) Cicatricial stricture.

In the above list is not included spasm of the esophagus, really a medical rather than a surgical condition, although it is almost always cured by mechanical means, the passage of a full-sized probang. It should be mentioned, however, that Mickulicz, in a paper read before the American Surgical Association at its recent meeting in Washington, describes an exaggerated form which he calls "Cardiospasm," causing a very considerable fusiform dilatation of the lower part of the esophagus, for which he has performed gastrotomy, and through the opening forcibly dilated the cardiac orifice. He also suggests that this might be done by means of a suitable dilator, introduced from above.

¹Read before The Massachusetts Medical Society, June 9, 1903.

(1) Congenital malformations are perhaps the most interesting and puzzling conditions met with. They may exist for years, and only suddenly be called to the attention of the patient by an inability to swallow, caused by some irritation produced by a rough ingested body, or they may be the cause of difficulty for years, and simply give the patient great discomfort and annoyance without endangering his life.

The case of a boy of ten years of age in my service at the Massachusetts General Hospital well illustrates an exaggerated form of this condition. He was brought in in the last stages of starvation, having had difficulty in swallowing for some years, the trouble being thought due to a small metal disk that he had swallowed when about four years old. He died soon after a gastrostomy had been performed under cocaine anesthesia, and on autopsy it was found that there were two tubes, one reaching from the pharynx nearly to the stomach, the other from the stomach nearly to the pharynx, with only a very small opening between them about three inches from the stomach.

Such a case might, I am sure, have been relieved, if not cured, in the manner to be spoken of later in connection with cicatricial contraction.

Congenital pouches are much more common, I have found, than is generally supposed. I have seen a considerable number of them, having seen three of them in my office in a month. They are usually small at first, and it is often late in life when they cause serious inconvenience. In these cases there is usually a history of a "small throat" since childhood, and finally regurgitation of food. These pouches are found in all parts of the esophagus, but fortunately are most often situated in the neck or behind the clavicles.

When the pouch becomes dilated it is almost impossible for the patient to swallow enough food of any kind to keep himself alive, though there is really no true stricture of the canal, the whole trouble being caused by the "spur" that acts as a valve.

When the pouch can be reached it may be excised and the esophagus sutured, the result being a perfect restoration of function. This is the ideal method of treatment, and should always be advised if the patient's age is suitable.

Much to my surprise, I have found that in many cases, when, for one reason or another, it was not thought best to resort to what must always be a difficult and fairly dangerous operation, I could by the passage of suitable bougies relieve the difficulty to a considerable degree, and the pouch would contract to a remarkable extent, so that the most distressing symptoms would disappear. The patient is given a large bougie which he learns to pass himself, and, though not cured, is made comfortable. This method of palliative treatment is worthy of trial in certain cases.

The passage of a bougie past such a pouch is not the easiest thing in the world, even to the

practised hand, as the opening of the esophagus is always on one side, and though large enough to admit an instrument of the largest size, may not be found by the tip of the bougie until after repeated trials.

And just here let me speak of esophageal bougies and their passage. Unfortunately in this country I have been unable to find a good quality or suitable sizes. The most perfect ones that I have seen come from Paris, are woven like urethral bougies, with olive tip, beautifully polished, and some of them are loaded with fine shot. The largest sizes should be at least three-fourths of an inch in diameter.

As has been said before, the lower opening is almost always on one side of the canal, and this is true not only of the congenital pouch but also of the acquired pouch that usually forms above malignant and cicatricial strictures. Hence, in order to find this opening it is well to have a bougie bent at a slight angle or even of a bayonet shape, so that the point will hug the side of the canal. This may be best done by a whalebone stylet, bent at the proper angle by heat, and forced down into the hollow bougie. It should always be remembered that even with these flexible instruments fatal injury may be inflicted, not only by passing them through a malignant growth into the mediastinum or elsewhere, or through the bottom of a congenital or acquired pouch, but also through the normal wall of the pharynx or esophagus. I have had one such accident, perforating the wall just at the beginning of the esophagus, when every attempt to swallow forced air and the contents of the pharynx into the cellular tissue, causing emphysema, inflammation and death.

The bulb probang is a useful instrument for exploration and diagnosis, but is not to be recommended for dilatation.

(2) Of impacted foreign bodies so much has been written that one need only speak of the great advantages of esophagotomy or gastrostomy in their removal, over prolonged or violent attempts with forceps, coin catchers and similar instruments.

In the hands of the expert laryngologist, the removal of foreign bodies from the esophagus by means of suitably constructed esophageal tubes or specula and forceps is often most successful, and should always be tried if the right man and instruments are at hand.

(3) Malignant disease of the esophagus is the most frequent cause for seeking surgical aid, and the one most hopeless of cure, though much may be done to avert starvation and to relieve the patient. It may occur in any part of the canal, and is seldom of such character that excision is of benefit. Sometimes, however, when the growth is very high up, it may be possible to remove it and bring the lower end of the esophagus into the lower angle of the wound. As a rule we must be satisfied with relieving the dysphagia.

Dilating the stricture is the most common method of treatment and is the most satisfactory

in many cases, especially if food is introduced into the stomach at the same time. In many cases there is hemorrhage or irritation caused by every introduction of the bougie, and it is in these cases that Symond's method of permanent tubage is of great help. The tube is introduced over a small bougie as a guide and is left in for a week or two, the patient swallowing liquids easily until the tube becomes foul and stopped. Remember that a pouch almost always forms above a malignant stricture and hence the passage of a straight instrument may not be possible. For impassable or very irritable strictures of this sort, esophagostomy or gastrostomy is demanded. I have had most satisfactory results with esophagostomy in disease high up, and much prefer it to gastrostomy when it is possible.

(4) Of syphilitic strictures there is little to be said except that they are far from common, and should be treated with appropriate medication and dilatation.

(5) Cicatricial strictures of the esophagus, generally the result of swallowing strong acids or more generally alkalies, are among the most common and obstinate lesions of this canal that the surgeon is called upon to treat. Generally multiple and difficult to dilate, often with several acquired pouches, the resources of the surgeon are taxed to the utmost. Constant dilatation will serve to keep the canal patent, but often the canal is tortuous and even impassable to the smallest bougie. Sometimes an instrument may be passed *upward* from the stomach through a gastrotomy opening, but it is by no means easy.

It is in these cases that the method of Abbe — sawing through the stricture with astring — is of the greatest benefit.

Two years ago, before this society, Dunham of New York read a paper on this subject and demonstrated his beautiful method of getting a guide through a seemingly impassable stricture. His recent paper in the *Annals of Surgery* gives the whole story, so it need not be repeated here; enough to say that any one who has ever tried this method, as I have in a number of cases, cannot fail to be impressed with its ingenuity, simplicity and splendid efficiency. It is the greatest improvement in the technique of esophageal surgery in recent years. By this method of thread swallowing I have been able to relieve most desperate and apparently hopeless cases of multiple stricture both in children and adults, and keep them from living the rest of their lives dependent on a tube and tunnel in connection with a gastrotomy opening.

In conclusion let me strongly insist upon care and delicacy of manipulation in all esophageal work. Do not even examine too long at the first sitting if the instrument does not pass readily. Too prolonged probing may send the patient home with a stricture that is tightly closed by swelling, and the result may be serious. The esophagus is more intolerant of violence than even the urethra.

DISCUSSION.

DR. G. W. GAY of Boston: It has fallen to my lot to do esophagotomy four times: once upon a child three and one-half years of age, for the removal of a cent; once for a plate carrying four teeth; once for a fish-hook, and once for a malignant stricture of the esophagus to enable a Symond's tube to be placed in position. Another case of foreign body should have been treated by operation, but owing to one of those psychical lapses to which, I presume, most of us are occasionally liable, the diagnosis was not made until the autopsy revealed a small sliver which had ulcerated through the walls of the esophagus, and produced an abscess in the mediastinum. The first operation was done in 1878. No more cases came to my notice for thirteen years, when three operations were done within five months.

My first case of esophagotomy was done on Sunday, Sept. 8, 1878. The patient, a cook, forty-nine years of age, while eating fish, felt something lodge in the throat, which prevented her from swallowing solids. She entered the City Hospital twenty-six hours after the accident, presenting the usual symptoms of these cases. She was unable to swallow solid food, and could swallow liquids only in a very small quantity, and after repeated and painful efforts. She was weak, depressed and evidently the victim of a profound general disturbance.

The careful use of the bristle and sponge probangs failed to dislodge the foreign body. The pulse and temperature began to rise, and the constitutional disturbance, in the way of restlessness, depression and debility, increased. Forty-eight hours after the accident the esophagus was exposed upon the left side, as described by Dr. Cheever in his classical monograph. A sharp substance was felt at the bottom of the wound, which after a little manipulation was seized with forceps and made to cut its own way through the walls of the gullet, purulent matter escaping with it. The cause of the trouble proved to be a thin, flat fish bone an inch and a quarter in length and a third of an inch wide. It was imbedded in the posterior wall of the esophagus opposite the cricoid cartilage. No ligatures were required. The small wound in the esophagus was allowed to take care of itself. The external one was closed with sutures.

For four days after the operation no food or drinks were swallowed, but she received rectal injections of beef tea, etc., every four hours. The wound suppurated moderately, but no food or drink ever escaped from it. It was healed in ten days, and the patient left the hospital eighteen days after operation. She was able to eat solid food, and was apparently as well as ever.

This was a fortunate case in that the operation was done earlier than usual,—forty-eight hours after the accident,—the foreign body was located favorably for removal and comparatively little violence to the deeper structures was necessary.

Lena, three and a half years old, was brought

to the City Hospital on Friday, October 16, 1891, with a history of having swallowed a foreign substance eight months before. She was said to have had little, if any, trouble for six months; but for the past two months she had ejected most of her food in about a minute after it was swallowed. She was weak, languid, emaciated and presented all the appearance of a sick child.

She was examined under chloroform with an ivory-tipped probang, and a metallic body readily detected in the lower part of the esophagus. The gullet was opened in the usual manner, the walls being divided upon a uterine sound as a guide. The foreign body was located about two inches below the top of the sternum and four inches from the opening in the esophagus. It was readily removed with a pair of bullet forceps, and proved to be an ordinary copper cent.

The wound was left open, and the child was nourished for some days on enemata of peptonized milk. From the first she was allowed to drink all the cold water she wanted, as the thirst was irresistible. Liquids escaped from the wound in diminishing quantities for ten days. The child was up and around the ward in thirteen days, and was discharged two days later. Twenty-five days after operation she was eating solids, had regained her flesh and strength, and was well.

A teamster, a young man of intemperate habits, fell from his cart and knocked a plate with four false teeth down his throat. He entered the hospital four days later in a wretched condition. He could swallow only liquids, and these in very small quantity, and with great difficulty. He was septic, weak, despondent and miserable.

With an ivory-tipped probang the plate was easily detected in the esophagus, thirteen inches from the upper incisors and about four inches below the top of the sternum. There was moderate swelling above the clavicles and sternum.

Esophagotomy was done at once, the walls of the tube being divided upon a pair of esophageal forceps used as a guide. The plate was located about seven inches from the wound, and after careful manipulation was finally removed with forceps. Its measurements were one and three-quarters by one and a half inches, with the usual sharp corners and prominent borders.

The wound was closed, and the patient fed and stimulated by the rectum and through a stomach tube. In spite of vigorous measures along these lines, he died of sepsis five days after the operation.

Mr. K., aged forty-eight years, entered the City Hospital suffering from a malignant stricture of the esophagus, which prevented his swallowing anything whatever. The dysphagia had been growing markedly worse for about four months. As might be expected, he was weak and emaciated, and suffering all the horrors of slow starvation. All instruments passed into the gullet brought up in a pouch behind the sternum. To enable a bougie to be passed through the stricture into the stomach, the esoph-

agus was opened in the usual place and manner, and with a finger in the wound a hard mass, the size of a hen's egg, was readily felt, involving the gullet. Above this mass the esophagus was dilated into a sac. On the anterior wall about an inch from the bottom was found the opening of the lower portion of the gullet leading to the stomach. A long bougie was passed through the mouth and, guided by the finger in the wound, was made to enter the lower part of the tube. This done, Dr. Mixer had no difficulty in placing the No. 19 Symond's tube in position, so that it passed through the stricture into the stomach.

The patient rallied well from the chloroform, and was able to drink liquids fairly well. While considerable quantities escaped from the wound, yet he retained enough to remove his hunger and thirst, and to enable him to gain quite a little strength, sufficient to make him much more comfortable than he was before the operation. The tube was replaced by another in two weeks, and again nine days later. As this last one could not be removed by any reasonable force, it was allowed to remain during the remainder of his life.

This patient improved sufficiently to enable him to go home a month after the operation, where he remained until two days before his death. He entered the hospital for the last time, emaciated to the last degree, and suffering horribly from dyspnea. A quick tracheotomy was done under a few whiffs of chloroform with some little relief, but he soon succumbed to the disease and died in forty-eight hours.

Could this patient's esophagus have been intubed earlier, it is but fair to conclude, from the relief he did get, and from the experience of Dr. Mixer and others, that he might have lived some time longer, and that he certainly would have suffered less than he did. In the earlier stages of the disease, before the esophagus had become dilated above the growth, the Symond's tube could probably have been inserted without any operation. This disease is always fatal so far as we know, and yet almost any measures are justifiable to give even temporary relief to the horrible suffering of slow starvation.

The diagnosis of foreign bodies in the esophagus is not difficult for those who have ever seen a case of this sort. Many physicians, however, have never met with the accident, and therefore might find it anything but easy to distinguish the real from the suspected cases. The latter are more common than the former, and usually occur in nervous or neurotic persons, as servant girls, etc. They complain of pain and difficulty in swallowing, and yet they can readily swallow liquids, or even solids, without any great effort. They are apt to be indefinite as to the exact location of the sore spot, it being situated in different places at different times, or more commonly the distress is a general soreness, rather than a distinct, localized, painful spot. There is no constitutional disturbance whatever, no increase in pulse or temperature,

and no depression of the vital energies. They are nervous and frightened, but not sick.

Now, the clinical picture of a person with a foreign body lodged in the esophagus is very different from all this, and once seen can never be forgotten. Depressed, anxious, debilitated from the lack of nourishment, dreading to make the effort of swallowing, and accomplishing that function only with great difficulty and after repeated trials, locating the tender or painful point definitely, and always in the same place, — these symptoms point very strongly to the pressure of a foreign body in the gullet. The diagnosis is complete if it can be confirmed by an examination with an ivory-tipped bougie or similar instrument. Unfortunately many foreign substances elude the peculiar impact of the bougie, and thus little or no aid is to be obtained in that manner. The above symptoms, however, if severe and progressive, justify an exploratory operation.

The x-ray furnishes unmistakable evidence of the presence of certain substances in this part of the body, as well as in every other. False teeth, pins, needles and other metals are readily shown by these rays, and thus give us the benefit of a positive diagnosis.

Little dependence can be placed upon bristle and other probangs for the removal of foreign bodies from the gullet. They sometimes succeed but oftener fail in accomplishing the object. I once removed a large piece of turkey bone and meat with the bristle probang, twenty-four hours after its introduction. In a case of a child three and a half years old, a careful examination under chloroform failed to reveal any foreign body, although the symptoms pointed strongly to its presence. Operation was refused. Eight months after the supposed accident the boy vomited a pewter quarter of a dollar. All symptoms, including a persistent hoarseness, soon after disappeared, and the boy was perfectly well.

In regard to the method of doing esophagotomy the only point that I would call especial attention to is the use of some metallic guide in the esophagus. The great advantage of this sort of an instrument over a flexible one is that it can be more readily introduced, can be manipulated and controlled at will, and hence made prominent at place of incision of the esophageal walls. We have found the ordinary uterine sound to answer the purpose very well, especially in children, but anything having the necessary curves and stiffness will do.

In a thin neck, free from edema or swelling, the operation for opening the esophagus is not a difficult one, but under opposite conditions it may be very difficult. Hemorrhage usually gives little or no trouble, and often no ligatures are required. As a rule the writer has used chloroform in operations upon the esophagus, as well as in those involving the trachea, for the purpose of avoiding the spasm of the glottis and free accretion of mucus, which at times threatens to drown the patient. Less danger is to be apprehended from these complications in opera-

tions upon the esophagus than upon the trachea, in which they are common and call for close watching and prompt relief to avoid disastrous results. The risks in the use of chloroform under these circumstances are probably less than are to be expected from the various complications that may arise under ether. The writer has never met with any trouble or untoward symptoms from the use of chloroform in operations about the face and neck, while he is fully aware of the moderate danger of its use in general surgical operations.

INFERENCES TO BE DRAWN FROM THE EXAMINATION OF THE GASTRIC CONTENTS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

THE gastric contents are examined chiefly to aid in the diagnosis and treatment of catarrh, dilatation, ulcer, cancer and neuroses of the stomach or to obtain proof that it is in a healthy state. The list is a small one. In reality the diagnosis of the various diseases of the stomach is far easier than is usually thought. The rule of exclusion can be used to great advantage.

The data upon which diagnoses are based are also few, some six in number. Five of these can usually be detected by gross observation, while the chemical tests for the remaining are extremely simple. The subjects which admit of discussion to-day are: (1) Gastric motility. (2) Gastric secretion. (3) Gastric fermentation. (4) Mucus. (5) Blood. (6) Pus.

Another function of the stomach — absorption — is not included in this list. Absorption may be disregarded, because so little takes place through the walls of the stomach. Practically no water is absorbed. When water enters the stomach, it is either expelled through the pylorus, the cardiac orifice or remains. There are one or two exceptions to this rule of the non-absorption of food in the stomach. Sugar and peptones are absorbed to a slight extent, varying with the concentration of the solution. Alcohol is readily absorbed, as is manifested by clinical experience. When alcohol is absorbed from the stomach, water is secreted into it in more than equivalent volume. Since absorption is of such minor importance, the iodide test for it is superfluous.

(1) *Gastric motility.* — The power to expel its contents is the most important function of the stomach. If secretion utterly fails, there occurs only a moderate impairment of digestion. This is due to the compensatory action of other digestive organs. Let gastric motility fail, however, and distressing, urgent or fatal consequences invariably ensue.

Gastric motility is disturbed by various means. Perhaps the commonest is that due to weakness of the gastric muscles themselves. This may form part of a general muscular weakness, and is often associated with a displacement of the

stomach and frequently of other organs. Such a displacement increases the work to be done by the stomach because the pylorus is more firmly fixed than the rest of the organ and the food must be raised before it is expelled. A vicious circle is the result.

Another cause less generally appreciated is interference with the continuity of the inner wall of the stomach. Such a state is brought about by an ulcer or cancer, even when they do not obstruct the pylorus. The interference with motility in such cases is not extreme, but it is quite constant. The detection of slight degrees of disturbed motility is therefore important and a suspicious sign.

Obstruction to the passage of food through the pylorus is the most obvious cause of disturbed muscular action in the stomach. At first the obstruction usually leads to extra efforts on the part of the muscle walls. This is apparent to the patient by the sensations produced and to the physician by his observance of peristalsis. In the advanced stages of this condition exhaustion of the muscles apparently succeeds to active peristalsis and the most extreme grades of dilatation of the stomach result. It is often impossible to determine the cause of a pyloric obstruction at a first visit and it is unwise to attempt a diagnosis. Repeated observation of the behavior of the stomach under varying conditions is essential. In many instances time alone will determine whether the stricture is functional, being due to spasm, or is organic from the presence of a scar, ulcer, cancer or other less common causes.

The determination of gastric motility is the most important test in the diagnosis and treatment of disorders of the stomach. Frequently proof of its derangement is afforded by the story of the patient. Food is vomited which has been eaten more than seven hours previously, or quantities of food are vomited which are so large that they are directly suggestive of a dilatation of the stomach. This is acute or chronic according to the frequency with which such vomiting has occurred. A degree of muscular disturbance sufficient to produce such symptoms is rare, but even when it occurs it is not uncommonly overlooked. It must not bias the practitioner, however, in favor of malignant disease any more than marked loss of weight in an individual with indigestion.

In contrast with this crude method of estimating gastric motility is the accurate test of this function by the passage of the stomach tube into the fasting stomach. The fasting stomach should be empty. If food is obtained from it seven hours after a meal it can be assumed that there is disturbance of gastric motility. This examination is the simplest and most valuable of all examinations of the stomach which are made. In the first instance, the manipulation of the tube is easier with the fasting stomach than after a test meal. In the next place, the contents so removed are more readily examined. Inspection alone will determine the presence of food, secretion, fermentation, mucus, blood and pus —

¹ Read before The Massachusetts Medical Society, June 9, 1903.

the essentials for gastric diagnosis. Too much cannot be said of the value of the examination of the fasting stomach.

Conclusions regarding gastric motility may be reached by measuring the quantity of food removed from the stomach one hour after the administration of an Ewald test breakfast. The slice and a half of bread and the glass and a half of water of which this consists should leave a residue of not more than 3 oz. when removed under the above conditions. Excess of this quantity suggests a deranged muscular activity. Another method of reaching the same result is to give Hemmeter's test meal. This consists of one small piece of beef (2½ oz.), one soft boiled egg, 1 oz. boiled rice, one-half pint milk and a piece of bread. Four to five hours later an Ewald test breakfast is given and the contents removed in one hour. The complete disappearance of the earlier meal points to normal motility. Gastric motility has been tested in still another way by directing the patient to eat at night a few spoonfuls of dried English currants. These would not be found on the following morning in a healthy stomach.

Normal motility is present in two diseases of the stomach—gastric catarrh and in the group of cases included under the term "achylia gastrica." In the latter instance excessive motility has been supposed to be present. This idea may have arisen from the fact that undigested fragments of food are expelled with difficulty through the stomach tube. The stomach is then considered empty when this is really not the case. The water has passed on, but the solid particles of undigested food remain and can be obtained by prolonged expression, aspiration or lavage.

(2) *Gastric secretion.*—The healthy stomach produces about three pints of gastric juice in twenty-four hours. Ordinarily this passes on with the food into the intestine without causing disturbance. It is obvious, however, from what has been said of the slight degree of absorption which takes place in the stomach and the various conditions in which the muscular power of the gastric wall is affected, that such quantities of secretion can cause many symptoms. Much confusion exists between slight degrees of deficient motility and excessive production of gastric juice. But the pronounced states of either are clear. When the secretory function is in a normal condition the fasting stomach will be empty; if hypersecretion is present, varying quantities of gastric juice up to several ounces can be removed from the fasting organ. Increased secretion of gastric juice is pathognomonic of no single disease. It most frequently occurs as a neurosis in connection with an overproduction of hydrochloric acid. It is a precursor of ulcer of the stomach and is the signal for prophylactic treatment. It accompanies ulcer.

The constituents of gastric secretion which are most important for recognition are hydrochloric acid and pepsin. Their presence in normal quantities may be inferred with great probability from the gross appearance of an Ewald test

breakfast. Such contents removed from a normal stomach look "well digested." If gastric secretion is absent the contents resemble closely a mixture of bread and water. It is not safe, however, to rely wholly on gross appearances, for occasionally with excessive amounts of hydrochloric acid a somewhat similar condition is produced.

The safest test for hydrochloric acid is with Günzburg's reagent.² This is performed by slowly heating a few drops of this solution with an equal amount of the stomach contents. A red color develops. Another test is with Congo red paper.³ This turns blue when moistened with a solution containing free hydrochloric acid. The development of a brownish color with Congo red denotes the presence of some organic acid. Congo red paper is very useful in a general practice because it requires no apparatus. Following a suggestion of Dr. Pfaff, it can be prepared in different strengths, and with these an approximate idea of the percent of free hydrochloric acid in the stomach can be obtained.

Excess of hydrochloric acid occurs most commonly as a neurosis. It is the torment of the nervous dyspeptic and the nervously tired-out individual. Like hypersecretion it frequently precedes ulcer of the stomach and generally accompanies the condition when established. Often hyperchlorhydria occurs in dilatation of the stomach due to a benignant stenosis of the pylorus. In such cases the stagnant food appears to call it forth. Ulcer is usually associated with the presence of free hydrochloric acid, often in excessive amounts. In cancer, free hydrochloric acid is the exception. It is by no means seldom, however, that a chronic ulcer exists without free hydrochloric acid and that a cancer is accompanied by free hydrochloric acid. In the latter instance the cancer has usually developed from an old ulcer—a much rarer condition than supposed.

The hydrochloric acid is diminished in catarrh of the stomach to a greater or less extent according to the severity of the disease. It is completely absent in atrophy of the mucous membrane and sometimes absent when no atrophy exists, perhaps due to a secretory neurosis. Patients in whose gastric contents no hydrochloric acid can be found after repeated trials are said to have achylia gastrica. (Strictly speaking, the absence or marked diminution of pepsin and renin also should be proven to establish this condition.) The acidity of such contents hardly suffices to react red with litmus. The gross appearance of an Ewald test breakfast removed from a patient with achylia gastrica

²Günzburg's Phloroglucin-Vanillin Test.

| | |
|--------------------|----|
| Phloroglucin . . . | 2 |
| Vanillin | 1 |
| Alcohol | 30 |

³Filter paper saturated with aqueous solutions of Congo red of the following strengths will react with the given percents of free hydrochloric acid:

| Congo Red. Percent. | Hydrochloric Acid. Percent. |
|------------------------|--------------------------------|
| 0.001 | 0.200 |
| 0.00175 | 0.150 |
| 0.0025 | 0.075 |
| 0.0062 | 0.050 |
| 0.01 | 0.025 |
| 0.05 | 0.01 |

resembles a mixture of bread and water, so incomplete is its digestion. It is a rule for the hydrochloric acid to be absent in cancer.

Pepsin varies in the gastric juice to a greater or less extent with the hydrochloric acid. In most examinations of the stomach contents the tests for it can be omitted. It can be demonstrated as follows: Add a portion of the white of a hard-boiled egg of about the size of a dime to 2 dr. of filtered gastric juice. Keep at body temperature. The egg normally is digested or disintegrated in two to six hours. If free hydrochloric acid is not present, add dilute hydrochloric acid one drop at a time until its appearance is shown by Günzburg's or the Congo red test.

(3) *Gastric fermentation.* — Fermentation in the stomach is proof of diminished motility. It is recognized by the appearance of three layers in the gastric contents, which form about a quarter of an hour after their removal. This is best shown by placing the contents in a glass. The lower layer consists of partially digested food, the middle layer is liquid and contains the soluble products of digestion, while the upper is frothy, due to the admixture of gas (chiefly carbonic acid) with small particles of food. The exciting agent of the fermentation varies, and, as Dr. Hewes has shown to the students of the Harvard Medical School this year, can be isolated. Especial interest attaches at present to but two sorts of fermentation — that caused by *sarcinæ* and that due to the lactic acid bacillus. *Sarcinæ* grow abundantly in the presence of hydrochloric acid, and lactic acid bacilli only in its absence. The presence of *sarcinæ* therefore implies fermentation in a stomach which is still secreting hydrochloric acid, while lactic acid implies that no hydrochloric acid is being produced. In both, motor insufficiency is present. Sarcinous fermentation has a peculiar odor which is so distinctive that when once appreciated it is easily recognized. The sense of smell alone can in this way lead to a conclusion that hydrochloric acid is present. Conclusive proof is afforded by the detection of the "cotton-bale" shaped *sarcinæ* under the microscope. Lactic acid is demonstrated by the distinct appearance of a canary yellow color on the addition of filtered gastric contents to a nearly colorless solution of ferric chloride. The demonstration of *sarcinæ* or lactic acid in a stomach contents adds therefore nothing new to our knowledge. It is simply another method of showing that a state of deficient motility, associated with or without hydrochloric acid, exists.

(4) *Mucus.* — Mucus is present in the stomach when there is catarrh of that organ. Acute or chronic gastric catarrh exists only when associated with mucus. The acute cases attract little attention, for the duration of the disease is so short that an examination of the stomach is seldom necessary. Chronic catarrh of the stomach is a rare disease, notwithstanding it is so common in the minds of the laity, and for that matter in the diagnoses of the profession. In a recent four months' out-patient female medical

service in which about one thousand new patients were seen, only one typical case of chronic gastric catarrh was recognized. In fact, one of the decided advantages of the examination of stomach contents is the opportunity it affords of disabusing the patient's mind of the idea that he or she has a chronic catarrh. On the other hand it must be remembered that catarrh may exist with cancer or dilatation of the stomach. The mucus obtained from the mouth, throat and esophagus during the passage of the stomach tube should always be distinguished from mucus formed in the stomach. Gastric mucus is intimately mixed with the food; other mucus is not. Mucus is most easily detected in the fasting stomach.

(5) *Blood.* — Blood is not uncommonly obtained from the fasting stomach. Cancer is the disease most uniformly associated with it, for either a little blood is present in the stomach before the introduction of the tube or is set free by the irritation of the tube itself. Ulcer behaves similarly. Very small quantities or little clots of blood are frequently obtained from patients with achylia gastrica. These three diseases can often be differentiated by the state of gastric motility and the hydrochloric acid. Blood may also be obtained from the healthy stomach by too forcible straining and struggling on the patient's part or too powerful aspiration of the contents by the doctor. Coffee-ground vomitus perhaps is more commonly associated with cancer than with ulcer, but it is by no means proof of it. It may occur daily for a week in ulcer.

(6) *Pus.* — Pus is common in any gastric catarrh. It is frequently met with in the fasting stomach of patients with cancer or ulcer, and so in the absence of mucus gives valuable evidence.

Diseases of the stomach can be treated empirically or with a certain degree of scientific accuracy. The scientific method is usually successful, while empiricism favors a migratory tendency on the part of the patient. If, on the other hand, empiricism is successful and the patient is cured, in the end more real harm results, for the doctor is encouraged to repeat his lucky experiment and his medical progress thereby comes to an end.

The examination of gastric contents is often neglected because it is thought to be too difficult and too time-consuming. These views are erroneous. The examination requires no more time than the examination of the urine, and is far simpler. In fact, the gross examination of the gastric contents furnishes the most valuable data of all, and these can be recognized almost at a glance. There is no necessity for the busy practitioner to titrate the percent of hydrochloric acid in the gastric contents. It is far more important that he should determine whether the organ contains food and secretion in the fasting condition and that he should make the simple tests necessary for their examination. More important still is the need for a proper interpretation of the results so obtained.

Rules are no more hard and fast in this branch

of medicine than in any other, and satisfactory deductions can only be drawn when the history of the patient, the physical signs and the data relative to the contents of the stomach are considered together.

DISCUSSION.

DR. R. F. CHASE of Brookline: Dr. Joslin has very thoroughly and concisely discussed a very broad subject. He has left very little to be said upon this subject. There are, however, a few points to which I wish to refer with the object mainly of emphasizing their importance:

When a patient comes to the physician for an examination of the stomach, he should not have eaten anything for at least six hours.

With a fasting stomach the physician can at once proceed to give a test meal and later examine the gastric contents obtained therefrom. Or, should it seem preferable, he can obtain the fasting contents (if there are any), then inflate and determine the size and position of the stomach.

Either part or the whole of such an examination may be made at the first visit, providing the patient comes with a fasting stomach. Whereas if he comes with a full stomach none of these tests can be conveniently carried out at the first visit. Dr. Joslin has already said that several examinations may be necessary to establish a diagnosis.

I particularly desire to emphasize the importance of this point, because I know there are physicians who have the impression that one chemical examination of the gastric contents is sufficient to enable one to make a diagnosis of any gastric affection. Such, however, is not the case. Besides the chemical examination of the gastric contents, the size, shape and motility of the stomach must be determined in all cases, and in many cases new phases of a disease appear which require prolonged study that they may be recognized and properly treated.

The average amount of gastric contents obtained one hour after the administration of an Ewald test meal has been stated by the reader as 90 cc., or 3 oz. I consider this amount a very fair average, but one must remember that it is only an average, the maximum and minimum normal limits being very wide, varying from about 20 to 150 cc.

A healthy student upon whom I recently made some tests yielded, on several successive days, from 120 to 160 cc. of gastric contents. On a certain day preceding a school examination which he was to take, I was able to obtain only 10 cc. one hour after the Ewald meal, and this gastric juice contained no free HCl, whereas on the previous examinations the free HCl had always been normal. This temporary suppression of the gastric secretion I attributed solely to nervousness arising from anxiety over his pending school examination.

Small amounts of gastric contents are obtained in the conditions referred to by Dr. Joslin, namely, in diminished secretion, in hypermotility of the stomach and in cases of patent or lax pylorus.

In these conditions it is frequently, I may say usually, necessary to introduce the stomach tube within thirty or forty minutes after giving the Ewald meal, to obtain any contents for examination.

Failure to obtain the average amount of gastric contents one hour after the Ewald meal does not necessarily indicate the existence of one of the conditions just mentioned; it may mean that the entire contents of the stomach have not been removed.

Lavage of the stomach will clear up this point, because if the contents have not been entirely removed crumbs of bread and cloudiness of the wash water will be observed. Formerly I used (as recommended by some) a Davidson's syringe bulb in evacuating the stomach contents and in 20 to 30% of all cases I obtained small amounts of blood. I now use a different bulb, and do not encounter blood in more than 2 to 4% of all patients. Small amounts of blood, however, are frequently of no significance.

Mucus must *not* be confounded with saliva, which as a rule runs freely down the *outside* of the tube. The former is recognized by its stringy nature and comes of course only from the *inside* of the tube; it is also well seen when pouring the contents from one vessel into another.

Excepting the detection of blood, or food which has been eaten one or two days previous, an examination of the vomitus from a patient does not aid one much in the diagnosis of gastric disease.

Dr. Joslin has stated that during a three months' hospital service he has failed to encounter one case of chronic gastritis.

During a present ten weeks' service I have also not met one case of chronic gastritis. This disease of the stomach, of which we hear so much, is not nearly so common as is generally supposed.

New Instrument.

A CHEAP TRACTION SPLINT.¹

LOUIS T. WILSON, M.D., BOSTON.

This splint was made primarily to fill a need for a cheap, light splint suitable for bed traction on hip cases at the Children's Hospital, Boston. The average hip splint is heavy, requires a skilled mechanic to manufacture it, is therefore costly and thus often beyond the reach of the physician, outside the large cities, who may have hip cases under his care. It was desired, therefore, at the same time, to make a splint of such simple construction and material that it could be easily made by any mechanic, blacksmith or even the physician himself if necessary, at a very small cost. Sheet steel and gas-pipe can be easily obtained in almost any town, and from these materials this splint was made.

¹ Presented at the Annual Meeting of the American Orthopedic Association, Washington, D. C., May 14, 1903.

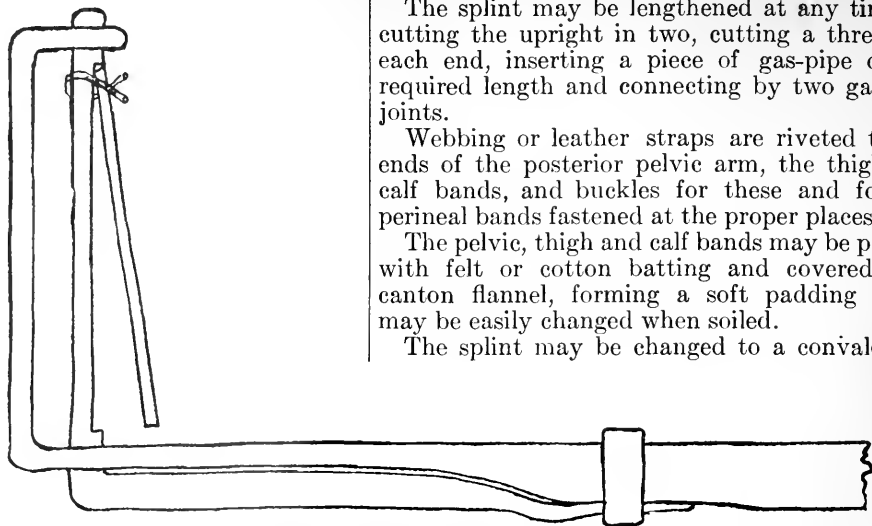


FIG. 3. — TRACTION WINDLASS AND FOOTPIECE.

The upright and foot piece are made from one piece of $\frac{3}{8}$ -inch iron gas-pipe. The upright, where it joins the pelvic band, is simply heated and flattened for a distance of about one inch. The lower end forming the foot piece is also heated, flattened and bent to the desired shape. Care should be taken to flatten the pipe for a distance of three to four inches up on the upright to allow a flat surface for the windlass arm.

The traction windlass is made from $\frac{1}{8}$ -inch steel wire bent to a right angle. One arm is inserted into two holes bored in the foot piece, while the other lies along the upright, which was flattened and is held to it by a sliding wire ring. The traction windlass may be prepared to hold the extension straps in one of three ways: (1) A slot may be cut in the wire, the straps passed through and caught by a turn of the windlass. (2) Two small wire pegs may be inserted into the wire to fit into holes made in the straps. (3) The wire may be filed flat on one side where it crosses the foot piece, and a flat piece of steel fitted to this. The extension ends are then laid on the flat wire, the steel placed on top and caught at one end by a turn of fine wire. One turn of the windlass arm binds these together and prevents any further slipping.

The pelvic band is cut from sheet steel of the desired gauge (generally No. 10–No. 14), riveted on to the flattened end of the upright and bent to the desired shape. In the large splints it may be necessary to secure a firmer hold on the upright, in which case a tab of steel may be left on the band and this bent around to grasp the upright. Also the arms of the first pelvic band may be made only two or three inches long and a second pelvic band of the required length riveted to this. This gives a firmer band and prevents the perineal straps, when tightened, from drawing the arms together.

Thigh and calf bands are cut from thin sheet steel and fastened to the upright by boxes made from similar steel and riveted to the bands.

The splint may be lengthened at any time by cutting the upright in two, cutting a thread on each end, inserting a piece of gas-pipe of the required length and connecting by two gas-pipe joints.

Webbing or leather straps are riveted to the ends of the posterior pelvic arm, the thigh and calf bands, and buckles for these and for the perineal bands fastened at the proper places.

The pelvic, thigh and calf bands may be padded with felt or cotton batting and covered with canton flannel, forming a soft padding which may be easily changed when soiled.

The splint may be changed to a convalescent

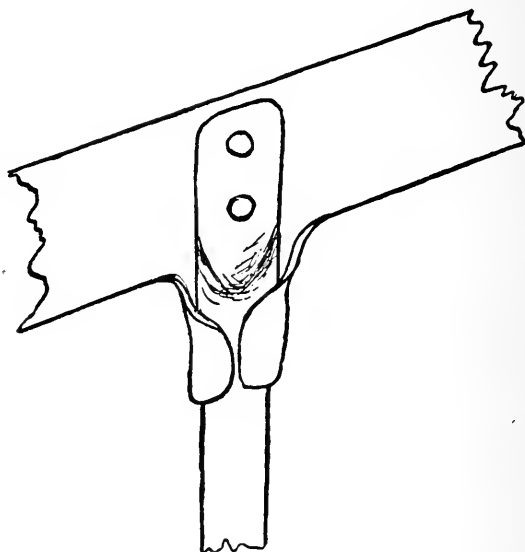


FIG. 1. — METHOD OF FASTENING PELVIC BAND AND UPRIGHT.

splint by removing the foot piece and substituting a piece of gas-pipe ending with a joint into which a piece of rubber or a rubber cork has been inserted.

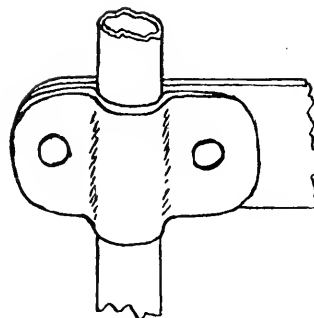


FIG. 2. — METHOD OF FASTENING CALF AND THIGH BANDS TO UPRIGHT.

This splint has been in use in the wards and on young children in the Out-Patient Department of the Children's Hospital, Boston, since March and so far has proved satisfactory. The cost as made in the hospital shop ranges from two dollars and a half to three dollars and a half. Of this, the material costs seventy-five cents to a dollar according to the size. The weight of a 30-inch splint is about eighteen ounces.

Medical Progress.

PROGRESS IN THORACIC DISEASE.

BY JOHN W. BARTOL, M.D., BOSTON.

INFLUENCE OF WIND ON PHTHISIS.

GORDON¹ has studied the distribution of phthisis in certain districts of Devonshire, and concludes that there is justification for the belief that strong, wet winds, when prevalent, have a marked influence in raising the death-rate from phthisis in communities exposed to them, and that this effect is possibly explained by the chilling and depressing nature of the winds and their tendency to excite bronchial catarrh in the inhabitants of such districts.

CONSUMPTIVE CHEST NOT FLAT.

Hutchinson² has followed up his preliminary investigation published in 1897, and feels more than ever convinced that the tuberculous chest is round rather than flat, or in other words that prevailing belief and teaching is entirely erroneous. The human chest, with a few exceptions easily accounted for, is the only one in the animal kingdom in which the transverse diameter is the longer, a relation obviously explained by the erect position and the locomotive necessities of the anterior limbs. Measurements taken of series of normal chests show the index of proportion of antero-posterior diameter to transverse to be approximately 70%; in the embryo the index runs up to 105-115, while at two years it is about 94, and from three to seven averages 85. In the tuberculous chest the average of the measurements thus far taken is not far from 80, or, in other words, a persistence of the type normal for the age of fifteen to eighteen years. The apparent flatness of tuberculous chest is an optical delusion due to the condition of round shoulders, and this in turn is the result of the forward displacement of scapulæ on a thoracic wall which is barrel-like instead of flat.

Conclusions of importance are that the existence of such a conformation in a person past the age of eighteen is a sign of arrested development; that it is likely to be precedent to tuberculosis; that systematic measurements should be made in growing children, and flatness of chest favored by appropriate exercises.

TRAUMATIC PERICARDITIS, ENDOCARDITIS AND MYOCARDITIS.

Pleasants³ concludes that trauma is a much more important cause of disease of the heart than is generally supposed. Judging from the frequency with which pericarditis of any origin is overlooked, he thinks that the traumatic form exists many times unrecognized, and publishes two cases of his own, in one of which the somewhat startling assumption of injury by *contre-coup* is made. Endocarditis definitely shown to have developed in connection with serious injury to the thorax has occurred in one case of his own knowledge and in three other cases from the literature, and it is considered probable that in many instances an endocarditis developing some little time after an injury without other discoverable cause is due to the trauma. A myocarditis set up by trauma in a previously normal heart probably does not attain a development sufficient to cause signs capable of demonstration, and if the heart was previously diseased, a supposed relationship between trauma and myocarditis must be very carefully probed before it is accepted as proven. Altogether five cases are reported which are considered above suspicion.

TIDAL PERCUSSION.

Colbeck⁴ complains not only that too little attention is paid to percussing the apices during both inspiration and expiration, but that a mistaken belief in regard to percussion changes produced by this manœuvre is very prevalent; in other words, contrary to general belief and for manifest anatomical reasons, there is above the clavicles in full inspiration a decrease in the limits of pulmonary resonance and in full expiration an increase of the same, while during the same intervals there is respectively a raising and lowering of percussion note. Investigations bearing on this point were reported eighteen months ago, and further study has simply served to confirm the opinion then formed.

LATE SYSTOLIC MITRAL MURMURS.

Hall⁵ considers that, when the murmur of mitral incompetence occurs not with but later than the first sound, there exists a marked degree of asynchronism, that the first sound is due to the earlier contraction of the right ventricle and that the later contraction of the left gives not a sound but a murmur. In some cases, however, he grants that the delay may be an apparent one due to the first part of the murmur being inaudible, and also admits as a possible factor the pulling in of the auriculo-ventricular curtains by the contraction of the papillary muscles, shown by Roy and Adami to be the final act in ventricular contraction.

¹ Brit. Med. Journ., May 23, 1903.

² Journ. Am. Med. Ass., May 2.

³ Johns Hopkins Hosp. Bull., May, 1903.

⁴ Practitioner, March, 1903.

⁵ Am. Journ. Med. Sci., April, 1903.

DIASTOLIC MURMURS WITHOUT LESIONS.

In a series of one hundred and fifty-three autopsies studied with relation to mistakes in physical diagnosis Cabot and Loeké⁶ found "not a single case in which a diagnosis of aortic regurgitation made during life failed to be substantiated at autopsy," but they are able to report four cases seen within a year in which the demonstration of normal aortic valves discredited the probable diagnosis of aortic regurgitation, based on the presence of a diastolic murmur. Similar instances have been reported by various observers and sundry explanations offered. Of these the most plausible are taken to be: (1) Dilatation of the aortic ring associated with aneurism or diffuse enlargement, or dependent on high blood pressure; (2) tuberculosis of the lungs and pleura, and consequent production of cardio-respiratory murmur; (3) intense anemia, with the relation of thinness of the blood to the production of murmurs still unexplained.

CARDIAC HYPERTROPHY IN NEPHRITIS.

Senator⁷ returns to this unsolved question, and endeavors to explain why there is cardiac hypertrophy at all and also why it should especially affect the left ventricle. The investigations of Strauss carried out in his clinic show that there are marked differences between the blood in chronic parenchymatous and that in chronic interstitial nephritis. In the latter is found almost always an increased molecular concentration, an ordinarily normal specific gravity and albumen content, and an increase in the nitrogenous residue (that is, after precipitation of albumen), with consequent increase in the toxicity of the blood — while in the former, concentration is normal, albumen and specific gravity are lowered, and nitrogenous residue not increased. As a result of the toxic matters in the blood not eliminated on account of disease in kidneys, we get changes in the blood vessels with resulting symptoms, varying according to the nature of the process in the kidney. In acute nephritis the irritative effects are most marked — the walls of the vessels very rapidly lose their tone and dropsy ensues at once, and is protective in the sense that it helps remove from the blood the irritating elements; while duration is too short to produce permanent changes in vessel wall or heart. In chronic parenchymatous nephritis the poison works more slowly, the dropsy develops later, and the toxic effect on the heart muscle is gradually shown by hypertrophy; that this hypertrophy becomes so much more marked on the left is because peripheral resistance due to diseased vessel walls is so much more an important factor in the greater circulation than in the lesser. In chronic interstitial nephritis the toxic elements accumulate much more slowly, the vessel wall does not lose its tone, dropsy develops slightly if at all and there ensues

the gradual changes in vessel walls and heart with same reason for a preponderance of hypertrophy of left ventricle. In this form of nephritis, however, where the initial renal insufficiency remains for a long time so slight and the consequent accumulation of poison is so slow, it is perhaps necessary to assume some toxic influence within the system independent of the kidney as a starting point for the disease.

INFECTIVE ENDOCARDITIS TREATED BY RECTAL INJECTIONS.

Duckworth⁸ reports one case in which without much doubt of the diagnosis, and after internal treatment with fresh yeast and subcutaneous injection of antistreptococcus serum twice repeated had failed to produce any satisfactory effect, regularly repeated rectal injections of mixed antistreptococcus serum, 10 cc. at a dose, apparently effected a cure.

Reports of Societies.

SURGICAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

NEW ORLEANS, LA., MAY 5 TO 8, 1903.

JAMES E. MOORE, M.D., President.

FIRST DAY — AFTERNOON SESSION.

H. J. WHITACRE, Cincinnati, read a paper entitled

SUPPRESSION OF URINE; REPORT OF A CASE ENDURING EIGHT DAYS, RELIEVED BY DECAPSULATION OF THE KIDNEYS.

The case was that of a woman aged forty, who took ergot for the purpose of producing abortion. The effect was entire suppression of the urine. She was taken to the hospital, and about 60 oz. of salt solution injected intravenously, with the result that about 5 oz. of urine containing albumin, casts and pus were passed on the third day. The kidneys were incised and decapsulated. The patient left the hospital on the nineteenth day, and nine weeks afterward was perfectly well, and excreting 60 oz. of urine per day.

DR. ALEX. HUGH FERGUSON, Chicago, read a paper entitled

THE SURGICAL TREATMENT OF NEPHRITIS,

in which he stated that he had published an article on this subject about one month prior to the appearance of Edebohls' first article. He reported two cases. The first case occurred in a young man twenty-four years of age, who died three and one-half years after the operation of removal of part of the kidney and decapsulation. He also reported a case suffering from pain in the loins, albuminuria, anasarca and ascites. He had contracted syphilis seventeen years previously, for which he had received mercurial

⁶ Johns Hopkins Bull., May, 1903.

⁷ Deutsch. med. Wehnschr., Jan. 1, 1903.

⁸ Brit. Med. Journ., May 23, 1903.

inunctions. At the time of his admission to the hospital his urine contained 5% albumin. The right kidney was decapsulated, and he left the hospital on the eighth day with only $\frac{1}{2}$ % of albumin in his urine. Later he returned for operation on the left kidney, the albumin having increased to 2 $\frac{3}{4}$ %. He made a good recovery and the albumin has been reduced to $\frac{3}{10}$ %.

DR. ARTHUR DEAN BEVAM, Chicago, felt that the value of surgical interference in the treatment of anuria had not been sufficiently emphasized. He divided the condition under three headings for the purpose of treatment: (1) Obstructive anuria; (2) reflex anuria; and (3) nephritic anuria. He preferred nephrectomy to decapsulation of the kidney for the treatment of anuria.

DR. WM. R. JEPSON, Sioux City, Iowa, thought that decapsulation of the kidney would be of little value in cases of chronic nephritis, and that it would do the greatest good in interstitial nephritis, with involvement of the surrounding structures and thickening of the capsule, especially where there is hemorrhage under the capsule.

DR. ARCHIBALD McLAREN, St. Paul, Minn., felt that the benefit produced in these cases was probably more from the splitting of the kidney than from the decapsulation.

DR. RAMON GUTERAS, New York, said that the operation for decapsulation for Bright's disease was still in its infancy, and that the chief object thereof was to establish an increased circulation in the kidney. He stated that in the records of the autopsies of five hundred cases of chronic Bright's disease, he had found only one case of the pure unilateral variety.

DR. A. H. McARTHUR, Chicago, reported a case of chronic Bright's disease of both kidneys, proven so to be by segregation, in which he had decapsulated both kidneys, one three months after the other, with decided improvement. During the time between the operation on the first and the operation on the second kidney, the difference between the excretory powers of the kidneys was quite marked.

DR. JOHN R. WINSLOW, Baltimore, Md., reported the case of a young woman who was in a septic condition following confinement, and suffered from pain over the right kidney and pus in the urine. Exploratory operation not revealing a condition that seemed to justify removal, the kidney was decapsulated and punctured, and the patient made a good recovery.

DR. ALEX. HUGH FERGUSON, in closing, referred to the almost instantaneous effect produced in some of these cases, the cause of which he attributed to the relief of the tension in the acute and subacute cases and to the improvement in the circulation in the chronic cases where the kidney had become contracted.

DR. H. J. WHITACRE, in closing, stated that there were various causes producing the condition of suppression of the urine, and believed that it was in those cases resulting from tension, pro-

duced by contraction of the capsule, that decapsulation would be of the most value.

DR. B. B. DAVIS, Omaha, Neb., read a paper entitled

INDICATIONS FOR CHOLECYSTECTOMY,

in which he reported twenty-eight cases upon which he had performed this operation, all but 20% of which were entirely cured.

DR. F. A. DUNSMOOR, Minneapolis, Minn., read a paper entitled

THE CALL FOR EXPLORATORY OPERATION IN THE GALL-BLADDER REGION,

in which he urged the value of this method as a diagnostic aid, and also its value in cases where operable conditions were not discovered, reporting two cases in which an exploratory laparotomy and breaking up of adhesions, etc., had been followed by recovery.

DR. WILLIAM J. MAYO, Rochester, Minn., emphasized the necessity for frequent operations upon the gall bladder.

DR. J. B. MURPHY, Chicago, recommended the removal of the gall bladder, unless this procedure was contraindicated, as we would thus remove the two chief causes of recurrence, namely, remaining stones and affections of the cystic duct; but owing to the high mortality following radical operation when infection was present, he felt that it was better to do as little surgery as possible to establish drainage under these circumstances.

DR. A. J. OSCHNER, Chicago, referred to the fact that many cases of gall-bladder disease were not diagnosed, and that more frequent exploratory laparotomy would be of material benefit in this respect.

DR. B. B. DAVIS felt that in those cases in which the condition of the patient was such as to render dangerous the removal of the gall bladder, one should first relieve the acute trouble and then do a cholecystectomy as a secondary operation. He believed that most of the cases of gallstones, if operated on early, could be cured without the removal, but in the complicated cases this procedure was necessary.

DR. F. A. DUNSMOOR, in closing, remarked that when the surgeon attempts to operate on the gall bladder he should be prepared to relieve any condition that may present itself.

SECOND DAY — MORNING SESSION.

DR. VAN BUREN KNOTT, Sioux City, Iowa, read a paper entitled

A CONTRIBUTION TO THE SURGERY OF GASTRIC ULCER,

in which he referred to the fact that about 80% of all gastric ulcers were situated on the posterior surface of the stomach or at the pylorus, thus bringing them in more or less direct contact with the liver, spleen, pancreas, intestines and other abdominal organs, the area of the adhesions and the extent of the intestinal wall infected vary-

ing considerably. Surgical interference was believed to be the only relief for these conditions, and gastro-enterostomy was recommended whether the adhesions be divided or not. Cases were reported bearing out the theories advanced in the paper.

DR. H. D. NILES, Salt Lake City, Utah, read a paper entitled

SURGICAL CONCEPTION OF PYLORIC OBSTRUCTION,

in which he recommended that if the growth be of a cancerous variety it be excised, as the pyloric carcinoma is slow to extend to surrounding tissues, but for the treatment of gastric ulcer he recommended gastro-enterostomy, owing to the likelihood of there being numerous ulcers.

DR. A. J. OSCHNER, Chicago, Ill., read a paper entitled

CLINICAL OBSERVATIONS ON THE SURGERY OF THE STOMACH,

in which he recommended that in all cases of gastric ulcer which did not heal promptly under medical treatment surgical treatment should be instituted, one of the most valuable methods being anastomosis between the lowest portion of the stomach and jejunum, a method which he thought reduced the persistent vomiting to a considerable degree. Three points in making the anastomosis by means of the Murphy button were emphasized: (1) The button must grasp just enough tissue to make a perfect union; (2) it must be at the lowest point; (3) there must be no tension.

DR. WILLIAM J. MAYO, Rochester, Minn., remarked that the surgical treatment was more particularly directed to the complications of gastric ulcer than to the ulcers themselves, and referred to the difficulty of knowing the best mode of procedure if the case was diagnosed early, for if excision of the ulcer be performed, there is a liability that other ulcers will remain to give trouble afterward.

DR. CARL WAGNER, Chicago, reported the case of a woman who was suffering from a tumor in the center of the stomach about the size of two fists, which had been diagnosed by several surgeons as gastric carcinoma. Exploratory incision revealed that it was simply a mass of the omentum adherent to the parietal peritoneum, liver and gall bladder, and a tumor of similar formation was found in the inguinal region. Both were removed and the woman made a good recovery.

DR. WILLIAM L. RODMAN, Philadelphia, referred to the necessity for extreme caution in separating gastric adhesions, owing to the liability of tearing the stomach wall.

DR. A. H. CORDIER, Kansas City, recommended gastro-enterostomy in preference to excision of the ulcer, since it avoided the cicatricial tissue, which is the primary source of many ulcers.

DR. KNOTT, in closing, merely emphasized

the necessity for prompt diagnosis and operative treatment in these conditions.

DR. NILES, in closing, stated that his reason for preferring gastro-jejunostomy was that he believed the ulcers would get well in almost any stage if the stomach were put at rest, which was done by this method, and in excision there was great liability of leaving some behind.

DR. OSCHNER, in closing, stated that he felt that with early recognition of the cases, pylorotomy would become a more favorable operation than it had been in the past. Precaution should be taken to prevent hemorrhage and the gastro-hepatic omentum should be removed.

DR. O. BEVERLY CAMPBELL, St. Joseph, Mo., read a paper entitled

THE SINGLE CUFF METHOD OF CIRCULAR ENTERORRHAPHY; A NEW METHOD,

in which he described in detail the technique of the operation, which he had performed on seventy-five dogs and two human subjects; seventy-two of the dogs recovered and none of the deaths was attributed to the operation *per se*. One of the operations on man was done after the removal of an adeno-carcinoma from the vicinity of the sigmoid flexure, and the patient made a good recovery. The second case was the resection of six inches of the bowel for a chronic fecal fistula following operation five months previously for obstruction of the bowel. Death ensued in thirty-six hours, and was attributed to the previous condition of the patient.

DR. JAMES H. DUNN, Minneapolis, Minn., read a paper on

INTESTINAL RESECTION, WITH REPORT OF FIFTEEN CASES, NINE WITH THE BUTTON AND SIX WITH SUTURE,

in which he stated that the Murphy button should be used except in cases of end-to-side anastomosis between the large and the small intestine, in which he recommended the employment of the Connell suture, the advantages being that it is simple, continuous and penetrates all the coats, thus insuring the strongest possible union. He emphasized the importance of selecting one method of suture, becoming expert in its use and adhering to it.

DR. J. B. MURPHY, Chicago, believed that a careful recognition of the pathological condition above and below the line of approximation was of more value than the technique of approximation, and believed that fewer failures would result if sufficient of the proximal end of the bowel were removed to leave a perfectly healthy, uninfiltated intestinal wall.

DR. ALEX. HUGH FERGUSON stated that he had employed almost entirely of late the Connell suture and the Murphy button.

DR. CAMPBELL, in closing, stated that as the sutures did not go through the mucous membrane, he felt that the knots would do but little harm.

DR. JOHN A. WYETH, New York, read a paper entitled,

THE TREATMENT OF VASCULAR TUMORS BY THE INJECTION OF WATER AT A HIGH TEMPERATURE, WITH SUGGESTIONS AS TO ITS EMPLOYMENT IN TUBERCULAR ADENITIS, ABSCESS, FISTULOUS TRACTS, ETC.,

in which he stated that these tumors were chiefly of three kinds—arterial, capillary and venous, the capillary being the most numerous, and that under these conditions he had found injections of boiling water the most efficacious. He reported two cases in the first of which danger of hemorrhage prevented the removal of the growth by means of the knife, but it was successfully removed by this method. The other was a case of arterial angioma. Both operations were done under ether and both were entirely successful. The treatment was recommended in cases of hemorrhoids and fistulae, and the only objection seemed to be the possibility of embolism.

DR. WM. J. MAYO, Rochester, Minn., stated that after seeing Dr. Wyeth perform this operation on one of the cases reported, he had injected $\frac{1}{2}$ oz. of hot water into a large venous angioma of the cheek, with the result that in two or three weeks it was decreased in size two-thirds, and is now almost entirely gone.

DR. JOHN P. LORD, Omaha, Neb., reported a case similar to that referred to by the last speaker, which had been treated by electrolysis for some time without apparent effect. He then began treatment of the tumor by means of injections of iodine, the circulation in the surrounding vessels being cut off by finger pressure in order to avoid the chief cause of accident,—embolism,—and excellent results followed.

DR. RICHARD H. GIBBONS, Scranton, Pa., felt that this method would be of value in a great many inoperable cases of angioma, and suggested its use in fibroid and other tumors of the uterus.

DR. WYETH, in closing, stated that in all cases where surgical relief was possible, the knife should be employed. In regard to whether or not a thermometer could be attached to the syringe, he felt that the operation must be done too speedily to make this practicable.

FURTHER EXPERIENCE WITH THE VERTICAL OVERLAPPING OPERATION FOR THE RADICAL CURE OF UMBILICAL HERNIA,

was the title of a paper read by Dr. W. J. MAYO of Rochester, Minn., in which he called attention to the difficulty of performing this operation successfully in adults, owing to their frequently obese condition, the attenuated abdominal muscles and the fact that the recti muscles are about three-quarters of an inch apart in this region, which is further accentuated by the downward strain present in most cases. The author now advocated, in order to cover the defect, the overlapping from above downward of the aponeurotic structures, which would

secure a wide area of adhesion in place of an edge-to-edge union.

DR. A. J. OSCHNER, Chicago, referred to the fact that nearly every textbook on surgery gave for the radical cure of this condition a large mortality and a large percentage of recurrences. This he attributed to the fact that the operation was improperly done.

DR. J. B. MURPHY, Chicago, referred to the dangers from pulmonary edema when the lateral operation is done, because the sutures incapacitate the patient from diaphragmatic breathing; this is avoided by the method recommended by Dr. Mayo, and the opinion was expressed that with the employment of this method there would not only be a decrease in the mortality but a smaller percentage of recurrences.

DR. ALEX. HUGH FERGUSON, Chicago, while not recommending the abandonment of the lateral operation altogether, highly commended this mode of procedure. He thought that by cutting through the transverse fascia one could shorten the peritoneal muscles, and then stitching the sheaths of the muscular tissue one could make a good muscular union.

DR. MAYO, in closing, stated that the excess of peritoneal fat could be removed during the operation, as he had done on two occasions.

DR. W. T. ECKLEY, Chicago, Ill., read a paper entitled,

EVOLUTION OF THE MAMMALIAN STRAIGHT GUT, WITH SPECIAL REFERENCE TO PERITONEAL CHANGES INCIDENT TO ROTATION,

in which he emphasized the importance of a thorough knowledge of the embryonic arrangement, as well as the position in adult life, of the liver, stomach, spleen, pancreas, intestines and other abdominal organs, and he felt that the best way of teaching this subject was by various mechanical devices showing the different developmental stages and also by the study of the lower animals.

DR. WILLIS of California, in discussing this paper, urged upon the members the necessity for the more thorough training of the medical student in anatomy.

THE VALUE OF ENTEROSTOMY IN SELECTED CASES OF PERITONITIS,

was the title of a paper read by Dr. FRED. B. LUND, Boston, in which he referred to the very grave condition of diffuse peritonitis with intestinal paralysis complicating appendicitis, respiration perhaps being interfered with by mechanical obstruction, and the patient being in all probability too weak to stand a radical operation. In these cases he emphasized the value of enterostomy as a primary operation, and reported several cases in which it had been performed with good results. The fistula he closed by secondary operation under local anesthesia.

DR. M. B. TINKER, Baltimore, Md., stated that enterostomy had been used in selected cases in the Johns Hopkins Hospital for several years,

the chief objection to it being the fecal fistula, which it is difficult to keep clean, and the liability of excoriation of the skin. Enterostomy he believed to be preferable to colostomy, and in many cases, if properly done, secondary operation is not required. It is of great value in certain cases of intestinal perforation, either appendiceal or typhoidal, where the patient is in too weak a condition to stand extensive surgical procedures.

DR. JOHN B. THOMAS, Washington, D. C., felt that very little good would result from doing the enterostomy unless the cause of the peritonitis was relieved. He recommended that the radical operation be done first, and then, if necessary, an enterostomy.

DR. JAMES B. BULLIT, Louisville, Ky., recommended that enterostomy be used where the patient after the operation developed well-marked tympany, and also for the temporary relief of peritonitis prior to the operation.

DR. F. A. DUNSMOOR, Minneapolis, Minn., recommended the performance of enterostomy when indications seemed to demand it either prior or subsequent to operation, and in cases of perforation he felt that the intestines should be handled as little as possible, and that this operation, in conjunction with the washing out of the abdominal cavity with saline solution, would produce the best results.

DR. LUND, in closing, stated that he would rather close the fistulas than wait for nature to do the work, and that he believed most patients preferred this mode of procedure. He did not believe that the abdominal cavity should be washed out at the time of the primary operation, and if the patient was of easy access he would do nothing more than the enterostomy at that time.

DR. F. D. SMYTHE, Memphis, Tenn., read a paper entitled

CHOLECYSTECTOMY *vs.* CHOLECYSTORRHAPHY AND CHOLECYSTOSTOMY,

in which he stated that the life of the patient demands removal of the gall bladder in malignancy and gangrene, and while not absolutely necessary as a life-saving measure, it is the better procedure to remove it if the cystic duct is obliterated, or if it presents macroscopic evidences of disease, infection, thickening, etc.

THIRD DAY — MORNING SESSION.

SUNSHINE AND FRESH AIR *vs.* THE FINSSEN ULTRA-VIOLET RAYS AND THE ROENTGEN RAY IN TUBERCULOSIS OF THE JOINTS AND BONES,

was the title of a paper read by DR. DEFOREST WILLARD, Philadelphia, which he summarized as follows:

(1) Sunlight, fresh air and good food, together with fixation of the joint, are the most important agents in the contest with tubercular infection of the hard tissues.

(2) Direct exposure to the rays of the sun is

essential, and all hospitals should be provided with solaria or sun porches and roof gardens.

(3) Patients lying in bed should have the diseased joints exposed to the direct rays of the sun, their heads and eyes being protected by green glasses or shades. The joints may be covered with blue so as to secure easiest passage of the ultra-violet actinic rays, and local medications rich in iodine may be employed as desired.

(4) Tent life on the hospital grounds, or better, in the open pine forest, can be successfully employed through both summer and winter.

(5) Sanatoria should be instituted for tuberculosis of the hard tissues as well as of the soft.

(6) The concentration of the sun's rays by lenses, as suggested by Butler, Finsen and others, is of positive benefit in bactericidal power. As final curative agents, however, the direct sun's rays are more effective. The electric rays are valuable in the absence of sunshine.

(7) The Roentgen rays in the laboratory have an inhibitory power upon the tubercle bacillus, and may prove useful in restraining the growth of these micro-organisms in living tissues.

(8) The actinic rays and the x-rays are both apparently helpful in the fight with tuberculosis, but several years will be required to determine accurately their effect. They should be employed not to supersede but to antedate and to supplement operative procedures, and to assist the mechanical and general therapeutic measures employed.

DR. J. CLARK STEWART, Minneapolis, Minn., read a paper entitled

EPITHELIOMA UNDER THE X-RAY; A PRELIMINARY REPORT OF THE HISTOLOGICAL CHANGES,

in which he drew a careful comparison of the degenerative changes as reported by Ellis and the case which he had studied, which was the case of an epithelioma on the back of the hand of a Norwegian woman fifty-two years of age. Seven sections were removed at varying intervals during the treatment and showed the following degenerative changes: (1) Fatty degeneration; (2) vascular changes; (3) elastic tissue and granular cells; and (4) hyaline degeneration. He believed that the effect of the x-ray upon these conditions was due to a fatty degeneration rather than the degeneration of polynuclear leucocytes described by Ellis.

(To be continued.)

VICTIMS OF THE ALPS.—The "playground of Europe," as the Alpine region has been called, is annually the graveyard of many adventuresome tourists. This year the death roll has been even above the average, for already there have been recorded more than three hundred accidents, resulting in the death of one hundred and fifty visitors. The causes of this unprecedentedly large number of accidents, have been two—cold and stormy weather and the foolhardiness of attempting dangerous ascents without guides. — *Medical Record*.

THE BOSTON

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HYDROPHOBIA.

THE disease hydrophobia, though fortunately of rare occurrence, is so fatal in its outcome and so intimately associated in its genesis with matters of increasing pathological import that our interest in it is, and should be, continually revived. In the issue of the *Medical News* for Aug. 15, 1903, a large part of the number is taken up with articles from various writers on the general subject of hydrophobia, its literature, pathology, prophylaxis and prevention.

Dr. F. L. Taylor writes an interesting paper in which he discusses several of these points, drawing attention to the fact that the disease was originally described by Aristotle, by several men in the eighteenth century and in the beginning of the nineteenth century. In 1871 Galtier produced the disease in rabbits, and in 1880 Nocard and Paul Bert began laboratory investigations on the subject. Pasteur's revolutionary work, which is still bearing rich fruit, is universally known, and it is now generally recognized that the virus of the disease is found in the nervous system, salivary glands, the pancreas and in various other parts of the body. It is not found in the blood. Much work has of late been done upon the pathological anatomy of the conditions with apparently perfectly positive results regarding the nervous system. The names of Nélis and Babés in Paris and McCarthy and Ravenel in this country are well known in this connection. The alterations in nerve cells, particularly of the posterior dorsal root ganglia and other collections of cells, are now generally recognized as practically pathognomonic. Such changes, which have been described as the rabic tubercle, are pictured

in this JOURNAL in our issue of Feb. 6, 1902. The demonstration of these alterations, which has now been repeatedly made, is clearly of very great advantage in determining immediately the existence of hydrophobia, and naturally may be accomplished in a much briefer period than is necessary in inoculation experiments.

Dr. Taylor discusses prophylactic inoculations, and reaches the generally accepted conclusion that in spite of a few mishaps the very great value of this method of treatment is beyond question. Regarding serumtherapy he also thinks that there is much future promise that new light may soon be thrown upon this subject. A very considerable work has already been done, but the method up to this time has not been applied to the human subject. More work remains to be done before the method can be regarded as particularly useful, although its scientific possibilities are already evident.

Dr. W. B. Pritchard also contributes a short paper, which concerns itself chiefly with the symptoms and diagnosis of the disease. Dr. H. D. Gill, a veterinary surgeon of New York, in his paper, which was read before the Alumni Association of the Bellevue Medical College, after discussing the general subject, makes the following statements of the precautions to be observed to secure absolute public safety:

(1) To place the city dog handling under proper medical or veterinary jurisdiction; (2) to prohibit all dogs from running at large unless muzzled or, at least, muzzle all dogs in infected areas; (3) to provide separate compartments in the wagon and at the pound for each dog; (4) to provide safe and proper places for the keeping of dogs suspected of having rabies, especially if they have bitten other dogs or a person; (5) every dog bitten by a rabid animal should be destroyed or quarantined for at least one year.

Methods of preventing hydrophobia are discussed by Dr. Follen Cabot, in which he urges, after experimental study, that treatment of the wound is of very great value. He recognizes nitric acid and actual cautery, but has slight respect for nitrate of silver. Mere cleansing of the wound and scrubbing with soap and water he found had some effect. Dr. Cabot makes a strong plea to the profession to make a more thorough study of the subject and not to fail to act promptly in the preliminary treatment of the injury.

It would seem that hydrophobia might quickly be placed in the category of the absolutely preventable diseases, but in one sense this is far more difficult of accomplishment than in diseases like smallpox or diphtheria, which do not occur among the lower animals. So long as animals are kept

as pets, or for domestic or other uses, it is inevitable that a certain amount of hydrophobia will continue to exist. For this reason it is highly desirable that every precaution should be taken that instructions to the owners of such animals should be general and that when hydrophobia is actually discovered, the treatment should be radical and complete.

THE BRITISH MEDICAL ASSOCIATION.

ONE of the most important and far-reaching meetings among medical men is the annual meeting of the British Medical Association. This association gathers together a very large number of physicians each year, is apparently democratic in its organization and usually, in the various addresses which are delivered, voices the spirit of progress in medical matters throughout the world. This year the seventy-first annual meeting of the association was held at Swansea. Commenting on the meeting, the *Lancet* states that the attendance was not so large as usual, which it attributes in part to the remoteness of the place of meeting from any well-known university center. The cause of this year's visit to Swansea was the fact that it met there in 1853 and this year, therefore, commemorates the fiftieth anniversary.

Apparently the effect which Swansea produced upon the visiting members was not altogether enlivening, due in a measure to the unpropitious weather. The following is the description which the *Lancet* gives of the event:

First impressions of Swansea were not lively, but the courtesy and kindness of every one brightened those impressions. Those members of the Association who arrived at Swansea on July 27 approached the town through a thick, murky canopy of smoke rendered especially disagreeable by heavy rain. Despite the elements, however, the streets were encumbered with a multitude assembled to do honor to their countryman, the Welsh volunteer who had gained the King's Prize at Bisley and was returning to Swansea on that day. Visitors to Swansea had been warned not to expect anything beautiful in the place, and the narrow, monotonous streets, in which no trace of architectural ambition appears, looked their worst in the downpour.

It is an unfortunate fact, but none the less true, that the complete success of these yearly medical gatherings is dependent upon various purely external conditions. Pleasant weather and cheerful surroundings are quite enough to lead to the success of such gatherings, despite the fact that medical communications may not be of an exhilarating character. We have always maintained, therefore, and we think with justice, that it is desirable in selecting a place of meeting that va-

rious matters purely external to the supposed main issue should be considered. The *Lancet*, in spite of an attempt at enthusiasm, apparently does not regard this meeting of the British Medical Association as an absolutely complete success. This we suspect was due to the external conditions of which we have spoken and also to the somewhat unoriginal character of certain of the addresses, which were not altogether up to the high standard set in previous years by this association.

The address in medicine was delivered by Dr. Frederick T. Roberts, on the subject of "Infective and Infectious Diseases." In one of the opening paragraphs of this address he says:

It has always seemed to me desirable that the "Address in Medicine" at the annual meeting of the British Medical Association should be devoted to some particular subject of more or less general interest and not savoring, so far as can be possibly avoided, of the absurd, irrational and most mischievous "specialism" which is so rampant at the present day.

Inasmuch as many members of his audience must have been specialists, it is probable that this somewhat uncalled-for attack was received with coolness. It is always hard to say why specialism, which has arisen through a perfectly natural process of development, should be so viciously attacked by men in high standing in the profession. Such attacks, coming from such sources, can, however, have no other ultimate result than to bridge the gulf which certain men seem to delight in increasing. Certain things it is well to accept and make the best of, and one of these is specialism. This address in general is taken up with a detailed discussion of what has hitherto been accomplished in relation to infectious diseases and adds little new to the knowledge which we already have.

Dr. T. D. Griffiths delivered the president's address, on the somewhat threadbare subject of the "Evolution of Antiseptic Surgery." Here again the history, always edifying, of the development of modern surgical practice was detailed at great length.

A. W. Mayo Robeson, F.R.C.S., gave the address in surgery, consisting essentially of personal reminiscences and the experience gained from the performance of two thousand operations on the abdomen.

At the annual dinner, held also at Swansea, there was a large amount of after-dinner speaking. The toast of "Our Guests and Friends from Over the Sea" was responded to very briefly by Professor Senator of Berlin and Professor Adami

of Montreal. We note no name from the United States.

THE PATHOLOGY OF SMALLPOX.

IN the last number of the *Johns Hopkins Hospital Bulletin* Dr. William Royal Stokes offers an article on the pathology of smallpox based on a careful pathological study of five autopsies and sections and cultures from six non-fatal cases. Dr. Stokes discusses in very considerable detail, yet in concise fashion, the various lesions found in the internal organs and the microscopical appearances in patients dying of smallpox. As a succinct statement of these alterations, the article is of very considerable value, particularly since it is accompanied by a large series of half-tone plates. As already determined by other investigators, Stokes concludes that streptococcus infection is the most striking feature of fatal smallpox and that the course of this infection may be traced from the skin to the general circulation. In four of his fatal cases he found streptococci in the pustules and in the heart, liver, kidney, spleen, lymph glands, pancreas and lung.

We should have expected in any paper on smallpox, written at this time, a discussion, or at least a detailed mention, of Councilman's, Magrath's and Brinkerhoff's recent striking work on the subject. This we miss and, although the paper must be regarded as a certain addition to our general knowledge, it is hardly to be considered as a wholly modern view of the smallpox question, owing to the omission of the recent protozoa theories.

MEDICAL NOTES.

FRENCH CONGRESSES ON ALCOHOL AND TUBERCULOSIS.—It is announced that the First National Anti-Alcohol Congress is to be held from Oct. 26 to 29 in Paris. The attempt will be made to outline the present state of affairs regarding alcoholism and, in the second place, to plan out a comprehensive method of combating the evil. The French Congress to combat tuberculosis also meets on the same dates at the amphitheatre of the Faculty of Medicine in Paris.

RETIREMENT OF PROF. KARL SCHÖNBORN.—It is announced that Dr. Karl Schönborn is to resign his professorship at the University of Würzburg because of illness. His life has been a peculiarly active one, particularly at the time of the Franco-Prussian War, when he had charge of various clinics at Berlin, Langenbeck and Bardeleben, having left for the seat of war.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Aug. 26, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 35, scarlatina 17, typhoid fever 25, measles 14, smallpox 0.

THE ADULT BLIND.—At a recent meeting of the Executive Council, Governor Bates of Massachusetts made nominations for a new commission on the adult blind as follows: Dr. Edward M. Hartwell of Jamaica Plain, Miss Agnes Irwin of Cambridge and Alpheus H. Hardy, Esq., of Boston. This commission is appointed under a resolve of the last Legislature for the purpose of investigating the condition of the adult blind. The resolve provided that the commission should serve without compensation, but might employ such assistants as required and also be provided with funds necessary for traveling, etc. Its object is to investigate the condition of the adult blind within this Commonwealth, to consider means of amelioration and the possible expediency of an industrial training school or other institution, a report to be made to the General Court on or before Jan. 15, 1904.

NEW YORK.

ARREST OF BABY INCUBATOR EXHIBITOR.—A baby incubator exhibit having been established at Coney Island, the Society for the Prevention of Cruelty to Children recently caused the arrest of one of the proprietors on the charge of conducting a "baby farm." The case was brought to the Coney Island Court, and Dr. Martin A. Cooney, the inventor of the incubator, being called upon to testify, stated that in Buffalo the lives of fifty out of fifty-two infants had been saved by its means and that out of nineteen cared for thus far at Coney Island, but one had been lost. In order to enable the court to come to an intelligent decision in the matter, a committee, consisting of Dr. William Brennan, of the State Medical Board, the Superintendent of the State Charities Department and the President of the New York Board of Health, was appointed to investigate and express an expert opinion. As a result, the committee were so favorably impressed with the merits of the apparatus that they recommended that at the close of the exhibition at Coney Island the incubators should be purchased by the city, half of them to be sent to Bellevue Hospital and the others to the Kings County Hospital in Brooklyn.

PLANS FOR THE NEW WOMAN'S HOSPITAL. — The plans for the new Woman's Hospital to be erected in West 110th Street have just been filed with the Building Department. The hospital will be six stories in height, with basement and attic, and will have façades of granite, limestone and terra cotta. The main building will be 188 feet in length and 40 feet deep and there will be two wings, each 60 feet long and 40 feet deep. In the basement will be a pathological museum and a clinic for out-patients and the first floor will contain, besides the administration offices, a lecture hall and a chapel with a seating capacity of one hundred and fifty. The cost is estimated at \$610,000. The Woman's Hospital was founded by Marion Sims and its surgeons have always maintained it in the first rank of such institutions.

THE STONY WOLD SANITARIUM. — The Stony Wold Sanitarium at Lake Kushaqua, fifteen miles from Paul Smith's in the Adirondacks, was formally opened on Aug. 15 with addresses by Bishop Potter and Dr. E. L. Trudeau of Saranac Lake. Among the large assemblage present were a number of New York physicians who are especially interested in the subject of tuberculosis: Drs. James E. Newcomb, whose wife is president of the institution; H. M. Briggs; Alfred Meyer; Charles H. Knight; Charles M. Cauldwell and S. Knopf. The money for the establishment of Stony Wold, the movement for which was inaugurated as long ago as 1891, has been raised through the efforts of the ladies of New York. The institution is intended for women and young girls suffering from incipient tuberculosis. The expenditure thus far has amounted to more than \$150,000, and some \$30,000 is still needed to bring it to completion. One of the most attractive of the buildings is the Memorial Dormitory, costing \$38,000, of which \$20,000 was given by Henry Sigel. Probably the largest single donation to the sanitarium was one of \$25,000 by John D. Rockefeller.

LAWS FOR THE PROTECTION OF CHILDREN. — Several laws enacted at the last session of the Legislature for the better protection of children will go into effect on Sept. 1. One of these will meet a condition which has given rise to much complaint. In the past, children under sixteen were frequently held in station houses and places of detention over night and sometimes longer, to the prejudice of their health and morals. This new law provides that whenever a child under sixteen is arrested in any city of the first class for

the violation of a corporation ordinance or other minor offence, or for peddling newspapers without a license under the recent newsboys' license act, the police captain or sergeant before whom the child is brought may accept in lieu of bail the personal recognizance, in writing, without security, of a parent, guardian or lawful custodian of such child, to produce the child before the proper magistrate at the time required. By another act the general establishment of children's courts, which have proved beneficent in the larger cities, is made obligatory, the new law requiring that all cases involving the commitment or trial of children actually or apparently under the age of sixteen shall be heard and determined apart from a trial of other criminal cases. A separate docket and record shall be kept and, so far as practicable, a separate room used, to be known as the "children's court."

Miscellany.

CHOLERA IN THE PHILIPPINES.

CHOLERA showed an increase a few weeks ago in the number of cases reported from the provinces to the Manila Board of Health and nearly all the large islands still have foci of infection. Several sharp little outbreaks have occurred, particularly in the southern islands. Thus at Panay, on the island of Panay, 47 cases with 29 deaths were reported as occurring in one day lately. The infection on this island has been very persistent and Panay shows a much higher mortality than any other island in proportion to its population. Cholera exists in the most northern and most southern provinces of Luzon, and a considerable number of cases are occurring in a few badly infected villages. In the provinces near Manila, sporadic cases crop up every now and then. Cholera has occurred on a number of boats returning to Manila from provincial ports, but these have been held up and the vessels sent to the Mariveles quarantine. Manila has been free from cholera for more than two months, but twelve cases having occurred since the beginning of the year. Four cases developed lately on the waterfront, however, in which the disease could not be traced to any outside source, and there is no reason why Manila, like some of the provincial cities, should not have a few foci of infection still existing and ready to light up another outbreak with the onset of the rains. There is also a strong probability that foodstuffs brought in from the surrounding country are occasionally infected and this matter of infection of a food supply is much more difficult to handle here than it would be in the United States. There is no way of confining the population to the use of foods which are known not to be infected, as nearly all the articles of food eaten by the Fili-

pino are used fresh, there are practically no facilities for cold storage and tinned articles of food are too costly to ever become even an important article of diet with the native. "Living from the can" was a resource for the foreigners here which undoubtedly saved many lives in the past year; but it was financially beyond the power of the poorer natives to take advantage of this means of protection. Much rice, fruit, eggs, vegetables, etc., are imported from the Asian mainland, but the ports of departure have been infected and the delay due to necessary quarantine caused all perishable articles to spoil. It was by such imported foods that the original infection gained entrance to the islands. Under the circumstances, and appreciating that the poorer Filipino in Manila does not keep a day's supply of food ahead, it is necessary in practice to modify rules which, in theory, should be strictly applied. The only thing to do is to interdict the sale of certain of the more dangerous food-stuffs and try and educate the natives into using only foods which are fresh and have been thoroughly cooked. This apparently simple task is really most difficult, for it goes against the local customs which have come down from time immemorial; while the native objects to any interference with his habits and customs, and present political conditions require that he shall be handled with tact and diplomacy. Up to date the official reports on the cholera epidemic received by the health authorities show a total of 131,846 cases and 83,300 deaths for the archipelago, giving a mortality of 63%. The first two figures are undoubtedly much too low, as many cases have never been reported; the mortality rate is somewhat too high, as it is based chiefly on the more severe cases, which are most liable to come under official notice. Probably the total number of cases so far should be placed at about 250,000 and the deaths in the neighborhood of 150,000, giving a mortality of about 60%. So far, there have been 4,681 reported cases, with 3,472 deaths, in the city of Manila. In the island of Luzon, the town of Aparri, on the north coast, is reported as being badly infected, with 19 cases and 15 deaths reported for one day alone. The municipal authorities have been denying the presence of the disease and the condition has finally been determined by special inspector sent from Manila. In the meantime no steps were taken to prevent the disease, and the latter has taken advantage of the opportunity to spread to several neighboring villages. The military authorities in the vicinity had early recognized the presence of the disease and promptly took steps which have prevented the troops from becoming infected. As soon as the presence of cholera in Aparri was officially stated, a number of towns quarantined against that city and vigorous repressive measures were instituted. Unfortunately, a number of the natives, learning of the presence of the inspector and appreciating that cholera did exist, promptly scattered among the provincial towns to avoid the quarantine which they felt sure would be instituted.

Correspondence.

ADVANTAGES OF SMALL DOSES OF OPIUM.

Boston, Aug. 20, 1903.

MR. EDITOR: The object of this communication is to assert the benefits to be derived from moderate and even small doses of opium, in certain cases. To quiet pain and to procure sleep mean also to rest the nervous system and to strengthen the whole body. It is well known that small doses of opium are stimulating and large doses narcotic. I believe that moderate doses possess both these properties.

Chronic disease is usually organic. Organic disease is incurable. But peace and life may be conserved by moderate doses of opium—I mean by not exceeding one grain of opium in twenty-four hours and often by half a grain of opium. This may be considered equivalent to one sixth of a grain of morphia or to one twelfth of a grain of morphia respectively. But the effects of opium and morphia are different. Crude opium (the gum) in suppository, by the rectum, is one of the best forms. When given by the mouth, a preparation called *Liquor Opii Compositus*, made by Squibb, has been used by me a long while, with unvarying effect. Seventeen drops of this fluid contain one grain of opium. By suppository, one half a grain of crude opium is often sufficient.

Finding a case of cancer of the rectum, high up, in a middle aged female, I began with one half a grain of opium in the rectum daily. This was enough for several months; the patient lived about fourteen months and the amount of opium was very slowly increased, but was never large. Now if one had begun with the common remedy of one quarter of a grain of morphia and a little extract of belladonna, as is often done, the increase to one third, one half, one whole grain of morphia would have followed and with some bad results. Begin low down, as little as will palliate. Increase with reluctance; one half a grain of opium by rectum, each twenty-four hours, has now been in use six years, by a patient with colitis, mal-assimilation and two to four painful stools each morning.

Five drops of Squibb's *Liquor Opii Compositus*, in a delicate female, will sometimes suffice to quiet moderate neuralgia and procure a nap; ten drops is a tolerably narcotic dose and lasts all night; fifteen drops will be needed for colic, if severe. Meanwhile the use of the solid extract of valerian will help nervous wakefulness and the restlessness of afternoon hectic, and when this fails, bromide of sodium will suffice, but its after-effects are depressing. Opium is not depressing, and when used habitually, in moderate doses, is not constipating.

Assafetida is a very valuable adjunct; it is quieting, supporting and stimulating. Now we shall surely find that the piling up of doses of morphia is disappointing. Especially in promoting euthanasia, morphia in moderate dose does all it can do; in larger and larger doses it absolutely fails. In such distressing and fatal conditions, chloral may be tried with success, but chloroform, by inhalation, should be allowed, provided the friends understand and wish it and the patient longs for unconsciousness. Bear in mind, when the breathing is shallow, that death from chloroform may follow.

Truly yours,

DAVID W. CHEEVER.

APPENDICITIS IN A PATIENT WITH TRANSPOSED ORGANS.

211 STATE STREET, PORTLAND ME.,
Aug. 21, 1903.

MR. EDITOR: Maggie L. came into my service June 11, 1903.

Examination showed general septic peritonitis, probably appendiceal in origin. The apex beat was found in the right chest one inch to the right of and on a level with the right nipple. Incisions in the abdominal wall showed a complete transposition of all the abdominal organs. The appendix, surrounded by a large abscess, was found on the left side, the rectum being in the normal position of the appendix. Postmortem examination confirmed the previous findings. I was unable to obtain permission for a complete autopsy.

Truly yours,

JOHN F. THOMPSON, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 15, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,255 | 516 | 37.85 | 6.76 | 2.07 | 21.27 | 3.95 | |
| Chicago . . . | 1,885,000 | 483 | 177 | 42.02 | 5.17 | .83 | 25.00 | 1.60 | |
| Philadelphia . . | 1,378,527 | 426 | 142 | 34.64 | 4.69 | 1.17 | 1.40 | 3.28 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 190 | 87 | 34.79 | 1.58 | 1.05 | 20.00 | 3.16 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 151 | 55 | 37.74 | 5.96 | 1.98 | 11.86 | 4.63 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 73 | 29 | 42.47 | 5.26 | — | 30.14 | — | |
| Boston . . . | 603,163 | 207 | 69 | 25.60 | 4.83 | 1.93 | 12.07 | 2.41 | |
| Worcester . . . | 132,044 | 36 | 12 | 27.78 | 2.78 | — | 19.44 | — | |
| Fall River . . . | 115,549 | 38 | 18 | 60.51 | 7.89 | — | 42.09 | 7.89 | |
| Lowell . . . | 101,959 | 51 | 33 | 43.12 | 1.96 | 1.96 | 1.16 | — | |
| Cambridge . . . | 98,639 | 27 | 10 | 33.33 | — | — | 7.40 | — | |
| Lynn . . . | 73,497 | 18 | 6 | 5.55 | — | — | — | — | |
| Lawrence . . . | 69,766 | 18 | 11 | 55.55 | — | — | 50.00 | — | |
| Springfield . . | 69,389 | 19 | 8 | 36.84 | — | — | 26.31 | — | |
| Somerville . . . | 68,110 | 16 | 7 | 25.00 | — | 6.25 | 6.25 | — | |
| New Bedford . . | 67,198 | 39 | 22 | 43.69 | 5.12 | 2.56 | 35.89 | — | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brookton . . . | 44,873 | 8 | 4 | 12.50 | — | — | — | — | |
| Haverhill . . . | 42,104 | 14 | 6 | 57.12 | — | — | 28.56 | — | |
| Newton . . . | 37,794 | 7 | 2 | — | — | — | — | — | |
| Salem . . . | 36,876 | 15 | 10 | 40.00 | — | — | 40.00 | — | |
| Malden . . . | 36,286 | 11 | 4 | 36.36 | — | — | 18.18 | — | |
| Chelsea . . . | 35,876 | 10 | 4 | 10.00 | — | — | — | — | |
| Fitchburg . . . | 35,069 | 7 | 4 | 14.30 | — | — | — | — | |
| Taunton . . . | 33,656 | 11 | 5 | 18.18 | 18.18 | — | 9.09 | — | |
| Everett . . . | 28,620 | — | — | — | — | — | — | — | |
| North Adams . . | 27,862 | 12 | 6 | 33.33 | — | — | 8.33 | — | |
| GloUCESTER . . . | 26,121 | 6 | 2 | 50.00 | — | 16.67 | 16.67 | — | |
| Quincy . . . | 26,042 | 11 | 4 | 27.27 | — | — | 9.09 | — | |
| Waltham . . . | 25,198 | 5 | 1 | — | — | — | — | — | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . . | 22,589 | 4 | 1 | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 9 | 8 | 44.44 | — | — | 44.44 | — | |
| Medford . . . | 20,962 | 2 | 1 | — | — | — | — | — | |
| Northampton . . | 19,883 | 5 | 0 | 20.00 | — | — | — | — | |
| Beverly . . . | 15,302 | — | — | — | — | — | — | — | |
| Clinton . . . | 15,161 | 5 | 2 | 20.00 | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 4 | 2 | 25.00 | — | — | 25.00 | — | |
| Woburn . . . | 14,300 | 6 | 6 | 83.33 | — | — | 66.67 | — | |
| Hyde Park . . . | 14,175 | 3 | 1 | 66.67 | — | — | 33.33 | — | |
| Adams . . . | 13,745 | 5 | 2 | 40.00 | — | — | 40.00 | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 4 | 1 | 50.00 | — | — | 25.00 | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 9 | 5 | 22.22 | 11.11 | 11.11 | 11.11 | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 1 | — | — | — | — | — | — | |
| Frammingham . . | 12,534 | 2 | 1 | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 1 | 1 | 100.00 | — | — | 100.00 | — | |
| Weymouth . . . | 11,344 | 3 | 0 | — | 33.33 | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 7 | 2 | 28.60 | — | — | 28.60 | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,234; under five years of age, 1,288; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,115, acute lung diseases 189, consumption 338, scarlet fever 16, whooping cough 36, cerebrospinal meningitis 10, smallpox 19, erysipelas 6, measles 12, typhoid fever 55, diarrheal diseases 606, diphtheria and croup 49.

From whooping cough, New York 8, Chicago 9, Philadelphia 8, Baltimore 3, Pittsburg 4, and Cambridge, Fitchburg, North Adams and Woburn 1 each. From erysipelas, Philadelphia 1, Pittsburg 2, Boston 3. From smallpox, Philadelphia 7, Pittsburg 12. From scarlet fever, New York 2, Chicago 2, Philadelphia 6, Baltimore 1, Pittsburg 3, New Bedford 1, North Adams, 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Aug. 1, the death-rate was 14.4. Deaths reported, 4,158; acute diseases of the respiratory organs (London) 110, whooping cough 49, diphtheria 51, measles 84, smallpox 5, scarlet fever 43.

The death-rate ranged from 3.3 in Hornsey to 25.9 in Warrington; London 13.5, West Ham 11.7, Brighton 15.0, Portsmouth 15.5, Southampton 16.6, Plymouth 6.5, Bristol 10.9, Birmingham 12.5, Leicester 13.3, Nottingham 15.9, Bolton 17.1, Manchester 17.7, Salford 15.2, Bradford 15.5, Leeds 16.6, Hull 16.3, Newcastle-on-Tyne 18.3, Cardiff 11.5, Rhondda 17.4, Liverpool 21.2, Tottenham 7.6, Great Yarmouth 20.1.

METEOROLOGICAL RECORD.

For the week ending Aug. 15, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|-----------|-----------------|-------------------|----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|--------------|-----------|---------------------|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | |
| S . . . 9 | 29.92 | 58 | 61 | 55 | 83 | 97 | 90 | S | E | 5 | 3 | O. | .01 |
| M . 10 | 29.96 | 70 | 79 | 60 | 80 | 67 | 74 | N W | W | 4 | 8 | C. | O. |
| T . 11 | 29.91 | 69 | 78 | 60 | 61 | 88 | 74 | W | S | 2 | 9 | F. | O. |
| W . 12 | 29.88 | 69 | 77 | 61 | 83 | 61 | 72 | W | W | 7 | 11 | C. | O. |
| T . 13 | 30.08 | 64 | 72 | 56 | 58 | 61 | 60 | N W | N W | 12 | 7 | C. | O. |
| F . 14 | 30.10 | 66 | 77 | 56 | 72 | 58 | 65 | W | N W | 7 | 3 | C. | O. |
| S . 15 | 30.09 | 68 | 77 | 58 | 60 | 66 | 63 | N W | S E | 10 | 5 | C. | O. |
| Mean | 29.99 | | 74 | 58 | | | 71 | | | | | | .01 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. — Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING AUG. 22, 1903.

A. G. GRUNWELL and W. H. BUCHER, surgeons. Appointed surgeons from June 20, 1903.

J. C. THOMPSON, passed assistant surgeon. Commissioned as such Aug. 10, 1903.

F. W. F. WIEBER, surgeon. Ordered to the "Prairie" Aug. 21.

R. E. RIGGS, assistant surgeon. Detached from the Naval Hospital, Philadelphia, and ordered to the Navy Yard, Washington, D. C.

H. L. BROWN, assistant surgeon. Detached from the Navy Yard, Washington, D. C., and ordered to the Naval Hospital, Philadelphia, Pa.

H. G. BEYER, surgeon. Detached from the "Prairie" and ordered to duty as member of a Board on Barracks.

A. D. MCLEAN, assistant surgeon. Ordered to the "Wabash," Boston, Mass.

S. L. SCOTT, assistant surgeon. Ordered to the Naval Hospital, Chelsea, Mass.

J. A. RANDALL, assistant surgeon. Ordered to the Naval Hospital, Norfolk, Va.

F. G. ABEKEN, assistant surgeon. Ordered to the Naval Hospital, New York.

APPOINTMENTS.

DR. CHARLES H. HOLMES of New York has been appointed junior physician at the Manhattan State Hospital for the Insane on Blackwell's Island.

The following changes have taken place in the Faculty of the Tufts College Medical School: E. M. Plummer, M.D., has been elected Professor of Otolaryngology in the place of F. L. Jack, resigned; James S. Howe, M.D., Professor of Dermatology; George W. Kaan, M.D., Professor of Clinical Gynecology; John L. Ames, M.D., assistant Professor of Clinical Medicine; Gardner W. Allen, M.D., assistant Professor of Genito-Urinary Surgery; and Charles F. Painter, M.D., assistant Professor of Orthopedic Surgery.

SOCIETY NOTICES.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION. — The thirteenth annual convention will be held at the Hotel Windsor, Atlantic City, N. J., on Sept. 22, 23 and 24, 1903.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. — The American Association of Obstetricians and Gynecologists will hold its sixteenth annual meeting in the Northwestern University Medical School Building, Chicago, Ill., Sept. 22, 23 and 24, 1903, under the presidency of Dr. Lehman H. Dunning of Indianapolis.

MEDICAL SOCIETY OF THE MISSOURI VALLEY. — The annual meeting of this society will be held in Omaha, Sept. 14, 15, instead of 17, as previously announced.

RECENT DEATH.

Mr. Herman D. Osgood, who is said to have been the first to use nitrous oxide gas in dental operations, died Aug. 22, at Concord, Mass.

Original Articles.

THE RESISTANCE OF TISSUES AS A FACTOR IN THE MANUAL REDUCTION OF CONGENITAL HIP DISLOCATION.

BY E. H. BRADFORD, M.D., BOSTON.

It is now universally admitted that the chief obstacle in the reduction of a congenitally dislocated hip lies in the soft parts rather than the bone, and it is manifestly of practical interest to determine which tissues offer the greatest resistance.

It has been a matter of discussion whether the greatest difficulty is encountered in overcoming the altered capsule or from certain shortened muscles. Reasoning from analogy, from normal anatomy and the strength of the capsule and ligaments of the hip, many writers, myself among them, have believed that these rather than the muscles were of the greatest importance in maintaining the dislocated position in a congenitally dislocated hip, as the capsule and ligaments offer the chief obstacle to a dislocation in a normal hip.

The writer has been led to give up the opinion that in the capsular resistance the chief obstacle to reduction is to be found, by his recent experience in operating by incision in certain resistant cases, from which it has been clear that even after all capsular contraction has been removed and the capsule entirely freed from any connection with the neck of the femur, the lesser trochanter or the shaft within a half an inch below the lesser trochanter, a formidable obstacle often remains to elongating the limb to its normal length or to placing the head of the femur sufficiently below the acetabulum. If this obstacle does not lie in the capsule it must be found in the muscles; and if in the muscles, it appears to be beyond the limit of skill by manual manipulative reduction where failure or disaster have followed manual reduction. Following this line of reasoning, the question presents itself as to the practicability of using a more thorough division of the muscles as an aid to reduction than has hitherto been employed.

Tenotomy and myotomy have been tried in the reduction of congenital dislocation of the hip by a few surgeons, but the method has not received general acceptance, perhaps because the attention of the surgical world has been turned to other methods, and perhaps also to a degree because the precise usefulness of the method has not been carefully studied. Tenotomy alone will not cure clubfoot. It is only within a century that its general use was advocated. At one time, however, tenotomy was regarded as the only important factor in the correction of clubfoot by surgeons, and relapse was the usual result. It is certainly true that myotomy and tenotomy of the muscles around the hip in congenital dislocation are of no benefit unless used in connection with careful manipulation. Now, however, that the manipulative method has been carefully studied and is of approved efficiency, may we not also take advantage of tenotomy as an aid? The

objections which have been urged against the use of the knife in congenital correction of deformity are the danger of sepsis, that extensive excision would be needed which would lead to cicatrization and also that it is an unnecessary procedure. Are these objections valid? The subject is one in which anatomical investigation can be made with advantage.

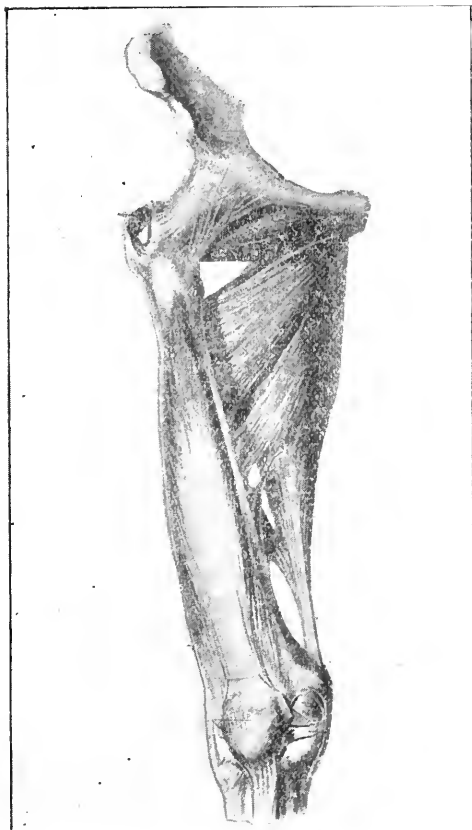
Through the courtesy of Professor Dwight, the anatomical opportunities of the Harvard Medical School were placed at my disposal, and an adult dissecting room cadaver was examined by Professor Dwight and myself to discover the possibility, with moderate force, of lengthening the limb by traction. It was found that where the capsule of the hip joint was freely incised a slight amount of lengthening of the limb could be gained by traction. When the long adductor and hamstring muscles were divided and the fascia lata cut, the limb could easily be lengthened two inches more.

The largest group of the muscles to be considered is the adductors. The glutei have been shown by Hoffa and Lorenz not to be a factor in the problem of congenital dislocation of the hip. The quadriceps extensor, with the exception of the reflected head of the rectus, is a femoral muscle and the reflected head and the psoas iliacus are useful in flexion of the thigh and are of but little importance in the problem to be considered. The adductor and hamstring group are manifestly the most important in their resistance to an abducting and a traction force.

If the muscles of the adductor group are examined it will be found that the structure of the several muscles differs with their situation and probably with their function. The adductor longus, which is the most prominent superficially, is a long-fibered muscle, a companion to the gracilis, and stretched without the exercise of great force. Its attachment to the symphysis is superficial and easily divided by a knife. This muscle presents but relatively slight obstacle to forcible correction either in abduction or downward traction. The adductor brevis, a shorter and thicker muscle, is, as is the medius, attached to the upper part of the femur and serves partly like the quadratus lumborum, the pyramidalis and gemelli, to hold the head of the femur well into the acetabulum. These muscles are not firmly fibered and with comparatively few intramuscular septa. They are beyond the reach of the knife in any practical surgical procedure short of amputation. Their resistance would be to extreme abduction and but little to a downward pull.

The adductor magnus, the largest and strongest muscle of the group, has a double function at its upper attachment to the femur. It acts purely as an abductor and its fan-like insertion along the middle of the femur to the junction of the middle and lower third makes it, with its fan-like intra-muscular septa, its toughness, its broad and strong origin, the most powerful of the whole group. The greater part of the muscle is of fleshy fiber, but the long inner edges and the

lower fibers are grouped into a strong tendon, which passes over and to the inside of Hunter's canal and is inserted into the tubercle of the adductor magnus above the internal condyle. If this tendon is examined it will be seen that it is one of the strongest tendons of the body. From its position and strength it is clear that it offers the strongest resistance both to downward pull and to abducting force. If this is overcome comparatively little resistance will be offered by the other muscles, and unless this is overcome but little will be gained in resistant cases either in elongating the limb or in increasing the arc of its abduction. It would appear, therefore, that if the long tendon of the adductor magnus were divided at its insertion at the lower end of the femur (a simple and harmless procedure) one important obstacle to diminishing the resistance in correction could be removed. After this correction, force in resistant cases in the direction of abduction is much easier and resistance to a downward pull much diminished.



The hamstring group presents a formidable resistance to a downward pull. The muscles are strong, with long tendinous insertion. They can be relaxed, however, in manipulative correction by flexing the leg, and can be easily divided by tenotomy. The long insertion of the tensor vaginæ femoris or the ilio-tibial ligament presents a formidable obstacle to downward traction. If, however, the limb is abducted, the resistance of

the tissue to the success of manipulative correction is slight. The ligament is superficial and can be as easily divided by a tenotome as the planta fascia.

It would appear, therefore, that the chief muscular obstacle in manipulative reduction lies in the long tendon of the adductor and in the hamstring tendons. It of course does not follow that division of these muscles is necessary or advisable in all cases or if done will make the manipulative correction easy, but it follows that this procedure, not a difficult one, will, in the resistant cases, diminish the resistance with no increase in the danger.

The following observations were made at the dissecting room of the Harvard Medical School by Dr. L. T. Wilson, and illustrate the effect of division of the adductor magnus and other tendons on the resistance of a limb to direct traction :

A full-term fetus, twenty inches long and weighing nine and three-quarters pounds, was placed on its back and its pelvis fastened immovably to the table. A traction dynamometer was fastened to the right ankle. A pin was driven into the right anterior spine and another into the right exterior tuberosity of the femur. Slight traction was made to straighten the leg and the distance between the pins measured (*A*). A traction of 30 kilograms was made and the distance measured showing an increase over *A* of one-eighth of an inch. The capsule of the hip-joint was then divided and traction of 30 kilograms made, showing an increase over *A* of one-half an inch. Tenotomy of the adductor magnus tendon, with an increase over *A* of one inch. The tensor vaginæ femoris was then cut, with an increase over *A* of one and one-eighth inches. The hamstrings were cut, with an increase over *A* of one and one-half inches. A traction of 30 kilograms was used each time. Traction was then made to see how far the femur could be drawn down, and at 40 kilograms the epiphyses at the knee gave way. Confirmatory tests on the other leg gave similar results.

An adult male cadaver was taken and the upper half of the body removed at the level of the iliac crests. The pelvis was then fastened immovably to the table and to a heavy post. A dynamometer was fastened around the right ankle and a tackle fastened to this and to a heavy post. A nail was driven into the anterior superior spine and another into the external tuberosity of the femur. Traction of 175 kilograms was made and the distance between the nails measured (*A*). The capsule was then cut (see later remarks) and traction of 175 kilograms made, showing an increase over *A* of one-half an inch. The tendon of the adductor magnus was tenotomized and traction made, with an increase over *A* of three-quarters of an inch. The hamstrings were cut and tension made, with an increase over *A* of three-quarters of an inch. The fascia lata was then cut and tension made, with an increase over *A* of seven-eighths of an inch.

These results being far from what was expected from Experiment I, investigation was made and

the capsule found not to be divided in many places, especially the back. This was fully cut and tension of 175 kilograms made and an increase over A found to be one and one-half inches.

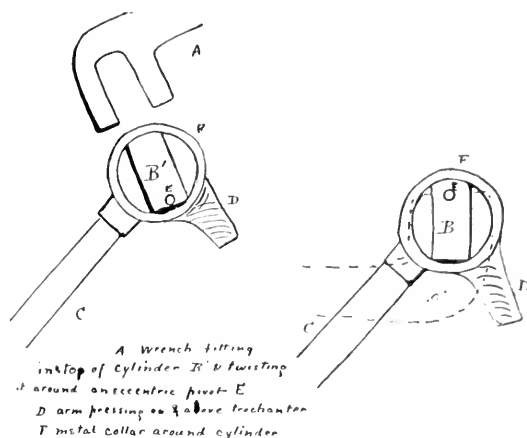
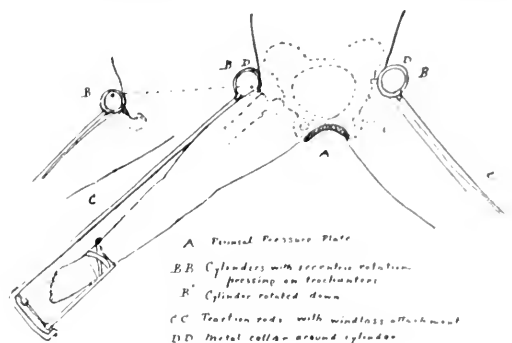
A second hip was treated in the same manner with the following results: A traction of 150 kilograms was used. Measurement of A taken. Increase over A with the capsule thoroughly divided, one-half an inch. Increase over A with the capsule thoroughly divided and a tenotomy of the adductor magnus, three-quarters of an inch. Increase over A with the capsule cut and a tenotomy of the adductor magnus and tenotomy of the hamstring, three-quarters of an inch. Increase over A with the capsule divided and tenotomy of the adductor magnus, hamstrings and fascia lata, three-quarters of an inch. This case, however, was an old dissecting-room subject which had had the skin removed, and the muscles were fairly hard and dry.

Nothing could be more simple than the method of Lorenz in correcting the deformity in a young child, but in the more resistant cases the amount of force necessary brings the operator face to face with the danger either of using too great force and causing an unnecessary injury, or too little force and failing to effect reduction. Fractures of the femur may occur with injury to the soft tissues, due in part to the difficulty of regulating the amount of force used. There is difficulty on the part of the operator in securing the pelvis under his control, as both of his hands are occupied in the manipulation of the leg; the pelvis is left to an assistant. It is impossible that there should be complete harmony of muscular effort, and either too great or too little force may be used, — too great fracturing or bruising tissues unduly, or too little not overcoming the chief resistance, which appears to be the lower tendinous insertion of the adductor magnus. To stretch this muscle efficiently it is necessary that the pelvis be held securely; that there be traction force combined with an abducting force. If this force is arranged in such a way that the trochanter is pressed upon an immovable fulcrum and the limb is sufficiently pulled at the same time it is abducted there must be slight danger of fracture of the femur by crowding the head into the pelvis or resistant tissue. The resistance of the adductor magnus may be assumed to be less than the strength of the shaft of the bone. The adductor magnus protects from motion injurious to the soft tissues and these vessels and nerves cannot be injured until this tendon is stretched, torn or divided.

It is essential that the mechanical force employed should be directly under the control of the operator.

The necessary requirements are met with success in an apparatus devised by Mr. Bartlett of Boston, after careful investigation of the subject and observation of cases and pathological specimens at the Children's Hospital and Harvard Medical School. A full description of the device will be published later, but a less detailed account may be of interest. It consists of two metal cylindrical posts adjustable on a stand to press

upon the pelvis above the trochanters. On these metal cylinders metal collars fit, to which a strong steel rod is secured with a windlass traction attachment. A rawhide strip hitched with a clove hitch to the padded ankle of the patient provides for traction to any desired extent, counter pressure being furnished by a metal perineal post. The traction rods are secured to the metal collar, which plays about the cylindrical post. Abduction and adduction, flexion and hyperextension combined with a pull are provided for.



The cylindrical post acts as a fulcrum to the abducting force of the rod, but as the center of this motion is outside of the position of the femoral head, abduction alone will act as a force which will bring the head of the femur from above the acetabulum to its level, if sufficient additional force is applied to stretch the hamstrings and adductors. To secure direct pressure upon the capsule and any contracted fibers which prevent the descent of the femoral head, a superimposed cylinder is placed upon the trochanter cylinder and on this a metal collar is fitted with a handle on one side and an arm on the other, fitted so as to press above the trochanter above and below the femoral neck. If this arm, while the limb is being stretched and abducted and the head pulled away from the ilium, can be forced down, the femoral neck and head will be pressed before it, provided the arm is fitted snugly around the neck and slipping is prevented. This is prevented by a cam motion of the superimposed cylinder, which is worked by a wrench. The surgeon holds the

handle which directs the pressure on the trochanter, and at the same time moves the wrench, forcing the cylinder to revolve, exerting a downward pressure of any required force and with adjustable accuracy. Under this force there is no danger of a fracture of the femoral neck or head, as they are free from resisting pressure. The tissues which will be torn are the shortest tissues alone, which can be torn without danger.

The objection to this appliance is the objection of every surgeon to all mechanical aids. Few surgeons have mechanical ability or training and they prefer their unaided hands, armed if necessary with a scalpel. This objection, however, is not of great value. The reduction of resistant dislocation of the hip is the work of a specialist and the specialist should train himself in the most effective methods.

In order to test the efficiency of the Bartlett machine, experiments were made on an adult cadaver, for if the resistance of the tissues and capsule could be so far overcome as to produce a downward dislocation of the hip in an adult cadaver, it is to be presumed that its efficiency could be relied upon in the congenital dislocation of a hip of a child. The following is the result of an experiment conducted by Dr. Wilson, Mr. Bartlett and myself at the Harvard Medical School:

An adult male cadaver was placed in the apparatus. The ankle of the right limb was secured to the traction rod and a dynamometer was attached to register the amount of force employed. When a traction force of 160 kilograms was applied the limb was abducted to an angle of 50 degrees with the long axis of the body, and the dynamometer registered a pull upon the femur of 220 kilograms. No dislocation of the femoral head was developed. The cylindrical post was then turned by means of a wrench on its eccentric and the downward pressure upon the neck of the femur exerted, with the result of a dislocation of the head of the femur one inch below the acetabulum. The experiment was repeated upon the other femur of the cadaver with a similar result. The amount of force required was not carefully registered by the dynamometer, as in applying the force to the upper eccentric the amount of abduction of the limb was lessened, thereby lowering the traction force and the force registered upon the dynamometer remained as before 220 kilograms.

From this it would appear that no mechanical obstacle exists to forcing the femoral head downward from its fixed position by the use of force within surgical limits. Experience with osteoclasis has demonstrated that a pressure of much over 250 kilograms is borne by tissues without injury. A traction force and an abducting force combined with a downward force upon the head of the strongly abducted femur appears to present an economy of effort.

As a complement to these experimental investigations, the principles here presented have been utilized practically at the Boston Children's Hospital in cases of congenital dislocation of the hip under treatment for the last four months.

The method of manipulative reduction with the aid of tenotomy of the adductor magnus tendon has been performed at the Children's Hospital in three cases. These cases were not of the most resistant type, but the aid given to the manipulation, making the correction much easier, was apparent.

Correction by the aid of mechanical force by the Bartlett machine without tenotomy has been done in a child of nine and in a child of six, fairly resistant cases, with success and much less effort than would be necessary by manual force. A combination of mechanical force and tenotomy was employed with great success in a child of thirteen, the reduction being made with great ease. This method has been tried in two younger children with success, but as the Lorenz method is simple and efficient in the younger cases, mechanical force is unnecessary.

The facts which are here presented for consideration may be summarized as follows:

- (1) The resistance offered by the capsule to the correction of congenitally dislocated hips is not more important than that offered by the muscles.
- (2) The chief resistance to forcible abduction is from the strong tendon of the adductor magnus.
- (3) The resistance to pulling down the head comes from the hamstring group and the long tendon of the adductor magnus and ilio-tibial band.
- (4) These resistant tissues can be overcome by small incisions at a distance from the hip.
- (5) In the lighter cases manual manipulative reduction is sufficient.
- (6) In resistant cases, mechanical force which pulls upon and abducts the limb, arranged so as to also directly act upon the capsule, is of assistance.
- (7) Where the tendon of the adductor magnus is so strong that an immoderate amount of force is needed in stretching, it would seem advisable to divide the chief resisting tissues rather than to incur the danger of severely bruising the tissues by the force used. The division of the tendon can be done either before the operation of forcible correction or at the same time.

PRIVILEGED MEDICAL COMMUNICATIONS.

BY DAVID W. CHEEVER, M.D., BOSTON.

In a court of justice a communication is called privileged if the witness may legally refuse to divulge it; or where he may be protected or sustained by the court, if he declines to answer. Such are the statements or revelations of a prisoner to his legal counsel. A privileged medical communication would be one made by a patient to his physician.

The Roman law protected the physician. And among Latin countries France made it a penal offence for the physician to disclose the confidence of his patient. But the English common law, so

lenient to the accused in most respects, assumes another position in regard to medical witnesses and obliges them to answer, or be held in contempt of court and subject to imprisonment.

"The highest legal authorities in England have decided that medical men enjoy no special privilege with regard to secrets of a professional nature. In other words, no practitioner can claim exemption from answering a question because the answer may or would involve a violation of secrecy, or even implicate the character of his patient."¹

The law of Massachusetts follows the English law. To quote an authority: "Neither is protection extended to medical persons in regard to information they have acquired confidentially by attending in their professional characters."²

Again: "By the common law of Massachusetts the physician is obliged to state publicly, on the witness stand, whatever may have been told him by his patient, even although involving character or family secrets."

Every New England state has the same law; so, also, Alabama, Delaware, Florida, Georgia, Mississippi, North Carolina, New Jersey, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia.

New York, however, follows the Latin precedent and goes even farther, as follows: "No person duly authorized to practice physic and surgery shall be allowed to disclose any information which he acquired in attending a patient in a professional capacity and which was necessary to enable him to act in that capacity."

A similar law governs priests and attorneys. The New York law was subsequently amended so as to allow a physician to testify, in cases of wills, as to the mental or physical condition of the deceased, except confidential communications and such as might disgrace the memory of the patient. The following states have adopted similar laws: Arkansas, California, Colorado, North and South Dakota, Idaho, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, Ohio, Oklahoma, Oregon, Utah, Washington, Wisconsin, Wyoming. Eighteen states copy Massachusetts. Twenty-two states follow New York. The remaining states we are unable just now to determine. Such is the law. What are the evils?

Indiscretion, weakness, fear, sin, all seek the family physician as a father confessor. He holds the honor of the patient and the character and social standing of families in his hands. He knows what no other knows; and he often knows what is unknown in the family itself. In every relation of human life the doctor holds, and holds sacred, the secret history of many families, and carries to the grave with him knowledge which would revolutionize the life of whole communities. The mischief of telling is so much greater than the mischief of concealing, that the simplest principle of expediency should forbid the revelation.

Every instinct of honor, propriety, decency, is arrayed against it.

Hippocrates laid an obligation on his students that nothing heard in the sick-room should ever go outside it. The wisdom of former ages is only confirmed by the experience of to-day.

Does any one doubt it? Even judges and lawyers acknowledge its force. Says an English judge: "If a medical man were voluntarily to reveal these secrets, to be sure he would be guilty of a breach of honor and of a great indiscretion; but in a court of justice medical men are bound to reveal secrets, when required to do so." Said a Massachusetts lawyer to an unwilling medical witness, before the trial, "You shall have plenty of room to kick!"

Public opinion, not to consider professional opinion, would revile and condemn the man who betrayed confidence. Such opinion says, "You must not tell." The law says, "It may be dishonorable, but you have got to tell." Can any position be more false and more cruel for the honorable man?

I quote the London *Lancet* of May 9, 1896, on the Playfair case: "Never was the question of professional etiquette more forcibly presented. There is no written code to guide the practitioner." "There are [things] which it would be subversive to every moral rule to divulge; there are those which it is his bounden duty to disclose. It is a safe formula that, unless there are overpowering reasons to the contrary, a patient's secret should be held inviolable by his medical adviser, almost, if not quite as binding as the confessional of the Roman Catholic Church. When it involves the commission of crime, morality and justice require the breaking of a confidence." Says Taylor's "Medical Jurisprudence," edition of 1897: "The safer rule for the physician is never, under any circumstances, to reveal the confidence of his patient, and to preserve inviolate any secret obtained in the course of his professional practice."

The doctor in a court of law is in a false position — false in proportion to his sense of honor. Some would go to prison rather than betray a confidence — some would consider (and so say the judges) that the law absolved them. The law should recognize the rights of the patient, the duties of the medical man and the justice due the community.

How can these difficulties be reconciled? We propose the following for consideration:

It shall be considered unprofessional for a physician to divulge anything confided to him by a patient, unless:

- (1) With the patient's consent.
- (2) To defend himself when accused.
- (3) To expose crime.

In all other cases, such professional confidences shall be classed as "privileged communications." It shall be a question of honor whether the physician shall feel it his duty to repeat such a "privileged communication"; if he conscientiously declines, he shall be protected; if he testifies, it shall be before a judge, in private.

¹ Prof. Tidy.

² Greenleaf on Evidence.

THE WORKINGS OF THE NEW YORK LAW.*

BY WALTER SOREN, ESQ., BROOKLINE, MASS.

THE original form of the New York law in regard to confidential communications between physician and patient (passed at least as early as 1836) is as follows: "A person, duly authorized to practice physic or surgery, shall not be allowed to disclose any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity."

The best way to treat the subject is to illustrate as well as possible by citing cases how the New York courts have construed the most important points in this statute.

In its practical application the statute has been considered as passed solely for the protection of the patient and has been construed somewhat liberally in his favor. Under recent amendments allowing the privilege of secrecy to be waived by the patient or his heirs, no other parties can be allowed to take advantage of the statute if the proper waiver has been made.

Another practical point is that a party at a trial wishing to take advantage of the statute must claim the privilege and show that he is entitled to it, as soon as the objectionable question has been put. If he waits to see whether the answer is favorable to him or not, it is then too late to object in any form.

Theoretically, I shall invite your attention to only three points in this statute which have been passed upon by the higher courts of appeal:

I. What shall be considered to constitute the relation of physician and patient?

II. In any given case, what shall be considered as information "acquired in attending a patient"?

III. What information shall be considered as "necessary" to enable the physician to act as such?

Instead of trying to give a complete answer to any of these questions in abstract form, it has seemed more in accord with the general idea of this paper to cite a number of cases on each point and thus afford a good opportunity for the formation of individual opinion as to the working of the law. The cases from "N. Y." reports are of undoubted authority. Those from Hun and "State" reports are the decisions of inferior courts, but are in accordance with the principles laid down by the higher court and are believed to be good law. Each case should be considered with particular reference to the point under which it is cited, as it has not been fully considered or reported with reference to such other points in it as may seem important on general principles.

The cases are also arranged as nearly as possible with reference to their closeness of application.

I.

First, those referring to the relation of physician and patient:

At the trial of an action involving the validity

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of a certain will,¹ it appeared that a short time before the execution of the will and the testator's death, the attending physician called another physician, who attended in consultation as to the testator's condition and treatment. One of the parties called the consulting physician as a witness and desired to show by his testimony whether the testator was in a conscious or unconscious condition when examined by him.

It was decided that the relation of physician and patient arose here, under the circumstances, even though the patient might not have known or recognized the consulting physician, and that the consulting physician therefore could not testify as to the condition in which he found the patient.

On an inquisition as to sanity by a jury before commissioners,² held some time after the patient had been set free from an asylum, evidence was offered of the opinion of certain physicians who had treated him at the asylum as to his condition when he left. On objection being made on behalf of the patient, it was decided that these physicians could not give their opinion as requested, inasmuch as it was necessarily based upon facts observed while treating him professionally.

At a trial of an action against a life insurance company³ to recover the amount of the policy, the defence was that the insured had made a false statement in his application as to the health of a brother. It appeared that a month before the application was made, a physician had examined the brother's physical condition at the request of the brother's employer, who received the physician's report and paid him his fee. The physician told the employer that the man was not well enough to continue in business, and also told the brother that he was hopelessly ill, but did not prescribe for the case or give any advice as to its treatment, or have any further connection with it. It was decided, however, that the physician could not be allowed to testify as to the results of the examination, as the patient was entitled to the privilege of secrecy on properly submitting himself to a physical examination, whether or not it was for his own benefit or at his own expense.

At the trial of an action against a railroad company to recover damages for personal injuries received in an accident,⁴ the defendant called as a witness a doctor (usually employed by it as an expert), who testified that some two weeks after the accident the attending physician of the plaintiff brought the latter to the office of the witness and asked him to examine the plaintiff and see what was the matter with him. He testified that he made an examination and among other things examined the ribs. He was then asked the question, "Did you find any fractured rib?" It was decided that this might be answered, inasmuch as it was not shown that the witness was requested or expected to treat or prescribe, or to advise respecting treatment, or that he did either.

In a case where the sanity of a person on trial for murder was drawn in question,⁵ it appeared that certain physicians had been sent to the jail by the district attorney to make an examination of

the prisoner's mental and physical condition. It was decided that they might properly testify as to their opinion of the prisoner's mental condition, merely as they saw him in the cell and in the court-room, but could not testify as to any statements that he made or as to his physical condition.

These cases are sufficient to bring out the most important of the points involved in the first question.

It will be desirable here to mention the following amendment, passed in 1893: "In an action for the recovery of damages for a personal injury, the testimony of a physician or surgeon attached to any hospital, dispensary or other charitable institution, as to information which he acquired in attending a patient in a professional capacity at such hospital, dispensary or charitable institution," shall be taken before a referee, but the court may in its discretion summon him as a witness.

No case has been found involving this amendment, but it does not seem to contain any points of obscurity. Since this amendment was passed one or two cases have been decided in which it might have had some application, but it does not appear to have been taken into account. However, they are of interest on the general subject.

The question arose in one case at the trial of an action brought by a minor against a street railway⁶ to recover damages for personal injuries received in an accident. The defendant's counsel called as a witness a physician, who testified that he went with the hospital ambulance to take charge of the plaintiff at the time of the accident, and on the way to the hospital asked him various questions as to how the accident happened, etc.,⁷ all, however, in compliance with the rules of the hospital as to his conduct in the treatment of patients. The court decided that the witness might properly state what the plaintiff said to him as to how the accident happened.

Three justices dissented to this opinion, very properly calling attention to the point that the witness distinctly asserted that whatever information he acquired from the patient was in reference to his condition and for the purpose of prescribing for him.

In a somewhat similar case,⁸ the physician who attended in the ambulance came to the patient's room in the hospital some ten days after the accident and asked him some questions as to how it happened. The trial judge said, "I think the doctor came there with the assumed authority that a doctor would have in such a place and the communication was privileged."⁹ However, it was decided that the relation of physician and patient did not appear under the circumstances to exist in any such sense as to bring the case within the privilege of the statute.

In this case the patient was a child only six or seven years old, and it would seem, under the circumstances, as if the trial judge took the most sensible view. In both the above cases, however, the result would probably have been the same if the amendment had been used.

II.

The second point is on the question of what, in any given case, shall be considered as information acquired in attending a patient.

On the trial of an action in which the physical condition of a certain person during the last year of his life became material,¹⁰ a physician was called as a witness, who testified that he had attended the decedent professionally during the year 1879 and the first few months of 1880. At that time the professional relation ceased, but from then on it appeared that the witness often saw the patient informally and observed his condition in that way until the patient died in November, 1881.

It was decided that the physician might testify as to the patient's condition as it appeared from observations of outward visible facts, open to the sight of any person and seen by him on occasions when not attending in a professional capacity.

The next case is one showing the beginning of the exercise of some ingenuity in avoiding the effect of the statute:

In an action to recover the amount of a life insurance policy,¹¹ a question arose on a warranty in the application as to the health of the brother of the insured. A physician who had attended the brother professionally and whose whole knowledge of the case was acquired at one interview, was called as a witness by the defence. Of course his testimony as to the results of his examination was inadmissible, but he was asked this question: "What opinion did you form of the case, based on the general sight of the man before you made an examination, or before you had any conversation with him?" It was decided that this question was not admissible, although it related to facts observed by the physician without the necessity or aid of any confidential disclosure, or any physical examination. It was enough that the observation was permitted to the witness in his character of physician and in the due and proper exercise of his calling.

The next case presented an excellent opportunity for the exercise of some ingenuity in evading the operation of the statute, but it was not fully taken advantage of:

At the trial of a case involving the validity of a certain will,¹² where the testamentary capacity of the maker was drawn in question, a physician was called as a witness who had attended the deceased in a professional capacity and also for a considerable period as a friend and not professionally. It appeared from the preliminary questions, however, that the impressions he acquired on the friendly visits necessarily related back to and were influenced by the knowledge he acquired during his professional visits. Of course it was decided that he could not be allowed to testify.

The next two cases, however, seem to have been prepared with great skill:

At the trial of a case in which the validity of a certain deed was drawn in question,¹³ a physician was called to testify as to the mental condition of one Eliza Fisher at or about the time when she

executed the deed. It appeared that he had attended her professionally and had also seen her at various times when he was not in attendance for the purpose of treating her professionally. He was asked various questions as to her mental condition and requested at the same time to exclude from his mind, in answering, any knowledge or information which he had acquired as to her condition while attending her professionally, and to confine his answers to such knowledge and information as he had obtained of her by seeing her when she was not his patient. Of course the questions were all objected to, but it was decided that they might be answered, because they were so framed as to exclude evidence being given of impressions obtained while the witness was attending his patient in a professional capacity.

At the trial of an indictment for murder,¹⁴ the prosecution called as a witness the physician of the jail where the prisoner had been confined for the preceding six months and proceeded to ascertain his opinion of the mental condition of the prisoner at the time the murder was committed, by putting certain hypothetical questions based upon symptoms which had appeared before the prisoner came to the jail and which had been observed and testified to by other witnesses. The witness was requested, in answering, not to allow his actual knowledge of the case to influence his opinion and replied that it was impossible to do this entirely. As the question was in proper form, however, he was allowed to answer, making what effort he could to comply with the requirements of the question.

It is no more than fair to call attention to the facts that this was a criminal case and also that the relation of physician and patient here was official only. If it had been a civil case the rule would probably have been applied in the same way as in the "Darragh" case just cited.

The foregoing cases give some idea as to what the statute means by the relation of physician and patient; and what information is considered as acquired "while attending the patient."

It remains to examine the point as to what information is considered "necessary" to enable the physician to act as such (and therefore privileged).

Here, more than in the other two points, there has been difference of opinion between the higher and lower courts and also some change in the general opinion since the statute was enacted. It is a good example, too, of how the operation of a statute may be modified and directed by judicial construction. The cases cited will show that while the word "necessary" has received a somewhat broad construction, it is not extended to include in any way matters not directly relating to the patient's mental or physical condition.

The first two are cases where the facts in dispute could not have any effect upon the professional conduct of the practitioner and were not facts regarding the condition of the patient.

III.

WHAT KIND OF INFORMATION SHALL BE CONSIDERED NECESSARY.

At the trial of an action against a railroad company to recover damages for injuries received in an accident,¹⁵ the defendant called the attending physician and asked him this question: "Did the plaintiff state to you on the day when you first called on him that he did not observe the train until he was struck?" This question was objected to, but the court decided that in such a case, nothing the patient could say in regard to his observation of the train could have been either material or useful to the physician in his treatment, and therefore the question might properly be answered.

In another similar case,¹⁶ it was held that the physician who attended a person injured in an accident at a railroad crossing might testify to the statements of his patient of means taken to warn him of the approaching train and which he did not observe until it was too late.

The next two cases deal with facts relating somewhat to the patient's condition:

At the trial of an action against a mutual benefit association to recover the amount of the policy,¹⁷ it appeared that the deceased had, about a month before he died, in order to get reinstated as a member, made a certificate to the effect that he was in good health. The sole defence to the action was that the certificate was untrue.

It was decided that the physician who attended the insured in his last illness might testify as to the number of calls he made on the deceased, the dates of the calls and that the patient was sick and thus contradict the certificate without disclosing any information intended to be protected by the statute.

At the trial of an action against a railroad¹⁸ to recover damages for personal injuries sustained in an accident, the defendant called as a witness a physician, who testified that the day after the accident the plaintiff called and consulted him. He was then asked if he conversed with her and made an examination of her with regard to her injuries. It was urged in support of this question that it did not appear to call for the disclosure of any information that was necessary to enable the witness to act in a professional capacity. But the court said that the inevitable inference was that the information given to the physician by the patient, whether it related to her injuries or not, would not have been imparted except to aid the witness in prescribing and, therefore, under a liberal construction of the statute, the witness could not state the particular injury as to which the plaintiff consulted him. It will easily be appreciated, too, that the question could not have been answered either Yes or No, without disclosing the fact as to whether the patient was then suffering from her injuries to such an extent as to require treatment.

At the trial of an action brought by a woman against a town to recover damages for personal injuries received by falling on a defective side-

walk,¹⁹ the plaintiff claimed and offered evidence to show that among other severe and serious injuries caused solely by the accident was an umbilical hernia. The defendant then called the plaintiff's family physician as a witness, and he testified that he had attended the plaintiff in a case of childbirth about a year before the accident. At this point the plaintiff's attorney objected, and it appeared that the defendant was about to prove by the witness that the hernia complained of had existed before the accident happened. It was claimed that if the physician discovered the hernia while treating the patient, but did not treat her for it, and the knowledge of its existence was not necessary to enable him to give the treatment he did, he ought to be allowed to testify in regard to it.

The court decided, however, that the witness could not be allowed to testify in regard to the hernia, because the very nature of his employment compelled its disclosure to him, and in this sense the information he acquired as to its existence was "necessary."

It would not be very easy to sum up the result of these and many other cases that might be found in regard to this third point, but it may be put pretty accurately as follows:

Information acquired by a physician in his professional capacity shall be considered necessary to enable him to act, whenever it relates to the patient's mental or physical condition, whether acquired by direct examination or incidentally and whether or not the condition so observed be the particular subject of treatment either at that or at any other time.

HOW THE STATUTE MAY BE WAIVED.

After the statute in its original form had been on the books some forty or fifty years and had worked a great deal of injustice because any one could take advantage of it, the brilliant idea occurred to somebody that as the law was made entirely for the benefit and protection of the patient, it would be no more than fair to allow him to waive it when its operation would work him a great injustice. Accordingly, in 1877 an amendment was made, allowing the patient to waive the privilege.

In about fifteen years more some one conceived the equally brilliant idea for equally obvious reasons, that it would be no more than fair to allow the patient's heirs to waive the privilege, so that the entire amendment now stands substantially in the following form (including in its application two other sections as to clergymen and lawyers):

"The last three sections apply to any examination of a person as a witness unless the provisions thereof are expressly waived by the person confessing, the patient or the client. But a physician or surgeon may upon a trial or examination disclose any information as to the mental or physical condition of a patient who is deceased, which he acquired in attending such patient professionally, except confidential communications and such facts as would tend to disgrace the memory of the patient when, the provisions of Sec. 834 have been

expressly waived . . . by the personal representatives of the deceased patient, or (if the validity of the . . . will . . . of such . . . patient is in question), by the executor . . . named in the will, or the surviving husband, widow or any heir at law or next of kin of such deceased, or any other party in interest."

This amendment had a salutary effect in preventing the working of great hardship in many cases where a waiver of the privilege was desirable for the benefit of the patient or of his estate.

But the life insurance companies (who had suffered in some of the cases already cited and of course in many others) were not slow to adopt the plan of putting into all their printed applications a concise but complete waiver of the privilege of the statute, on behalf of the insured or his heirs and all persons claiming under them.

This gave rise to an amendment in 1899 to the effect that the waiver may only be made in open court or by agreement of counsel before trial. However, the waiver so made need not be in any particular form, but may be made by merely calling the physician as a witness and asking him the necessary questions.

It is evident, of course, by this, that it is possible to waive the statute by the conduct of the case in court.

Before calling your attention to a few cases where this has been done somewhat unintentionally, I am going to add to the statement that the statute is solely for the benefit of the patient the corollary that it is not for the protection of criminals. This has been indicated also in one or two of the cases mentioned in the first part of this paper.

It has accordingly been held that in a case where a waiver by the patient or his heirs had become impossible, a physician who had attended the patient might give evidence of facts observed by him tending to show that a crime had been committed and to which ordinarily, without such waiver, he could not be allowed to testify.

But it is no doubt true that if the patient or his heirs were accessible and capable of waiving the privilege, such waiver would have to be made, even in a criminal case, before any evidence could be introduced of any information ordinarily privileged.

The remaining cases to be cited show how the privilege of the statute may be waived at the trial by estoppel, as it were, and are therefore instructive. It will be seen from these, as from some of the cases cited under II, that, naturally enough, attempts are constantly made on behalf of the patient to get the benefit at the trial of the facts constituting the privileged information; and then by the exercise of the privilege, prevent the other side from introducing any evidence in regard to them.

About the time of the commencement of an action against a railway company for injuries sustained in an accident,²⁰ two physicians attended the plaintiff for the purpose of ascertaining the extent and nature of her injuries. At the trial the plaintiff called one of them as a witness (waiv-

ing the privilege of the statute as to him) and he gave important testimony tending to show that the plaintiff was affected with some spinal trouble as the result of the accident. This opinion was based mainly upon the result of the examination which he had made together with his associate on the occasion referred to. Both had attended together and made a physical examination with special reference to the existence of some disease of the spine as a result of the accident.

When the defence came to putting in their case they wanted to call the other attending physician and allow him to state his opinion. The plaintiff objected to this, but the court held that in such a case the waiver of the privilege as to one consulting physician extended to the whole consultation and the other physician might properly be called upon to state his opinion. The court in this case took occasion to state as a general rule that —

“Where a full disclosure is made with the consent of the patient, the reasons upon which the statute was founded no longer exist and every party to the transaction thus disclosed is relieved from any injunction of secrecy.”

At the trial of an action against a railroad to recover damages for personal injuries received in an accident²¹ the plaintiff called the physician who had attended at the time of the accident and he testified as to the nature of the injuries. It appeared that three physicians had attended the case, but all at different times, one after another. The defendant then wished to call the other two attending physicians as witnesses, but it was decided that by calling the first physician the plaintiff had only waived the privilege as to him and as to the case as it was when he saw it. But the privilege was not thereby waived as to the subsequent condition of the case and the two physicians called by the defendant could not therefore testify as to the condition of the case when they saw it.

At the trial of an action of tort for personal injuries²² the plaintiff came on the stand and testified that the defendant shot him in the arm with a rifle and that “Dr. Venner came and put a plaster on it.”

The defendant testified that he only struck the plaintiff a blow with the rifle and wished to substantiate this evidence by calling Dr. Venner to testify what his opinion was, at the time when he attended, as to the nature of the wound, claiming that the plaintiff, by his testimony, had waived the privilege, having disclosed and brought in issue the facts as to the nature of the wound. It was decided, however, that the plaintiff had not gone far enough by stating his own observation of the case to waive his privilege of preventing the attending physician from stating his opinion as to the nature of the injury.

It seems pretty evident that so far as can be judged from the records of decided cases the working of the New York law of privileged communications between physician and patient is a little hard on life and accident insurance companies.

It does not seem to have much effect now in

contests over questions of testamentary capacity, as any one interested in the estate can waive it.

Nor is it of great service in itself in preventing the disclosure of matters not intimately connected with the physical or mental condition of the patient. This has arisen, however, mainly from the interpretation of the New York court as to what information shall be considered “necessary.”

The defence of accident cases is of course much assisted by the amendment allowing hospital physicians and surgeons to testify, and there has also been since 1893 a provision of the code that where an action to recover damages for personal injuries is brought, or expected to be brought, and the case is a proper one for requiring the plaintiff's deposition to be taken, on the plaintiff's motion a judge may before trial order a physical examination to be made at the same time the deposition is taken. The report of the physicians or surgeons making such examination, however, must be made to the court and they cannot be allowed to testify at the trial as to any information acquired at the examination.²³

Of course this provision cannot be used except in a very few cases, but it is mentioned here for the sake of completeness.

Under the late amendments, the privilege cannot be waived, after the death of the patient, as to confidential communications and such facts as would tend to disgrace his memory. Unfortunately this amendment has not been fully passed upon, so that it can only be conjectured in the light of previous decisions whether the court would decide that “confidential communications” were such only as related to the patient's mental or physical condition.

Before closing, I will call your attention to one more case which illustrates several of the principles already noticed.

A workman employed in a quarry was accidentally struck with a piece of iron on the left side in the region of the heart.²⁴ The wound was superficial, but quite severe, and he was carried to his home, where he died a week afterwards. He had been carrying an accident policy, but the company refused to pay and the widow brought an action to recover the amount of the policy. At the trial the plaintiff's attorney proved by the testimony of the widow and one or two nurses what symptoms had appeared in the case between the time of the accident and the time of the patient's death.

He then called four physicians who had never seen the case at all and asked them certain hypothetical questions, based upon the evidence which had already been given as to the condition and symptoms of the deceased. These experts all testified that in their opinion the death of the insured was the direct result of being struck by the piece of iron.

The defendant did not cross-examine them at all, but proceeded to call four other physicians and qualified them as experts.

It turned out from the preliminary questions that the last four were the family physician who had attended the case, and three others who had

been called in for assistance and consultation. To each of these, hypothetical questions were put involving the same facts as those put to the plaintiff's experts, but in the following form: "Doctor, please exclude from your mind any knowledge or information you acquired in attending this case professionally and suppose you were called to see a man suffering from a wound in his side such as has been described in this case and found also that he had something of a cough, with an occasional spitting of blood and delirium in the night time; and suppose he died in about a week, while those symptoms continued, what would you say was the cause of his death?" At this the plaintiff's counsel objected; but the court said he had disclosed all the facts himself, so that the answers of the defendant's experts would not tend to disclose any information prohibited by the statute and they might answer and the fact that they really knew something about the case *would only affect the weight of their testimony*. With this permission the defendant's experts proceeded to answer the questions and all testified that in their opinion the patient died of typhoid fever.

Since this paper was delivered an article has appeared in a journal circulated among the medical profession, calling attention to a case in another jurisdiction under a similar law, where manifest injustice was done to a physician who appeared as the defendant in a suit for malpractice. According to the principles contained in the cases above cited, it seems pretty clear that under the New York law the plaintiff in a suit for malpractice would have to prove and thereby disclose so much in regard to his physical condition as to practically waive the privilege of the statute on any matters of importance to the defendant's case.

The obvious lesson to be drawn from the working of the New York law, so far as I have been able to show it, is that any new legislation on the subject of privileged communications would have to be contained in eight or nine separate sections in order to take advantage of the points which have made the amendments to the New York law advisable. It would also be well to avoid, if possible, language giving the court such entire freedom of construction as the word "necessary," which was passed upon in most of the cases cited under III. It is not intended to make this paper controversial and perhaps an apology should be made for the remarks about the malpractice case. It is of course evident that cases of injustice will arise both with and without such a law as prevails in New York. If a new law as to privileged communications is wanted, the question is whether such a law could be framed which prevented more injustice than it caused.

It has often been said that the well-known "Statute of Frauds" did not meet this requirement, yet it is still almost everywhere in force. The fact that they are still amending the New York law, instead of repealing it, is a point in its favor. However, the main question is intended to be left open for the present, for further debate under such light as may be derived from this and other more bountiful sources.

1. *Renihan v. Denny*, 103 N. Y. 577 (1886).
2. *11 State R.*, 263 (1887).
3. *Grattan v. L. I. Co.*, 24 Hun. 43 (1881).
4. *Henry v. R. R.*, 57 Hun. 76 (1890).
5. *People v. Kemmler*, 119 N. Y. 585 (1890).
6. *Green v. Met. St. R'way Co.*, 171 N. Y. 201 (1902).
7. *Accident* in 1897.
8. *Griffiths v. Met. St. R'way Co.*, 171 N. Y. 106 (1902).
9. *Accident* in 1899.
10. *Burley v. Barnhard*, 9 State Rep. 587 (1887).
11. *Grattan v. L. I. Co.*, 102 N. Y. 274 (1883).
12. *Re will Catherine Darragh*, 52 Hun. 591 (1889).
13. *Fisher v. Fisher*, 129 N. Y. 654 (1892).
14. *People v. Schuyler*, 106 N. Y. 298 (1887).
15. *De Jong v. R. R.*, 60 N. Y. Supp. 125 (1899).
16. *Brown v. R. R.*, 45 Hun. 439 (1887).
17. *Patten v. L. I. Co.*, 133 N. Y. 450 (1892).
18. *Feeney v. R. R. Co.*, 116 N. Y. 375 (1889).
19. *Nelson v. Oneida*, 156 N. Y. 219 (1898).
20. *Morris v. Ry. Co.*, 148 N. Y. 88 (1895).
21. *Hope v. R. R.*, 40 Hun. 438 (1886); 110 N. Y. 643.
22. *Dunkle v. McAllister*, 74 N. Y. Supp. 902 (1902).
23. *Lyon v. Manhattan Railway*, 142 N. Y. 298 (1894).
24. *Meyer v. Accident Co.*, 40 N. Y. Supp. 419 (1896).

PRIVILEGED COMMUNICATIONS TO PHYSICIANS.¹

BY FREDERICK J. STIMSON, ESQ., DEDHAM, MASS.

It was a matter of regret to me that an accident prevented my having the honor of speaking for my profession upon this subject at the annual meeting of The Massachusetts Medical Association; but I have now the advantage of the discussion upon it made by Dr. Cheever and Mr. Soren. I have advisedly changed the title, for the reason that "Privileged Medical Communications" seems to imply that the statutes protecting such are limited to matters medical alone, whereas, at least under some laws, such is not the case.

The papers read at the meeting, as well as the discussion in the BOSTON MEDICAL AND SURGICAL JOURNAL which preceded it, had the valuable result at least of clearing the ground. Probably in the minds of both professions, medical and law, there was considerable haze upon this subject. Many of us had a vague idea that communications *were* privileged when made to a physician in the course of his attendance. This undoubtedly arose from the fact that all judges, under the English common law system of procedure, are clothed with very considerable discretion in their conduct of examinations, particularly cross-examinations, of all witnesses. This discretion is so great that, particularly in states where there is no statute, the judges shape the law. For instance, in Massachusetts, which is among those conservative states still following the common law and rejecting codes, there is, I believe, no instance where a priest has been compelled to divulge the secrets of the confessional. Yet the priest is no more protected by any statutory provision than is the physician. This leads me to the chief of the contribution that I have to make upon the subject—that the question is really, in one of its principal aspects, hinged upon the dispute, with which we lawyers are so familiar, as to the relative advantages of *codes*—that is, statements of the law or of the common law, more or less complete, made by newly drawn-up statutory codes, which intend at least to be

¹ Read before The Massachusetts Medical Society, June 10, 1903.

exhaustive — and the “common law” system, which accepts the English common law as it is, crystallized through a thousand years of court decisions in England and this country, and rarely attempts a new statute, still less a statute which is merely expressive of the common law. The lawyers of this country are still divided on this cardinal point into two schools, and the same is true of the state legislative systems. The older states, particularly those of English origin, stick to the common law, and never attempt to define it, rarely even to improve it by statute. The newer states, especially those where the codes prepared by the late David W. Field have been seriously considered, adopt the other view. The “common law” states are Massachusetts and the New England states, Pennsylvania and the middle states except New York, and the Southern states generally, with one or two notable exceptions, such as Georgia, where they have a code which aims to be so complete as to exclude the necessity of referring to the common law at all. The Field codes of substantive law were generally adopted only in California and the far Western states following her lead, but the Field code of *procedure* was also adopted in New York, and there has been a tendency to codification in New York since. I do not propose here to go into the argument between the two schools. The obvious view of the young Western lawyer, who has not generally had a college education and lives in a town possibly remote from libraries, is that it would be convenient to find all the law in the statutes. We are told in the early lives of Abraham Lincoln that one of the two or three books that he first read and almost learned by heart was a volume of the revised statutes of Indiana — somewhat dry reading, we should think, to-day. The reply to this argument by the common law believers is that the effect of a code is to wipe out all the certainty that we have gained from past history, and to lose the benefit of the infinite number of adjudged cases where the law was decided in the absence of a statute, and where, even now, no statute could possibly be drawn which would apply. Under the common law most cases, after all, have been the subject of judicial decision. Moreover, the vagueness of the discretion left to the judge is possibly of advantage. Under the code system, nothing is certain that is not in the code. No discretion to be strict or to be lenient can possibly be allowed the judge; and until every sentence, every word, every punctuation mark, has been the subject of a court decision, we cannot be certain of what the law is.

Thus it happens that in this matter of privileged communications there has been under the common law very great discretion exercised by the judges, extending, as I have said, in the case of priests, at least, to a complete privilege, and probably in the case of physicians, to a very considerable protection. This protection is given, it is true, at the court's

discretion, but is the more adjustable to the reason of each case by that very fact; and at least one thing is clear — that if we are to have a statute on the subject, that statute must necessarily be a rod of iron. It must apply to all cases equally; and nothing on the one side of the line can be allowed and nothing on the other side can be excluded. No one, for instance, contends that the privilege of physicians should be extended to cloak crime, and yet it is extremely probable that, if the statute were passed, there might be some other cases where the admission of a physician's testimony would be for the public advantage; and on the other hand, even when the privilege is extended in civil matters only, it should certainly not go so far as to prevent a physician from testifying as to the mental condition of a deceased testator in a contest over a will.

In short, I believe that the general question will be largely determined, at least by lawyers, according as they believe or do not believe in general statutory codes.

Coming now to the concrete matters. It is clear, as I have said, that the following points are fairly established: (1) The lawyer at common law has a privilege the physician and priest have not; (2) the privilege should rarely, if ever, be extended to criminal cases; (3) the privilege exists for the benefit of the patient or client, and not for that of the physician or lawyer. There are other points which are very uncertain, at least in states where they have a statute upon the subject; for example, whether the privilege extends to actual communications or also to matters of observation which fell under the notice of the physician while occupying the relation of medical adviser to the patient; whether the patient must, in fact, have employed the physician or have known that he was so employed; whether and under what circumstances the privilege may be waived.

The statutes, in so far as they have been adopted, fall also into several classes. According to the latest textbook on the subject, that of Mr. Arthur M. Taylor of New York, they have not been adopted in New England and the middle states, except New York and Pennsylvania; but the Pennsylvania statute is very moderate, applying only to civil cases; in the South they have been adopted only by North Carolina; but in the middle West they have been adopted by all the states except Illinois; in the states west of the Missouri River by all the states and territories except New Mexico — twenty-five states and territories in all have a statute, but the tendency, even in these states, is not always consistently in favor of a professional privilege to physicians. Minnesota has recently adopted and Michigan proposed most extraordinary statutes, one providing that no physician shall, in matrimonial causes, be protected from testifying as to the existence of a sexual disease, and the other (which, however, failed for the moment to pass), providing that no one could get married without a certificate of his family physician

that he or she was free from epilepsy, consumption or sexual diseases generally, and that in no such case should the doctor have any privilege whatever. It is also important to notice that the statutes very generally apply only to licensed physicians or surgeons, though, as we know, the tendency to license persons not regular physicians — osteopaths or Christian Science people — is very largely increasing in the more radical states. Generally the privilege only applies to such information as was necessary to enable the physician or surgeon to act in his professional capacity. Such is the New York statute; but a court of Pennsylvania, notwithstanding its statute did not go nearly so far as that of New York, made a very sensible decision that matters outside such professional information, when confided to the doctor by the patient, especially in answer to the doctor's questions, were also privileged — a most excellent example, by the way, of the advantage of the common law over the code: the Pennsylvania court, having no code law upon this point, could make such a decision, while a New York court could not. Generally the statute reads that a physician shall not *be allowed* to disclose such information, but in some states it is only that he shall not be compelled, and in most states, as I have said before, it may be waived, not by the physician, but by the patient or party to the suit. The restriction of the privilege to civil cases exists in only a few states having the statute. In my opinion the wisest law of all is that of North Carolina, which, while creating the privilege, says that the presiding judge may compel disclosure of knowledge professionally obtained, etc., if in his opinion the same is necessary to a proper administration of justice. Practically, this is the common law.

The relation of physician and patient must, of course, exist. The mere fact that a man is a physician confers no privilege, but it is usually immaterial whether the physician was called or employed by the patient or by some one else. A physician who goes really to get evidence, not employed by the patient, although he may give some professional treatment, commonly acquires no privilege, especially when the physician is wholly paid by a third party. One physician may, however, call in another and impart to him the privilege. In Ohio, Indiana and in other states the statute extends to all matters observed by the physician, although not confided to him by the patient or not necessarily matters relating to the treatment. For instance, in Arkansas, where an unmarried woman told her physician that the father of her child had not promised to marry her, the communication was not held to be privileged, as it had nothing to do with her professional treatment. This rule is usually in opposition to the statute contended for by Dr. Cheever, which protects only the disclosure of any matters tending to cast disgrace upon the person treated. A physician was not required, in Missouri, to state that his patient was drunk when he called

upon him for professional services. In no case is there any privilege in suits by the patient against the physician for malpractice.

Let us now consider the usual cases in which the question of the physician's privilege arises. These are: (1) Criminal cases where the patient is the criminal; (2) criminal cases where the patient is not the criminal but the person injured; (3) actions for damages for personal injuries by the patient; (4) will contests; (5) actions by the beneficiary of insurance policies; (6) suits between physician and patient. Let us leave the question of statute or common law, but consider, broadly stated and in popular language, how we should like the law to be in each of these classes of cases.

(1) Criminal cases where the patient is the criminal. I can see no reason, nor do I believe that the medical profession will differ from me, to use the physician's privilege to protect crime. We all recognize the ethical duty of the physician not to tell. No one claims that he should run to the nearest police officer; but these considerations are matters of professional honor and there they may well be left. When the patient, long after he is well, is actually apprehended and brought into court on a charge of murder, or even assault, it is clear that the highest interests of the state require that the physician's knowledge should not be used to cloak the crime. Certainly that is true in cases of murder, but in the lighter cases — take the example of assault and battery — it is pretty clear that a man who is seriously injured will not risk his life by failing to consult a physician when the punishment for the crime itself is so slight. And for the extreme example, does any one claim that the doctor who set the leg of John Wilkes Booth, after the murder of Abraham Lincoln, should have been prohibited from testifying to the facts? Was he not in fact sentenced for life because he did not reveal the fact?

(2) Criminal cases where the patient is not the criminal, but the person injured. In this case there seems no reason whatever why the physician's testimony should not be required.

(3) Actions for damages for personal injuries by the patient. This is perhaps the only case subject to any doubt, but after all, why should the patient be protected? If his injury is really trivial and the person injured intends to maintain a fraudulent claim for large damages, there does not seem much injustice in the end in making him go to a physician at his own risk. Moreover, it is always to be remembered that it is difficult for him to refuse seeing a physician sent by the defendant. If, on the other hand, the person is seriously injured he will certainly go to a physician and that physician will certainly testify to his benefit. In fact, experience shows that physicians, perhaps properly, are more than ready to testify on their patient's side of the case.

(4) Will contests. In this case it is perfectly clear that there should be no privilege. To begin with, the patient is dead. Even in New

York there has been a desire and an attempt by the courts to alter the law in this particular, so that a physician may only not be required to testify, after the decease of his patient, to anything bringing disgrace upon him or his family. But the matters which result in the annulment of wills are not usually those which bring disgrace upon the patient or his family, except where that disgrace is richly deserved. Wills are rarely affected by the physical condition of the patient. They are either affected by outside conditions or by the patient's mental condition, which is surely proper matter of evidence.

(5) Actions by the beneficiaries of insurance policies. All life insurance companies now require the applicant for a policy to see their own physician, but under the New York statute even he is prohibited from testifying. There might be some reason for this on the ground of estoppel: if he allows the applicant to get a policy, he could logically be prevented from saying that he ought not to have had a policy; but as a matter of fact, it is well known that the New York statute, in effect, works a fraud upon life insurance companies, and if the family physician knows that the policy holder is subject to an incurable disease and, notwithstanding, he gets a life policy by concealment of that fact, under what ethical principle is the physician not to testify after his death, thus making a fraud effectual?

(6) Suits between physician and patient. Under the common law there is no privilege in suits for malpractice, while suits by a physician for his fee are somewhat rare in the higher orders of the profession. Certainly it is not for the interest of the physician, at least, to have the privilege maintained in this latter case.

Finally, there is a great class of cases, likely more and more to get into the courts, in matters of marriage, divorce or sometimes wills, where the physical condition and the just or temperate life of some person is concerned. I have not made a definite class of these, for the reason that they might come in almost any of the divisions above set forth. Probably we all know cases where the testimony of the physician has been of great importance, as in matters of justifiable breach of promise. Those wishing to go into the subject may refer to a very able article by Professor Huberich of the University of Texas, in a recent number of the *Harvard Law Review*. But these are all peculiar cases where the discretion of the judge, acting under the wise liberality of the common law, may be relied upon to protect both the patient and the physician. No statute can be drawn which may be safely applied to such delicate matters short of the absolute exclusion of all testimony by physicians in all cases. I have said enough to show that in my opinion this, at least, is unwise.

My own conclusion is, therefore, both that in most cases the common law stands right, and that it is wiser in all to leave the whole matter to the common law. A significant argument for this is shown in the very fact that Mr. Soren-

has found it necessary to fill some twenty pages with an account of cases where it has been necessary for the supreme tribunal of New York to decide what the statute meant. All these are the consequences of the adoption of a statute. During the same period very few such cases have troubled the courts of Massachusetts and the courts of New England, for under the common law the rule is in most cases clear. And there has recently been a distinct check to the tendency to adopt statutes upon this subject. I find that, while some twenty or twenty-five states copied, as they usually do, the statute of New York when it was adopted, since 1891 there has been no statute in any state of the United States except the very reasonable one already mentioned in Pennsylvania, and an extraordinary statute in Iowa which absolutely prohibits physicians from disclosing any communications given in professional confidence, and which applies as well to stenographers or confidential clerks. Indeed it may be doubted whether the reasons for such a statute do not apply as well to the case, for instance, of a confidential clerk or a trustee as of a physician.

The reason of the privilege given the lawyer rests on quite a different basis. One goes to him for the express purpose of being defended in the courts. We all know that the ethical position of the lawyer defending a person known to him to be a criminal has been a commonplace of debate for centuries. Nevertheless, it is generally accepted now, if only on the broad ground that it is by no means easy always to tell whether a man is a criminal or not, and that, even if he be a criminal, he is entitled to counsel, if only for the purpose of determining the degree or grade of his offence. This, therefore, is a mere rule of the game in the courts. But a criminal does not, in the ordinary course of events, have to go to a physician; and in ninety-nine cases out of a hundred what the physician testifies to is of momentous consequence, civil and criminal, and often no other person can be conversant with the facts.

If any statute is adopted I should recommend a combination of the laws of Pennsylvania and North Carolina; that is, adopt the Pennsylvania principle that the privilege extends only to civil cases, and this with the exception of the competency of persons making a will, and the very luminous phraseology of the North Carolina statute, which substantially states the common law, that is, it allows the judge to determine when the communication by physicians of knowledge acquired while attending the patient is necessary for a proper administration of justice.

Many legal abuses have grown up and many bad decisions have been rendered in this country, I regret to say, from the plain ignorance, that is, the absence of historical legal education on the part of the judges. Notably this has been true in the great human interests affecting labor and capital, and those recent combinations commonly known as trusts. Two great evils — the election of ignorant judges and the clothing

of petty courts with high chancery powers — have largely been responsible for the abuse known as government by injunction and the objectionable powers of trusts; and it is more than probable that, in matters of evidence, many judges have rudely compelled the disclosure of professional secrets which in no sense really pertain to the necessary administration of justice. This is, indeed, one of the arguments for the code, that it brings to the notice even of an unlettered judge more principles of the common law than he might otherwise be familiar with; but for Massachusetts, at least in this matter of privileged communications, I should prefer to rest, as we do now, upon the definiteness and the elasticity of the common law, the good sense of the judges and the honor of the medical profession.

Clinical Department.

ECHINOCOCCUS CYSTS OF THE LIVER AND LUNGS.

BY ARTHUR K. STONE, M.D., BOSTON.

THE following case was brought to Medical Room of the Out-patient Department of the Massachusetts General Hospital, and from thence it was transferred to the service of Dr. Chas. B. Porter, who immediately operated. The patient lived four days. The important portions of the various records are appended.

The patient was an Armenian who had come to the United States seven years before, during which time he had lived and worked in Milford, Mass. So far as could be ascertained, he had always considered himself well until ten weeks before his coming to the hospital. Dr. Gaiolzakyan, who accompanied the patient, when asked about the habits of the Armenian peasants, stated that hydatid disease was not common in Armenia nor was there any special opportunity for exposure for the people living in the Armenian villages.

For ten weeks there had been progressive loss of strength and weight, accompanied by pain in the epigastric region. Two weeks after the appearance of the symptoms they had become so severe that the patient had been obliged to stop work. When the presence of a tumor was first noticed could not be ascertained. The ordinary symptoms of fever had been present, but no chill. In the past three weeks the epigastric pain had been very severe and the weakness and emaciation had progressed rapidly. Throughout the sickness there had been no symptoms of dyspepsia and no vomiting. The bowels had moved without difficulty and on the day before there had appeared a tendency to diarrhea. The patient was much exhausted by his efforts in coming to the hospital.

Physical examination showed a well-developed man, much emaciated, pale, and sweating profusely. His tongue was dry and coated. There

were no glandular enlargements visible. The sclera showed a very slight yellowish tinge. The temperature was 96° F. A stained preparation of the blood showed no marked leucocytosis. A blood count some hours later gave 1,600 whites. The urine was high in color, acid, 1,025. Albumin present, 1-10 to 1-8%. Bile was present in small amount. The sediment showed numerous brown granular casts, also a few normal blood globules. The sounds were weak, but otherwise the heart was practically normal, as also appeared to be the left lung.

The lower portion of the right chest was bulging. There was flatness from the fourth rib in front to four fingers' breadth below the costal margin. Below the fourth interspace in front and the mid-scapular in the back there was absence of fremitus and respiratory murmur. Below the ribs, extending nearly to the median line, was a convex bulging tumor. On inspiration there was a palpable crepitus, and a loud friction rub was to be heard over the outer portion of the tumor. Over the convexity of the mass there was a doubtful sense of fluctuation. The edge of the liver and the whole surface of the mass presenting below the ribs felt smooth and hard. The diaphragm phenomenon was absent on the right side, but well marked on the left.

The abdomen was otherwise normal, there being no sign of ascites, so that the lower portion appeared flat and depressed as compared to the upper portion. In spite of the fact that he was an Armenian, the spleen was not palpable.

The examination of the right back showed dullness beginning at two inches below the spine of the scapular, quickly becoming flat. Respiration and fremitus were diminished and lost below the angle of the scapular. Above the dullness the respiration was harsh but of diminished intensity. Signs in the left side of the back were practically normal.

With the left hand at the back, pressure over the tumor was transmitted through to the under hand, also a faint feeling of trembling as of an over-distended cyst. It was evident that we had to do with a greatly enlarged liver and with a tumor of its anterior surface.

The cause evidently had begun to obstruct the outflow of bile, as shown by the slight jaundice. There were evidences of perihepatitis and probable peritonitis present, but they were evidently secondary in character and of recent origin. Cancer was hardly to be considered, from the absence of all symptoms of indigestion and the rapidity of the development. Primary abscess of the liver could not be eliminated, but was made improbable from the absence of history pointing to intestinal infection. Hydatid disease could not be eliminated but did not seem probable from the history. This left the rare cystic disease of the liver, against which nothing could be urged but its rarity. There were, of course, evidences of secondary inflammatory process present.

Immediate operation was deemed advisable, and Dr. C. B. Porter operated, making an incision through the abdominal wall over the most prom-

inent portion of the tumor and parallel to the costal margin. A small amount of bloody fluid was found in the cavity, which proved sterile on culture. The tumor presenting in the wound consisted entirely of the enlarged liver, which appeared dark and distended and softer than normal. On the second attempt, the aspirating needle found purulent material at a depth of about two inches. The cavity thus found was quickly opened by knife and dilators. The contents of the cavity gushed out, showing the pressure under which they had been retained. The amount of the escaping material, blood, pus and gelatinous material was estimated at about four quarts. In the escaping fluid were innumerable cysts from the size of a pea to those two inches in diameter. As the hemorrhage was excessive, the cavity had to be packed with gauze after cleansing as thoroughly as possible.

The patient, though in poor condition after the operation, made a good recovery from the ether.

The following day the patient felt much better than before the operation, and the ooze from the wound, which at first was considerable, stopped. Early on the second day after the operation the patient suddenly became delirious, pulse 150; temperature 104.5°. Abdomen was flat; there was a large movement following the administration of calomel. There was flatness and friction sounds to be heard at the base of the chest on the right side. No signs of consolidation, however, developed and the general condition somewhat improved. The wound continued in good condition and there was no distention of the intestines. At noon, the fourth day after the operation, the patient's condition suddenly changed for the worse and death followed.

ABSTRACT OF AUTOPSY RECORDS, CLINICO-PATHOLOGICAL LABORATORY, MASSACHUSETTS GENERAL HOSPITAL.

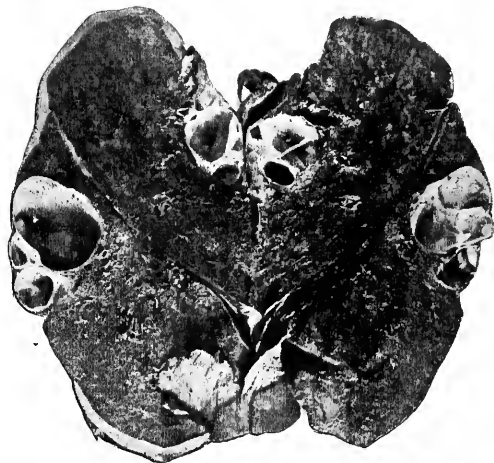
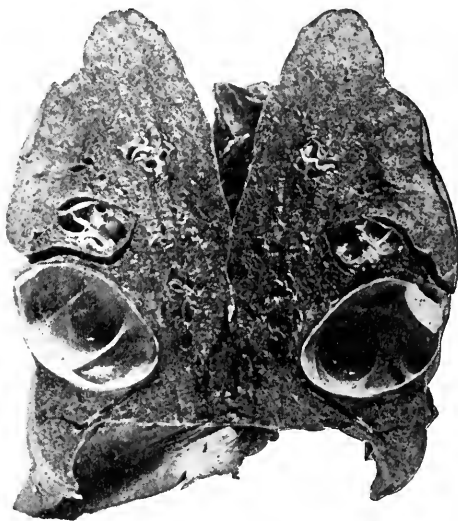
Autopsy No. 981, Dec. 13, 1902.

The liver is of about normal size, and in the right lobe there is a large, irregular-shaped cavity probably 15 cm. in diameter. This cavity, for the most part, has a rough, irregular lining composed chiefly of a patchy layer 2 or 3 mm. thick, of dirty greenish gray, somewhat friable, finely granular material. Adherent to this in places are plaques and patches of a dense but friable dirty grayish, opaque, tough substance. The plaques of this substance are 2 or 3 mm. in thickness and are not easily removed from the lining of the cavity. In places the lining of the cavity resembles the mucous membrane of the gall ducts and presents the appearances of being formed by the walls of greatly distended gall ducts more or less reddish discolored. In fact, a close examination and dissection shows that these portions of the lining resembling distended gall ducts are undoubtedly continuous with the hepatic duct of the liver. This was followed below the opening of the cystic duct and found to be apparently of wider circumference than normal. The cavity of the liver lies in immediate relationship with the diaphragm and the diaphragm is adherent to the

liver and forms probably a part of the wall of the cavity superiorly. The lining of the cavity seems to be separated from the liver substance by a thin layer of connective tissue. In the superior wall of the cavity and in the midst of a considerable amount of what appears to be inflammatory tissue adherent to the surface of the liver are two abscesses filled with white, thick pus, the largest about 12 mm. in diameter. In the neighboring liver tissue several much smaller abscesses are apparent. The liver not extensively cut up, in order to preserve the specimen for teaching purposes. Portions of the wall of the cavity, including adjacent liver substance, preserved for microscopical examination.

Lungs.—In each lung there are cystic structures in the midst of the pulmonary tissue and bulging outwardly beneath the pleura. Where they bulge the most, these cystic structures have a grayish, translucent wall, apparently formed of little more than the pleura. The dimensions of these cystic structures and their situations are as follows:

Right Lung.—Median lobe. Cystic structures 3 cm. in diameter. In the inferior lobe of



LUNGS FROM THE CASE OF ECHINOCOCCUS CYSTS OF THE LIVER AND LUNGS. (Photographs by Dr. A. H. Gould.)

the right lung a large cystic structure 7 cm. in diameter. In the superior lobe of the left lung a cystic structure about $4\frac{1}{2}$ cm. in diameter. In the neighborhood of these a collapsed cystic structure probably 3 cm. in diameter. In the inferior lobe of the left lung another apparently multilocular cystic structure probably 3 cm. in diameter. In the inferior lobe of the left lung another apparently multilocular cystic structure about 6 cm. in diameter. At the base of the same lung, not bulging to the pleural surface, are two cysts, $1\frac{1}{2}$ and 1 cm. respectively in diameter. These are filled with a clear fluid and possess a white gelatinous lining in the form of a layer about 1 mm. thick. This is readily removable, leaving a smooth surface beneath, apparently formed by a thin layer of connective tissue. No evidence of pneumonia or acute pleurisy. Lungs preserved in formalin for further examination.

BACTERIOLOGICAL REPORT.

Coverglass from the purulent material in the liver shows no bacteria.

MICROSCOPICAL EXAMINATION.

Sections of the wall of cysts in lung show the kitinous layer with brood capsules containing scolices adherent.

Sections of liver bordering upon the cystic cavity show chronic inflammatory changes. In one section foci of necrotic material are present.

Spleen. — An area of necrosis in the section, which area probably corresponds to a suspected infarct.

ANATOMICAL DIAGNOSIS.

Evacuated echinococcus cyst of the liver. Small abscesses of the liver. Echinococcus cysts of the lungs.

There have been four other cases of echinococcus cyst operated upon at the hospital since 1890. Three of these have been men and one a woman. Strangely enough, one of these patients was an Armenian, who had lived in this country for six or seven years. Thus two out of five cases have developed in a people who make up a very small portion of the community. Another patient was a Russian Jew; a third was an American sailor who had, however, never been in Iceland, but had "always had a dog on board." The woman alone was a native of Iceland and had had symptoms of pain in the side seven years before her coming to the hospital, and five years previously she had had a cyst of the liver opened.

Of diagnostic symptoms there was little to be gained from the histories. Pain in two cases came on only within six weeks of the time of operation. In one there was marked nausea lasting for six weeks and in two cases the symptoms developed suddenly, one as the result of acute inflammatory processes and the other brought on by a blow which ruptured the cyst, which had apparently given no previous symptoms. In one case the tumor, which was sub-hepatic, had been noticed for thirteen months. In the woman's case the pain had developed three

years after the first operation. The pain had started at the border of the ribs and radiated upwards towards the axilla and would often last for half an hour at a time. Indigestion, nausea and vomiting were not complained of.

Four of the five cases here mentioned recovered from their operations. These cases are therefore of interest in that two of them occurred in Armenians, a people of whose susceptibility to echinococcus infection we have no statistics. In four of the cases pain was the first most pronounced symptom which attracted attention. In the case given above in detail the extent of the lesions in both lungs, which gave rise to no symptoms, together with the large cyst in the liver, makes the case quite unusual.

Reports of Societies.

SURGICAL SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

NEW ORLEANS, LA., MAY 5 TO 8, 1903.

(Concluded from No. 9, page 242.)

THIRD DAY (Concluded).

DR. HENRY A. CHRISTIAN, Boston, reported a case of

EPITHELIOMA OF THE CAULIFLOWER TYPE OF THE BACK OF THE HAND,

which examination previous to the beginning of treatment had proved to be a true example of this condition. Serial examinations during the progress of degeneration showed that the cells died, were surrounded by granular cells and were destroyed. During the operation a portion of the hand which had been supposed to be non-carcinomatous was protected by a lead sheet and this afterwards became infected. During the process no polymorphic nuclear leucocytes were present and he did not look upon the process as one of fatty degeneration.

DR. EDWARD H. NICHOLS, Boston, stated that he believed many cases of epithelioma were reported as cured, when in reality it was simply a healing over of the skin surface. The action of the x-ray, he believed, was that of a mild irritant, thus producing increase in the epithelial cells and later disintegration. He also referred to the fact that the x-ray will produce epithelioma, a case being reported of an operator in Boston who lost three fingers from one hand and two from the other. Operative treatment was recommended in all cases where possible, and in some cases it was thought secondary treatment by the x-ray would be beneficial.

DR. FRED B. LUND, Boston, reported several cases of epithelioma of the face of the rodent ulcer type, which had been benefited by the x-ray treatment, and in the cases in which recurrence had occurred there had usually been glandular involvement. In a case of recurrent carcinoma of the breast he had removed the

growth several times under local anesthesia and the patient was finally subjected to the x-ray treatment without any apparent result, and the opinion was expressed that it had very little effect upon malignant growths.

DR. JOHN W. BRANDAU, Clarksville, Tenn., reported two cases of cancer of the cervix treated by the x-ray, in which the pain disappeared and the growth underwent rapid degeneration.

DR. WILLARD, in closing, stated that he believed a blue medium would increase the quantity of the ultra-violet rays and thus be of benefit in the x-ray treatment of tubercular joints. He believed that the sunlight, Finsen light and x-ray would have to be used for at least five years before any definite conclusions could be reached, and recommended mechanical fixation of the joint in addition to the treatment by the other methods. He also believed that bringing the patients out of the darkness and giving them good food had much to do with their improvement.

DR. STEWART, in closing, stated that he did not think leucocytosis was a very important factor in the degeneration of the epithelioma, and reported two other cases in which this did not occur, but the occurrence of vascularization he thought was singular. He reported a case of tuberculosis of the shoulder joint, in which, during the first two months of treatment by the x-ray, very little result was obtained, but in from eighteen to twenty-four months good influence over the tubercular process was obtained.

DR. JOHN E. SUMMERS, JR., Omaha, Neb., read a paper entitled

VARIX OF THE INFERIOR MESENTERIC VEIN, COMPLICATED BY CHRONIC ULCERATIVE COLITIS; OPERATION.

In the case reported there was a chronic ulceration of the rectum and sigmoid flexure of the colon, accompanied by the usual clinical signs and demonstrated by ocular inspection, which he was not able to state positively was the effect or cause of the varix of the inferior mesenteric, but believed it to be the latter.

DR. CHARLES A. POWERS of Denver read a paper on

CONGENITAL DISLOCATION OF THE RADIUS.

The patient was a boy of thirteen years, in whom the left upper extremity had been from birth materially shorter than its fellow, the bones of the forearm being fixed in extreme pronation with inability to supinate. The elongated left radius was dislocated upward, forward and outward, lying on the outer and anterior aspect of the humerus. Photographs and x-ray pictures showed the condition.

DR. JOHN P. LORD, Omaha, Neb., read a paper entitled

ACUTE EPIPHYSITIS OF THE HEAD OF THE FEMUR, CAUSING A CONDITION SUBSEQUENTLY SIMULATING CONGENITAL MISPLACEMENT,

in which he reported the case of a child who had

an abscess over the hip at the age of sixteen months, up to which time he was supposed to be normal. As a differential factor in the diagnosis of these conditions he mentioned the fact that in the congenital deformity the head of the femur is against the ilium, while in the pathological condition it is far removed from the pelvis.

DR. WISNER R. TOWNSEND, New York, felt that the most important point was to keep the thigh abducted and prevent irritation, and recommended that the thigh be placed in a plaster of Paris bandage instead of a leather support or splints.

THIRD DAY — AFTERNOON SESSION.

DR. H. EARLES, Milwaukee, Wis., read a paper entitled

NECESSITY FOR MORE CARE IN THE TREATMENT OF SKULL FRACTURES,

which he summed up as follows:

(1) Fractures of the skull are not always recognized as such until too late. (2) When not properly treated at or about the time of fracture, they frequently result in death, and if not in death, in serious remote consequences. (3) When properly treated they usually terminate satisfactorily, and with ordinary care and cleanliness fractures of the skull may be successfully treated by the average surgeon and under ordinary conditions.

DR. SULLIVAN, Chicago, recommended operation in all cases of compound fracture of the skull, and that simple fractures should be kept under observation and operation performed so soon as motor symptoms developed. If sepsis occurs a median incision should be made and drainage established.

DR. B. B. DAVIS, Omaha, Neb., referred to the fact that very often there were extensive injuries to the substance of the brain with very little injury to the bone, and he believed the two things to be considered in deciding whether or not to do an operation were (1): Is there any danger if we do not do the operation? and (2) Are we going to leave the patient in a bad condition if we do it? The operation should not be done unless absolutely necessary, as cicatricial tissue is liable to form and cause subsequent trouble.

DR. JAMES B. BULLITT, Louisville, Ky., read a paper entitled

EPISPADIAS; REPORT OF A CASE TREATED BY A MODIFICATION OF CANTWELL'S METHOD,

in which he stated that, while he believed the operation as described by Cantwell in 1898 to be an almost ideal operation, he felt that the transplantation of the newly-formed urethra beneath the penis in its normal position was an improvement and had employed this modification in his case. With the exception of a small fistula about the size of a pinhead, the wound healed and the patient was able to retain his urine for several hours.

DR. RUDOLPH MATAS, New Orleans, La., read a paper entitled

CICATRICIAL ANCHYLOSIS OF THE JAWS; A CONTRIBUTION TO ITS OPERATIVE TREATMENT.

The teeth were horizontal to the jaw, and they would not open to a sufficient extent to admit the blade of a knife, the patient being compelled to live entirely on broths and milk. The cicatricial tissue was first removed and then two bilateral flaps of the skin turned in to take the place of the mucous membrane. Very satisfactory results were obtained by this method, and the patient improved considerably.

DR. J. B. MURPHY, Chicago, reported two cases, in the first of which, after the incision through the fibrous growth and the removal of the mass, a flap was turned down on the neck, the cutaneous surface being on the inside, and a good recovery ensued without much disfigurement. The second case followed the removal of a large angioma, the teeth standing at an angle with the side of the mouth, and after doing the same operation a fairly movable jaw was secured.

DR. ARTHUR DEAN BEVAN, Chicago, read a paper entitled

FURTHER CONTRIBUTION TO THE SURGERY OF THE UNDESCENDED TESTICLE,

in which he expressed the belief that this condition occurred much more frequently than was generally supposed, and called attention to the following possible dangers of leaving the undescended testicle in its original position: (1) Hernia; (2) traumatism; (3) gangrene through twisting of the cord; (4) inflammation of the misplaced testicle; (5) malignant disease.

DR. J. B. MURPHY, Chicago, read a paper entitled

SURGERY OF THE URINARY TRACT IN THE FEMALE, EXPERIMENTAL AND CLINICAL,

in which he dwelt particularly upon the conditions of pyelonephritis, hydronephrosis and pyonephrosis. In all cases of infection of the kidney he recommended removal of the capsule and division of the kidney. He directed attention to the fact that with two healthy kidneys there was about four times the necessary renal secreting surface, and recommended the removal of the kidney in a secondary operation if the primary operation did not relieve the infection. He laid particular stress on the necessity, in operations on the pelvis, of making a large incision and bringing out the kidney, in order that you could better see to work, and directed attention to an incision through the bladder which he had found valuable, as the wound heals very quickly and it is a convenient route.

DR. ARCHIBALD McLAREN, St. Paul, Minn., felt that the operation suggested by Dr. Murphy was very valuable in pyelonephritis. He stated that in several cases upon which he had operated for stone in the kidney, where he was sure perfect aseptic conditions prevailed, the operation was followed by a curious diphtheritic inflammation

of the pelvis, which later necessitated the removal of the kidney.

DR. GEORGE GOODHUE, Dayton, Ohio, thought that if we were able to ascertain that the patient had one healthy kidney, by means of segregation it was better to remove the kidney than to subject the patient to repeated operations, with the consequent dangers of anesthetics and emboli.

DR. ALBERT M. TAGERT, Chicago, reported a case of movable kidney upon which he had operated one week after labor, the patient at that time having a temperature of 102° to 104°. There was very little secretion of the urine, and trouble with the other kidney was suspected. Everything went well for two weeks, when the nurse reported that she could not wash it out through the bladder. Upon introduction of the catheter he succeeded in opening the ureter, and the temperature fell to normal in five or six hours.

DR. RUDOLPH MATAS, New Orleans, stated that he believed there was no field of surgery in which conservatism was of more value than in the surgery of the kidney. He felt that in any infection of the kidney personal equation and the capacity of the operator must always be taken into consideration, and that when one has not had very much experience it may be better to remove the kidney at the primary operation.

DR. J. B. MURPHY, Chicago, in closing, recommended drainage through the cortex in connection with the operation for removal of a portion of the kidney or in an operation for stone in the kidney. The advantages of drainage as a primary operation instead of doing a nephrectomy are not that it is easier, but because a primary nephrectomy done according to Kister produces a mortality of from 23% to 50%, according to the conditions preceding operation, while with a secondary nephrectomy following drainage the mortality is almost nothing.

DR. A. H. LEVINGS, Milwaukee, Wis., read a paper entitled

TUBERCULOSIS OF THE MAMMARY GLAND,

in which he stated that the condition was almost exclusively confined to women, usually occurring between the ages of twenty and thirty-five years, during the activity of the gland. Nearly one-half of the women affected with the condition have borne children; it frequently occurs during pregnancy, and is superinduced by a weakened, anemic state. It does not appear to be dependent upon the pre-existence of the disease in any other portion of the body, and if it is secondary to a tubercular process elsewhere, the focus may be situated in the lungs, skin or some distant part of the body, the route of the infection being in many instances through the lungs. The differential diagnosis between this condition and carcinoma is not always easy, and prompt operative treatment should be instituted.

DR. B. B. DAVIS, Omaha, Neb., reported a case occurring in a young woman about thirty years of age, in which there was considerable involvement of the axillary glands with perfora-

tion and fistula, there being a history of a discharge containing tubercle bacilli.

DR. ANDREW WADE MORTON, of California, stated that he had recently made the diagnosis by the injection of tuberculin, with subsequent confirmation by pathological examination.

DR. A. H. LEVINGS, in closing, stated that he believed the reason so few cases of tuberculosis of the mammary glands were reported was because the condition was diagnosed as carcinoma. In regard to the treatment by curetting, he felt that the infection was confined chiefly to the pyogenic membrane, and if this could be eradicated one would get rid of the infection.

FOURTH DAY — MORNING SESSION.

DR. LUTHER SEXTON, New Orleans, read a paper on the

TREATMENT OF FRACTURES OF THE FEMUR IN PLASTER OF PARIS CASTS,

in which he called attention to the difficulty of approximating the fragments of the bone and retaining them in proper apposition, the greatest difficulty being to prevent shortening and displacement. He believed that plaster of Paris bandages were preferable to the side splint for this purpose, and described the technique in detail, laying stress upon the necessity for bringing the plaster of Paris high up around the pelvis. The method is cleanly, the bandage cannot get out of place, and good results will follow its perfect application.

DR. JOHN P. LORD, Omaha, Neb., while he did not think that all fractures of the femur should be treated by this method, particularly those below the trochanter, felt that it was particularly applicable for the treatment of intracapsular fractures, extension being used in addition to the plaster, if necessary, the most important point being to get the fragments of the bone in proper apposition and then maintain them there by proper dressing.

DR. ALBERT E. GRANT, Denver, Col., referred to the remarks of Dr. Allis in regard to the difficulty of maintaining correct apposition of the parts, and the necessity for cutting down the ends, and the consequent suggestion of Dr. Lane of the cutting down and wiring of the fragments, and stated that he had found this practice of value in fractures of the elbow joint. The best results, he believed, would be obtained by applying both some method of extension and a fixed apparatus around the limb. He did not think that the plaster should be applied until three or four days after the injury, when all inflammation had subsided, and recommended that the silicate of potash be employed in lieu of the plaster, as it is very light, the only disadvantage being that it requires more time to harden.

DR. ANDREWS of Mahnhata, felt that much better results would be secured from the use of the plaster of Paris dressing than from complicated body splints, and believed that it should

be applied after the inflammation had subsided.

DR. SEXTON, in closing the discussion, exhibited one of his patients, who was an engineer, who, in jumping from his engine in order to avoid a collision, sustained a backward dislocation of the knee joint and fracture of the femur, the latter being treated by plaster of Paris without the application of any extension. He has now entirely recovered, the slight limp in his walk being due to the ankylosis in the knee joint resulting from the dislocation, the accident having happened slightly over six weeks ago. The liquid glass, as suggested by Dr. Grant, he did not think would be applicable in a hot climate, and he did not consider that the patient should, under any circumstances, be allowed to walk around. The fragments of the bone should be held in position by an assistant during the application of the plaster.

DR. MILES F. PORTER, Fort Wayne, Ind., read a paper entitled

THE CLOSURE OF WOUNDS,

in which he stated that he believed adhesive plaster to be the best substitute for stitches, and recommended its employment for operations about the face in order to avoid scars, particularly in hare-lip operations.

DR. JOHN L. SUMMERS, JR., Omaha, Neb., thought that adhesive plaster answered the purpose admirably for superficial wounds, but for deep wounds, and especially in abdominal surgery, he felt that sutures should be employed in addition to the plaster.

DR. ANDREW WADE MORTON recommended the use of this method for the closure of superficial wounds, believing it to be superior to suturing, as in this manner one would avoid pressure and the consequent tissue necrosis, but if applied in deep wounds, he believed it would simply close the outside and leave dead spaces, and this would be particularly true if employed in abdominal wounds.

DR. MILES F. PORTER stated that he did not recommend the use of adhesive plaster to replace the use of sutures in abdominal surgery, nor that it could be used in any other operation where tension existed. In regard to the moisture that might occur beneath the plaster, he felt that that would be absorbed by the skin without doing any injury. In order to avoid the difficulty in taking off the strips of plaster, he recommended that about a quarter of an inch be turned up on each end of the strip at the time of its application, thus enabling you to catch hold of it to pull it off.

DR. T. C. WITHERSPOON, St. Louis, Mo., read a paper entitled

OPERATIVE TREATMENT OF EXOPHTHALMIC GOITER,

in which he reported nine cases, in three of which he had done the operation under chloroform, the remaining six being done under a local anesthetic, and stated that he believed a $\frac{1}{10}$ to a $\frac{1}{8}$ % solution of eucaïne to be the best for

that purpose, and there should also be infiltration of the tissues below the skin. He recommended that the incision be made parallel to the sternocleido-mastoid muscle, the arteries being ligated as suggested by Wolfe and Kocher. The injection method was condemned and the time for operation must be derived from the history of the case.

DR. ALFRED E. GRANT, Denver, emphasized the importance of as speedy work as possible in these operations. He recommended that the incision be made through the skin, the arteries ligated and the capsule opened. Hemorrhage is exceedingly dangerous in these patients, owing to their usual weakened condition.

DR. EMMET RIXFORD, San Francisco, Cal., divided the condition into two classes, primary and secondary, the latter being that stage in which the symptoms supervene in the presence of an existing goiter, and the prognosis is much better in this latter class of cases. The chief danger is from the anesthetic, and local infiltration is better than general anesthesia, the sight of the instrument, etc., being kept from the patient by a cloth around the neck supported by weights. The transverse incision is to be preferred where the tumor is not too large, as the cosmetic effect is much better.

DR. J. SHELTON HORSLEY referred to the doubtful etiology of the condition, and expressed a doubt as to whether the excess of thyroid secretion was the result or the cause of the exophthalmic goiter; the treatment, if the first theory is correct, would vary materially from what it would if the last is the correct one. He reported a case in which he had done the unilateral Venesection operation, followed by marked improvement. He advanced the theory that possibly the good results produced by operation might be owing to the fact that any interference with nerves in the neck would give temporary relief similar to that observed in some cases of epilepsy.

DR. T. C. WITHERSPOON, in closing, laid particular emphasis on the importance of ligation of the arteries and the employment of a local anesthetic.

DR. F. G. CONNELL, Leadville, Colo., read a paper entitled

SUBCUTANEOUS INJECTIONS OF PARAFFIN FOR DEFORMITIES OF THE NOSE,

in which he stated that the method was chiefly of value for the treatment of saddleback noses. He gave a *résumé* of the literature on the subject, and recommended that the injections be of small amounts at different intervals rather than a large amount at one time.

DR. ANDREW WADE MORTON, California, stated that he had used this method in twenty-five cases during the past three years, bringing the melting-point up to 109° by the use of sperm oil, it having been proven that it is necessary to have the paraffin above the temperature of the blood or it will not support the deformity.

DR. WILLIAM J. MAYO, Rochester, Minn., stated that the three principal methods for the

remedy of saddleback noses had been: (1) Flap carrying; (2) celluloid bridge, which after a time is liable to produce tissue necrosis, requiring its removal; and (3) paraffin injections, the last method being preferable to the others because it is more quickly done and produces a better and more permanent result.

DR. WALTER M. SPEAR, Rockland, Me., read a paper entitled

ABSCESS OF THE SPLEEN,

in which he gave a *résumé* of the literature on the subject and reported a case resulting fatally. If the diagnosis is made early and splenectomy performed, the prognosis is fairly good.

DR. E. J. MELLISH, El Paso, Tex., read a paper entitled

ANESTHESIA,

in which he stated: (1) That no anesthetic could be employed exclusively in all cases; (2) the best technique of preparation and administration and general management should be carried out; (3) it should be administered by a successful anesthetizer. He divided the cases into three classes: (1) Cases in which the indications for local anesthetic are absolute; (2) cases in which the indications for general anesthetic are absolute; (3) doubtful cases, in which a general anesthetic should be employed. The mere fact that an operation can be done under local anesthesia, he felt, is not sufficient to justify its employment.

DR. A. J. OSCHNER, Chicago, believed that with the conditions as they exist at present, — that is, anesthetics being administered by incompetent anesthetists, — less fatalities would occur from the use of ether, and if any anesthetic causes trouble during any operation it should not be employed with that particular patient. A feeling of confidence in the anesthetist on the part of the patient is of great value, and if the patient succumbs during chloroform anesthesia, the effort should be made to expel all the chloroform from the lungs possible, before beginning artificial inspiration. Free purgation prior to the administration of the anesthetic and attention to cardiac and renal conditions was recommended.

DR. WILLIAM J. MAYO, Rochester, Minn., recommended the use of the Souchon anesthetizer for operations on the mouth and throat.

DR. JOHN E. SUMMERS, JR., Omaha, Neb., called attention to the temperature curve occurring as an after-effect of the anesthesia. In emergency cases he recommended that the stomach should always be washed out prior to administering the anesthetic, and reported a case in which chloroform had been administered without this precaution, and during the vomiting which occurred when the patient was recovering from the anesthesia, a piece of potato was forced into the windpipe, and although the trachea was opened, death from asphyxiation occurred.

DR. E. J. MELLISH, in closing, felt that there was more danger in the employment of chloroform than of ether under any circumstances. The

chloroform, being heavy, is also eliminated but slowly from the lungs, and the patient will be more or less poisoned thereby for some time.

The following officers of the section were elected for the ensuing year: Chairman, Dr. CHARLES A. POWERS, Denver, Col.; Secretary, Dr. E. WYLLES ANDREWS, Chicago.

Recent Literature.

The Diseases of Warm Countries, a Handbook for Medical Men. By Dr. B. SCHEUBE, State Physician and Sanitary Adviser, Greiz; late Professor at the Medical School in Kioto (Japan). Translated from the German by PAULINE FALCKE, with Addenda on Yellow Fever by JAMES CANTLIE, M.B., F.R.C.S., and on Malaria by C. W. DANIELS, M.B., M.R.C.S. Edited by JAMES CANTLIE, M.A., M.B., F.R.C.S., D.P.H., Lecturer of the London School of Tropical Medicine; Surgeon Seamen's Hospital Society, Albert Dock Hospital; Lecturer Applied Anatomy Charing Cross Hospital Medical School, London; Consulting Surgeon Alice Memorial Hospital, Hong Kong. With all the original colored maps, charts, illustrations, etc., together with many additional plates, from the *Journal of Tropical Medicine*. Second revised edition. Philadelphia: P. Blakiston's Son & Co. 1903.

This volume of 594 pages is a translation by Pauline Faleke of the work of Dr. B. Scheube, and therefore appears for the first time in English. It is edited by James Cantlie, M.A., M.B., Lecturer in the London School of Tropical Medicine. The last few years have practically developed a new branch of medicine in the various diseases of the tropics and their relationship to affections common in temperate climates. The volume before us is an admirable, scientific, exhaustive presentation of these various diseases, amply illustrated and accompanied by excellent bibliographies, an attribute frequently missed in our modern medical books. The affections discussed include general infectious diseases, among which plague, yellow fever, beri-beri, leprosy, yaws and other less well-known affections are considered. Among diseases caused by intoxication, pellagra, lathyrism and snake venom poisoning find a place. A very considerable part of the volume is taken up with diseases caused by animal parasites and cutaneous and local diseases, together with certain organic affections, among which is included the so-called sleeping sickness. In all about forty-five different affections are discussed, all apparently in much detail. Although in some respects the subject matter seems distinct from our everyday practice, it is certainly true that the complete education of the modern physician demands increasingly a knowledge of the diseases endemic in tropical countries. It is, therefore, a source of congratulation that this most excellent work has been translated

into English, thereby rendering it available for a larger number of readers. The binding and typography is in the usual form of the publishers, and the full-page illustrations are, for the most part, instructive and well executed.

A Textbook of Legal Medicine and Toxicology. Edited by FREDERICK PETERSON, M.D., Chief of Clinic, Nervous Department of the College of Physicians and Surgeons, New York; and WALTER S. HAINES, M.D., Professor of Chemistry, Pharmacy and Toxicology, Rush Medical College, in affiliation with the University of Chicago. Two imperial octavo volumes of about 750 pages each, fully illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1903.

Dr. Frederick Peterson of New York and Dr. Walter S. Haines of Chicago act as sponsors for this new and somewhat exhaustive treatise on legal medicine and toxicology. The first volume, which alone has reached us, is comprised in 730 pages, including an index, and has as its contributors sixteen well-known names in the medical profession of this country, among which we observe Bailey, Da Costa, Eskridge, Ewing, Hammond, Hektoen, Jelliffe, Langdon and Peterson.

The object of the work is to provide both the medical and the legal professions with a comprehensive survey of forensic medicine and toxicology, a task which the editors believe has not been done in any recent book in English. The first volume is devoted wholly to legal medicine, in which particular attention is paid to laboratory investigation. The second volume it is designed to devote in part to the allied subject of toxicology.

The usual subjects of legal importance are treated in this first volume. The increasingly important matter of railroad injuries is discussed by two writers. The medical jurisprudence of life and of accident insurance is given a somewhat prominent position. Peterson writes upon the subject with which he is known to be particularly familiar, the stigmata of degeneration; insanity in general is from the pen of the late Dr. Eskridge. As in all volumes of multiple authorship, the value of the individual articles must depend upon the special fitness of their writers. Evidently excellent judgment has been used in this respect, and we shall therefore expect when this work is completed that it will stand as an expression of the best and most modern opinion upon the various matters of medico-legal interest, which with our increasingly complex civilization are of necessity absorbing more and more attention.

The volume is illustrated in part by colored reproductions, which do not to our mind convey a more definite impression of the lesions under consideration than would carefully prepared photographs in one color. The difficulty of successfully reproducing colors as they appear under pathological conditions is exemplified by these illustrations.

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SANITARY ADMINISTRATION IN PENNSYLVANIA.

THE State Board of Health of Pennsylvania was established in 1885, largely as a result of the serious epidemic of typhoid fever which had occurred at Plymouth in that state in a previous year, and now, in the seventeenth annual report of the Board, Prof. W. H. Allen, in an admirable address, takes occasion to present many facts which give to his paper much more than local interest. With an unsparing hand he shows up the defects of sanitary administration in that state — defects which are plainly due, not to the inherent makeup of the board, but to the want of intelligent appreciation of its work on the part of the people. Similar defects may be found in almost any state in the Union, since when questions relating to the protection of property and the saving of human life are concerned, greater interest is manifested in and larger sums are provided for the former than for the latter. For the destruction of gypsy moths in a few limited localities a sum was appropriated three times as great as was ever granted to the State Board of Health of Massachusetts for the prosecution of its life-saving work in any year, and five times as great as the emergency fund provided for the prevention of the introduction and spread of Asiatic cholera in 1884. The small appropriation needed for preparing the material necessary for saving several thousand lives from death by diphtheria was opposed far more vigorously than the appropriation of a sum one hundred times as great for the making of state highways.

Professor Allen's address affords abundant food for thought not only to the legislature of

Pennsylvania but also to every one who is interested in the public health. He introduces the subject by an excellent *résumé* of the evolution of sanitation from the earliest times, wherein, comparing the present with the past, he says:

The general death-rate has fallen from twenty-eight or thirty per thousand to eighteen or twenty. This saving exceeds a hundredfold the expense of administering precautionary measures. Many attempts to estimate this economic saving have been made, but there is no way of estimating the economic gain. What humanity gains by increased vitality, fresh blood, bounding pulse and clear eye cannot be set in figures.

The most sceptical, even more doubtful, perhaps, than the unprogressive mine operator or factory owner, is the inferior physician. Unfortunately he too often believes that the state is arrogating to itself the functions of his profession when it prescribes regulations for infectious diseases. He frequently resents the dictatorial attitude of the state when it limits the sphere of his own activity or imposes upon him uncompensated duties. The medical profession as a whole, however, has outgrown this dependence upon transmissible diseases and recognizes that its prosperity increases with every increase in the average standard of living. It is the man in the ten-room house rather than he in the one room who supports the physicians in luxury. It is the healthy man, the healthy family and the healthy community that pay large doctor's bills. Society to-day prefers to regard the family physician as an educator rather than a physician, one who prepares patients to avoid disease rather than one who does a general repairing business. It is probably true that medical curricula have not as yet adequately emphasized the socialization of the physician's skill; but fortunately, an advanced public sentiment, aided by teachers of social sciences and voluntary educational and scientific organizations, is effectually supplementing the medical curriculum and preparing the young physician to lead in sanitary reforms.

In the chapter on "Sanitation in Pennsylvania" the author treats of the sanitary condition of the state as it existed at the date of organization of the State Board of Health, and although many laws had been enacted providing for the sanitary protection of the people, but little provision had been made for their enforcement, the entire sum provided for the work of the State Board of Health in a state of six million inhabitants up to the present time being only \$6,000 per year, or only one-tenth as much as is given for similar work in Massachusetts, a state having a population one-half as large.

When the State Board of Health was established, the only statute guaranteeing the protection of rivers against pollution was enacted to ensure the preservation of the fisheries. The legislature had also enacted laws with severe penalties to prevent the exposing of poisoned meat with the intent that it should be taken by horses, cattle or other domestic animals or fowl.

In the words of the writer, "From protection to dogs and chickens and fish to protection of human beings seems an easy step, yet after thirty years it seems as distant as ever." The effect of this gross and habitual neglect is shown in the high death-rate from typhoid fever which Philadelphia constantly suffers.

Prominence is justly given to the important subject of vital statistics:

The object of gathering them is not to furnish material for future historians. They are to be used in shaping future history. They are facts collected with a view to improving social vitality, to raising the standard of life and to eliminating permanently those forces known to be destructive to health. Unless they are to be utilized in this way, they are of interest only to the historical grub. The state cannot afford to erect a statistical office to serve as a curiosity shop. Unless something is to be done to prevent the future recurrence of typhoid epidemics such as our cities, Pittsburg, Philadelphia, etc., have annually experienced, there is no special reason for asking the public printer to make tables which indicate the great cost of this preventable disease. Unless some one is at hand to abate the causes of transmissible diseases and to check infection at its inception, the notification of infection is of little social utility. Statistics presume efficient administration. An inefficient health officer will not care to gather statistics. If some one else furnishes him with statistics, they are as a lantern to a blind man.

Professor Allen's paper forms a distinct and valuable contribution to the literature of sanitary administration, and should be thoroughly read by every health officer who seeks the good of the community which he serves.

"THE INVALID'S EGYPT."

THE paper by Dr. F. Gordon Morrill, published in last week's issue of the JOURNAL, entitled "The Invalid's Egypt," is to be commended as a model of what that sort of paper should be both in form and substance. This is Dr. Morrill's second communication to these pages on Egypt, a previous paper having appeared in our issue for Nov. 28, 1901.

We take occasion to call attention to "The Invalid's Egypt" for several reasons: It is brief and concise, yet nothing of genuine importance to the physician who advises or to the invalid who thinks of going to Egypt is omitted; the information given is not compiled, but is drawn at first hand from intimate personal knowledge and experience, and the conclusions stated are the result of careful and revised intelligent professional observation, unbiased and unaffected by individual interests or surroundings.

We wish there were more such statements in

regard to other countries frequented by large numbers of our health-seeking or travel-loving fellow-countrymen and countrywomen.

We are all called upon more or less frequently for counsel as to climates, as to the benefits to be expected from or the dangers to be guarded against in this or that country; as to the distinguishing characteristics of this or that locality and of the various periods of the twenty-four hours; as to what season of the year is best in one place and what in another; as to what clothes should be taken.

Too many invalids have gone or have been sent to distant places without an adequate or exact knowledge on their own part or on that of their medical advisers of what they were to prepare for or to encounter when reaching their proposed destinations.

We therefore welcome on behalf of the physician and on behalf of the traveler, whether invalid or not, all such contributions as those of Dr. Morrill, to which we take very great pleasure in directing our readers' attention.

THE LATE MAJOR WALTER REED, M.D.

WE are glad to publish in another column a statement of the recent meeting held in Bar Harbor by friends of the late Major Reed to decide upon some fitting memorial for him and to attract public attention to one of the great medical benefactors of the time. A glance at the names of the men who took part in this meeting is sufficient guarantee of the wide and appreciative interest taken in Major Reed and his work by men not only of the medical profession, but others with large interests in progress of whatsoever character.

The conclusion reached by this first meeting was that an effort should be made to raise a memorial fund of at least \$25,000, the income to be devoted to Dr. Reed's widow and daughter and later to be appropriated to the promotion of research in Dr. Reed's special field, or to the erection of a memorial to him in Washington. We have no doubt that this really modest appeal will meet with a hearty response not only from physicians everywhere but also from others of humanitarian feelings. Dr. Reed's services in the cause of medicine, and so in the cause of civilization at large, are hardly to be overestimated, and the least we may do in such a case is to express our appreciation by a quick and liberal response to the request which has been made by the committee having the matter in charge. We are

inclined to think that if more general public recognition could be had of the services of physicians who have made great discoveries in the realm of science or applied medicine, it would conduce to a better appreciation of the fundamentally important work which the medicine of the future has in store, and also possibly lead to a juster comprehension of the sacrifices and often true heroism of men engaged in the difficult and dangerous pursuit of knowledge as it relates to infectious disease. The public is notoriously slow to recognize merit unless it is brought to its attention in some palpably objective way. To this end it is both right and fitting that men who have rendered such service as this of Dr. Reed's should receive a commemoration which will be both enduring and impressive. We sincerely hope that the minimum amount of \$25,000 may be far surpassed when the full significance of the memorial is appreciated by the public, whether lay or professional.

THE NEW MASSACHUSETTS GENERAL HOSPITAL OUT-PATIENT DEPARTMENT.

We make mention in another column of the opening of the new out-patient department for the Massachusetts General Hospital, which has been under construction during the past two years. Although the opening of this large department of the hospital's work appears to have taken place without ceremony of any kind, we nevertheless feel that the importance of the work which this new building represents is worthy of mention from several points of view. In the first place, with the construction of a building of this size and equipment comes the recognition that the often somewhat neglected ambulatory practice of a great hospital is one of its most important functions. This is true not only from the point of view of the patient, but also from the standpoint of the development of medicine at large.

We have hardly as yet begun to develop the possibilities in the way of research and investigation which are inherent in a properly equipped out-patient department. There can be no question that with the ample facilities now at their disposal the physicians connected with this department of the hospital will gain a new inspiration for thorough, conscientious work. Such facilities as are now offered certainly bring with them an added responsibility on the part of the medical profession to avail themselves to the full of their new privileges.

We note, also, with gratification that in the planning of this new building those in authority have considered that most important function of the modern hospital — teaching. Two excellent, commodious amphitheatres are provided for the use of students, and the general arrangement of the rooms is such that teaching may be done in the various departments without interruption and therefore to good effect. We can see no reason why in this new building the needs of the patients, of the physicians and of the medical students who are later to become physicians may not be completely subserved. The effect of so imposing a structure, with so complete an equipment, cannot be other than to elevate the out-patient department, not only at this hospital but elsewhere, to the position which it should long since have taken in general hospital economy.

MEDICAL NOTES.

SMALLPOX AND TYPHOID FEVER IN PHILADELPHIA. — Typhoid fever, which is prevalent in Philadelphia, shows no tendency toward abatement. The increase in one week during the latter part of August was nearly thirty. Smallpox also still prevails in the city, with about twenty cases now under observation.

A DISCREPANCY. — *American Medicine* is authority for the statement that a male infant weighing thirteen ounces was recently admitted to the New York Post-Graduates Hospital, and that the birth of a twenty-five pound female child is announced from Lexington, Ky.

DEATH OF DR. SALAZAR. — The report has been generally circulated that Dr. Salazar, physician in charge of the American Hospital in Tampico, Mexico, has died of yellow fever, contracted during his vigorous attempt to check the spread of the disease in that place. Even after he recognized the fact that he had contracted the disease, he persisted in directing the work of the hospital.

RESIGNATION OF DR. G. A. SOPER. — It is reported that Dr. G. A. Soper, expert of the New York State Health Department in relation to the Ithaca typhoid fever epidemic, has resigned, through dissatisfaction with the dilatory policy of the local authorities.

FOURTH OF JULY CASUALTY LIST. — A special investigation of the various casualties incident

upon our last July 4 is published in the current issue of the *Journal of the American Medical Association*, and contains many facts worthy of serious thought. In the Northern and Western states 406 deaths occurred from tetanus, usually due to the toy pistol. Aside from tetanus in the celebration of the Fourth of July this year, 60 deaths were caused, 10 persons made blind, 75 persons lost one eye, 54 lost hands, arms or legs, 174 lost one or more fingers and 3,670 received other injuries, making a total of 3,983 persons injured. Adding the deaths from tetanus and from other causes, 4,449 persons are dead or injured. These figures should point a moral and teach a needed lesson.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Sept. 2, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 41, scarlatina 13, typhoid fever 33, measles 11, smallpox 0.

OPENING OF NEW OUT-PATIENT DEPARTMENT AT THE MASSACHUSETTS GENERAL HOSPITAL.—The newly constructed out-patient building at the Massachusetts General Hospital was opened, without ceremony, for the reception of patients Aug. 31. The new building is located at the foot of Fruit Street, adjoining the general hospital. It is a three-story brick structure, in the shape of an L, constructed thus for the purpose of obtaining as much light as possible. The basement is occupied by the record room and the apothecary's headquarters, with a waiting-room for those whose prescriptions can be filled without consultation with the house physician. There is also a large room equipped for x-ray work. The first floor is devoted to men. On the second floor is the women's department, connected with which is the children's section, and on the top floor are the sections devoted to the treatment of diseases of the throat, nerves and skin.

A CODFISH FAMINE IS THREATENED.—It is said that the price of cod has reached the highest point since the civil war and that at present the receipts are approximately one-fourth of the regular supply, with small prospects of improvement. It is furthermore reported that the price of cod-liver oil, which comes largely from Norwegian fishing grounds, has advanced from \$22 to \$160 a barrel for the raw material. The reason for

the deficiency of this usually abundant fish is worthy of and no doubt will have careful investigation.

NEW YORK.

SUICIDE IN 1902.—From statistics collected by Frederick L. Hoffman of the Prudential Insurance Company in regard to suicide in the year 1902 in fifty American cities, having an aggregate population of fourteen and one-half millions, it appears that the rate was highest in Hoboken, N. J., being thirty-five per hundred thousand. In New York the rate was twenty-one.

LONDON AND NEW YORK PARKS.—On returning from a trip abroad Commissioner of Parks Wilcox recently stated, in comparing London and New York parks, that while London probably had more space in its parks, he thought the system of gymnasiums and the park attendants system of New York were superior. London had a few parks equipped with gymnasiums, he said, but none compared with the William H. Seward Park in New York and he did not believe that any five parks in the English city contained as many features as the Seward Park.

APPROPRIATION FOR BOARD OF HEALTH.—The estimate of the Board of Health for the appropriation it will require for conducting the department during the year 1904 is \$1,631,500 as against \$1,047,721 allowed for the present year. The estimate includes \$50,000 for the construction and equipment of a new steamboat.

ITHACA WATER SUPPLY.—On Aug. 22 the Ithaca Water Company commenced pumping water from its newly completed filter station into the mains of the city of Ithaca. It will be remembered that six months ago Cornell University loaned the water company \$150,000 for the building of a purification plant, and the result of the work, which has been conducted by expert engineers, has been pronounced entirely satisfactory by Dr. Soper, the representative of the State Health Department at Ithaca. It is described as follows: "The plant is built on the mechanical or rapid system of purification. The water as soon as delivered to the receiving wells is charged with a solution of sulphate of alumina, which forms a flocculent precipitate which rapidly coagulates any organic impurities in the water, combined or suspended. The water is then passed into settling basins, where 70% of its impurities are precipitated. It then passes through six filters of 3,000,000 gallons daily, capacity." At

the time of the typhoid fever epidemic at Ithaca the mayor appointed a water commission, which decided that the best method to obtain a pure supply was by the sinking of artesian wells, and accordingly a number of such wells have been driven by the city. The water company, however, after consulting the best experts on the subject, concluded that the construction of a filter plant was the only practicable way in which it could furnish its patrons with pure water. It is stated that the experts all agreed that the correct solution of the Ithaca water-supply problem was not to try for different water, but to take that which was already in use and purify it.

Miscellany.

MEMORIAL OF THE LATE MAJOR WALTER REED, M.D.

On the 15th of August a meeting was held in Bar Harbor of friends of the late Major Reed, M.D., U. S. A., to whom in a large degree is due both the discovery of the mode by which yellow fever has been spread and also the consequent suppression of that dire disease. Representative men were present from different parts of the country and letters were received from various members of committees already appointed to promote the collection of a memorial fund in grateful commemoration of Dr. Reed's services. Important suggestions were presented from President Eliot, Dr. W. W. Keen, Prof. J. W. Mallet and others. Dr. Daniel C. Gilman, chairman of a committee appointed by the American Association for the Advancement of Science, presided, and Dr. Stuart Paton acted as secretary. Among those who took part in the conference were Dr. W. H. Welch of Baltimore, Dr. Janeway of New York, Dr. Abbott of Philadelphia, Dr. Hertor of New York, Dr. Barker of Chicago, Dr. Putnam of Buffalo, Dr. Fremont Smith of Bar Harbor and Dr. Sajous of Philadelphia; and besides these medical gentlemen, Bishop Lawrence of Massachusetts and Messrs. Morris K. Jesup, President of the New York Chamber of Commerce, John S. Kennedy, President of the Presbyterian Hospital of New York and William J. Schieffelin of New York. The following conclusions were reached: That an effort should be made to raise a memorial fund of \$25,000 or more, the income to be given to the widow and daughter of Dr. Reed, and after their decease the principal to be appropriated either to the promotion of researches in Dr. Reed's special field, or to the erection of a memorial in his honor at Washington.

Arrangements were made for the publication of circulars explaining this movement and asking co-operation not only from the medical profession but from all liberally disposed individuals who appreciate the value of Dr. Reed's services to mankind.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 22, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . | 3,785,156 | 1,202 | 190 | 37.65 | 9.14 | 1.99 | 20.02 | 1.77 | |
| Chicago . . . | 1,885,000 | 483 | 151 | 41.60 | 5.10 | .52 | 21.34 | 3.52 | |
| Philadelphia . | 1,378,527 | 422 | 154 | 35.06 | 1.23 | 2.84 | 11.61 | 1.26 | |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 202 | 72 | 33.16 | 4.95 | — | 16.33 | .50 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 124 | 60 | 41.12 | .80 | 3.22 | 22.58 | 4.80 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 75 | 18 | 41.32 | 2.66 | — | 21.60 | — | |
| Boston . . . | 603,163 | 203 | 81 | 32.51 | 5.91 | 3.45 | 18.72 | .50 | |
| Worcester . . | 132,044 | 44 | 26 | 27.26 | 2.27 | — | 27.26 | — | |
| Fall River . . | 115,549 | 43 | 27 | 55.80 | 6.97 | — | 46.50 | — | |
| Lowell . . . | 101,959 | 39 | 21 | 41.02 | — | 2.56 | 30.76 | 2.50 | |
| Cambridge . . | 98,639 | 28 | 11 | 39.28 | 3.57 | — | 32.14 | 3.57 | |
| Lynn | 72,497 | 31 | 10 | 19.35 | — | 3.22 | 3.22 | — | |
| Lawrence . . | 69,766 | 20 | 11 | 45.00 | — | 5.00 | 30.00 | 5.00 | |
| Springfield . | 69,389 | 14 | 1 | 21.42 | 7.14 | — | 7.14 | — | |
| Somerville . . | 68,110 | 13 | 5 | 23.10 | — | — | 15.40 | — | |
| New Bedford . | 67,198 | 36 | 17 | 50.00 | 5.55 | 5.55 | 36.10 | — | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brookton . . | 44,873 | 6 | 2 | 16.67 | — | — | — | 16.67 | |
| Haverhill . . | 42,104 | 8 | 4 | 25.00 | — | — | 12.50 | — | |
| Newton . . . | 37,794 | 7 | 4 | 2.00 | — | — | 42.00 | — | |
| Salem | 36,876 | 27 | 17 | 37.03 | 3.70 | — | 25.92 | 3.70 | |
| Malden . . . | 36,286 | 14 | 2 | — | — | — | — | — | |
| Chelsea . . . | 35,876 | 7 | 6 | 56.20 | — | — | 14.30 | 14.30 | |
| Fitchburg . . | 35,069 | 8 | 3 | 25.00 | — | — | — | — | |
| Taunton . . . | 33,656 | 21 | 8 | 52.38 | — | — | 33.33 | — | |
| Everett . . . | 28,620 | 4 | 1 | — | 25.00 | — | — | — | |
| North Adams . | 27,862 | 16 | 4 | 31.25 | — | 6.25 | 12.50 | — | |
| Gloucester . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 5 | 3 | 80.00 | — | — | 60.00 | — | |
| Waltham . . . | 25,198 | 6 | 1 | — | 16.67 | — | — | — | |
| Brookline . . | 22,603 | 6 | — | 16.67 | — | — | 16.67 | — | |
| Pittsfield . . | 22,589 | 8 | 2 | — | 12.50 | — | — | — | |
| Chicopee . . . | 21,031 | 5 | 2 | 40.00 | — | — | 40.00 | — | |
| Medford . . . | 20,962 | 7 | 1 | — | — | — | — | — | |
| Northampton . | 19,883 | 5 | 1 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 3 | 3 | 66.67 | — | — | 66.67 | — | |
| Clinton . . . | 15,161 | 3 | 2 | — | 33.33 | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 8 | 1 | 37.50 | — | — | — | 12.50 | |
| Woburn . . . | 14,300 | 5 | 2 | — | 20.00 | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | 5 | 4 | 80.00 | 20.00 | 20.00 | 40.00 | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 5 | 2 | 40.00 | — | — | 20.00 | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 5 | 2 | 60.00 | — | 20.00 | 20.00 | 20.00 | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 2 | 1 | 50.00 | — | 50.00 | — | — | |
| Framlingham . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 6 | 2 | 33.33 | — | — | 33.33 | — | |
| Southbridge . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 1 | 1 | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,182; under five years of age, 1,236; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,181, acute lung diseases 193, consumption 351, scarlet fever 15, whooping cough 18, cerebrospinal meningitis 11, smallpox 12, erysipelas 6, measles 10, typhoid fever 70, diarrheal diseases 625, diphtheria and croup 59.


From whooping cough, New York 10, Chicago 1, Philadelphia 3, Pittsburg 1, Fall River 1, Fitchburg 2. From erysipelas, New York 2, Philadelphia 1, Pittsburg 1, Providence 2. From smallpox, Chicago 2, Philadelphia 2, Pittsburg 2. From scarlet fever, New York 4, Chicago 2, Philadelphia 3, Baltimore 1, Providence 1, Boston 1, New Bedford 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Aug. 8 the death-rate was 14.3. Deaths reported, 4,139; acute diseases of the respiratory organs (London) 107, whooping cough 61, diphtheria 41, measles 57, smallpox 8, scarlet fever 38.

The death-rate ranged from 5.1 in Burton-on-Trent to 26.6 in Bootle. London 13.0, West Ham 11.1, Brighton 10.0, Portsmouth 9.9, Southampton 8.5, Plymouth 13.5, Bristol 13.2, Birmingham 14.3, Leicester 11.1, Nottingham 15.1, Bolton 17.7, Manchester 17.5, Salford 17.3, Bradford 15.5, Leeds 15.8, Hull 16.3, Newcastle-on-Tyne 20.4, Cardiff 9.7, Rhondda 13.9, Liverpool 18.0, Hornsey 5.3, Warrington 19.0.

METEOROLOGICAL RECORD.

For the week ending Aug. 22, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Wet'h'r * | | Rainfall in inches. | | |
|---|-------------|--------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|----|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | | | | | | | | | | | | | | |
| S. 16 | 30.06 | 64 | 69 | 60 | 72 | 92 | 82 | N W | N W | 3 | 7 | O. | R. | T. |
| M. 17 | 30.02 | 70 | 72 | 61 | 72 | 70 | 72 | N W | E | 3 | 3 | C. | C. | .10 |
| T. 18 | 30.06 | 66 | 73 | 59 | 73 | 74 | 74 | N W | W | 4 | 10 | F. | C. | 0 |
| W. 19 | 29.97 | 72 | 80 | 64 | 81 | 79 | 80 | N W | N | 10 | 10 | O. | C. | 0 |
| T. 20 | 29.74 | 71 | 77 | 65 | 93 | 85 | 89 | S | N | 3 | 5 | O. | C. | .23 |
| F. 21 | 29.94 | 70 | 79 | 62 | 66 | 74 | 70 | N W | S W | 12 | 13 | C. | C. | 0 |
| S. 22 | 29.73 | 74 | 76 | 63 | 76 | 66 | 71 | S W | W | 11 | 12 | C. | O. | 0 |
|  | 29.93 | | 77 | 62 | | | 77 | | | | | | | .32 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. **Mean** for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING AUG. 20, 1903.

BANKS, C. E., surgeon. Three days' leave of absence from Aug. 8, 1903, under paragraph 189 of the regulations.

CARMICHAEL, D. A., surgeon. Bureau order of Aug. 10, 1903, directing Surgeon Carmichael to report to Director of Laboratory for special instructions, amended so that he shall report at the Laboratory for temporary duty. Aug. 17, 1903.

PERRY, J. C., passed assistant surgeon. Relieved from temporary duty in the Bureau, and directed to report to the Director of the Laboratory for duty. Aug. 15, 1903.

ROSENAU, M. J., passed assistant surgeon. Granted leave of absence for seven days from Aug. 19. Aug. 18, 1903.

NYDEGGER, J. A., passed assistant surgeon. Granted leave of absence for one month from Aug. 13, 1903, on account of sickness. Aug. 20, 1903.

WICKES, H. W., passed assistant surgeon. Leave of absence for one day granted by Bureau telegram of Aug. 13, 1903, revoked. Aug. 20, 1903.

PARKER, H. B., passed assistant surgeon. Relieved from special temporary duty at Vera Cruz, Mexico, to date from July 22. Aug. 17, 1903. Granted leave of absence for seven days from Aug. 19. Aug. 18, 1903.

MCCLENTIC, T. B., assistant surgeon. To report to Director of the Laboratory for duty, to take effect Aug. 1, 1903. Aug. 17, 1903.

WILLE, C. W., assistant surgeon. Relieved from duty at the Laboratory, to take effect Aug. 3. Aug. 17, 1903. Detailed as inspector of unserviceable property at Baltimore, Md. Aug. 18, 1903.

DELGADO, J. M., acting assistant surgeon. Granted extension of leave of absence for seven days from Aug. 12. Aug. 17, 1903.

FOSTER, J. P. C., acting assistant surgeon. Granted leave of absence for seven days from Aug. 19. Aug. 19, 1903.

FRISSELL, C. M., acting assistant surgeon. Department letter of Aug. 6, 1903, granting Acting Assistant Surgeon Frisell leave of absence from Aug. 6 to 18, amended to read from Aug. 10 to 25. Aug. 17, 1903.

SCHUG, F. J., acting assistant surgeon. Granted leave of absence for ten days from Aug. 15. Aug. 17, 1903.

SPOHN, A. E., acting assistant surgeon. Granted leave of absence from July 26 for thirty days. Aug. 17, 1903.

APPOINTMENTS.

Jamin H. Hamilton appointed acting assistant surgeon for duty at Richford, Vt. Aug. 5, 1903.

Stacy D. Williamson appointed acting assistant surgeon for duty at Malone, N. Y. Aug. 14, 1903.

PROMOTIONS.

Assistant Surgeon L. D. Fricks commissioned (recess) as passed assistant surgeon, to rank as such from Aug. 2, 1903.

Assistant Surgeon V. G. Heiser commissioned (recess) as passed assistant surgeon, to rank as such from Aug. 3, 1903.

Assistant Surgeon M. J. White commissioned (recess) as passed assistant surgeon, to rank as such from Aug. 4, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING AUG. 29, 1903.

E. M. BROWN, assistant surgeon. Detached from the Naval Hospital, Newport, R. I., and ordered to the "New York."

M. S. ELLIOTT, surgeon. Detached from the "New York" and ordered home to wait orders.

N. H. DRAKE, surgeon. Detached from the "New York" and ordered to the "Maine."

D. O. LEWIS, surgeon. Ordered to the "New York" as fleet surgeon of the Pacific Squadron.

H. C. CURL, passed assistant surgeon. Detached from the Naval Hospital, Mare Island, Cal., and ordered to the "New York."

W. R. DuBOISE, surgeon. Detached from the "Maine" and ordered to duty in the Bureau of Medicine and Surgery.

J. F. MURPHY, surgeon. Detached from the "Monocacy" and ordered to the "Wisconsin."

J. C. THOMPSON, assistant surgeon. Detached from the "Chesapeake" and ordered to the Naval Academy.

RECENT DEATHS.

ALLEN R. THOMPSON, M.D., a prominent physician of Troy, N. Y., died at Asbury Park, N. J., on Aug. 22, at the age of forty-five.

WILLIAM S. PLAYFAIR, M.D., of London, one of the most distinguished gynecologists and obstetricians of England, has recently died at the age of sixty-seven. Beyond his very large and successful practice, he was the author of two books on obstetrics, one of which became popular as a textbook and was reprinted in the United States.

CHARLES F. HILDRETH, M.D., died at Manchester, N. H., Aug. 18, at the age of seventy-one. He was graduated from the Harvard Medical School; began practice in Concord, N. H., and was for several years surgeon at the State Prison. During the civil war he served as assistant surgeon in the navy and also as surgeon in the 40th Massachusetts Regiment. At the conclusion of the war he began practice again in Concord, and later removed to Manchester, where he was, at the time of his death.

BOOKS AND PAMPHLETS RECEIVED.

Manual of the Diseases of the Eye, for Students and General Practitioners. By Charles H. May, M.D. Third Edition. Illustrated. William Wood & Co. New York, 1903.

Inefficiency of Ferrons Sulphate as an Antiseptic and Germicide. By Allan J. McLaughlan. U. S. Public Health and Marine Hospital Service. Bulletin No. 15. Washington, 1903.

Mundpflege bei Quecksilberkuren und einigen Mundaffektionen. von Julius Mueller, M.D. Berlin, 1903.

Consideration of the Medico-Legal Aspects of Aphasia. By Charles H. Hughes, M.D. St. Louis, 1903.

Some Practical Suggestions on Tropical Hygiene. By Maj. Henry P. Birmingham, Surgeon, U. S. A. Reprint. 1903.

Artificial Parthenogenesis in Molluscs. By Jaques Loeb. University of California Publications, Aug. 3, 1903.

Secondary Eruptions in Smallpox. By Jay F. Schamberg, A.B., M.D. of Philadelphia. Reprint. 1903.

A Thesaurus of Medical Words and Phrases. By Wilfred M. Barton, M.D., and Walter A. Wells, M.D. W. B. Saunders & Co., Philadelphia, New York, London. 1903.

Verhandlungen des Vereins für innere Medizin in Berlin. Herausgegeben von dem Vorstände des Vereins. Jahrgang XXII. 1902-1903. Sonderabdruck aus der "Deutschen Medizinischen Wochenschrift." Jahrgang 1902 und 1903. Berlin, 1903.

Radium and Other Radio-active Substances; Polonium, Actinium and Thorium, with a Consideration of Phosphorescent and Fluorescent Substances, the Properties and Applications of Selenium and the Treatment of Disease by the Ultra-violet Light. By William J. Hammer. Illustrated. New York: D. Van Nostrand Co. 1903.

Modern Bullet Wounds and Modern Treatment, with Special regard to Long Bones and Joints, Field Appliances and First Aid. Part of the Alexander Essay for 1903. By Major F. Smith, D.S.O. Philadelphia: P. Blakiston's Son & Co. 1903.

Transactions of the Seventieth Annual Session of the Tennessee State Medical Association. Nashville. 1903.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of Gustavus P. Head, M.D. Vol. VIII. Chicago: The Year Book Publishers. July, 1903.

Twenty-second Annual Report of the State Department of Health of New York, for the Year Ending December 31, 1902. With maps. Albany, 1902.

Original Articles.

CANCER OF THE INTESTINE, ETC.; ITS SURGICAL ASPECT, WITH REPORT OF CASES.¹

BY HOMER GAGE, M.D., WORCESTER, MASS.

THE danger of septic infection was one of the most important if not the controlling factor in limiting the field within which surgical operations could be properly undertaken a generation ago. Its removal by the development of an aseptic technique marks the beginning of a new surgery, one of whose first impulses seems to have been to see how much mutilation and interference nature will permit. Life is found to be quite livable without many of the organs that had hitherto been supposed to be essential to its existence.

But now that the possibility of these radical excisions and resections is established, must come the second stage in the new surgery, namely, a careful study of the remote as well as the immediate results of these new operations.

It seems quite certain that we shall discover that much that is possible is attended with very grave dangers to life, and is followed by an impairment of comfort and health that makes the life that is left hardly worth living. Already strong protests are being made by our medical brothers against many of the more radical operations — protests that must be heard and if possible answered, for, after all, our purpose must be, not to see what surgical feats can be successfully accomplished, but how they can be made to contribute to the prolongation of life and the relief of suffering.

One of the most notable protests that has been made recently was contained in the anniversary discourse before the New York Academy of Medicine, delivered Dec. 5, 1901, by Dr. Reginald H. Fitz of Boston.

It is an exceedingly temperate and judicial review of the ultimate results of surgical interference with diseased conditions that had hitherto been regarded as incurable. Much of it is naturally taken up with a consideration of the surgery of internal cancer, and it is to one feature of this that I wish to call your attention for a few moments.

In the records of the Massachusetts General Hospital for the ten years from 1890 to 1900 he found "ten cases of intestinal resection for cancer, of which eight died within a month after the operation; the ninth patient was found to have a girdling ulcer without gross evidence of malignant disease, although from microscopical examination regarded as an adeno-carcinoma. He was at work as janitor and enjoying fair health two and a half years after operation. The tenth patient was not heard from. Of the five cases of intestinal anastomosis (for cancer) two died within the fortnight following operation; one lived six months and two have not been heard from." "Of the seventy-seven cases of

cancer of the alimentary canal two, or only 3%, were living at the end of three years after the operation."

If we consider the question of relief of suffering in those whose history subsequent to the operation could be learned, the result is equally disappointing. I have thought it would be worth while, therefore, to look very briefly at the results which have been obtained by others in the surgical treatment of intestinal cancer, and to add my own small, but to me, significant experience.

In the first place, one finds it quite unsatisfactory to depend overmuch upon a general compilation of reported cases. The immediate results are so much better than the full reports from the more important clinics that one feels at once that the tendency to report individual successes makes the general table relatively unreliable as a true index of the general mortality, and, further, most of the cases are reported too early to give any assurance of the success or failure of the operation. Lardenois collected 241 cases with 24 deaths, a mortality of 34.8%, and Bovis 171 cases, with a mortality of 31.5%. Contrast this with the combined experience of such operators as Krönlein, Korte, Czerny, Billroth-Salzer and König, whose 58 cases resulted in 28 deaths, a mortality of 48.4%; of these Korte's record of 19 cases with 7 deaths, or 36.8% is the best — all of the others having a mortality of 50% or over. At St. Thomas' Hospital between 1888 and 1897, there were 12 resections with 7 deaths, and Von Bramann in 1897 reported 14 cases with 6 deaths.

According to Korte, the cecum is the most favorable locality for operative interference, he having resected for carcinoma five times and sarcoma once, with no deaths. This view is further supported by McEwen, who reports 5 cases with one death, and by Goullioud, who had 6 enterectomies for cancer of the cecum, with but one death; Krönlein, however, had 6 cases with 3 deaths. It follows that the general mortality in intestinal resection for malignant disease is still very high, — almost 50%, — except possibly in the region of the ileo-cecal valve. So much for the immediate, now let us look for a moment at the later results.

Of Korte's 12 successful cases, 5 were well from 3 to 8½ years after operation, 3 of his cases of resection of cecum being alive 8½, 6½ years respectively. Two of McEwen's cases were alive more and 2 less than 3 years after operation. One of Goullioud's patients was alive 3 years, the others less than 1 year, while Krönlein had 5 cases in which there had been no recurrence at the end of from 5 months to 14 years. Of Von Bramann's cases, 4 had remained well for more than 3 years and 3 for less.

Taking the experience of these operators, all of whose reports seem very complete, there were 56 cases, of which 13, or 23%, had survived the 3-year limit without any evidence of returning disease. These figures are, it seems to me, distinctly encouraging, and do much to overcome

¹Read before The Massachusetts Medical Society, June 9, 1903.

the prejudice naturally evoked by the very unfavorable statistics quoted by Dr. Fitz.

It must be remembered that the field is comparatively new, that the diagnosis is not usually made until the disease is pretty well advanced and that a considerable accumulation of experience must be made to furnish a basis for selection of cases suitable for operation. In view of the experiences already quoted, it seems reasonable to assume that when the growth has not extended beyond its original seat, and can be removed with a liberal margin of uninvaded tissue, although the immediate mortality will be large, a period of immunity from recurrences can be fairly expected in a proportion of cases that will compare favorably with the results obtained from the removal of cancer in other organs.

My own experience consists of but four cases:

CASE I. Cancer of the small intestine; acute intestinal obstruction, without previous symptoms. Operation on tenth day. Death from shock. Male, twenty-three years old, seen in consultation with Dr. W. M. Pearson of Ware. Had typhoid fever seven years ago, and has been troubled with constipation and occasional attacks of indigestion for two or three years, a very hearty eater, strong and active up to the advent of his last illness. On March 12 he ate a large quantity of cheese, from one-half to a pound, and on the following day was suddenly seized with pain in his stomach and vomiting. The pain subsided, but a continuance of the vomiting led him to consult Dr. Pearson on the 15th. In spite of a good variety of cathartics and enemata, no movement of the bowels could be secured, and the vomiting persisted. There was no distention and but little pain. Temperature had not been above 99, and until the evening of the 24th pulse had been of good quality and about 100.

On the evening of the 24th he showed signs of exhaustion, the vomiting became stercoraceous, and the pulse rose to 130. I saw him at 2 A.M. on the 25th; he was conscious, with a pinched, anxious expression, tongue moist, extremities somewhat cold and was very restless. The abdomen was not distended, but was somewhat tender, especially to left of median line below level of umbilicus, where there was a distinct increase of muscular resistance, and where under ether a definite tumor could be easily made out.

On opening the abdomen the intestines were empty and collapsed; there was a small amount of turbid serum present and some very recent easily separated adhesion. The lump on the left side was delivered through the incision and found to be contained within the lumen of the gut, which on its surface showed simply signs of fresh peritonitis. The portion containing the lump was partially intussuscepted into the intestine beyond. This part was resected, and the two ends united by a double row of sutures. The patient's condition was very unsatisfactory from the beginning, and he died about three

hours after the operation. The specimen was examined by Dr. F. H. Baker, who reported "that it consisted of about four inches of the small intestine, probably the lower part of jejunum. On opening, it is seen to be nearly occluded by a firm, irregular, lobulated polypoid growth, with a thick base and without ulcerations. The growth measures one and a half inches in width. No growth is apparent on the exterior surface of the bowel, but there was some contraction about the base of the tumor. Microscopical sections show it to be made up of an exuberant growth of glandlike structures, irregularly lined with columnar epithelium. Many of the glands are somewhat necrotic. Between the glands there is a coarse fibrous stroma.

"The diagnosis is adeno-carcinoma of the small intestine."

I have given the history of this case at some length because cancer in this locality is exceedingly rare, and because its existence was so entirely unexpected. There was absolutely nothing in the young man's history that would lead any one to suspect the real condition. It illustrates afresh the value of operating early in all cases of intestinal obstruction, and the possibility, in some cases at least, of finding a cancerous growth that has not invaded the walls of the bowels and has no palpable secondary glands. A more perfect case for complete and thorough removal of cancer in any part of the body could not be desired. It is a strong incentive to a careful study of the conditions which should lead to earlier recognition and operation.

CASE II. Cancer of cecum; symptoms of chronic appendicitis; resection; alive and well now, two years and eight months after operation. Miss N., thirty years old, a seamstress, had always had a spot in right side that was tender; supposed she had inherited a gastric trouble from her mother. For more than ten years had been awakened in the night by attacks of colicky pain in abdomen, and for four years these had been growing more and more frequent. There was always severe pain in the right side, and the attacks of colic would occur perhaps twice in a week, and then not for six weeks; would sometimes last several hours, and were controlled only by morphine. For two years she had noticed that the gas would collect and form a bunch in the right iliac region. She had been very constipated, but the movements had been normal in appearance. During the last year she had lost flesh, and found it difficult to keep on with her work. She was referred to me as a case of chronic appendicitis. There was marked tenderness with a distinct mass in the cecal region, and I acquiesced in the diagnosis.

I operated Sept. 20, 1900, and found the cecum converted into a hard mass; appendix not involved, normal in appearance, and the lower end of the ileum very much dilated. There were no enlarged mesenteric glands. The cecum was movable and not adherent to any of the adja-

cent structures. I excised it with a portion of the ileum as well as of the ascending colon. So much enlarged was the caliber of the small intestine that an end-to-end suture with the colon was easily effected. Her recovery was uninterrupted, and except for a small ventral hernia, which is easily controlled, she has been in better health than ever, with no sign of recurrence.

Dr. Baker reports "that the specimen consists of the last two inches of the ileum and the first five inches of the cecum. There is no evidence of the growth on the outside of the intestine, but involving the ileo-cecal valve there is felt a hard, contracting, encircling mass. On opening the lumen, the ileo-cecal valve is contracted so that its aperture is about the size of an ordinary lead pencil. Numerous small papillary growths project into the lumen about the ileo-cecal valve, and several small isolated ones are seen springing from the mucosa of the cecum as far up as one and a half inches from the valve. Sections show the intestinal wall to be about four times its normal thickness, and to be infiltrated with an adenomatous growth. The diagnosis is adenocarcinoma."

The result in this case certainly justified the interference, and is worth making several unsuccessful efforts to attain. If we could obtain as complete immunity in even 20% of our cases, it would be as favorable a showing as we can get in some of the better established and less opposed operations for cancer, in some of the more superficial and easily accessible parts of the body.

CASE III. Cancer of hepatic flexure; chronic intestinal obstruction; resection with artificial anus; subsequent closure; death from recurrence.

The patient was a male, fifty-two years old, who had for years been a pretty constant sufferer from intestinal indigestion and constipation. In 1898 he went to Cuba as a captain in the regular army; had while there a severe attack of dysentery, and was invalided home. For a time he seemed to be much better and stronger than he had been for many years, but during the winter of 1901-2 his old trouble returned, and he was evidently losing both flesh and strength.

About March 1, 1902, he had a severe attack of abdominal distress, with vomiting and obstinate constipation. Flatus passed freely, and there were some small but unsatisfactory movements. During the next twelve days his condition became worse; there was severe abdominal distention, but no local pain or tenderness. He could retain very little nourishment, and as the obstruction seemed to be growing more complete, in consultation with his attending physicians, Drs. Wood and Baker of Worcester, I advised his removal to the hospital for exploratory incision.

This was done on March 13, and I found the obstruction to be caused by an annular constriction in the neighborhood of the hepatic flexure. A hard infiltrating and contracting mass involved the whole circumference of the bowel, which was intimately adherent to the abdominal wall. There were several enlarged glands to

be felt in the adjacent mesentery. I succeeded in freeing the mass and excising it with enough of the mesentery to include the glands which I had felt. The patient's condition was such that I did not feel justified in attempting a careful suture, and had to be satisfied with an artificial anus at that point. He rallied well from the operation, was able to take and retain his nourishment, and at the end of a week was removed to his home.

Here he gained rapidly in flesh and strength, and was able to be up and walk about the house. On the 25th of April, six weeks after the first operation, I attempted to close the fistula and found the disease was already returning in the mesentery and adjacent parts. Symptoms of obstruction quickly supervened, and he died on the 25th of May.

Dr. Baker reported "that the specimen consisted of about five inches of the ascending colon near the hepatic flexure. Occupying about two inches of the middle was a firm, nodular, encircling, contracting growth, with broken adhesions over its external surface. This growth in the interior of the intestine presents a rough polypoid surface with several small areas of ulceration. The lumen of the gut was reduced to a little less than one-half inch. Sections showed the mucosa and submucosa in places to be nearly destroyed, and the growth to be made up of an irregular-shaped glandlike tissue, with the glands lined with columnar epithelioma. Some sections showed marked necrosis. The interglandular stroma was made up of coarse fibrous tissue. Adeno-carcinoma of large intestine."

The operation in this case is fairly open to the criticism made by Dr. Fitz upon surgical interference with intestinal cancer in general. If it was reasonable to open the abdomen and to make sure that the obstruction was not something that could be easily and safely relieved, a matter perhaps it should have been possible to decide without, in view of the extent of the disease and the improbability of being able thoroughly to remove it, I think the interference should have stopped there. I shall certainly never again attempt or advise removal under similar conditions.

CASE IV is one which I reported in the BOSTON MEDICAL AND SURGICAL JOURNAL for Dec. 19, 1901. It was that of a man seventy-five years old, who was operated on by Dr. McBurney of New York for acute intestinal obstruction. Six inches of the lower half of the sigmoid flexure was resected for carcinoma. Five years later I operated for a second obstruction caused by internal strangulation, and found no evidence of recurrent disease. He is alive and well now, seven years after the removal of the cancer, and in his eighty-second year.

Clinically these cases illustrate three different ways in which the presence of a malignant growth in the intestinal canal may manifest itself. In two, acute intestinal obstruction was the first indication of the existence of any serious trouble. There had been absolutely nothing in either

case to suggest the possibility of organic disease, and as we review the histories of intestinal cancer in the reported operations, one is surprised to find how often its development proceeds wholly unsuspected.

The diagnosis in this class, therefore, cannot be made until the abdomen has been opened, and there can be no question as to the propriety of the operation. When, as in Case II, the accompanying symptoms are such as to suggest a chronic appendicitis, — and the frequency with which cancer is found in the cecal region makes this class relatively a large one, — the desirability of surgical interference is equally clear.

The existence of the more serious lesions can seldom be made out beforehand, and fortunately the early appearance of the symptoms can lead to an early discovery of the growth by a surgical incision, and to its early removal while yet confined to its original seat, when all the conditions for success are most favorable. This explains, I think, in no small measure, the comparative low mortality and long immunity from recurrence observed in cases where the disease has been confined to the region of the ileo-cecal valve.

In that class of cases represented by the patient with chronic obstruction, there is certainly room for a very wide and honest difference of opinion. If left until the obstruction is nearly complete, the growth has too often spread by contiguity or metastasis, until its complete and thorough removal is impossible. Interference under such conditions may furnish the opportunity for the exhibition of great technical skill on the part of the surgeon, but can hardly be of any substantial benefit to the patient, and too often supplies the sort of failures which are contained in Dr. Fitz's paper, to the discredit of surgery.

Much the same can be said of those cases in which operation is undertaken only after the discovery of a palpable tumor. When the disease has reached a point where the diagnosis is only too apparent, surgery is unlikely to afford any great measure of relief, and even an exploratory incision should be undertaken very cautiously, if at all.

In these cases, before the appearance of obstruction or tumor, it will usually be found that there have been for a longer or shorter time, symptoms of intestinal indigestion, abdominal pain, constipation often alternating with diarrhea and other intestinal disturbances, which, in the light of the later developments, were their forerunners.

I believe there is a time in every case of cancer of the intestine, as of cancer in other more exposed parts of the body, when the growth is local and can be removed with reasonable probability of a very long immunity from recurrence, and it is to a study of these earlier symptoms, with a view to the recognition of this earlier stage, that we must invoke the hearty co-operation of our medical friends, for that is the appropriate time for surgical interference.

I would confine the exploratory incision, then, to those cases in which the earliest symptoms were those of acute intestinal obstruction, of appendicitis, acute or chronic, and to those cases of chronic intestinal disturbance in which there was a clear presumption that malignant disease, if it existed, had not advanced beyond the point where its radical removal was impossible.

So, too, after exploration and the discovery of a malignant growth, I would stop there, where the disease was found to have invaded the mesentery, its lymphatics, the adjacent peritoneal surfaces by adhesions, or other organs by metastasis, to an extent to make its complete and radical removal unlikely. It happens often enough here, as elsewhere, that cancer has invaded adjacent structures even when its presence cannot be detected by sight or feeling. I would reserve the radical operation for those cases in which the disease, so far as gross appearances are concerned, can be wholly isolated and removed.

I have said little of the palliative operation of colostomy and the various forms of intestinal anastomosis and exclusion, because I feel that if the growth cannot be removed with a fair assurance of immunity from recurrence there can be but little relief or satisfaction in a few weeks or months of added life with the burdens of a fecal fistula or a more or less imperfect anastomosis. Such an existence, short and full of suffering as it so often is, may be important enough for some special purpose to make one or the other of these operations necessary or desirable.

Colostomy in particular may be necessary for the relief of acute intestinal obstruction, or under other conditions as a preliminary to resection, but in the advanced stages of the disease none of these operations can afford more than a very temporary and imperfect relief, and they belong, it seems to me, to the surgery of the mechanic, not of the Samaritan.

DISCUSSION.

DR. F. S. WATSON of Boston: I want to say one word only with regard to that part of Dr. Gage's paper which deals with the question of making an artificial opening in the bowel as a palliative measure in inoperable cases of malignant disease of this locality. I cannot agree with either the reader or with Dr. Fitz, whom he quotes, with regard to this point, that it is not worth while to do colostomy under such circumstances.

Dr. Fitz gives, in the paper referred to by Dr. Gage, an entirely erroneous judgment with regard to colostomy as a measure of relief in these cases. Colostomy performed as Mayo recommends, on the same principle as that of the Ssabana Jew Frank gastrostomy in cases of cancer of the stomach, uniformly affords very great comfort to the patient, and does not simply prolong life at the expense of substituting a condition so disgusting and obnoxious to the patient

and to those who care for him that it is worse than that produced by the disease left to itself.

It is true that we cannot relieve the pain which is due to the pressure of the tumor, but why we should allow the patient previous to that time, or for that matter after it is present, to support the additional suffering which arises from the distention due to obstruction, or that which proceeds from the passage of feces over an ulcerated surface, when we have the power to remove both by an operation which when properly done, controls the action of the bowels perfectly in the majority of cases, and removes all fecal matter from contact with the diseased area, is more than I can understand. It seems to me that it would be quite as reasonable to permit a patient to die of suffocation during diphtheria in a hopelessly fatal case, rather than to supply to him the ease furnished by a tracheotomy, and thus take that sting out of the load of distress to be sustained before death comes. I am confident that any of us who was suffering from the great pain of distention in obstructive cancerous disease of the bowel would call pretty loudly for the relief of colostomy if he had ever seen it given to another under such conditions.

DR. A. T. CABOT of Boston: Dr. Gage's paper I think shows very clearly that what we need is not fewer but earlier operations; and that if our medical brethren would teach us how to discover these cases earlier, rather than point out cases which we lose because they have come to us too late, we might hope to advance in the direction of cure. We know that in these cancers at that part of the intestine which is accessible to constant examination in the lower bowel and rectum, there is a stage during which a radical removal is a cure. I have a number of patients now well from whom I have removed adenomata, adeno-carcinomas of the lower bowel. If you could learn the existence of these growths of the higher bowel during that stage, the removal would be quite as easy, even more so, because the bowel is less attached to the parts about. It seems to me the thing we must seek for is a closer observation of cases during the earlier stage of obstruction,—partial, recurrent obstruction,—because these patients often give a history of obstipation that amounts almost to obstruction which with castor oil passes off, and then two or three months later they cannot get movements with castor oil, and are turned over to the surgeon. I think we ought to work towards better diagnosis of the earlier stages. Whether we are going to get that by examination of the feces or how, I cannot say; but it seems to me it is "up to" our medical brethren to help us in that way rather than by criticising the cases which, coming to us too late, do not result favorably.

DR. GAGE: I am well aware that there is room for a wide and honest difference of opinion in regard to these palliative operations. In my own experience, even if immediate relief is obtained, the suffering is simply postponed, and even then the relief is very incomplete. The pain and discomfort incident to the continued

pressure and extension of the disease are still very much in evidence, even if the acute obstruction is overcome.

Personally I should rather go without the operation, unless the disease could be radically removed or there was some special reason for which I wished to live a few weeks longer.

THE RELATIONS EXISTING BETWEEN RESPIRATORY AND INTRAPELVIC DISEASES.¹

BY DANIEL H. CRAIG, M.D., BOSTON.

IN 1878 Professor Skene,⁹ in his inaugural address, called the attention of the New York Obstetrical Society to the very common occurrence of prolapse of the ovary, and requested the members to devote their energies to the discovery of the causes of this lesion in cases in which the cause was not manifest and in which the prolapse was unassociated with either disease in the ovary itself or uterine displacement. During the ensuing year, Drs. Mundé¹² and Goodell¹³ each presented monographs upon the subject, not only considering the causes, but also the course, symptoms, diagnosis and treatment. Various authors have contributed to the subject since and practically all have quoted the list of causes as given in the above papers, and it is because I feel that I can aid a cause which will account for cases not explained by any causes mentioned heretofore that I have undertaken the work, of which I trust you will consider this as but a preliminary report.

Clinically, the condition is of immense importance, for Mundé¹² found uncomplicated prolapse in practically 10% of his cases and they are even more frequent now. In the last five hundred cases of pelvic disease personally diagnosed I have found prolapse of the ovary to play a clinical part as follows:

Total number of cases 500.

| | |
|--|-------------|
| Cases in which ovarian prolapse was not a factor | 296 or 59 % |
| Cases in which the uterus was retrodisplaced, the ovaries not being coincidentally prolapsed | 62 or 12½% |
| Cases in which retrodisplacement and ovarian prolapse coexisted | 69 or 11 % |
| Cases in which ovarian prolapse existed with no retrodisplacement of the uterus | 73 or 14½% |
| | 500 100— |

The increase of 4% in the frequency might be accounted for by the recent greater prevalence of respiratory diseases incident to the annual epidemics of influenza, which had not occurred at the time of Mundé's paper in 1879.

My attention was first directed to the relations existing between respiratory and intrapelvic lesions by the fact that patients with pelvic lesions, and especially those with ovarian prolapse, were invariably made worse and their favorable progress under treatment arrested by the interurrence of any cough-accompanied lesion. In accordance with this conception

¹ Read before The Massachusetts Medical Society, June 10, 1903.

particular attention was given to the question of antecedent respiratory lesions in all cases in which ovarian prolapse obtained, and especially in those cases specified by Skene in which no cause was manifest. Positive histories were obtained too frequently to allow of its being considered merely coincidental. Very many histories might be adduced to substantiate this statement, but I have chosen three which seem sufficient for the present need.

CASE I. M. B. M., single, aged twenty. Never pregnant. Never any pelvic infection. For a few months acted as clerk in a drug store. For two years has been "running down." Family history strongly tubercular, but father and mother and one sister living and free from tuberculosis. Three years ago had enlarged glands removed from cervical region. Three small glands now palpable on right. Takes cold easily and always has persistent cough following each cold. Cough has at times persisted for months until phthisis was feared. About one year ago began to suffer from backache and leucorrhea and pain in iliac regions. Catamenia began at thirteen. Regular until recently. Painless. Duration five days until recently; now three or four days. Two napkins a day. No clots. Leucorrhea variable in amount and not absolutely constant. Exertion increases leucorrhea, which is then thick and yellowish. Has used douches. Not much backache now, but severe at times. Appetite poor. Digestion fair. Bowels fairly regular. Micturition normal.

Physical examination.—Chest and abdomen negative. Hymen intact but distensible. Nulliparous. Cervix long and conical. Uterus in good position, not enlarged nor tender. Some thickening of the right broad ligament. Left tube and ovary prolapsed and the ovary slightly enlarged [cystic?].

CASE II.—B. E. B. Single. Aged twenty-four. Never pregnant. Family and past history irrelevant. Catamenia began at twelve. Rather irregular, often varying between three and five weeks. In spring of three past years has menstruated every two or three weeks. Painless. Duration six to seven days, using thirty napkins, which are well saturated. Clots are frequent, their evacuation being accompanied with pain. Last April (date of history, Sept. 9, 1899) after a severe attack of la grippe, in which she narrowly escaped pneumonia, she suddenly began to feel pressure in the head, most persistent at the vertex. This vertical pain has been constant since. Worse at times. Often disturbs sleep, pain being worse at night. Can get no specific history. Paternal grandfather lived "a sporty life." Vertigo. Constant leucorrhea, sufficient at times to demand protection and of a thick, whitish character. Bowels regular. Micturition normal. General health good except that she is subject to winter cough. Appetite good. Digestion good.

Physical examination.—Thorax and abdomen negative. Perineum and cervix nulliparous. Uterus slightly enlarged and slightly back of the normal axis and decidedly tender. No discharge

from os. Right tube thickened but ovary not felt. Left ovary prolapsed at side of cervix and slightly movable, being apparently loosely adherent.

CASE III. C. S. Married eleven years. Aged thirty. Has had two children and one miscarriage. Oldest child ten and the youngest three. Miscarriage resulted from a fall. First catamenia at fifteen. Always irregular, but much more regular the past two years. Duration seven to nine days. One to two napkins a day. Severely painful at times, necessitating rest in bed. Pain principally in right iliac region. Nearly constant lumbar and sacral backache, which is increased by walking and relieved by lying down. Constant but not excessive leucorrhea. Severe and frequent headaches. Bowels constipated. Micturition normal. Nervous and irritable. General health poor. Has many times feared consumption and has been almost constantly under medical care for pulmonary troubles. Has spent winters in the South to avoid lung troubles. Has raised blood at times.

Physical examination.—Lungs now clear. Heart normal. Uterus in normal axis and very little enlarged. Perineum good. Cervix lacerated, everted and eroded. Right ovary in the posterior cul-de-sac and enlarged, very tender and firmly adherent. Left ovary enlarged and soft.

These histories were chosen because in them the factors which have heretofore been most frequently assigned a causal rôle, perfectly correctly, are so markedly conspicuous by their absence. And here permit me just a word as to my position. I am not attempting to controvert the work already done on this subject, but to amplify the knowledge by the addition of one more etiological factor. Without doubt every one of the causes thus far mentioned, and especially those of Mundé¹² and the eleven enumerated by Goodell,¹³ are all equally or more important.

Goodell,¹⁵ in speaking of the causes of ovarian prolapse, summarizes his views in one terse sentence in which he says that any condition which causes a persistent congestion of the ovary should be considered a cause of its prolapse. Authors are unanimous in stating that the most frequent cause is arrest of involution post-partum, leaving the broad and ovarian ligaments in a relaxed, inelastic condition. In the above three cases, however, not one of the more active ordinary causal factors is present, and the only one of Goodell's eleven present is a lacerated cervix, which I feel sure was placed in the list mainly for the sake of completeness.

But two of these cases had never been pregnant nor infected and were virginal, showing no evidence of any form of sexual excitation. In the third no sign of subinvolution existed, any enlargement in the uterus being readily accounted for by the cervical and ovarian condition.

Study of the mechanism of cough will show that it most abundantly satisfies the causal requirements, first as to congestion and secondly, as I hope to show below, as to the force necessary to push the ovary downward. Westbrook²⁷ has

clearly and concisely described the mechanism of cough, and the following is an abstract of his article:

The muscles of respiration, with the exception of the diaphragm and levatores costarum, are attached to and act upon the upper ribs; the expiratory group make their principal traction upon the lower portion of the thorax. The expiratory group, in which we are particularly interested, are anteriorly and laterally the triangularis sterni above and the recti, obliqui and transversalis abdominis below. The action of the triangularis is simple and in this connection relatively unimportant. The action of the rectus is also simple. Its sole influence is to draw the sternum downward and so to diminish the size of the anterior wall of the abdominal cavity. The action of the obliqui is more complicated; their posterior portions, which pass directly from the crest of the ilium to the ribs exert an immediate and powerful downward traction upon the thoracic walls, not only diminishing the size of the lateral walls of the abdomen, but acting as adductors to the ribs, which have been put in abduction during inspiration. The more anterior portions have a crossed action and make diagonal traction across the abdomen. The upper portion of the external oblique and the middle portion of the internal oblique of the opposite side, attached as they both are to the intervening sheath of the rectus, are equivalent to one long diagonal muscle, passing from the ribs on one side to the crest of the ilium on the opposite side and capable by its contraction of drawing the ribs downward and inward so as to contribute much toward the expiratory diminution of the thoracic and abdominal cavities.

The function of the transversalis is equally important. Its middle portion is attached by strong fascia to the transverse processes of the lumbar vertebræ; while the fibers below arise from the iliac crest and outer half of Poupart's ligament. Above, it arises from the inner surfaces of the costal cartilages. The fibers of this part of the muscle pass horizontally across the abdomen and by the mutual attachment of those of the opposite sides at the linea alba, one continuous muscle is formed, the contraction of which strongly adducts the lower costal cartilages and thus diminishes the epigastric angle. The middle portion of the transversalis acts directly upon the abdominal wall. In its contraction the transversalis acts from the outer border of the quadratus lumborum, as that muscle fixes its tendons in the lumbar region. It tends first to draw the linea alba toward the fixed point; but the antagonism of the opposite side prevents lateral displacement and simply allows the anterior abdominal wall to approach the vertebral bodies, shortening the antero-posterior diameter. The muscular fibers intermediate between the anterior and posterior attachments make strong lateral compression. The lower fibers when they contract tighten the line across the abdomen and compress the intestines.

The posterior muscles are the erector spinæ, serrati postici and quadratus lumborum. When the

erectores spinæ contract they draw the ribs forcibly downward toward the pelvis, lessen the transverse and antero-posterior diameters of the thorax and at the same time tend to shorten the perpendicular axis of the abdomen.

When these powerful muscles of expiration are spasmodically contracted, as in the act of coughing or sneezing, their first effect is to adduct and depress the ribs and by so doing diminish the size of the thorax in all its diameters. But as the abdominal walls only yield in the upward direction and as the contents of the abdominal cavity are practically incompressible, its roof, the diaphragm, which is relaxed during expiration, must ascend and encroach upon the thoracic space, from which air escapes, to compensate for the diminution in its size. The second effect of the expiratory contraction is to lessen the circumference of the abdomen. As the contents are incompressible and as the sphincter muscles, by their contraction, prevent the escape of the contents of the hollow viscera, the decrease in the transverse and antero-posterior diameters must be compensated for by an increase in its long diameter, another factor in the ascent of the diaphragm. Further, during the expiration of cough the glottis is partly closed, thus producing considerable resistance to the egress of the air.

Thus by making a more or less rigid walled cylinder of the abdomen, of which the top is to be elevated by internal pressure, the ascent of this top being resisted not only by gravity but also by a partial closure of the glottis, it is readily understood that the bottom of this cylinder is struck a veritable blow by *contre coup*. Speaking of this effect Westbrook says: "In the pelvis the inferior hemorrhoidal veins and those of the uterus, vagina and bladder are sometimes so turgid that slight ruptures and hemorrhages occur, particularly from the uterus, causing a bloody, serous discharge from the vagina during cough. Involuntary urination also sometimes results from the sudden downward pressure, especially in women."

Weiss⁷⁶ (*Heilkünde*, Vienna), as evidencing the expulsive power of this muscular mechanism, says: "The expelling speed of the air varies considerably. In quiet respiration it passes through the glottis at 125 cm. per second, and the pressure supports 2 mm. of mercury. During violent expiration and coughing, the pressure rises to 150 to 200 mm. and the speed is said to exceed that of the wind in a storm. It is said to be as much as 100 meters a second."

Westbrook's article was written apropos of respiratory diseases, but if it had been his desire to defend such a contention as is suggested by the present paper he could hardly have written more directly to the point.

In operating in or through the vagina no one can fail to note the marked rise and fall of the vaginal vault with each respiration, and if perchance the patient cough or vomit, the specula are not infrequently forced entirely out of the vagina. This impulse caused by cough is also plainly evident if a patient coughs during a digital examination.

Moreover the effect of respiratory influence has long been recognized in various pelvic lesions, particularly herniæ and uterine displacements, but no mention, so far as I am able to learn, has been made in connection with genuine respiratory diseases. This is true of both monographs and textbooks, both old and recent. The respiratory influence most frequently invoked is invariably a secondary one in connection with either the straining due to muscular exertion or that due to intestinal diseases. Almost every author who has written at all comprehensively of displacements of the pelvic viscera has cited straining as a cause. Yet the effect of straining on the pelvic organs is entirely respiratory, being wholly due to the involuntary holding of the breath in inspiration which invariably accompanies the muscular strain. The principal difference existing between the mechanism of strain and that of cough is in the degree of force, and that in straining the glottis is completely closed, with or without the relaxation of the sphincters.

The clinical evidence appearing so conclusive, the actual demonstration and measurement of the relation existing between respiratory causes and pelvic effects was all that was lacking. To supply, very crudely it is true, this want, I have constructed this apparatus, which, notwithstanding its humbleness, I have christened the pelvio-respirometer.

By its use I have been able to read exactly the force of the downward impact upon the pelvic structures resultant from various respiratory movements. Readings have not been made from a large number of subjects, because, as I expected, I found that the figures varied only within very narrow limits, and the readings given represent the mean average reading, with the maximum and minimum extremes only an ounce or a fraction of an ounce above or below.

Before giving the readings, however, I wish to say just a word as to what was to be expected. Many of you have undoubtedly, as I have, seen the so-called "lung-testing" machines commonly placed in public places, the dials of which show how many pounds pressure can be created by forcible expiration. All that I have seen are shamefully mendacious. The average expiratory power for an adult man is $1\frac{1}{2}$ lbs. By training and special gymnastic expansion of the chest a few ounces can be gained. In the adult woman the average expiratory power is $11\frac{1}{2}$ oz., the maximum personally noted being 14 oz. With this explanation I submit the readings obtained by the use of the pelvio-respirometer.

Downward pressure is produced upon the pelvic viscera as follows:

| | |
|--|--------------|
| Ordinary inspiration causes a downward intrapelvic pressure of | 1.85 ounces |
| Ordinary expiration a vacuum of | 7-16 inch |
| Forced inspiration a pressure of | 2.56 ounces |
| Forced expiration, a vacuum of | 13-16 inch |
| Slight cough a pressure of | 7.5 ounces |
| Violent (artificial) cough a pressure of | 16.3 ounces |
| Moderate straining a pressure of | 6.83 ounces |
| Strenuous straining a pressure of | 10.95 ounces |

So that the conditions might as nearly as possible simulate the ordinary conditions, these readings were all made with the patients sitting erect and with the corsets on. One other fact I wish particularly to specify; no readings have been made in cases in which a genuine hard cough due to actual respiratory lesions existed. Much as I desired to do this and also to measure the pelvic effects of sneezing, I feared to allow my enthusiasm to carry me thus far on account of the possibility of sufficient pressure being brought to bear on the fluid in the vagina to force it through the fimbriated ends of the tubes into the peritoneum. I mention sneezing because but for the trespass upon your time I should have detailed one history in which an attack of hay-fever was the direct exciting cause of the symptoms which were due to an uncomplicated prolapse of the left ovary.

The effect of genuine hard cough of bronchitis, for example, certainly far exceeds that of the counterfeits, and yet I think you will agree that a persistent repetition of such force as has been shown to be engendered in the artificial cough would be quite sufficient in time drive the ovary down.

Moreover, a study of the topographical anatomy of the pelvic contents shows still further reason for this action of cough. Prolapse of the left ovary is slightly more common than of the right, the reason usually assigned being its greater proneness to congestion owing to its venous return circulation. This reason is undoubtedly active and is only supplemented by the relations of the sigmoid flexure as described by Deaver.⁷⁸ He says: "Normally, owing to its long meso-sigmoid, the greater part of the sigmoid is an occupant of the pelvis. *Here it lies in contact with the bladder, the uterus and its appendages,** and those coils of the small intestines which occupy the pelvis." The attachment of the sigmoid being posterior, if it is in relation with the bladder it must cross the top of the left broad ligament in an antero-posterior direction. Consider what must occur when this sigmoid is driven downward by the effects of coughing, or even straining, especially if this sigmoid is loaded, as so frequently occurs in women. But this downward impact represents only one or two equally important factors. According to Westbrook, the mechanism of cough is such as to exactly supply Goodell's one general predisposing cause, namely congestion.

We have also thus far been considering the effect of cough on normal ovaries. Consider now how much this effect is heightened in the instance of an ovary already predisposed to prolapse by pre-existing lesions. Consider, for example, its effect upon an ovary enlarged, heavy and turgid with the physiological congestion of menstruation, or enlarged and heavy from the presence of a false corpus luteum, or again an ovary but imperfectly sustained by broad and ovarian ligaments weakened by arrested involution, and does not the evidence seem conclusive?

And of all the causes of ovarian prolapse respiratory lesions are certainly amongst the most

* The italics are my own.

important. First, because in our New England climate catarrhal conditions of the respiratory tract, accompanied by more or less persistent cough, are so common as to have by familiarity bred a certain degree of contempt, especially in the laity. Secondly, because this is a cause which does not act insidiously and unsuspectedly, but frankly and openly, thereby offering the greatest possible scope for the highest attainment of medical science; namely, the prevention of disease.

But before proceeding to the consideration of the prevention of complications, I wish to offer one other suggestion. Throughout the literature of the subject I find comparatively frequent reference to congenital ovarian prolapse. My suggestion is that these cases may be better accounted for. In congenital malformations several factors generally act conjointly and it is anatomically difficult to understand how any such action can produce *downward* and backward congenital ovarian displacement. Ovaries are congenitally unquestionably displaced anteriorly, as in Engelmann's¹⁵ cases and into hernial sacs, but where such conditions as persistence of the lumbo-ovarian ligament or the existence of the appendiculo-ovarian ligament of Clado obtain, the ovary is maintained above its normal level.

May not at least a part of these co-called congenital prolapse cases be due to the congestion and pressure effects of respiratory diseases — for example, whooping-cough — during childhood, no symptoms manifesting themselves until after the maturation of the organs?

If we grant that the above deductions are correct, at least in part, much can be done, especially in women known to be the subjects of pelvic lesions, by prompt and efficient attention to the respiratory lesions; and if for any reason it is inadvisable or impossible to inhibit the cough, much may be done to lessen its evil effects upon the pelvic viscera. And I say pelvic viscera advisedly, for while I have confined myself to-day entirely to the ovarian conditions, you can all easily see the concomitant influence on the other pelvic structures.

The prevention of pelvic complications of respiratory lesions rests not with the gynecologists but with the general practitioner, for it is he who sees the cases long before he needs to refer them to us.

The following suggestions may, with others better known to the general practitioner than to us, serve to avoid such complications:

The congestion of menstruation acting in conjunction with that of cough is always harmful and even the nulliparous should be guarded against it. As corsets lessen decidedly the normal abdominal resiliency and go far toward destroying the so-called retentive power of the abdominal mechanism, they had better be proscribed during any severe and long persisting cough-accompanied lesion, especially during the catamena.

By requiring a patient to assume the prone position for a few minutes after a violent coughing spell, disengagement of the pelvic vessels is favored and gravity assists the ovarian supports.

If ovarian, or pelvic, involvement is suspected

much good may result from the employment of the pelvic respiratory massage as suggested by Williams. This consists in having the patient assume the genu-pectoral or knee-elbow position and aspirate the pelvic vessels by slow force-expiration about fourteen times a minute.

Complications may also be avoided in those already the subject of pelvic disease, by insistently warning them of the necessity of avoiding a cough and the importance of prompt and efficient attention should such a condition arise.

ADDENDUM.

Having pursued this study thus far, which, by the way, I consider as probably only the beginning, I naturally desired to know if the downward impact of practically one pound, as shown by the pelvio-respirometer, was really sufficient to throw the ovary down. While I do not consider my data as conclusive as yet and shall investigate the matter further, I have, since the completion of the paper, thanks to the kind co-operation of Professors Thayer, Cushing and Leary, been able to make a series of investigations on the cadaver and learn that in the dead subject a pressure of 10 oz. is sufficient to carry the fundus of the uterus to the bottom of the cul-de-sac of Douglas. A slightly greater force is requisite to so completely prolapse the ovary. It is carried down to the level of the utero-sacral ligaments by a pressure of 12½ oz. and is completely prolapsed by a pressure of 14 oz. The normal vital ligaments would undoubtedly act slightly different from those on the cadaver, but if the respective resistance imparted to the hand is of any value the ligament on the cadaver seemed much more resistant than are those ordinarily felt in operating, but of course totally lacking in resiliency.

Taking these findings as a basis, it appears that the force engendered by cough is slightly in excess of that required.

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CARCINOMA OF CHOROID METASTATIC FROM PROSTATE.

BY ALLEN GREENWOOD, M.D., BOSTON,

Ophthalmic Surgeon, Boston City Hospital.

W. G. C., age fifty-six, came to the eye clinic of the Boston City Hospital Sept. 29, 1902, and the following history was obtained:

Born in Pennsylvania. Hotel clerk.

Family history. — Mother and father dead; cause unknown. Sister alive and well.

Past history. — He entered the Boston City Hospital Oct. 9, 1901, in the service of Dr. Munro, for difficulty in urination. The records show a diagnosis of hypertrophy of prostate, with a history of difficulty of urination covering a period of ten years and for a year more or less dribbling of urine.

Physical examination at that time is recorded as follows: Obese, color fair. Pupils small, but react. Tongue clear. Heart, systolic murmur over base with aortic second accentuated. Liver palpable about two fingers below. Abdomen prominent. Temperature 100. Pulse 110°.

Rectal examination. — Flat, broad prostate, not projecting, but slightly into rectum and upper end not within reach of finger. Operation advised and refused. Taught how to use catheter.

Present history. — Four weeks ago he noticed a dimness of vision of the left eye and went to an eye clinic, where he was told that he had a retinal separation. The vision became more and more defective until a week ago, when it was reduced to light perception accompanied by severe pain in eye and all over left side and front of head. The pain was much worse at night. He also complained of great weakness and shortness of breath. Has lost sixty pounds in one year.

Examination showed a well-developed man, but poorly nourished and very anemic to the point of cachexia. Right eye normal. Left eye presented a marked circumcorneal injection, pupil widely dilated and cloudy looking, iris muddy, cornea steamy and anesthetic, and tension plus; fundus could not be seen on account of cloudy media, perception of light only. Under use of eserine and cocaine the pain and injection diminished.

On Oct. 6 I first saw the case and by that time, though the tension was still plus and the eye showed all the signs of acute glaucoma, the media had cleared enough under the eserine to allow a view of the fundus. The ophthalmoscope showed a separation of the retina in the upper temporal quadrant extending into the lower quadrant, beyond which the retina could not be followed on account of vitreous haziness. The cause of the separation could not be made out by use of the ophthalmoscope, but the clinical history of localized retinal separation, followed by acute glaucoma and accompanied by beginning cachectic condition, led me to a diagnosis of choroidal tumor, probably sarcoma, with involvement of other organs, especially the liver. The treatment of the glaucoma with eserine was continued and the patient transferred to the medical wards for observation and treatment of his general condition.

The following additional facts were taken from the medical records:

Marked arteriosclerosis. No general glandular enlargement. Mucous membrane pale. Tongue protruded straight, considerable white coat.

Thorax. — Barrel-shaped. Some prominence of lower half right. Resonance good throughout. Some slight dullness at left apex. No apparent change of vocal fremitus. Expiration prolonged.

Heart. — Upper border in third space, right 5 cm. to right, left 9 cm. to left, of mid-sterum. Sounds best heard at fifth space inside of nipple line. Sounds clear, strong through-

out, save systolic murmur over aortic area. Action regular. Aortic second accentuation.

Pulse. — Regular, fair volume and tension.

Liver. — Dullness from fifth rib, edge palpable just below costal margin in nipple line. Surface smooth. No nodules felt.

Spleen. — Not felt.

Abdomen. — Markedly scaphoid. Superficial tissue very lax. Tympanitic. No tenderness or spasm.

Genitalia. — Apparently normal.

Extremities. — Reflexes present and equal. No edema. Tibia slightly rough.

Skin. — Dry, numerous pigmental, papillary, pea-sized growths on trunk and extremities.

The day after entrance patient's temperature rose to 101.8°, but soon became normal and then subnormal.

He was somewhat stupid, but roused to answer questions. Had some diarrhea. Had some cystitis.

Four days later it was noted that he had grown more feeble since entrance. Was rapidly emaciating and was not entirely conscious. Respiration very rapid. Failed more rapidly to-day than before. Pulse failed and he died at 7 p.m.

We were fortunate in obtaining an autopsy, including removal of the left eye, section of which showed carcinoma of choroid. The autopsy was performed by Dr. E. E. Southard, whose report follows. Dr. E. E. Jack of Boston reported a case of double metastatic carcinoma of the choroid, at the thirty-eighth annual meeting of the American Ophthalmic Society, which was published in the transactions. The following summary of reported cases is from Dr. Jack's report: Up to that time, including his own, there had been twenty-nine cases reported — "twenty-three females and five males, one clinical history unrecorded. Of these nine have been double and all but one in females. In the twenty-three females the primary tumor was in the breast in twenty-one, in the lungs and pleura in one and in the thyroid in one. In the five males, stomach in three, breast in one and lung in one." The case reported here adds another to the list of males and the first one with the primary tumor in the prostate. Another unusual feature was the occurrence of acute glaucoma.

A CASE OF CARCINOMA WITH SECONDARY NODULE IN THE EYE.¹

BY E. E. SOUTHARD, M.D., BOSTON,

First Assistant in Pathology, Boston City Hospital.

THE present report follows a clinical report by Dr. Allen Greenwood, to whom I am obliged for a number of suggestions. To Dr. F. B. Mallory, during whose service I made the autopsy, I am indebted for aid in the report.

(a) AUTOPSY FINDINGS: GROSS.

The examination was made twenty hours after death.

External examination shows an elderly man of fairly strong build and good musculature. Nutrition poor. Abdomen scaphoid. Moderate sclerosis of peripheral arteries. Pupils equal, 5 mm. wide. The only external sign of tumor is

a mass, egg-size, immovable, under skin of left axilla.

Internal examination of trunk shows in —

Bony thorax. — Two tumor masses. (a) A low mound-like prominence at back of sternum, involving lower end of body and the xiphoid attachment, 5 by 1.5 cm., well encapsulated, of rather firm consistence, of a mottled pink and gray color with miliary china-white masses starting from cut surface. (b) A mass, orange-size, obliterating a portion of pleural cavity at left apex, replacing a portion of third and fourth ribs and continuous with mass palpable in axilla. No evidence of encapsulation. Substance injected, darker in color than sternal mass, but of same consistence.

Abdominal walls, retracted, with thin layer of fat.

Pleural cavities. — Numerous fairly firm old adhesions over all, but thicker and firmer at summits of the many subpleural tumor masses and inseparable at the left apex.

Pericardial cavity. — Moderate amount of amber fluid. Membrane normal save for grayish-black mass, 3 by 2 by 1 cm., bulging into and covered by parietal serosa in uppermost portion of sac, well encapsulated in front by mediastinal connective tissue.

Peritoneal cavity. — Serosa mainly unaltered. Fibrous adhesions overlie many coin-sized and umbilicated tumor masses in liver. A smooth fibrous band striking across space behind bladder, bowstring fashion, shows in the middle a dark gray tumor mass, pea-size. Bladder, moderately distended, rides high in pelvis. Reduction impossible, on account of tumor in prostate and on account of the firm union of bladder wall with symphysis pubis by a flattened tumor mass, 2 cm. thick, accurately fitting but not invading the two structures.

Heart. — Weight 350 gm. Epicardium thinly underlaid with fat. Muscle of good consistence. Left ventricle 1.5 cm. thick at a point 2 cm. below aortic valve; right ventricle 0.5 cm. thick at a point 2 cm. below pulmonary valve. Fibrillæ contain no fat. Endocardium chiefly normal; the mitral valve curtain shows a few slight yellowish mounds of sclerosis. The valves measure: tricuspid, 13.5 cm.; pulmonary, 7.5 cm.; mitral, 11 cm.; aortic 8 cm. Chambers contain eruer clots.

Lungs. — Right weighs 1,050 gm., left weighs 910 gm. Both lungs exhibit everywhere nodules, sometimes ill-defined, sometimes globular and from a few millimeters up to several centimeters in diameter, often of an ash-gray color with black vascular points, sometimes darker and of a reddish tint. The surface is emphysematous and retracted, according to the site of underlying nodules, in areas 2 to 3 cm. across. Section surface firm and almost dry. Two thirds to three quarters of air space is replaced with tumor. Peribronchial lymph nodes enlarged to size of fist, but the nodal composition is preserved; from the cut surfaces start white miliary masses on slight pressure. Pigment-bearing tis-

¹ From the Pathological Laboratory of the Boston City Hospital.

sue skirts the periphery of some of the enlarged nodules.

Spleen. — Weight 130 gm. Unciform projection below 4 cm. in diameter. Capsule blue. Section surface beefy red and slightly pulpy. Trabeculae evident. Malpighian bodies as gray points. Gastrointestinal tract normal except for nodule described above.

Pancreas normal.

Liver. — Weight 1,860 gm. Substance of a slightly yellowish brown riddled with opaque yellowish-white nodules, varying from pea- to walnut-size, globular within, superficially low and often umbilicated. Substance of the usual liver firmness; nodules somewhat firmer, in comparatively few cases centrally yellower and of softer consistence. Nodules show no trace of capsulation. The largest nodules occur toward and upon the under surface.

Gall bladder. — Bile dark. Two mulberry calculi, about 1.5 cm. in diameter.

Kidneys. — Weight 240 gm. (right 95, left 145). Strip with moderate difficulty. Interstitial pitting narrow but of fine mesh. Left kidney shows at upper pole an egg-sized, thin-walled cyst containing clear fluid. Fresh specimen shows no intra-epithelial fat.

Adrenals. — Left shows irregular distribution of medullary substance — a species of separate adrenal lying imbedded but not encapsulated in the cortex at the inferior pole.

Bladder. — Mucosa blackish, perhaps thickened, but not invaded by neoplasm.

Prostate. — If there is any normal prostate tissue, it is now indistinguishable from a firm egg-sized mass, through which probe cannot be passed or urine forced. Space between bladder and symphysis completely filled by the growth which rises just above the level of symphysis. The tissue is gray with a few vascular points and miliary whitish masses popping from section-surface. Upon the left iliac rim over iliac bifurcation is a boat-shaped mass of tissue resembling the prostate growth. Seminal vesicles and ejaculatory ducts not made out.

Aorta. — Moderate patchy sclerosis.

Organs of neck. — Trachea reddened.

Brain. — Weight 1,360 gm. Dura tense. Right side darker than left. Sinuses contain crur clot. Dura peels with difficulty from right side. Pia of upper surface of frontal lobe replaced with a reddish-gray firm growth, 1.5 to 2 cm. thick; growth very vascular, in places hemorrhagic. The right frontoparietal region is overlaid with hemorrhage in which there may be organization or a thin layer of neoplasm. Convolutions of left side flattened, of right side marked with digitations radiating roughly from a point in the longitudinal fissure 5 cm. from anterior pole.

Eye. — The tumor occupies a spherical sector on the temporal side of the globe of the left eye. The tumor is composed of two lobes, fused at the base, and is 20 mm. by 6 mm. at the greatest width, advancing to a point 4 mm. back of the ora serrata and failing to involve the nerve head by 2 mm. The sclera is of the usual thickness on

all sides and is not involved. The choroid coat merges indistinguishably into the tumor; the pigment cannot be told in color from rather wide darkened areas in the tumor considered at time of autopsy as hemorrhagic in origin.

(b) MICROSCOPIC FINDINGS.

Following are the microscopic findings in the main organs:

Heart. — Perinuclear pigmentation of a few fibers.

Lungs. — Pleura injected. Small interstitial collections of pigment. Capillaries everywhere deeply injected. Considerable diapedesis into many air spaces. Pigment-bearing macrophages in many air spaces. Neoplasm prominent, confined in plane of section to certain acini. The tumor spreads from space to space in continuous masses, coarsely and smoothly lobulated by the intact septa. The tumor is here and there constricted by the re-entrant septa, so that the cells become elongated and compressed. The cells are in the main oval; their outlines are indistinct except at the free border of the tumor. The nuclei are quite regularly oval or a trifle acuminate, vesicular and provided with one or more deeply staining round or oval nodes suspended at some distance from nuclear membrane by numerous chromatic threads. The nuclei often lie free in rounded spaces in the cytoplasm. At some foci the tumor breaks up into more deeply eosinophilic masses with dead-black nuclear remnants.

Spleen. — Trabeculae and reticulum increased in amount. Capillaries packed with blood corpuscles. Phagocytes containing masses of blood corpuscles, often fused together and colored a deep brown, are prominent, apt to occur in groups, often in the adventitia of the vessels of the Malpighian bodies. Similar pigmentary masses occur in the capsule. The vessels of the Malpighian bodies frequently show hyaline changes in media.

The tumor masses are rounded and lobulated, preferring to spread through the pulp, sparing both trabeculae and Malpighian bodies. The cells resemble those described with the lung. Masses of acidophilic debris are common inside certain lobules. Mitoses frequent.

Liver. — Section of liver with small tumor nodules.

Perilobular tissues in the main normal. A certain number of branches of portal vein are dilated by masses of cells occasionally in mitosis. A slight degree of lymphoid infiltration around the vessels containing tumor.

Capillaries filled with blood. Parenchymal cells granular and centrally or diffusely pigmented.

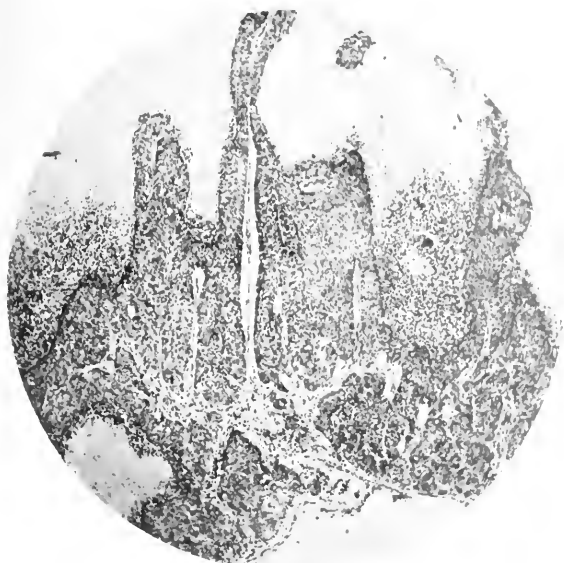
The tumor mass contains numerous mitoses. The individual cells resemble those described under lung; but they are grouped in smaller masses to suggest alveoli with a thin stroma. Toward periphery of nodule the thin stroma begins to contain remnants of liver epithelium. The tumor has a finely serrate edge: the tumor pre-

fers to invade capillaries or pericellular spaces. The portal canals are spared by the tumor and may be made out deep in the tumor mass with the portal veins containing tumor thrombi.

Kidney. — Islands of interstitial overgrowth with collections of lymphoid cells. Moderate diffuse interstitial overgrowth well marked in

growth in the lung. The growths in the pia and in the eye must be grouped together from their tendency to the papillary form. The tendency to hemorrhage shown by the pial growth is remarkable and is probably due to local compression of the veins. Notable also is the choroidal pigment deep in the stroma of the nodule of the eye.

A CASE OF CARCINOMA WITH SECONDARY NODULE IN THE EYE. — SOUTHWARD.



Portion of carcinomatous nodule in the eye. Note papillary form. Intracellular pigment in stroma, *e. g.*, at base of tallest process.



Tumor occupies spherical sector on temporal side of left eye. Shown here in coronal section. Note pigmentation and detached retina.

(c) PATHOLOGICAL SUMMARY AND DISCUSSION.

Anatomically the case shows carcinoma of prostate with extension into retroperitoneal pelvic tissues; carcinoma of intestine, liver, spleen, lung, mediastinum, thoracic cage, pia mater, eye; general arteriosclerosis; chronic interstitial and arteriosclerotic kidney.

Histologically the carcinoma is fairly constantly composed of —

(a) Smooth masses of cells having indistinct borders and a cytoplasm containing clefts or vacuoles in which lie oval vesicular nuclei with prominent nucleoli.

(b) A stroma varying extremely in amount from organ to organ. The minor differences are partly ascribable to locus: thus the finely serrate border found in the liver depends upon the rapid growth of the tumor in the parenchyma of that organ; with this may be compared the smooth lobular

those principles of physiology which then, as now, were believed to govern the functioning of the human body. But as electricity as a therapy advanced in popularity, curiously enough, it was found that vibration, mechanically produced, again came forward and was received with more professional favor. It was not surprising, therefore, that at the last International Congress of Electro-Therapeutists held in Paris in July and August of 1900 — the year of the French Exposition — six instruments were there exhibited, all designed to apply mechanically produced vibration to the body. As none of these instruments were the equal in the point of merit to several upon the market of this country to-day, I will not detain you by describing their several mechanical features further than to say that they were designed and introduced by

¹ Read before the Medical Society of the Borough of the Bronx, New York, May 12, 1903.

sue skirts the periphery of some of the enlarged nodules.

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fers to invade capillaries or pericellular spaces. The portal canals are spared by the tumor and may be made out deep in the tumor mass with the portal veins containing tumor thrombi.

Kidney. — Islands of interstitial overgrowth with collections of lymphoid cells. Moderate diffuse interstitial overgrowth, well marked in pyramids. Arteriosclerosis with areas of fibrous overgrowth and atrophy of tubules in association with the vessel. The dilated tubules contain granular débris and ring-reticula. The epithelium is granular, the nuclei small and black or absent, the cell-borders indistinct. Glomeruli pervious.

Prostate. — The prostate tissue is ill-preserved: tumor masses, smooth, round and homogeneous in character of cells contained, lie imbedded in deep stroma.

Brain. — Section from frontal lobe with overlying tumor. Deep rounded masses of tumor cells set close with scarcely evident cell-borders interdigitate with deep trabeculae of fibrous tissue. Nearer the cortex the true pia comes more in evidence with collections of blood corpuscles, lymphoid cells and enormous numbers of pigment-bearing phagocytes. Extreme overgrowth of subpial glia.

Eye. — Section from eye shows a tumor growth resembling that overlying the brain. The papillary masses are not so thick as in the pial growth; they grow in places, characteristically in deep, slender, fjord-like clefts. Cells containing choroidal pigment are found in the slender connective tissue stalks several millimeters distant from the choroid.

There is little differentiation of cells within the masses. The cell-borders are usually indistinct; but show in places as rounded or polygonal cells occasionally drawn into processes. The nuclei are rounded or oval, have a distinct membrane and are supplied with very distinct, rather coarsely-meshed network with several large condensed masses of chromatin. The tumor shows in places fragmentation and degeneration, in other, sometimes closely adjacent, places, many karyokinetic figures.

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growth in the lung. The growths in the pia and in the eye must be grouped together from their tendency to the papillary form. The tendency to hemorrhage shown by the pial growth is remarkable and is probably due to local compression of the veins. Notable also is the choroidal pigment deep in the stroma of the nodule of the eye.

From anatomical and histological evidence alone, one would scarcely be warranted in assigning the prostate as the original focus of tumor formation. But the case as a whole — taken clinically as well as pathologically — seems to warrant interpretation as a case of carcinoma of prostate with multiple metastases.

MECHANICAL VIBRATION: ITS THEORY AND APPLICATION IN THE TREATMENT OF DISEASE.¹

BY MAURICE F. PILGRIM, A.B., M.D., NEW YORK,

Professor of Psychiatry in the New York School of Physical Therapeutics; First Vice-President of the American Electro-Therapeutic Association.

In presenting briefly to you this evening the theory and application of mechanical vibration in the treatment of disease, I feel that I am not asking your attention to a new physical method of treatment so much as to the revival of an old but now greatly improved therapeutic agent.

Attempts in the treatment of disease by more or less crude and clumsy mechanical vibratory methods were made as far back as forty years ago. Little if any progress was made, however, and they received slight recognition from the profession at large. Two reasons were responsible for this: First, the treatment was applied more or less empirically and without much reference to any well-defined principles of physiology. Second, it began what little development it subsequently attained, at about the time electricity was beginning to come forward as a curative agent. Whatever virtue it may have possessed in these earlier years, was obscured by this agent, which, if not more capable therapeutically, was at least applied with more definiteness of purpose and a greater regard for those principles of physiology which then, as now, were believed to govern the functioning of the human body. But as electricity as a therapy advanced in popularity, curiously enough, it was found that vibration, mechanically produced, again came forward and was received with more professional favor. It was not surprising, therefore, that at the last International Congress of Electro-Therapeutists held in Paris in July and August of 1900 — the year of the French Exposition — six instruments were there exhibited, all designed to apply mechanically produced vibration to the body. As none of these instruments were the equal in the point of merit to several upon the market of this country to-day, I will not detain you by describing their several mechanical features further than to say that they were designed and introduced by

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eminent French electro-therapeutists, among whom may be mentioned Drs. Garnault, Boudet, Gilles de la Tourette, Larat and Gautier. Dr. Charcot had on exhibition what was known as the "Vibrating Table of Charcot and Gilles de la Tourette," which was the best instrument of its kind shown there. When a little later in this paper we come to consider what scientific mechanical vibration really is and demands, you will observe how crude even Charcot's conception of such an instrument was. Employing this instrument, the patient was placed in a chair securely fastened to the platform, and the table or platform was then set in motion, which was more or less vibratory in character. The patient was thus given a pretty powerful "shaking-up," which was not, in reality, vibration at all as it is now understood or demanded for therapeutic purposes. The idea has been worked out in this country in the instruments which are being sold directly to the public, without appealing at all to the profession for support, and which they certainly very properly would not receive. Such instruments should more accurately be called "shakers," rather than vibrators, and are susceptible of producing quite as much harm as good.

Rapid progress has been made, however, along this line until we now have manufactured exclusively for physicians' use, and sold only to them, instruments which meet the scientific demands of practitioners, one of which it will be my pleasure to exhibit and demonstrate to you this evening.

In order to rapidly canvass the subject, it may be well to consider:

- (1) What mechanical vibration is?
- (2) How it can be most effectively applied?
- (3) What it is capable of accomplishing when so applied?

Considered in its broadest sense, vibration is the most abounding, the commonest force in the universe with which we are familiar. Hearing and sight, for example, two of the most important functions of the body, are scientifically recognized as the result of the rapid vibrations in the universal ether. Physicists say that the ether here referred to is a medium filling all space, through which the vibrations of light, radiant heat and electric energy are propagated. The nervous system — spinal and sympathetic — which dominates the entire body, responds to and requires, at times, stimulation. Aside from the source of normal or natural nerve stimuli, there are several artificial methods of supplying it. Landois and Stirling, on page 76 of their Textbook of Physiology, in referring to this subject, say:

"The following are the various kinds of general nerve stimuli, that is, modes of motion which act upon nerves: (1) Mechanical; (2) thermal; (3) chemical; (4) physiological; (5) electrical."

They add: "Nerves possess the property of being thrown into a state of excitement or greater action and efficiency by stimuli."

It is a matter of repeated demonstration, familiar to us all, that pressure (which is in reality only a modification of a blow) imparts stimulus to a nerve. For example, light pressure exerted over the pneumogastric, just above the sternum, produces a cough — the effect of reflex pressure stimulation. So, too, a sharp blow over a nerve accelerates or stimulates its action, the degree being largely governed by its length and force. If greater pressure is made, a sedative effect ensues; and if the pressure is sufficiently prolonged, inhibition results. Thus it will be seen that in the vibratory stroke mechanically produced we may get (1) stimulation; (2) sedation; (3) inhibition, depending upon its length, force and the duration of its application.

Having briefly seen what mechanical vibratory stimulation is, the second and next inquiry in this consideration is as to *how* it can be most effectively applied.

(1) As to the stroke. Whether it should be a long or a short one depends upon the depth of the location of the nerve to which the vibrating stimulus is sought to be applied. The deeper the nerve or nerve center, the greater the intensity of the physical abnormality and the more remote its location from the spinal center, the longer, proportionately, should be the stroke. Superficially located nerves or nerve areas are better treated by a short stroke; and for delicate structures like the eyeball, the short stroke should always be used. It ought constantly to be remembered that the *length of the stroke* is always of greater importance than the rapidity of the vibrations.

(2) *The treatment should be localized.* If treatment is beneficial when applied to diseased or abnormally functioning organs or their neural connections, it is illogical, to say the least, to apply it to those parts that are not so affected. The general "shake-up" of the entire organism, such as some vibration instruments are constructed to give, is neither desirable nor productive of beneficial results. Those parts alone concerned in the diseased process should be treated.

(3) Treatment should usually be applied between the transverse processes of the spinal vertebrae which are immediately over the posterior division of the spinal nerves that control directly or reflexly the nutrition of the diseased viscera or area. In some instances, as in certain conditions of the liver, for example, the vagi may require treatment, but ordinarily it should be applied, according to Bayliss and Starling (see Kirke's Physiology, page 512), to the transverse processes from the third to the eleventh dorsal inclusive. For further example, the kidneys are stimulated from the eleventh and twelfth dorsal and first lumbar. Additional information in detail respecting the spinal nerve centers influencing or controlling the various viscera may be found in Kirke's, Foster's, Landois and Sterling, the American Textbook and others of the more modern works on physi-

ology. A medium stroke, and moderately deep pressure between the processes, should be used in treating the spinal nerves. The impulse thus set up is, it is believed, conveyed towards the cord, and is communicated at the juncture of the anterior and posterior roots in the intervertebral foramen to the anterior division of the spinal nerves, and through the *rami communicantes* to the sympathetic nerves lying on the heads of the ribs.

In stimulating the lymphatics, vibration should be applied to them direct. Similarly in the case of muscular contractures. By far the greatest benefit from this treatment will be realized through its application to the spinal and sympathetic nerves or nerve centers concerned in and controlling the affected organ, and which are reached mainly through the spinal cord.

In concluding this branch of the subject, it should be remarked that every mechanical vibratory instrument, in order to produce the best possible results, ought to be susceptible of and combine three distinct features:

- (1) *Easy adjustment or change of stroke;*
- (2) *The localization of the treatment at a given point; and*

(3) *Absolute rigidity of action*, by which is meant that the vibrations excited by the motor should be concentrated in the vibrating attachment and so introduced into the patient's body. In many instruments, *especially those having flexible shafts*, no provision whatever is made for this, and much of the vibration produced by the motor passes either into the hands of the operator or into the floor or base upon which the instrument happens to rest. Whatever other features a vibrator may advantageously possess, those above indicated are believed to be absolutely essential to the highest success. An inefficient instrument is not cheap at any price; and here as elsewhere, the best will, in the end, be found to be the cheapest, regardless of the relative price as measured by a money standard.

We are thus naturally led up to the third inquiry of our consideration, namely: What is this mechanical stroke, or the vibrations to which it gives rise, capable of accomplishing when applied to the human body? Its effects may be *stimulative, sedative or inhibitory*.

STIMULATIVE.

(1) When applied as a stimulant to the vasomotor areas in the spine supplying particular organs, the volume and flow of blood to those viscera are thereby greatly increased.

(2) Nutritive processes are consequently improved.

(3) Secretion and excretion are also improved; elimination, the great desideratum in so many diseased conditions of the body, is also increased.

(4) Muscular and general systemic metabolism is enhanced, with greater oxidation and the production of more animal heat.

(5) Improvement in the respiratory function. (Foster, in his Textbook of Physiology, page

370, has shown the existence of a nervous center of respiration which can be reached and *stimulated through the spinal cord*.)

SEDATIVE.

Its sedative effects are marked in cases of general nervous irritability, excitability, fatigue and, very markedly, in insomnia.

INHIBITORY.

The inhibitory power of the mechanical vibratory stroke is demonstrated in the prompt relief of pain and in the dispersion of congestions or engorgements.

The foregoing enumerated effects follow (in varying degrees, of course) from the application of vibratory stimulation to the nerves of the spinal and sympathetic systems. There yet remain to be stated two of the most important physiological results that follow the application of mechanical vibration, which alone would entitle it to a high and important place in physical therapy. These are:

(1) The relief or relaxation of muscular contractures.

In such cases vibration is applied deeply to the affected muscle as well as to its spinal connections. This is done in order to directly excite or stimulate the independent nerve centers, which inhere in all muscular structure.

(2) The removal through stimulation of the lymphatics and their glands, of many forms of tumors, enlargements, exudates and other products of inflammation; also the relief of varicosities and the dispersion of many varieties of cutaneous eruption.

In the treatment of a considerable number of cases of goiter, embracing all varieties, mechanical vibration may fairly be said to have been thus far highly successful either in effecting their removal absolutely or in greatly reducing their size.

From the foregoing epitomized statement of what this therapeutic agent is capable of accomplishing, it will be observed that its range of application is very extensive and comprehensive. There is no specialty in the practice of medicine in which it may not frequently be utilized with signal advantage. For the ophthalmologist in the treatment of anemic or hyperemic conditions internally or externally, and the gynecologist in dealing with non-suppurative pelvic congestion of various kinds, as well as for all the other specialists standing intermediate to them, this therapy possesses advantages of incalculable value.

Mechanical vibration is not claimed to be a panacea, gentlemen, for all human ills. Neither is it recommended as an *exclusive* system of treatment. It is not contended that all the results above enumerated will certainly and absolutely follow its correct application to every properly selected case. It does not aspire to accomplish the indefinite postponement of senile degeneration or to abolish the process of death of the physical body.

But, gentlemen, after having critically employed it almost daily for the past eight months in clinical work,² which embraced all phases of diseased bodily conditions, and in large numbers, I have now to say that I know of no other *single physical agent* that will accomplish as many of the above epitomized results, or as often and with as few failures, as that concerning which I have had the honor and pleasure of speaking to you to-night.

Medical Progress.

RECENT PROGRESS IN GASTRO-INTESTINAL DISEASES.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

DIAGNOSIS OF GASTRIC CANCER.

SALOMON¹ suggests a new clinical test. This is based on the supposition that the cancer discharges a serum containing nitrogen. The patient receives liquids — milk and gruels — in the morning; from two o'clock on, a diet which is liquid but also free from albumen — bouillon, coffee, wine, tea. At nine in the evening the stomach is thoroughly washed and nothing is allowed the patient during the night. On the following morning 400 cc. of physiological salt solution are allowed to flow into the stomach, then are withdrawn, and the procedure repeated until the surface of the stomach has been thoroughly washed off. The fluid thus obtained is tested for nitrogen by the Kjeihdahl method and for albumen with Esbach's test. In the majority of instances — nervous dyspepsia, chronic gastric catarrh, gastropnoia, etc. — Salomon found that the wash water gave no reaction with Esbach's reagent or only a slight opalescence. The quantity of nitrogen varied between 0 and 16 mg. nitrogen in 100 cc. of the wash water. In all cases of gastric cancer which Salomon investigated the wash water showed an intense cloudiness, quickly becoming flocculent, with Esbach's reagent. The quantity of albumen by the Esbach method lay between $\frac{1}{16}$ and $\frac{1}{8}\%$. The nitrogen was also correspondingly greater, ranging between 10 and 70 mg. per 100 cc. wash water.

THE DIRECT PERCUSSION OF THE EPIGASTRIUM AS A DIAGNOSTIC SIGN OF ULCER OF THE STOMACH.

Mendel² calls attention to the intense pain which ulcer patients feel from the lightest percussion in the epigastrium. Such pains are apt to persist after the completion of percussion. If the outermost points of these painful zones are connected a picture of the gastric ulcer will be projected upon the abdominal wall. The pain disappears with convalescence. Likewise in duodenal ulcer there is a sharply circumscribed painful area which can be demonstrated by this method of examination. This lies alongside the linea alba just below the center of a line drawn

from the costal margin to the navel. This area is a little larger than a silver quarter of a dollar and disappears as the ulcer heals.

PERMEABILITY OF THE GASTRO-INTESTINAL WALLS OF CHILDREN FOR TUBERCLE BACILLI.

Disse³ has studied the question of the permeability of the gastro-intestinal tract in young animals. He refers to the work of Römer, who showed that young colts will absorb tetanus and diphtheria antitoxins from the gastro-intestinal tract and store them up in the blood, but that they lose this power when they become three weeks old. Young rabbits react similarly. Such observations make it probable that there is some change in the epithelium of the gastro-intestinal tract as the animal grows older, and in fact this is the case. The mucus formed at birth in the epithelial cells of the stomach is small in quantity, but this increases rapidly in the first few days of life and soon approximates that of the adult. The intestinal mucous membrane of newborn animals, on the other hand, resembles that of the adult animal. V. Behring has called especial attention to the danger of infection in young animals from this lack of a mucous coating in the stomach.

Professor Disse was able to demonstrate the passage of tubercle bacilli as well as antitoxins through the gastro-intestinal tract of newborn mammals. His especial attention, however, was directed to the formation of the mucous layer in the stomach. In the adult the epithelial cells lining the stomach are divided into two layers — a basal, which is protoplasmic, granular and includes the nucleus; and a peripheral, which is homogeneous and extends to the surface and joins with that of the neighboring cells to form the mucous coating of the stomach. At birth there is also a mucous layer, but this is thin and not continuous. Before birth the cells do not show two layers, but are uniform throughout, except for a collection of granular material lying between the nucleus and the free surface of the cell. This granular material is thus wholly surrounded by the protoplasm of the cell. It takes the same stain as mucus and forms a sort of mucous plug in the cell. In the first few days of life the protoplasmic network which surrounds and separates the mucous plugs diminishes and each mucous plug spreads out until it reaches the periphery of the cell which encloses it and joins that of the neighboring cell. The coating of mucus thus formed gradually thickens, presumably requiring a longer time with large than with small animals to reach its full development. The period during which this coating is formed might be termed the critical period of the animal's existence — the time in which the animal is most liable to infection.

INSPECTION OF THE STOMACH.

Stockton⁴ has very ably edited the translation of Riegel's "Diseases of the Stomach" in the

² At the New York School of Physical Therapeutics.

¹ Deutsche med. Wchnschr., July, 1903, p. 546.

² Cit. in Cent. f. inn. Med., Aug., 1903, p. 785.

³ Berl. klin. Wchnschr., 1903, No. 1, p. 4.

⁴ Diseases of the Stomach, 1903. Riegel, p. 32.

Nothnagel series. The book is a masterpiece in itself and the American edition represents the best and latest work in this branch of medicine. The book is worth buying for the sake of Stockton's notes, a few of which we reprint. He inserts the following note on inspection:

"Inspection may be facilitated and the success of the method greatly enhanced by placing the patient upon a raised table, the head toward a window, the shades of which are so arranged that the light enters on a plane only slightly above that of the patient — the rays of light directed from the head toward the feet. Standing now toward the foot of the table, and bending from side to side, the examiner is able, by a little experience, to make out delicate shadows cast by the slight inequalities of the abdomen. These shadows are seen to move with respiration. By resorting to this method, the size, shape and position of the stomach can often be made out when ordinary methods of inspection are unsatisfactory. This maneuver is especially valuable in discovering the gastric and intestinal peristalsis, the presence of enlargements and, to some extent, the relations of the abdominal viscera. This method I have long practiced and can testify to its utility.

"Knapp has recently suggested this modification: 'With the patient placed in the position described, the observer stands at the side or at the shoulders, and brings his eyes down to the level of the abdomen, and carefully observes the respiratory waves passing over its surface. After a little experience one is able to detect delicate transverse lines or waves passing upward and downward with respiration. These lines are found to correspond with the curvatures of the stomach.'"

DEATH FROM INFLATION OF THE STOMACH WITH CARBONIC ACID GAS.

Stockton⁵ reports the following:

"In the inflation of the stomach by carbonic acid gas there is an element of danger in case of ulcer, carcinoma or other disease that seriously weakens the gastric walls. It is true that accidents rarely occur, and yet caution should be practiced when the walls of the stomach are known to be diseased. Behrand and Hughes⁶ report three fatal accidents resulting from the use of this method.

DANGERS IN THE USE OF STOMACH TUBES.

Stockton:⁷

"It would seem unnecessary to call attention to the dangers of using a cracked or otherwise weakened stomach tube; and yet the interesting case reported by Friedenwald⁸ points out the danger of carelessness in this respect. The case was that of a colored woman, aged twenty, upon whom a quack doctor passed a defective stomach-tube, and in attempting to remove it left a portion behind. No evidence of the presence of the

tube could be felt upon palpation through the abdominal wall. Upon entering the Providence Hospital, Baltimore, Dr. Harris performed a gastrotomy and removed two pieces of stomach tube, one 9½ inches and the other 6½ inches in length. The patient made an uninterrupted recovery."

Riegel⁹ quotes a case reported long ago by Leube, but still worthy of repetition. The subject swallowed the whole tube. This was retained in the stomach for nine days, despite various efforts which were made to remove it. Finally there were "sudden nausea and a desire to cough, combined with a feeling of suffocation. The patient pushed her fingers down into the pharynx, found the sound behind the tongue and pulled it out with one jerk."

QUANTITATIVE ESTIMATION OF PEPSIN IN GASTRIC JUICE.

Many methods have been proposed in the last five years for the quantitative estimation of pepsin. These are an improvement on the simple test of the digestive action of the gastric juice, but are still unsatisfactory. The original test was performed by the addition of a small disc of coagulated white of egg to 5 cc. of the filtered gastric contents, adding, if necessary, sufficient hydrochloric acid to give a reaction for free HCl. The white of egg should be wholly digested or thoroughly disintegrated if left at body temperature for two to six hours.

Hammerschlag's method,¹⁰ which was at one time in favor, has been superseded to a considerable extent by that of Mett.¹¹

"It consists in sucking fresh egg-albumen into capillary tubes 1 or 2 mm. in diameter, coagulating the albumen by boiling, then cutting off portions, 3 to 5 cm. long, of the filled tubes, and adding these pieces of the tubes to gastric contents. The tube containing this is then kept at body temperature in the incubator for ten hours. At the end of this time each end of the tubes will show a lack of solid albumen, owing to its digestion, while in the central portion some will remain. Both the empty portions and the portion still full are carefully measured, and the activity of peptic digestion determined thereby. Borison states that the relative amount of actual pepsin present varies according to the square of the length of the empty portion of the tube, the figures for the latter being expressed in millimeters — that is, 3 mm. digestion equals 9 parts pepsin; 2 mm. equals 4 parts pepsin."

Mett's method in turn has been the subject of much criticism by Schorlemmer,¹² Nirenstein and Schiff¹³ and Jung.¹⁴

Spriggs¹⁵ bases a method for the estimation of pepsin on the fact that the viscosity of an albuminous solution decreases in the same proportion as coagulable substances disappear.

⁹ *Idem*, p. 68.

¹⁰ *Wien. klin. Rundschau*, 1895, No. 23.

¹¹ *Diseases of the Stomach*. Riegel, edited by Stockton. 1903, p. 128.

¹² *Arch. f. Verd.*, 1902, vol. viii, p. 299.

¹³ *Idem*, p. 559.

¹⁴ *Idem*, p. 605.

¹⁵ *Cit. in Cent. f. med. Wissen.*, 1903, No. 22, p. 371.

⁵ *Idem*, p. 49.

⁶ *Med. News*, June 14, 1902.

⁷ *Idem*, p. 68.

⁸ *Amer. Med.*, Aug. 2, 1902.

GASTRIC HYPERESTHESIA AND ITS MANAGEMENT.

Stockton¹⁶ distinguishes the condition especially from hyperacidity. The examination of the gastric contents generally shows a diminished quantity of hydrochloric acid. Notwithstanding this fact, such patients generally feel better by the use of those means which diminish gastric acidity and prolong digestion and by the use of easily digestible substances.

CONGENITAL STENOSIS OF THE PYLORUS.

Graanboom¹⁷ reports two cases of congenital stenosis of the pylorus. The first was a child two months old, who began to vomit, though never bile, when eight days old, and whose bowels moved only with laxatives and then but slightly. A cure was effected by washing out the stomach and diet. The stenosis, therefore, was simply a spasm. The second case, four months of age, had exactly the same symptoms, but did not yield to treatment. Operation showed a pylorus scarcely passable by a thin sound. Vomiting ceased after operation and the bowels moved naturally, yet the child died in six weeks. Autopsy revealed no reason for death. Pylorus was nearly $\frac{1}{2}$ cm. thick. The writer collected eighteen cases of pure congenital pyloric stenosis. Laparotomy was performed in three instances, but in only one was it successful.

ACUTE DILATATION OF THE STOMACH.

Thompson¹⁸ believes that a primary paralysis is the usual cause of acute dilatation of the stomach rather than an obstruction produced by the pressure of the superior mesenteric artery upon the duodenum. He shows that the situation at which the distended intestine passes into the collapsed portion is very variable. In a recently observed case the intestine was dilated for a distance of eight feet and nothing was found which could cause an obstruction.

ETIOLOGY OF GASTRIC ULCER.

Vedova¹⁹ has produced ulcers of the stomach in fourteen dogs out of twenty-seven by resection of the celiac ganglion or of the splanchnic. The necroses, hemorrhages and ulcers were located near the pylorus in twelve of the fourteen cases and were in some instances accompanied with an excess of hydrochloric acid. The striking necrobiotic character of the microscopic appearances was noteworthy, as well as the relatively unimportant signs of reactive inflammation.

SUGAR IN THE DIET OF DYSPEPTICS.

Morgan²⁰ draws the following conclusions from the experiments he instituted to determine the effect of sugar on the gastric juice. Sugar in large quantities (90 gr. cane sugar, 180 gr. maple syrup) lowers the amount of hydrochloric acid and pepsin in the gastric juice of both healthy

individuals and invalids. According to the results obtained in all cases, except those having achylia gastrica or chronic gastritis, it appears probable that by the addition or withdrawal of sugar the total acidity and free HCl of the gastric juice can be increased or diminished at will. The negative action of the sugar in achylia gastrica depends quite probably upon the atrophy of the mucous membrane; the unexpected increase of the gastric juice in chronic gastritis is perhaps due to the cleansing and even antiseptic action of the sugar.

HYPERACIDITY.

The above article of Morgan shows that sugar is suitable and should be useful in the dietetic treatment of excessive acidity of the gastric juice due to hydrochloric acid. It cannot be prescribed indiscriminately, but such patients usually are more comfortable when they take a cereal at breakfast and some are helped by the addition to this meal of honey or maple syrup. Fats and oils tend to diminish the secretion of HCl also, as Pawlow²¹ has shown. Strauss and Aldor²² demonstrated that fats are as well digested in hyperacidity as in subacidity. Thus by the administration of large quantities of sugar and fat to patients with hyperacidity we are instituting curative rather than palliative treatment and at the same time are building up the nutrition. Mild cases of hyperacidity are, as a rule, relieved by a glass of albumen water between meals. In severe cases, in addition to the use of cream and salads at the meals, it is often beneficial to prescribe a tablespoonful of olive oil in the forenoon, afternoon and on going to bed.

TREATMENT OF CHRONIC GASTRO-SUCCHORHEA.

Rollin²³ discusses this affection, fifteen cases having come under his care in the last sixteen months. He refers to the two classes of dietetic treatment — the administration of albuminous food in large quantities and frequently for the purpose of combining with the excess of acid secreted and thus rendering it harmless; and the other method, in which little albuminous food is given, in the endeavor by this means to stimulate as little as possible the gastric glands. The mild cases yield as a rule to either of these regulation methods of treatment. In certain severe cases of chronic gastric secretion in which the symptoms pointed to ulcer, Rollin has prescribed a rigid ulcer régime. The patient is fed only by rectal enemata for six to ten days, then gradually begins with the usual ulcer diet, but receives no meat until the end of eight or ten weeks. The symptoms cease and a cure results, as is proven by the examination of the fasting stomach.

HETEROCHYLIA.

Heterochylia is a name given by Hemmeter²⁴

¹⁶ Journ. Amer. Med. Assoc., 1902, Jan. 11.

¹⁷ Cit. Arch. f. Verd., 1902, vol. viii, p. 671.

¹⁸ Lancet, 1902, Aug. 2.

¹⁹ Arch. f. Verd., 1902, vol. viii, p. 255.

²⁰ Idem, p. 152.

²¹ The Work of the Digestive Glands. English Translation, 1902.

²² Zeit. f. diätet. u. physik. Therap., vol. i, p. 134.

²³ Berl. klin. Woch., July, 1903, p. 625.

²⁴ Arch. f. Verd., 1902, vol. viii, p. 75.

to a suddenly changing state of gastric secretion which occurs chiefly in nervous dyspepsia. He found, for example, in the same patient and after the same test breakfast within one week normal acidity, hyperacidity and anacidity. Einhorn described a patient with absence of gastric juice for five years, at the end of which time hydrochloric acid reappeared. Similar cases have been reported by others in nervous diseases of the stomach. Boas has noticed changes in gastric secretion in organic disease of the stomach. Kuttner observed a decrease or even absence of hydrochloric acid during menstruation. Elsner found in some cases an increase, in others a decrease of hydrochloric acid. These various reports led Korn to collect the cases of heterochylia in nervous as well as organic diseases which have occurred in Boas' clinic. In six cases with the diagnosis neurosis and two of tabes dorsalis free hydrochloric acid was present at one time, but absent on another occasion. The same alternation was present in two cases of gastric ulcer and in a case of chronic gastritis, in which was an accompanying pulmonary tuberculosis.

These facts are of especial interest because they indicate what may be the explanation of those cases in which the symptoms of the patient fail to correspond with the results obtained from the examination of the gastric contents. They show the necessity of repeated examinations of the stomach, particularly in doubtful cases. When hydrochloric acid is absent and there is a suspicion of cancer, Korn emphasizes the suggestion of Boas to examine the contents with great care for blood and to test the motor function of the stomach, which, as a rule, early suffers in cancer.

SURGERY OF GASTRIC CANCER.

Petersen²⁵ reports the results of thirty cases of cancer of the stomach upon which resection was performed at the Heidelberg clinic. Twelve of the patients died soon after the operation; of the remaining eighteen seven are still alive. The resection in these cases was most thorough. Petersen's statistics show that life is prolonged in gastric cancer four or five months when gastroenterostomy is performed; six to eight months by the resection of the tumor.

INTESTINAL ANTIPERISTALSIS.

Grützner, in 1894, it will be remembered, called attention to the fact that small particles of charcoal or finely divided horse hair, when saturated with physiological salt solution and injected into the rectum, could be found six hours later throughout the small intestine and even in the stomach. In the same way starch would pass from the rectum to the stomach. Essential to this phenomenon in each instance was the presence of the salt solution. Ten years before Grützner's work, Nothnagel demonstrated active

antiperistaltic movements of the intestine when salt was placed on the peritoneal coat. By these experiments Grützner and Riegel also concluded that nutrient enemata were similarly moved upward through the whole intestinal tract and thus were digested and absorbed.

Hemmeter²⁶ has investigated this question by a series of experiments upon four healthy individuals and in a cat and white rat. The stomach was shown first to be free from the substance — raw starch — which was chosen for the enema, and the diet was such as would not lead to confusion. Twenty-five grams of starch in 200 cc. physiological salt solution were then taken by enema at 9.30 p.m. On the following morning at seven starch was found in the stomach when it was washed with 250 cc. water. Similar results were obtained with charcoal, provided that like the starch it was suspended in the salt solution. This did not take place, however, if the starch and charcoal were suspended in weak solutions of potassium chloride or hydrochloric acid. Bismuth subnitrate and lycopodium also were similarly made to pass from the rectum to the stomach, and although suspension in physiological salt solution favored this it was not definitely proven to be absolutely necessary. Fasting favored the passage upwards of these enemata; constipation delayed it as well as diarrhea. The most favorable condition was presented when the bowels moved but once a day.

Peristalsis and antiperistalsis must therefore be going on simultaneously, since the bowels were moving daily during the experiments. Hemmeter explains this by considering that one set of movements (peristalsis) is central while antiperistalsis is peripheral. By experiments on cats he gained support for this hypothesis. By means of the x-ray the movement of subnitrate of bismuth could be watched from the rectum until it could be seen throughout the whole of the abdomen, and then it was demonstrated in the stomach by Savage. On killing the animal the bismuth was found to be situated peripherally in the small intestine. Hemmeter reaches the following conclusions:

(1) A movement of small particles takes place in human beings from the rectum to the stomach. This movement is favored by the suspension in physiological salt solution, is hindered or prevented entirely when solutions of potassium chloride or hydrochloric acid are used as a menstruum.

(2) The movement is marginal, because on sections through the intestine and on autopsies on human beings the particles are only found in the periphery and close to the epithelium of the intestinal mucosa.

(3) The passage upwards of particles to the stomach goes on simultaneously with the downward passage of fecal masses.

(4) This antiperistalsis cannot move the ingesta forwards *en masse* and for this reason cannot be considered an explanation for the digestion of nutrient enemata.

²⁵ Die Therapie der Gegenwart., July, 1903, p. 308.

²⁶ Arch. f. Verd., 1902, vol. viii, p. 59.

TREATMENT OF CHRONIC DIARRHEA WITH HYDROCHLORIC ACID.

Soufrault²⁷ and François²⁸ recommend the administration of hydrochloric acid in chronic diarrhea for the reason that this is due to a too hasty evacuation of the stomach. Different experimenters have shown that the food leaves the stomach more slowly in dogs, the greater the acidity of its contents. The assumption is therefore tenable that the presence of a large quantity of hydrochloric acid prolongs the stay of the food in the stomach and allows a more complete digestion. It does not appear that the acid improves the chemical work of the stomach, but rather reflexly excites the muscular fibers and produces a stronger contraction of the pylorus, which prevents the early passage of food into the intestine.

A CASE OF ULCERATIVE COLITIS CURED BY OPERATION.

Boas²⁹ advised operation in a case of severe ulcerative colitis which resisted all internal treatment. An artificial anus was produced at the cecum. The large intestine was then washed out with solutions of silver and iodine. The pus and blood gradually subsided and at the end of one year the fistula was closed. A fecal fistula remained for a few months. When this closed the cure was complete. The ulcerative process completely healed and only a mild constipation remained. A similar case was reported by Steiner at the German Surgical Association in Berlin, June, 1903.

Reports of Societies.

AMERICAN DERMATOLOGICAL ASSOCIATION.

TWENTY-SEVENTH ANNUAL MEETING, HELD AT WASHINGTON, D.C., MAY 12, 13, AND 14, 1903.

FIRST DAY, TUESDAY, MAY 12.

DR. JOHN T. BOWEN of Boston, President.

METHODS OF TEACHING DERMATOLOGY.

THIS was the title of the president's address. He stated that the didactic lecture, the clinical demonstration and the recitation all had their place in the teaching of dermatology. How much time should be accorded to each was a question about which there might be much difference of opinion and it would often have to be decided according to the resources of the department. He laid the most stress, however, upon the advantage of the method of teaching small sections of students from the patient or model and he believed that in the further development of that system lay most hope of improvement. The method required a large amount of material and a large force of instructors. With the development of section work instruction naturally became more complicated and more time was demanded

of the instructors, so that the best teachers of the future would be obliged, perhaps, to sacrifice some of their private work. In the ideal dermatological department of the future it was to be hoped that the endowment would be sufficient to attract men of ability and enthusiasm to the chair, who would consider research and the teaching of their specialty their chief ends and who would be willing and able to subordinate their private practice to their vocation as teachers.

A CASE OF UNKNOWN INFECTION OF THE SKIN: POSSIBLY GLANDERS.

DR. J. A. FORDYCE of New York presented this communication. The patient was a man fifty-two years old, a native of Holland. His occupation was that of a cigar-maker. He was a very moderate drinker, but smoked heavily; he denied all venereal diseases. Five years ago he suffered from malaria and three years later from grippe and pneumonia; since then he had a slight cough at times and had lost some weight. He did not own a horse, nor had he handled horses recently, but he sometimes waited in a stable near the cigar factory if he arrived before the factory opened. He was admitted to the hospital March 11, 1903. Three weeks previous to that date, while removing ashes from the stove, he received a small scratch on the ring finger of the right hand. The wound became very painful and within a few days developed into a running sore. A few days later lesions developed on the upper lip, the right side of the mouth and on the head. When he entered the hospital he complained of weakness, chilly sensations, nervousness, headache and anorexia. The initial lesion on the ring-finger appeared as a deep, circular, fairly clean-cut ulcer, about the size of a cherry, without reddening of the surrounding skin or any evidence of cellulitis. It discharged a moderate amount of yellowish purulent material. There was a raised, irregular, confluent erosion of the skin of the upper lip, extending to the angle of the mouth and outward to the cheek for a distance of one inch. In the parietal and occipital regions of the scalp there were four large circular patches, one inch in diameter, with raised flat bases of dark brown color. Subsequently similar lesions appeared in the nose, mouth and throat, as well as on the scrotum and thigh, and death occurred on March 19, four weeks after the original infection. The autopsy, which was made by a coroner's physician, did not reveal any definite lesion to account for the man's death. The bacteriological findings were unsatisfactory, a growth of staphylococcus aureus only being obtained on the various media employed. Inoculations of guinea-pigs failed to give the characteristic reaction which was met with in glanders. Sections of the skin from the primary lesion and from secondary vesico-pustules showed the presence of an acute exudative inflammation, with evidence of hemolysis. Enormous numbers of staphylococci were present in the tissues. The infection undoubtedly occurred on the finger and rapidly spread by auto-inoculation to other parts of the skin and the mucous membranes. It dif-

²⁷ Cent. f. inn. Med., 1903, Feb. 7, p. 175.

²⁸ Bull. Génér. de Thérap., 1902, March 30.

²⁹ Deutsche med. Wchnschr., 1903, No. 11.

ferred in its type from all the forms of infection produced by the staphylococcus or streptococcus. The negative results of the histological and bacteriological investigations left the cause of the process in doubt.

DR. HENRY W. STELWAGON of Philadelphia said the case appeared to him to be an example of one of those infections following vaccination or inoculation from an animal source.

DR. BOWEN thought the case bore a great resemblance to the acute form of pemphigus described by the French, occurring particularly in butchers and those who had to do with animal products.

DR. FORDYCE, in closing, said the case did not suggest a vaccination eruption. The lesions were very rapidly auto-inoculable.

RECENT CONTRIBUTIONS TO OUR KNOWLEDGE OF THE HYSTERICAL NEUROSES OF THE SKIN.

DR. A. VAN HARLINGEN of Philadelphia said that in a former paper, read before this Association in 1897, he reported several cases of erythematous eruptions in hysterical persons, which led to excoriations, or perhaps what might be called superficial gangrene. In a subsequent paper he attempted to collect and classify the various skin affections which had been reported as connected in some intimate manner with the pathology of hysteria. Although most of the hysterical neuroses of the skin were related to each other in their nature, yet it seemed more convenient to regard them as distinct and record them in connection with their dominant feature. Most hysterical skin affections appeared, at least at first, to be vasomotor in character. This fact had been noted by Bettmann, Perrin and other writers on the subject. Cases of hysterical gangrene showed certain characteristics common to all. The great majority, in fact nearly all of the cases, occurred in young females showing signs of hysteria, usually of a mild type. The affection frequently developed after some slight accident, a burn or some injury from a corrosive substance, a cut or a puncture. The first eruption commonly occurred at or in the immediate neighborhood of the injury, with considerable sensory irritation. A similar irritation usually introduced subsequent outbreaks. Sometimes the prodromata of gangrene were entirely absent; at other times the gangrene developed from an urticaria or erythema, or more frequently from pemphigoid blebs. Occasionally, a zosteriform eruption was the first symptom. When gangrene was established, the separation of the eschar often left an intractable ulcer terminating in a keloidal scar. While the extremities were the favorite sites of hysterical gangrene, the face and mammary region and other localities were sometimes involved, such as the external aural cavity and the mucous membranes. The question of self-infliction was of great importance in the study of these cases. In a few instances this had been verified and was traced to the usual causes of a desire to excite sympathy, to escape disagreeable tasks, etc., but a careful investigation into other

cases failed to show the use of external applications.

RECURRENT BULLOUS DERMATITIS IN AN HYSTERICAL SUBJECT.

By DR. CHARLES J. WHITE of Boston. The patient was an American woman, twenty-three years old. She was distinctly hysterical and of a markedly neurotic and tuberculous parentage. During the past three years she had been the subject of a left-sided, recurrent, grouped, bullous dermatitis, which each year had attacked one part of the body and had, by repeated outbreaks, gradually advanced its position, each attack lasting about a week and leaving no mark behind. Dr. White said he regarded the case as an example of a rather extraordinary hysterical dermatosis. He did not see how that diagnosis could be avoided, for it seemed to him impossible to regard these one-sided, periodical, long-continued, progressive bullous outbreaks as due to the ingestion of drugs or to the infliction of self injuries and he knew of no cutaneous disease with such characteristics, outside of the mysterious dermatoses which we had learned to associate with hysteria. We could not place such an unusual group of symptoms under any of the well-recognized forms of disease, but must remain content to style it simply a cutaneous manifestation of hysteria.

DR. E. B. BRONSON of New York said that in studying these cases we should always bear in mind that in many hysterical patients there was a peculiar vulnerability or sensitiveness of the skin which was absent in the normal individual. There was no doubt that in many of these cases of dermatitis in hysterical subjects an element of deceit was present, but at the same time it took very slight provocation to produce very surprising effects.

DR. THOMAS C. GILCRIST of Baltimore said we were too apt to apply the term "neurotic" to an eruption that we could not classify or recognize its cause.

DR. F. J. SHEPHERD of Montreal said he had so frequently detected the practice of self-infliction in these cases that he was sceptical about the spontaneous origin of these gangrenous or bullous lesions. He agreed with Dr. Bronson, however, that there was a peculiar vulnerability of the skin of these patients.

DR. WILLIAM A. PUSEY of Chicago said he was quite convinced that in certain cases of so-called hysteria we might get dermatoses that were not due to external irritation, but were dependent upon the hysterical condition.

DR. JAMES C. WHITE of Boston said he thought there was no doubt that even these deep-seated lesions of the skin, which we were prone to look upon as evidences of malingering, might occur spontaneously.

DR. VAN HARLINGEN said he had arrived at the conclusion that there were certain cases in which the eruption was the result of some internal cause and was not produced by the patient. All these cases belonged to the class of vasomotor disturbances, which embraced dermatographism,

erythema, urticaria, bullous eruptions and hemorrhages from the skin.

SARCOMATOSIS CUTIS.

DR. G. W. WENDE of Buffalo reported this case. The patient was a colored woman, thirty-eight years old. The disease, resulting from an injury, made its appearance two years before her death in the form of tubercles accompanied by marked pigmentation and creating violent and persistent pain. One year later, when the lesions had attained a certain size, they broke down and this was followed by suppuration, exuberant granulations and free discharges. Microscopically, the skin tumors consisted of a round-cell infiltration, with scanty intercellular stroma. These formed nodules, chiefly in the hypoderm. The cells varied considerably in size. The disease hardly fell among those described as sarcomata, but should rather be classified, as Fuldt had suggested, among the granulomata.

FRAGILITAS CRINUM.

DR. GEORGE T. JACKSON of New York reported two such cases. The first was in a young man of twenty-six; a clerk. The hair was thinned over the whole top of the head and was dry and lusterless. There was no sign of dandruff. The peculiar feature of the case was that there was a patch on the left side of the head, another on the right side and a third over the forehead, where the hair was short and curled up close to the scalp. These patches were sharply defined, like those of ringworm. There was no sign of inflammation. Under appropriate treatment, the patches disappeared within six months and the hair became normal in appearance. The second case was that of a lawyer, fifty-five years old, whose general health was good. His hair had been growing thin for some years. Four or five weeks ago he noticed, on combing his hair, that it was matted on the back of the head. Examination showed that on the top of the head there were two well-marked, rounded, sharply defined patches about the size of a silver dollar, in which the hair was short and apparently broken off. On the back of the head there was another patch in which the hair was broken off and curled close to the scalp, presenting an appearance similar to the curly hair of the negro. There were no signs of inflammation. The microscopical examination, made by Drs. E. Wendé of Buffalo and Newborn of New York, disclosed no parasites, but showed many hairs with evidences of tricorrhexis nodosa.

AN UNUSUAL CASE OF TUBERCULOSIS CUTIS.

By Drs. T. C. GILCRIST and W. R. STOKES of Baltimore. The case was that of a colored girl who was first seen in 1894. She had cutaneous ulcerative lesions on the face, near the eye and on the nose. Sections from these lesions showed a fairly large number of apparently organized bodies, that is, they had a definite form and in some instances showed budding varieties. Most of them were situated in giant cells, but some were not. Tubercle bacilli could not be found in the

tissue. Enlarged glands in the neck of the patient were removed and large numbers of similar bodies were found in them; the majority of these had undergone definite calcareous degeneration. A guinea-pig was first inoculated intraperitoneally and it died in a month. Small nodules were found in the liver. These nodules contained a large number of bodies similar to those found in the glands and skin lesion of the patient. The bodies were present in necrotic areas in the liver and there were many commencing pathogenic areas in which no bodies could be found. No tuberculosis was present in the guinea-pig. This experiment showed definitely that these bodies were not inanimate objects; otherwise, we would not get necrotic areas and such multiplication of these bodies. The death of the animal was apparently due to the presence and growth of these bodies. Further extended experiments with glands which were excised from the patient two years later did not lead to entirely definite results. Pathogenic lesions were produced in a dog and a number of guinea-pigs. In the dog, which was killed, bodies similar to those found in the patient were present in the enlarged cervical glands. A mould grew in another case and on potato a pathogenic streptococci was obtained. Nothing could be grown on any media direct from the lesions. The relapsed lesions five years later were undoubtedly tubercular, as shown by inoculation into a guinea-pig.

DR. M. B. HARTZELL of Philadelphia said the case was interesting, but he failed to see how Dr. Gilcrist had proved that it was one of tuberculosis. DR. STELWAGON agreed with Dr. Hartzell.

THE PRESIDENT, DR. BOWEN, said that tissue which could not be differentiated histologically from that of tuberculosis had been shown to exist in so many different conditions that it was possible we had to deal here with a class of bodies which were perhaps degenerated elastic fibers or calcareous deposits.

[To be continued.]

Dwight's Epitome of Medical Jurisprudence. A Manual for Students and Practitioners. By E. W. DWIGHT, M.D., Instructor in Legal Medicine, Harvard University. In one 12mo volume of 249 pages. Lea's Series of Medical Epitomes. Philadelphia and New York: Lea Brothers & Co., Publishers. 1903.

This volume is one of a series intending ultimately to cover the entire field of medicine. It has been the editor's aim to provide brief manuals as contra-distinguished from mere compends. In the book before us this has been effected by amplifying the text to a certain extent and placing questions for students at the end of individual chapters. A very large number of subjects are briefly alluded to, and doubtful as we are of the ultimate value of such compendiums, we can easily see that many points of practical medico-legal interest are summarized in a way to render the book of value to students and practitioners not particularly engaged in this line of work.

THE BOSTON

Medical and Surgical Journal

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27 AND 29 BROMFIELD STREET, BOSTON, MASS.**THE LONG ISLAND HOSPITAL INVESTIGATION.**

LAST week an investigation before a committee of the Aldermen and Councilmen of Boston into the management of the Long Island Almshouse and Hospital was closed after a duration of nearly eleven weeks, in which twenty-two hearings were held. The investigation was extraordinary in many respects, but especially from the fact that the charges brought against the Board of Trustees having control of the institutions were made by a certain member of that board, for motives which it does not concern us here to discuss.

For the benefit of those who may be uninformed it should be known that after various vicissitudes the institution on Long Island, about six years ago, was placed under a board of seven unpaid trustees, and thereby removed from immediate political control. Two years previous to this a visiting staff had been organized, in accordance with a recommendation of a former investigating committee. The general result has been the gradual development of a well-appointed and a well-conducted hospital for chronic disease, with the essential adjuncts of such a hospital, in the way of a training school for nurses, house officers, a pathological department under a salaried pathologist and the encouragement of teaching. The visiting staff and the Board of Trustees, with the exception of the one member to whom reference has been made, have worked with complete unanimity toward this end.

The details of the somewhat farcical investigation which has been made of the institution at the instigation of this one disgruntled member of the Board of Trustees have been so widely exploited in the daily press that no description of

the proceedings is required here; certain probable effects of this investigation and the facts which it brought into public view are, however, of much more than passing interest to this community and to the cause of hospital care for the chronic sick in general.

In the minds of certain physicians of this city the feeling has long been gaining ground and the conviction strengthening that both for humanitarian and educational purposes the establishment of an adequate hospital for chronic disease is a necessity. This feeling has found expression in the progressive policy of the Long Island institution, encouraged by the visiting staff and made possible by the unfaltering co-operation of the Board of Trustees, as a body. The investigation just concluded has demonstrated this, and brought into public notice, as probably could have been done in no other way, the work which has thus far been accomplished in infusing a hospital spirit into an institution which previously did not rise above the level of an almshouse infirmary. We are firmly convinced that the city absolutely requires such a hospital in the fullest sense of the word, an opinion shared by the testimony of the various physicians called as witnesses. Regarding the situation from a broadly humanitarian standpoint, we fail to see wherein the opponents of this policy gained a single point.

The keen appreciation on the part of the majority of the Board of Trustees, of the medical needs of the city, as exemplified by this institution, is worthy of special comment, and this in spite of the fact that but one of the board is a physician. Had the closing argument in the investigation by Mrs. Alice N. Lincoln, as chairman of the Board of Trustees, come from the pen of a physician it could not more clearly have expressed the aims of the medical men who have been identified with the development of the hospital idea. It was at once a vindication of the policy of the trustees and a brilliant analysis and summary of the work of the past, the needs of the present and the hope of the future. In closing her argument, Mrs. Lincoln said:

We have told you, without exception, that the welfare of that institution is inseparably bound up with the welfare of the humblest patient who is in its charge—that the adjuncts of a hospital, which have been complained of as too costly, are really one and all for the benefit of those persons who come there for treatment, and also for the benefit of humanity at large.

Why is there a training school except to care for the sick; why is there a laboratory except to study the conditions of disease and health; why are there classes of stu-

dents except to show where future study and research may aid in preventing such ills as those from which these unfortunate people are suffering? The good of the patients is the first object of a hospital, but any hospital has also an important function to fulfill toward society in extending the scientific knowledge and treatment of disease, and affording facilities for its cure.

Whatever may be the result of this investigation, and that it will have some result I am reasonably certain, it is to be expected that the public will know better than ever before what is the scope and purpose of the Long Island institution, and especially of the importance of the hospital, which, although planned and built under our predecessors, has been developed and enlarged under the present administration along precisely the lines which, as already stated, were recommended by a previous investigating committee of the city government, and which, we believe, have received the indorsement of the citizens of Boston, both rich and poor.

With these statements we are in complete accord, and it is hardly to be expected that the better judgment of the people at large, to whom the final appeal must be made, will be other than favorable toward a policy which appeals at once to our sympathy, our reason and our common sense.

AS OTHERS SEE US.

It is apparent to any one who observes, that not only are foreigners coming among us more often for purposes of observation as well as travel, but also that their opinions of American manners and customs are finding more frequent expression in print. This is true of medicine as of other branches of knowledge. Within this year two papers have appeared in foreign journals by physicians who have recently visited America.

The first of these, by Dr. Georges Guillaïn of Paris, was published in the *Semaine Médicale* early this year, and concerned itself particularly with the question of instruction in neurology in the United States. Dr. Guillaïn made a tour of the country, including San Francisco, and wrote on his return to Paris a readable and for the most part appreciative and correct estimate of the situation in that branch of medicine in America at the present time.

More recently an excellent exposition of American methods has appeared from the pen of Prof. C. A. Ewald of Berlin in the *Berliner Klinische Wochenschrift*. As is generally known, Professor Ewald came to this country by invitation to attend the meetings of the American Medical Association and the Association of American Physicians and Surgeons. In addition to attendance at these meetings, he visited various of the more important cities of the East,

and has embodied his observations in a very entertaining and genial description.

In the first place, referring to the meetings he had attended, he remarks that it is apparently the English — meaning no doubt American — custom that papers are not given extemporaneously, but are read, which he regards as a less attractive method than extemporaneous delivery, and this he finds the more remarkable, since in discussion the writers prove themselves skilled and ready speakers. With this opinion we are in hearty agreement. If men would give the gist of their contributions without being bound to manuscript copy, the interest of hearers, as Professor Ewald suggests, would be very greatly enhanced. Of the "smoker" which formed part of the congress, the following comment is made:

Nur an einem Abend fand ein sogen. „Smoker“ statt, ein zwangloses Beisammensein, bei welchem für deutsche Begriffe sehr mässige Quantitäten von Bier und einer Art Bowle aus Rothwein getrunken wurden.

In speaking of the papers read in the various sections, Professor Ewald alludes to the fact that nothing is more erroneous than the generally accepted opinion that American medicine is distinguished only in certain practical surgical matters and stands behind in other lines of research. While we have for a long time been conscious that this was the fact, it is nevertheless a certain gratification to hear such an expression of opinion from a man of such wide knowledge and keen perceptions as Professor Ewald. Were others as generous and as well supplied with knowledge of the actual facts, we have no doubt that the popular and undoubtedly existing cynicism of the Germans at large toward American medicine would quickly be set aside.

Dr. Councilman's contribution to the etiology of smallpox is regarded as one of the important matters presented to the congress, and the opinion is expressed that the question of artificial products or other mistake in the interpretation of the microscopic pictures is not to be thought of. A brief, comprehensive account of the whole smallpox question is given in this connection. The comments which follow on hospitals, training schools for nurses and methods of medical education are all interesting and worthy of a detailed reading. In hospital construction, a fact which apparently was impressive was the "*himmelstürmende Bauart*" of the buildings in New York City, the reason for which he rightly interprets as the increasing value of land, a fact which necessitates that

Die Häuser in schwindelnde Höhen hinaufzuthürmen, wenn man keine Luxusbauten machen will.

Many other matters, to which space does not permit us to allude, are contained in this thoroughly appreciative description of American medicine. Professor Ewald was most naturally entertained widely in various places which he visited, and gained thereby an idea of hospitality which possibly was not his before. We, on our part, were happy in having a man of such broad sympathies and wide professional culture in our midst, who was quite able to look beyond details to the broad methods and aims of the leaders of medicine in this country. A few such men visiting our shores would quickly bring about that cosmopolitanism in medical matters which has been too slow in coming, and which is altogether to be desired for the ultimate good and progress of medicine at large.

THE AMERICAN JOURNAL OF ORTHOPEDIC SURGERY.

A SPECIAL branch of medical practice may be regarded as firmly established when it has attained to the dignity of an exclusive publication. This process has been going on with increasing activity during the last few years. We have gradually seen journals devoted to specialized branches developing and taking a definite and apparently permanent place in medical literature. Publications devoted to ophthalmology, neurology, psychiatry, dermatology and other branches have all taken their places along with the recognized journals of medical progress. The latest to join the ranks is the *American Journal of Orthopedic Surgery*, the first number of the first volume of which is now in our hands. Orthopedic surgery and the general study of the subject of orthopedics has for many years been very active, and has brought much knowledge to other allied branches of medicine. Through the energy of the members of the American Orthopedic Association this journal now appears, to be published quarterly by the association, and to replace the Transactions of the association, Volume I of the journal being Volume XVI of the Transactions.

The editorial committee is composed of Dr. R. W. Lovett of Boston, Dr. D. E. McKenzie of Toronto and Dr. H. M. Sherman of San Francisco. The first number consists essentially of papers read at the recent meeting of the association in Washington. The first is by Louis A. Weigel of Rochester, who was this year president

of the association, in which, rather opportunely in so special a journal as this, he discusses the question of the family physician, the specialist and the patient. Dr. Weigel is one of those who think that specialism should be a late development from the so-called general practitioner, and upholds his contention by various arguments, which it is not our present purpose to discuss. The names of Gibney, Bradford, Blanchard, Lovett, Goldthwait, Townsend and Whitman appear as contributors to this first number, a series of names so closely identified with the progress of orthopedic surgery in this country that the suggestiveness of their papers on various technical topics needs no mention.

Following the original papers a somewhat elaborate abstract department is appended which should be of the greatest possible service. Sceptical as we are of the attempt to abstract medical literature in weekly journals, we are quite convinced that such abstracts should form a most important part of a journal devoted to a special topic. In appearance this new journal offers little in the way of criticism. We note that the paper in general is rough and attractive to the eye, but that scattered through the text, wherever illustrations demand, an entirely different type of highly glazed paper is used in order that half-tones and x-ray pictures may be more clearly reproduced. This gives a somewhat uneven appearance to the pages as one turns them, and to our mind does not add to the attractiveness of the general appearance, necessary as it may be for the reproduction of cuts. On the whole we should much prefer the entire use of a glazed paper than this combination.

While we look with a certain regret upon the multiplication of periodicals, nevertheless we must be convinced that on the whole it conduces to the further development of medicine that each department which has attained to the rank of a so-called specialty should have its own journal. We have no doubt that this admirable publication, added to the long list, will find its place of usefulness and be an organ of importance to the growing number of votaries of orthopedic surgery.

MEDICAL NOTES.

CHICAGO THE VIRILE!—Under this heading the *Bulletin* of the Chicago Health Department makes the following statement: Of all the larger cities of the country Chicago has the largest proportion of males in its total population. During the last twenty years Chicago has averaged 5.3%

more males than females, while New York has averaged 2.8% more females than males, Philadelphia 5.7% and Boston 7% more females than males. Not only this, but Chicago's male death-rate is the lowest of the four cities — Chicago, 20.5 per thousand; Philadelphia, 22.9; Boston, 23.5; New York, 27.1, being the averages of the three Federal Census years 1880, 1890, 1900.

APPOINTMENT OF DR. WILLIAM A. WHITE. — Dr. William A. White, first assistant physician of the Binghamton State Hospital, has been appointed superintendent of the Government Insane Hospital at Washington in place of the late Dr. Alonzo B. Richardson. Dr. White is but thirty-three years old.

TRICHINOSIS IN HAMBURG. — A cable despatch from Berlin reports that in Hamburg and its vicinity two hundred persons are suffering from trichinosis.

CEREBRAL MORPHOLOGY. — The following statement is made in *American Medicine*: "The autopsy on the late Dr. Laborde of Paris disclosed an interesting fact regarding the brain. Dr. Laborde was an exceedingly fluent speaker, and it was desired to ascertain if the speech center was unusually developed. The left inferior frontal convolution was found to be much larger than the right. Its volume was the more remarkable because the brain as a whole was small, weighing 1,234 gm. (41 oz.) and the convolutions in general were but little complicated." Interesting as such observations are, we cannot but regard with scepticism the statement that fluency in speech should have so direct a bearing upon the cerebral speech area. Valuable as such apparently positive evidence may be, it needs very decidedly in matters of this sort to be controlled by a study of many brains, both of fluent and of poor speakers.

A SWEET GIRL MULTIGRADUATE. — The *British Medical Journal* thus characterizes a young woman of this city: "Miss Mary C. Lowell, M.D., of Boston, is said to be the only woman in the world who is entitled to practice the professions of medicine and law by virtue of the possession of degrees in those faculties. She was the first woman assistant superintendent of the Maine State Hospital for the Insane. After holding this position for five years she visited the hospitals of various European capitals. The love of study prompted her to elect a course in law, and it is said to be her intention to obtain two more degrees — Bachelor of Jurisprudence and Master in Chemistry."

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 9, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 26, scarlatina 11, typhoid fever 34, measles 4, smallpox 0.

A CENTENARIAN. — Miss Larissa Shailer, the oldest spinster in Connecticut, died at Lyme, Sept. 6, at the reputed age of 103 years. Miss Shailer was born in Haddam, Sept. 21, 1800.

ENLARGEMENT OF STILLMAN INFIRMARY. — It is stated that Harvard University has purchased a very considerable amount of land adjacent to the Stillman Infirmary in Cambridge, and that owing to the demands made upon it by students of the university it has been decided by the trustees to enlarge the present building.

LIABILITY FOR BURNING OUT OF A FUSE. — A decision of considerable practical interest has recently been handed down by the full bench of the Supreme Court of Massachusetts relative to the question of liability of a street railway company operating electric cars for the burning out of a fuse. This decision was made in two cases, in which in the Superior Court damages had been awarded. The ruling of the lower court is, therefore, sustained. More in detail the court decides that the company is liable when the fuse burning out is in an imperfect condition. It furthermore decides that the burning out of a fuse is actionable when the fuse box is so situated as to be a source of danger to passengers. It is of some interest that practically at the same time that this decision was handed down an Italian in a neighboring town, frightened by the burning out of a fuse, jumped from a moving car and was killed.

NEW YORK.

HEALTH DEPARTMENT REPORTS. — The reports of the Health Department show an exceptionally low deathrate for this season of the year. During the month of August the mortality represented an annual deathrate of 17.28 as against 19.06 for July and 18.75 for August, 1902. The corrected deathrate, excluding non-residents and infants under one week old, was 16.49. Among the diseases which showed a reduction in mortality were the following: The weekly average of deaths from diphtheria and croup decreased from 36 $\frac{1}{2}$ in July to 24 $\frac{1}{2}$ in August; the weekly

average from scarlet fever, from $11\frac{3}{4}$ to $6\frac{1}{4}$; from measles, from $15\frac{3}{4}$ to $5\frac{1}{4}$; from pneumonia, from $58\frac{3}{4}$ to $51\frac{1}{2}$; from broncho-pneumonia, from 47 to 32; from diarrheal diseases, from $301\frac{1}{4}$ to $257\frac{3}{4}$; from diarrheals under two years of age, from $277\frac{3}{4}$ to 225; from Bright's disease and nephritis, from $95\frac{3}{4}$ to $84\frac{1}{4}$; and from organic heart diseases, from $78\frac{1}{2}$ to $72\frac{1}{2}$. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from whooping-cough increased from 4 to 9; the weekly average from typhoid fever from $13\frac{3}{4}$ to $14\frac{1}{4}$; from acute bronchitis, from $13\frac{3}{4}$ to $16\frac{1}{2}$; from pulmonary tuberculosis, from $125\frac{1}{4}$ to $145\frac{3}{4}$; and from cancer, from $50\frac{1}{2}$ to $52\frac{3}{4}$.

From the condensed quarterly report of the Bureau of Records of the Health Department just issued, it appears that during the three months ending June 30, the second quarter of the year, there were in the city 16,674 deaths, which on an estimated population of 3,732,903 gives a deathrate of 17.93. Comparing this with an average number of deaths for the corresponding quarters of the preceding five years of 16,642 deaths, which on an estimated population of 3,448,567 gives a deathrate of 19.40 per thousand, it is seen that there has been a lowering of almost a point and a half. The deathrate of the following diseases shows a reduction: Measles, from 0.26 to 0.19; scarlet fever, from 0.34 to 0.29; pulmonary tuberculosis, from 2.34 to 2.14; pneumonia, from 2.76 to 2.60; diarrheal diseases, from 1.06 to 0.89; Bright's disease, from 1.52 to 1.49. In the following there has been an augmented deathrate: Diphtheria and croup, from 0.64 to 0.67; typhoid fever, from 0.11 to 0.13; cancer, from 0.67 to 0.69. It will be noted, however, that these increases are very slight, while several of the reductions are quite marked.

Miscellany.

INFANT MORTALITY IN NEW YORK.

WRITING in the *Medical News* on "Infant Mortality in New York," Dr. Rowland G. Freeman reaches the following conclusions: (1) The infant mortality of all countries is shockingly high, and this is shown to be unnecessary by the fact that infants that are well cared for show a very low mortality. (2) The influences that contribute to the high mortality are defective feeding, the active cause, and heat and humidity and bad surroundings as contributory causes. (3) There has been a marked decline in infant mortality during the last ten years in the United States and especially in New York City, due, for the most part, to the decline in mortality from summer

diarrhea. (4) This is due to many agencies. The general adoption of pasteurization and sterilization of milk is the most important of these. Other agencies in New York City are the improved city administration, the milk inspection of the Department of Health, the Straus Milk Charity, the fresh air work of St. John's Guild and similar charities, cleaner streets and asphalt pavements, the new small parks, playgrounds and recreation piers, improved tenements and the use of antitoxin.

HYSTERICAL FEVER.

THE existence of a pyrexial condition in association with hysteria apart from any recognizable cause for the hyperthermia has been called in question, but there are a number of carefully made observations on record which seem to establish the fact of its occasional occurrence. It is claimed that the diagnosis may be made by noting the want of harmony between the temperature and the pulse rate and respiration. Moreover, in lieu of an increased excretion of urea, this "functional" fever is marked by a diminished, which is in accord with common experience; but how can the alarming increase of lunacy during the past fifty years be accounted for? — *Medical Press*.

NEWSPAPER MEDICINE.

THE following excerpts are taken from a single daily paper, and serve to account in a measure for the prevalent erroneous popular ideas regarding medical matters:

CHICAGO MAN'S HEART MENDED. — An operation was made on the heart of M. P., who was stabbed in a fight, to save the man's life. At Mercy Hospital, where he was taken, physicians took out his heart and sewed it up. Then oxygen was administered continuously, and it was said that he had a possible chance of recovery. The wound almost cut the man's heart in two.

DR. GARTNER OF VIENNA has just patented an instrument which records the pulse of a patient under the influence of an anesthetic. The instrument is fastened to the forearm and a graduated disc records the increase or retardation of the pulse. The experiments in the hospital of Vienna succeeded marvelously. It is hoped by means of it to prevent death during operations.

SURGERY FOR CONSUMPTION. — L. G. of Hampton, N. H., underwent a rare surgical operation here on Saturday at the Stamford Hospital, as a last resort for the cure of pulmonary tuberculosis. An examination revealed a large cavity in the apex of the right lung and an abscess in the upper part of the middle lobe. The physician in charge of the case was satisfied that the only chance the patient had was an operation that would establish drainage through the chest wall. On Saturday, accordingly, he resected five inches of the second rib, four and one-half of the third and four inches of the fourth. The pleura being bound down by adhesions was brought into the wound and stitched there, both cavities were located and the pleura was opened with a needle. The cavities were thoroughly cleaned and drained with a rubber tissue drainage, and the wound was closed with the exception of space sufficient for drainage. The chest wall was strapped and dressed with a dry antiseptic dressing. A complete recovery is hoped for.

The optimism of the final statements in each of these instances is not calculated to instill correct physiological ideas into the popular mind.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 29, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,257 | 546 | 37.15 | 9.06 | 2.15 | 20.44 | 1.27 | |
| Chicago . . . | 1,885,000 | 586 | 219 | 40.26 | 3.75 | 2.05 | 24.22 | 2.55 | |
| Philadelphia . . | 1,378,527 | 420 | 136 | 33.80 | 5.47 | 3.09 | 11.66 | 3.57 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 223 | 89 | 37.59 | 4.07 | .90 | 15.40 | 3.62 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 146 | — | 40.40 | 5.48 | 2.74 | 13.70 | 6.16 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 71 | 29 | 38.00 | 5.63 | 5.63 | 21.12 | 1.40 | |
| Boston . . . | 603,163 | 180 | 66 | 37.89 | 6.11 | 1.67 | 21.67 | 1.11 | |
| Worcester . . . | 132,044 | 32 | 12 | 40.62 | 3.12 | — | 28.12 | — | |
| Fall River . . . | 115,549 | 39 | 21 | 33.33 | 12.82 | — | 23.07 | 5.13 | |
| Lowell . . . | 101,959 | 46 | 28 | 32.61 | 6.52 | — | 28.26 | 2.17 | |
| Cambridge . . . | 98,639 | 28 | 15 | 32.14 | — | — | 25.00 | — | |
| Lynn . . . | 72,497 | 18 | 6 | 16.67 | — | — | — | 5.55 | |
| Lawrence . . . | 69,766 | 26 | 18 | 53.90 | — | — | 42.35 | — | |
| Springfield . . | 69,389 | 24 | 5 | 20.83 | 8.33 | 4.16 | 12.50 | — | |
| Somerville . . . | 68,110 | 18 | 9 | 38.88 | 11.11 | — | 22.22 | — | |
| New Bedford . . | 67,198 | 40 | 20 | 50.00 | 2.50 | — | 35.00 | 2.50 | |
| Holyoke . . . | 49,286 | 11 | 5 | 36.36 | — | — | 18.18 | — | |
| Brockton . . . | 44,873 | 9 | 3 | 33.33 | — | 9.09 | — | — | |
| Haverhill . . . | 42,104 | 14 | 4 | 14.28 | — | — | 7.14 | — | |
| Newton . . . | 37,794 | 7 | 1 | 28.60 | — | — | — | — | |
| Salem . . . | 36,876 | 16 | 8 | 31.25 | — | — | 31.25 | — | |
| Malden . . . | 36,286 | 4 | 0 | 75.00 | — | — | — | 25.00 | |
| Chelsea . . . | 35,876 | 8 | 1 | 12.50 | — | — | 12.50 | — | |
| Fitchburg . . . | 35,069 | 12 | 3 | 25.00 | — | 8.33 | — | — | |
| Taunton . . . | 33,656 | — | — | — | — | — | — | — | |
| Everett . . . | 28,620 | 4 | 4 | 75.00 | — | — | 50.00 | — | |
| North Adams . . | 27,862 | 6 | — | 33.33 | — | 16.67 | — | — | |
| Gloucester . . . | 26,121 | 7 | 1 | 14.30 | — | 14.30 | — | — | |
| Quincy . . . | 26,042 | 10 | 6 | 60.00 | — | — | 50.00 | — | |
| Waltham . . . | 25,198 | 5 | 2 | — | — | — | — | — | |
| Brookline . . . | 22,608 | 2 | — | — | 50.00 | — | — | — | |
| Pittsfield . . . | 22,589 | 5 | 1 | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 1 | 1 | — | — | — | — | — | |
| Medford . . . | 20,362 | 2 | — | — | — | — | — | — | |
| Northampton . . | 19,883 | 4 | 1 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 4 | 4 | 25.00 | — | — | 25.00 | — | |
| Clinton . . . | 15,161 | 7 | 2 | 14.30 | 14.30 | — | 14.30 | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 6 | 3 | 33.33 | 16.67 | — | 16.67 | — | |
| Woburn . . . | 14,300 | 2 | 2 | — | — | — | — | — | |
| Hyde Park . . . | 14,175 | 2 | 0 | — | — | — | — | — | |
| Adams . . . | 13,745 | 2 | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 7 | 5 | 57.20 | — | — | 42.90 | — | |
| Melrose . . . | 13,600 | 5 | — | 40.00 | — | — | — | — | |
| Westfield . . . | 13,418 | 6 | 3 | 16.67 | 16.67 | 16.67 | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 3 | 1 | 33.33 | — | — | 33.33 | — | |
| Framingham . . . | 12,534 | 4 | 1 | 50.00 | 25.00 | — | 25.00 | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 4 | 1 | — | 25.00 | — | — | — | |
| Weymouth . . . | 11,344 | 3 | 1 | 33.33 | — | — | 33.33 | — | |
| Southbridge . . . | 11,268 | 5 | 2 | 20.00 | — | — | 20.00 | — | |
| Watertown . . . | 11,077 | 1 | — | 100.00 | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,342; under five years of age, 1,343; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,234, acute lung diseases 211, consumption 280, scarlet fever 21, whooping cough 30, cerebrospinal meningitis 12, smallpox 19, erysipelas 8, measles 9, typhoid fever 72, diarrheal diseases 652, diphtheria and croup 71.

From whooping cough, New York 8, Chicago 4, Philadelphia 5, Baltimore 3, Pittsburg 6, Lynn, Newton, Everett and Quincy 1 each. From erysipelas, New York 6, Chicago 1, Pittsburg 1. From smallpox, Chicago 2, Philadelphia 4, Pittsburg 13. From scarlet fever, New York 6, Chicago 5, Baltimore 4, Boston 1, Fall River 1, Lawrence 1, New Bedford 2, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Aug. 15 the death-rate was 15.7. Deaths reported, 4,544; acute diseases of the respiratory organs (London) 120, whooping cough 63, diphtheria 59, measles 91, smallpox 5, scarlet fever 33.

The death-rate ranged from 6.9 in Reading to 28.9 in Birkenhead; London 14.2, West Ham 12.8, Brighton 10.8, Portsmouth 12.8, Southampton 12.3, Plymouth 15.8, Bristol 11.5, Birmingham 17.3, Leicester 14.0, Nottingham 14.4, Bolton 21.4, Manchester 20.7, Salford 21.6, Bradford 14.2, Leeds 18.9, Hull 20.1, Newcastle-on-Tyne 18.8, Cardiff 10.3, Rhondda 13.9, Liverpool 21.2, Burton-on-Trent 13.2, Bootle 27.5.

METEOROLOGICAL RECORD.

For the week ending Aug. 29, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|-------|-----------------|-------------------|----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|--------------|-----------|------------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 23 | 29.81 | 75 | 85 | 65 | 61 | 39 | 50 | E | W | 10 | 8 | C. F. 0 |
| M. 24 | 29.96 | 66 | 70 | 62 | 64 | 75 | 70 | N | E | 9 | 4 | C. F. 0 |
| T. 25 | 29.88 | 60 | 63 | 57 | 59 | 97 | 93 | W | N | 5 | 4 | C. F. .66 |
| W. 26 | 29.98 | 59 | 62 | 56 | 54 | 29 | 12 | N | S | 10 | 4 | C. F. .7 |
| T. 27 | 30.07 | 62 | 68 | 57 | 77 | 77 | 77 | S | S | 8 | 8 | C. F. 0 |
| F. 28 | 30.13 | 64 | 68 | 59 | 66 | 63 | 74 | S | E | 3 | 8 | C. F. 0 |
| S. 29 | 30.16 | 60 | 62 | 58 | 56 | 91 | 88 | E | N | 20 | 12 | C. F. .13 |
| 30 | 30.00 | 68 | 59 | 78 | | | | | | | | .73 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. 30- Mean for week.

RECENT DEATHS.

ERNEST F. ALEXANDER of Hoosick Falls, N. Y., a veterinary surgeon widely known in the section where he resided, died on Sept. 4, at the age of forty-two. He was a native of England and was a graduate of Toronto College, Canada.

THE death is reported at Herrin in the Württemberg Black Forest, on Aug. 16, of DR. JOSEPH SCHNETTER, who was for forty years a practising physician in New York City. Dr. Schnetter was eighty-one years old. He was born at Gerdsheim, Bavaria, and was graduated with honors from the University of Würzburg. He came to this country in 1849, and later became one of the most distinguished and prominent German physicians in New York. There he was one of the founders of the German Hospital and Dispensary, which is now a large and flourishing institution. A few years ago he retired from practice on account of failing health and went back to Germany, where he has since resided in the city of Karlsruhe.

DR. EMILY R. ROBBINS, said to have been the first woman medical practitioner in America, has recently died in Philadelphia. She was born in that city seventy-one years ago and was graduated from a Pennsylvania medical school in 1857. Later she married a physician, and during the war rendered valuable services in caring for the wounded soldiers who were taken to hospitals in her native city.

BOOKS AND PAMPHLETS RECEIVED.

The Medical Epitome Series. Medical Jurisprudence. A Manual for Students and Practitioners. By Edwin Welles Dwight, M.D. Series edited by V. C. Pedersen, A.M., M.D. Philadelphia and New York: Lea Brothers & Co. 1903.

The Practical Medicine Series of Year Books, comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the general editorial charge of Gustavus P. Head, M.D. Vol. VI. Chicago: The Year Book Publishers. May, 1903.

On Syphonage and Hydraulic Pressure in the Large Intestine with their bearing upon the treatment of Constipation, Appendicitis, etc. By Ralph Winnington Leftwich, M.D. Illustrated. New York: William Wood & Co. 1903.

Index Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series. Vol. VIII. Washington: Government Printing Office, 1903.

A Reference Handbook of the Medical Sciences, embracing the entire range of Scientific and Practical Medicine and Allied Science. By various writers. A new edition, completely revised and rewritten. Edited by Albert H. Buck, M.D. Vol. VI. Illustrated. New York: William Wood & Co. 1903.

Tumours, Innocent and Malignant. Their Clinical Characters and Appropriate Treatment. By J. Bland-Sutton. Third Edition. Illustrated. Chicago: W. T. Keener & Co. 1903.

Organic Nervous Diseases. By M. Allen Starr, M.D., Ph.D., LL.D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1903.

The Erotopath in Society. By Charles H. Hughes, M.D., of St. Louis, Mo.

Original Articles.

THE ILL HEALTH OF FRANCIS PARKMAN.

BY GEORGE M. GOULD M.D., PHILADELPHIA, PA.

Boyhood. — Francis Parkman was born Sept. 16, 1823, in Boston, of the best New England ancestry. Farnham says that the tragic element in his life was probably as much the result of ignorance as of inherited weakness. As to "inherited weakness," one cannot inherit from ancestors what they have not, and there is not a hint that I have been able to discover which shows that Parkman's parents or grandparents had any of the physical troubles which made him suffer so grievously during his entire life. In his autobiographic letter he says of himself that his childhood was neither healthful nor buoyant, and that for a time though active he was not robust. Farnham says he had a delicate and sensitive physique, and was therefore sent at the age of eight to his grandfather's farm at Medford, Mass. Speaking of himself, Parkman says:

"I walked twice a day to a school of high but undeserved reputation, about a mile distant in the town of Medford. Here I learned very little, and spent the intervals of schooling more profitably in collecting eggs, insects and reptiles, trapping squirrels and woodchucks, and making persistent though rarely fortunate attempts to kill birds with arrows." Farnham adds that the woods, indeed, were so seductive as to be responsible for considerable truancy on his part, and some consequent fibbing. Those years at Medford were counted among his happiest, for the manifold interests and activities of country life were very congenial to his tastes.

"The causes of his early illnesses are enveloped in more or less mystery," says Farnham. "He was a headachy boy," Miss Parkman thinks,¹ and this illuminative remark, incidentally made, when coupled with the entire subsequent history of Parkman's life, hints at the key which unlocks the doors of the mystery. Boys of good stock and habits do not have headache except for good and sufficient reasons. When they live in the country and play truant, etc., as this boy did, the truancy is likely to be due to the unconscious desire to avoid headache. In such cases, as good oculists well known, the headache is most likely due to eyestrain. Reading thus between the lines, the oculist who remembers a large number of cases in his private practice of similar development in boys will also be struck by the likeness of essential psychologic conditions in the lives of the youth time of De Quincey and of Darwin. The erudite boy De Quincey was driven by the unconscious discomfort felt in study to years of vagrancy in the Welsh hills and elsewhere, and the intellectual son of intellectual parentage, Darwin, made his father despair by his addiction to "shooting, dogs, and rat catching." These and numerous instances in my practice have led me to formulate a rule as to the "truancy" and "play"

and "athletics" of boys naturally intellectual, but who show a strangely illogic tendency to avoid all study of a severe or continuous kind. They will not and of course cannot explain it, but they will not read and study, and at once upon the application of spectacles correcting the ametropia which made study result in suffering or unconscious irritability, these "obstinate" and "wild" boys lead their classes and become men of learning or intellectual power.

"At the age of eleven or twelve," writes Parkman of himself, when he was forty-five, "he conceived a vehement liking for pursuits a devotion to which at that time of life far oftener indicates a bodily defect than a mental superiority. Chemical experiment was his favorite hobby, and he pursued it with a tenacious eagerness which well-guided would have led to an acquaintance with the rudiments of the science, but which in fact served little other purpose than injuring him by confinement, poisoning him with noxious gases, and occasionally scorching him with some ill-starred explosion." "Baneful to body and mind," he again pronounces this interest in chemistry.

During the years from thirteen to seventeen we infer that he was attending school in Boston at the Chauncy Hall School. We do not hear that he was studious, and all hints show that both before and after this he was far from being so.

The age of fifteen or sixteen produced a revolution. At that momentous period of life retorts and crucibles were forever discarded, and an activity somewhat excessive took the place of voluntary confinement. A new passion seized him, which, but half gratified, still holds its force. He became enamored of the woods, a fancy which soon gained full control over the course of the literary pursuits to which he was also addicted.

The college student. — He entered Harvard College in 1840. His biographer says he devoted himself with ardor to his special interests — the study of rhetoric and history, the pursuit of physical development and a knowledge of the American wilderness. How great, or rather, how little was his ardor for book study, may be gathered from the statement of his friend Mr. Wheelwright concerning his social and student life at college:

He was very little in his own room, except at night for the purpose of sleeping. His constant craving for bodily exercise kept him out-of-doors or at the gymnasium the greater part of the day.

He now began, on entering Harvard, a course of physical training, by which he hoped to acquire the utmost strength, agility and endurance. . . . He took long walks at a pace his companions found it hard to keep up. . . . One of his strongest characteristics, a love of stir and movement, pushed him to excessive activity. (Farnham.)

Parkman says of himself that he formed the plan of devoting himself to history-writing at the age of eighteen, and that to prepare himself "he entered upon a training tolerably well fitted to serve his purpose." One at first smiles at finishing this sentence describing this training — "slighted all college studies which could not promote it, and pursued with avidity such as had a bearing upon it, however indirect." Parkman himself continues:

His reliance, however, was less on books than on such personal experience as should in some sense identify him with his theme. His natural inclinations urged him in

¹ Personal communication. From the age of twelve (he being then twenty-one) his sister was his almost constant assistant and companion. (Since this was in type Miss Parkman tells me there is some doubt in her mind or in that of her sister as to the fact of headache in boyhood. It is not of much import. Boys with eyestrain usually avoid headache by avoiding reading and writing.)

the same direction, for his thoughts were always in the forests, whose features, not unmingled with softer images, possessed his waking and sleeping dreams, filling him with vague cravings impossible to satisfy. As fond of hardships as he was vain of enduring them, cherishing a sovereign scorn for every physical weakness or defect, deceived, moreover, by a rapid development of frame and sinews, which flattered him with the belief that discipline sufficiently unsparing would harden him into an athlete, he slighted the precautions of a more reasonable woodcraft, tired old foresters with long marches, stopped neither for heat nor rain, and slept on the earth without a blanket.

During his college course he spent his vacations in long trips to the wilds of New England, in 1841 to Portsmouth, Lake Winnepesaukee, Mt. Washington, etc., to the Androscoggin and Magalloway rivers. In 1842 a similar trip was made, and in 1843 one to Canada for historical materials, examining battlefields, etc. His physical condition and athletic powers were so well known that it was a surprise to his friends when in his junior year (1843) he gave up his studies and went to Europe "for his health." "Nothing," says Farnham, "very definite is known of the cause of this sudden change. Some think it was a trouble with his eyes, but there is no reference to this in his diaries and the few letters he wrote. It was probably, as others intimate, with apparently better knowledge, a trouble of the heart resulting from overstrain in the gymnasium at Harvard."² Parkman sailed in September and — a side light on the rigor of college courses and discipline at that time — he returned in time the next year to be present at the graduation exercises.

As a law student. — Graduated in 1844 by Harvard, he at once entered the Law School, and received the degree of Bachelor of Laws in 1846. He never entered the bar, and judging from the hints given we may suppose his teachers and examiners were as lenient as they had been in the classical department. Of this period Parkman says:

"While following the prescribed courses at a quiet pace, I entered in earnest on two other courses, one of general history, the other of Indian history and ethnology, and at the same time studied diligently the models of English style, which various pursuits were far from excluding the pleasures of society."

When a student in the law school, he joined a class in riding under the instruction of a circus manager. With his chivalric and spirited temper he must have taken great pleasure in this knightly exercise. He chose the hardest horses, practiced riding in every form, with or without a saddle or stirrups; could run, leap, jump on a charger at full speed — in short, perform feats which only a "professional" could execute. In this study he probably had in view his "Oregon Trail" trip, which occurred soon after. If our athletic games had then been in vogue, his skill, courage, coolness and activity would have made him a successful competitor. (Farnham).

"The first trouble of which we have any definite knowledge," says Farnham, "was the beginning of an affection of the eyes." This extremely indefinite "definiteness" is further described as follows: "During his first year at the Law School, 1844-45, he rose very early and studied by candle light, often without a fire. In the course of the next winter, when confined to the house by some sickness, he, for the first time,

pursued his studies by listening to reading." The journeys undertaken during his law course are epitomized by Farnham and show the fiery energy that drove him over so much of the country.³

"*The Oregon Trail*," writes Farnham, "was undertaken partly to cure his eyes, partly to study Indian life." His friend Shaw and himself left St. Louis April 28, 1846, "on a tour of curiosity and amusement," quoting Parkman. In the preface of the book, written in 1872, he says:

As regards the motives which sent us to the mountains, our liking for them would have sufficed; but, in my case, another incentive was added. I went in great measure as a student, to prepare for a literary undertaking of which the plan was already formed, but which from the force of inexorable circumstances, is still but half accomplished. It was this that prompted some proceedings on my part, which, without a fixed purpose in view might be charged with youthful rashness. My business was observation, and I was willing to pay dearly for the opportunity of exercising it.

At Fort Laramie he was taken down with dysentery, and says of himself in the "Oregon Trail":

I had been slightly ill for several weeks, but on the third night after reaching Fort Laramie, a violent pain awoke me, and I found myself attacked by the same disorder that occasioned such heavy losses to the army on the Rio Grande. In a day and a half I was reduced to extreme weakness, so that I could not walk without pain and effort. Having within that time taken six grains of opium without the least beneficial effect,⁴ and having no medical adviser, nor any choice of diet, I resolved to throw myself upon Providence for recovery, using without regard to the disorder any portion of strength that might remain to me. So on the 20th of June we set out from Fort Laramie. Though aided by the high bow "mountain saddle" I could scarcely keep my seat on horseback.

Another quotation from the "Oregon Trail" goes into further details of his condition:

"At this time I was so reduced by illness that I could seldom walk without reeling like a drunken man, and when I rose from my seat upon the ground the landscape suddenly grew dim before my eyes, the trees and lodges seemed to sway to and fro, and the prairie to rise and fall like the swells of the ocean. . . . I tried repose and a very sparing diet. For a long time, with exemplary patience, I lounged about the camp, or at the utmost staggered over to the Indian village, and walked faint and dizzy among the lodges. It would not do; and I bethought me

³ The vacations of the year he devoted to historical research. Taking his rifle, he tramped alone over the hills of western Massachusetts, to study the routes followed by the French and Indians in their attacks on that region. He passed through Springfield, Cabotville (old name of Chicopee), Chester Factory, Lee, Stockbridge, Great Barrington, Mount Washington, Lebanon Springs, Stephentown, the Hopper and North Adams.

The diary of 1845 shows that he had now focused his ambitions on a definite work — the "Conspiracy of Pontiac." In April of that year he made a trip to St. Louis and spent the summer in collecting materials for this volume. He visited Lancaster, Paradise, Harrisburg, Williamsport, Trout Run, Blossburg, Corning, Seneca Lake, Rochester, Buffalo, Detroit, Windsor, Sandwich, Mackinaw, Sault Ste. Marie, Palmer, Newport, Niagara, Oswego, Syracuse and Onondaga Castle. In all these journeys he showed indefatigable energy and alertness, and while his main interest was historical research, in which pursuit he noted the scenery of historic places, examined family papers and other documents and wherever it was possible interviewed descendants of the actors in his historic drama, his diary reveals almost as much of interest in nature, human nature and civilization. The sketches he contributed to the *Knickerbocker Magazine* show something of these tendencies crystallized in literary forms. In the winter of 1846 he made a trip through Pennsylvania, visiting Trenton, Philadelphia, Washington, Baltimore, Harrisburg, Carlisle, Chambersburg and Pittsburg. This year is marked also by his most adventurous and important expedition, the trip of the "Oregon Trail."

⁴ This part of this sentence is oddly omitted in my copy of the "Oregon Trail," preface of 1872.

² The gymnasium was established in his junior year.

of starvation. During five days I sustained life on one small biscuit a day. At the end of that time I was weaker than before, but the disorder seemed shaken in its stronghold and very gradually I began to resume a less rigid diet."

He soon recovered and wrote that, "hardship and exposure had thriven with me wonderfully. I had gained both health and strength," and was "in high spirits." He had some relapses at a later date, but soon gained rapidly, ate well and went out hunting for sport, etc.

In his autobiographic letter, written years afterward, he speaks as follows of his life with the Indians:

On a journey of a hundred miles over a country in parts of the roughest, he had gained rather than lost strength, while his horse was knocked up and his companion disconsolate with a painful cough.

The long and exhausting buffalo hunts toward the end of the trip, for the fun of the thing, and the homeward journey down the Arkansas Valley, show how strong and essentially unharmed he really was in health. Of another he wrote, "He was complaining that night of a disease the wasting effects of which upon a younger and stronger man, I myself had proved from severe experience."⁵

I have felt it necessary to quote so fully concerning the "Oregon Trail" trip, because Mr. Farnham, in ignorance of the real pathogenic condition, has in his comments put the matter in a wrong light. He says that "his mind at times lost its clearness." "The prolonged and excessive strain of the journey permanently impaired his digestion, thus reducing his powers to resist the development of disease. In this way the Oregon trip was the immediate cause of his infirmities, though some of them may have had their source in heredity." Farnham indeed suggests that his lifelong insomnia was due to this journey, and that "inflammation and weakness of the eyes naturally increased with the decline of his general health on the Oregon trip." Finally Farnham says that the "Oregon Trail" trip thus cost Parkman his health for life.

Farnham here repeats the same error as was exposed in a previous study of Darwin, concerning the effects of the Beagle voyage. As Darwin returned from the voyage unharmed, sound and healthy, so Parkman came home from the Oregon trip essentially without any permanent injury. His subsequent ill-health had nothing whatever to do with the hardships and temporary intestinal troubles of the outing among the Indians. "The sport," says Parkman, "was good, and the faith

undoubting that to tame the devil, it is best to take him by the horns." The cause of all his succeeding illness (except of course the arthritis and rheumatism that came on later) was not suspected by himself or his biographer. This was eyestrain, which played no part during his Oregon journey, but which began its dominating influence at once upon his return to civilization, and made every day of his after life the supreme concern and every hour one of hidden suffering.

To the alertminded reader it will have become apparent that the school truancy, the interest in chemistry, the woods-roaming, the furious athleticism, the trip to Europe, the early choice of the peculiar historic subjects upon which to write—all were proofs only of a strange though unrecognized suffering when he wrote or read. The Oregon journey, itself preceded by the thousand-mile tramps and wanderings, were upon any other supposition strangely illogical. Parkman bravely convinced himself they were necessary to his preparation as a historical writer. But what a pitiable means to the end! It is plain that it was all but a powerful and subtle reaction against the ocular and cerebral injury wrought by the impossibility of visual labor with pen and type. There is, indeed, a large and hidden wisdom of the organism, a fused forefeeling and unconscious determination of the psychic and biologic personality which steadily and determinedly does the best it can with the condition at hand, the inherited tastes and abilities and the forelying circumstance or necessity of life. The youth and the entire life of Parkman, willed and potent as he was, is an illustration of how little the most dictatorial "environment" could conquer or long influence the more dominating temper of his character. Fate made him a true Yankee, and demanded his employment with intellectual and even with literary matters. It also gave him eyes that in any other man in the world would have rendered his living resultless to the world, and every hour a torture to himself. The torture he knew not how to escape, but he wrung from the bitterest suffering and the most un pitying fate great results for the world.

In spite of the fact that during his early years he was a wood-roamer, and even made commendable natural history collections, he was no scientist, and however ardently and arduously he prosecuted tree lore or animal study, or later chemistry, and still later horticulture, it is perfectly evident that his title rôle was not as scientist. He was cast by God for another part, and his soul's eye was set upon another ideal. He filled the small rôles as well as he could, but why he played them at all, and why he soon wearied of them, this is explained only by the fact that injury to eyes and the nervous system was unconsciously felt whenever he used his eyes in protracted reading and study. Hence he was driven to muscular activity, and being an intellectual man he could but choose the sole outlets for energy which united action and thought. The restless demon that from the depths of great men's souls ever cries out, *March, march!* begins his orders even

⁵ Approaching St. Louis an incident occurred which must be quoted in full: "... Dr. Dobbs is there besides. I asked who Dr. Dobbs might be. 'One of our St. Louis doctors,' replied Tête Rouge. For two days past I had been severely attacked by the same disorder which had so greatly reduced my strength when at the mountains: at this time I was suffering not a little from pain and weakness. Tête Rouge in answer to my inquiries, declared that Dr. Dobbs was a physician of the first standing. Without at all believing him, I resolved to consult this eminent practitioner. He offered in his own person but indifferent evidence of his skill, for it was five months since I had seen so cadaverous a face. ... I said I had come to ask professional advice.

"Your system, sir, is in a disordered state," said he, solemnly, after a short examination.

"I inquired what might be the particular species of disorder.

"Evidently a disordered state of the liver," replied the medical man; 'I will give you a prescription.' ... He presented me with a folded paper. 'What is it?' said I. 'Calomel,' said the doctor.

"Under the circumstances I would have taken almost anything. There was not enough to do me much harm and it might possibly do good; so at camp that night I took the poison instead of supper.

in boyhood. In Parkman's case it was a very literal command, iron and uncompassionate. The order had been obeyed from early boyhood on, and by eighteen he found that he could "march" and be an intellectual and creative man at the same time, only by taking as his life work the peculiar kind of historical writing which demanded or seemed to demand many extensive journeys and original research not solely of a bookish kind. This decision and the theme of his work were of course consonant with the character of the man, but had it not been for his unrecognized although active ocular affliction, the peculiar choice would not have been made. This comes out in Parkman's graphic account of the conditions of his mind and life in which he speaks of the result of his strenuous efforts as culminating in

A state of mental tension, habitual for several years, and abundantly mischievous in many respects. With a mind overstrained and a body overtasked, he was burning the candle at both ends . . . a pernicious intensity . . . a highly irritable organism spurred the writer to excess in a course which with one of different temperament would have produced a free and hardy development of such faculties and forces as he possessed. . . . Soon, however, he became conscious that the impelling force was growing beyond his control. Labor became a passion and rest intolerable, yet with a keen appetite for social enjoyment, in which he found not only a pleasure but in some sense repose, the stimulus rapidly increased. Despite of judgment and of will, his mind turned constantly towards remote objects of pursuit, and strained vehemently to attain them. The condition was that of a rider whose horse runs headlong, the bit between his teeth, or of a locomotive, built of indifferent material, under a head of steam too great for its strength, hissing at a score of crevices, yet rushing on with accelerating speed to the inevitable smash.

There is in these lines, as in everything written by Parkman about himself, a startling clearness of spiritual diagnosis, a truthfulness of view as to the facts and symptoms, and a most tragic failure to catch a glimpse of the pathologic condition that caused them. How near the eye came to seeing itself is shown by this swift glance:

It was impossible that conditions of the nervous system, abnormal as it had been from infancy, should be without their effects on the mind, and some of these were of a nature highly to exasperate him. Unconscious of their character and origin, and ignorant that with time and confirmed health they would have disappeared, he had no other thought than that of crushing them by force, and accordingly applied himself to the work.

How little they did or could have "disappeared with time and confirmed health" we now know, and as his whole after-life proved, only science makes it possible for the eye to see itself.

Parkman's rigorous athleticism. — We have seen that Parkman seemed to be impelled to an extreme of athleticism by some illogical and half-unrecognized impulse. Farnham says of Parkman that

His chief error was the not uncommon mistake of regarding exercise as the all-sufficient means of securing health. While developing his muscles he failed in the larger duty of acquiring a thorough knowledge of the laws of health. His physical culture had as close a connection with his personality as any other part of his education. His tastes and ruling traits pointed in advance to his course

and the dangers he would be likely to meet. Early in his life muscular development became his hobby; he desired to equal the Indian in strength, agility, endurance and skill in woodcraft; he also became convinced that a healthy mind could exist only in a healthy body. But in pursuing these laudable aims he was exposed to many risks. His self-discipline began when he was yet a boy at home; he would not permit himself habits or thoughts tending in the least to weaken the central virtue of manliness. . . . Thus the ways of the prudent, complaining and self-indulgent invalid were to him worthy only of contempt. He himself, going to the other extreme, drove his body to exercise with an excessive and destructive ambition. He treated his infirmities by the fatal method of "crushing them by force," attaining almost a savage's endurance of pain. If the strongest mind, bent on attaining health and ignoring illness, were able to cure disease by will power, Parkman should have been the healthiest of men.

Concerning this aspect of his life, Parkman wrote of himself:

But if a systematic and steady course of physical activity can show no better result, have not the advantages of such a course been overrated? In behalf of manhood and common sense, he would protest against such a conclusion; and if any pale student, glued to his desk here, seek an apology for a way of life whose natural fruit is that pallid and emasculate scholarship of which New England has had too many examples, it will be far better that this sketch had not been written. For the student there is, in its season, no better place than the saddle, and no better companion than the rifle or the oar. A highly irritable organism spurred the writer to excess in a course which, with one of different temperament, would have produced a free and hardy development of such faculties and forces as he possessed. Nor, even in the case in question, was the evil unmixed, since from the same source whence it issued came also the habit of mind and muscular vigor which saved him from a ruin absolute and irremediable.

In the words "a highly irritable organism spurred to excess," Parkman, with his usual precision, stated the facts without, of course, knowing the reason, or understanding why he had the "highly irritable organism." As an echo of this diagnosis Farnham again caught a glimpse of the truth when he wrote:

His love of action always pulled against his love of study. Such seemingly incompatible passions are rarely seen together in such force. Even in his college days, while still in good health and much interested in physical culture, he was marked as a man of retirement and industry, a reserved, brooding student, who seldom invited any one to his room, and at the same time an impetuous, social youth. But action was his first instinctive mode of expression, his chief pleasure in life. And it was, moreover, a kind of abnormal, physical necessity, as well as a propensity of his mind.

More accurately and tersely Parkman's friend, Dr. George E. Ellis, saw the truth when he wrote that:

His maladies intensified his impulses to exertion and mental application, while they limited the hours he could wisely give to reading and writing.

It is strange, as we now look back at the history, that none of his friends, not even the clear head of the patient himself, should have recognized the fact that the reflexes of eyestrain produced the "highly irritable organism" and pushed him to the furious physical activity which served at once to spare his eyes and to act as an outlet for the abnormal irritation engendered by

their use. He was accustomed to say, "I shall go to pieces if I do not exercise," or "I must exercise."⁶

On the gridiron and by means of the gridiron.— In 1846 Parkman returned to work, but found that only by the help of eyes other than his own could he do anything toward realizing his literary ideals. He dictated the "Oregon Trail," in the autumn, which was published in the *Knickerbocker Magazine* in 1847, and then took up "Pontiac." Farnham writes:

He devoted himself largely to medical treatment during 1847 and 1848. He spent the greater part of these years in New York and at West New Brighton on Staten Island, under the care of an oculist, also at a water cure in Brattleboro, Vt., to improve his general health. He returned to his father's house in 1849, having reaped but little benefit from the efforts of the doctors,— the "medical faculty," as he used to call them. With the help of his friend, Charles Eliot Norton, in reading proof, he was able to prepare "The Oregon Trail" for publication in book form. In 1853 "the enemy" again became too aggressive to be ignored, and again he resorted to water cure at Northampton. He was always willing to give the doctors every facility and to undergo any method of treatment, following faithfully the advice he sought,— excepting in regard to giving up writing.

Meanwhile, with the help of his wife and her sister, Miss Mary Bigelow, as amanuensis, he pushed along his literary labors.

Speaking of himself in his autobiographic letter, Parkman says as regards his physical, mental and ocular symptoms, that in a few months after his return to the settlements he "found himself in a condition but ill adapted to support his theory." He continues:

To the maladies of the prairie succeeded a suite of exhausting disorders, so reducing him that circulation at the extremities ceased, the light of the sun became insupportable and a wild whirl possessed his brain, joined to a universal turmoil of the nervous system which put his philosophy to the sharpest test it had hitherto known. All collapsed, in short, but the tenacious strength of muscles hardened by long activity. This condition was progressive, and did not reach its height—or, to speak more fitly, its depth—until some eighteen months after his return. The prospect before him was by no means attractive, contrasting somewhat pointedly with his boyish fancy of a life of action and a death in battle. Indeed, the change from intense activity to flat stagnation, attended with an utter demolition of air castles, may claim a place not of the meanest in that legion of mental tortures which make the torments of the Inferno seem endurable. The desire was intense to return to the prairie and try a hair of the dog that bit him; but this kill or cure expedient was debarred by the certainty that a few days' exposure to the open sunlight would have destroyed his sight.

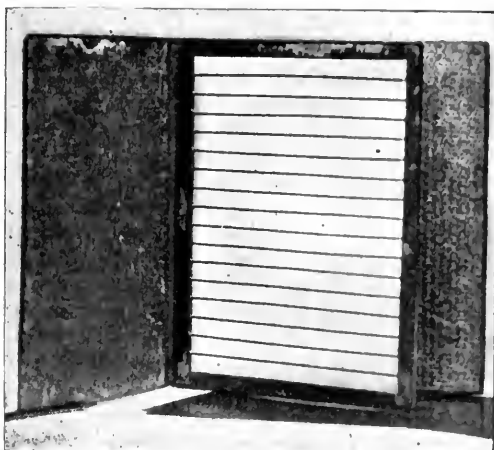
The autobiographic letter goes on:

In the spring of 1848, the condition indicated being then at its worst, the writer resolved to attempt the composition of the "History of the Conspiracy of Pontiac," of which the material had been for some time collected and the ground prepared. The difficulty was so near to the impossible that the line of distinction often disappeared, while medical prescience condemned the plan as a short road to dire calamities. His motive, however, was in part a sanitary one, growing out of a conviction that nothing could be more deadly to his bodily and mental health than

the entire absence of a purpose and an object. The difficulties were threefold: an extreme weakness of sight, disabling him even from writing his name except with eyes closed; a condition of the brain prohibiting fixed attention except at occasional and brief intervals; and an exhaustion and total derangement of the nervous system, producing of necessity a mood of mind most unfavorable to effort. To be made with impunity, the attempt must be made with the most watchful caution.

He caused a wooden frame to be constructed of the size and shape of a sheet of letter paper. Stout wires were fixed horizontally across it, half an inch apart, and a movable back of thick pasteboard fitted behind them. The paper for writing was placed between the pasteboard and the wires, guided by which, and using a black lead crayon, he could write not illegibly with closed eyes.⁷

He was at the time absent from home on Staten Island, where, and in the neighboring city of New York, he had friends who willingly offered their aid. It is needless to say to which half of humanity nearly all these kind assistants belonged. He chose for a beginning that part of the work which offered fewest difficulties and with the subject of which he was most familiar, namely, the siege of Detroit. The books and documents, already partially arranged, were procured from Boston, and read to him at such times as he could listen to them, the length of each reading never, without injury, much exceeding half an hour, and periods of several days frequently occurring during which he could not listen at all. Notes were made by him with closed eyes, and afterwards deciphered and read to him till he had mastered them. For the first half year, the



PARKMAN'S GRIDIRON.

(From a photograph of the original instrument.)

rate of composition averaged about six lines a day. The portion of the book thus composed was afterwards partially rewritten.

His health improved under the process, and the remainder of the volume—in other words, nearly the whole of it—was composed in Boston, while pacing in the twilight of a large garret, the only exercise which the sensitive condition of his sight permitted him in an unclouded day while the sun was above the horizon. It was afterwards written down from dictation by relatives under the same roof, to whom he was also indebted for the preparatory readings. His progress was much less tedious than at the outset, and the history was complete in about two years and a half.

⁷ This, with the allusion in the second letter, is Parkman's only reference to this instrument, and his reticence as regards what seems to me one of the most heroic and pathetic experiences in history is profoundly touching. Miss Parkman has loaned me the "gridiron," and I reproduce here a photograph of it. The original I hope will be preserved in the archives of the Massachusetts Historical Society. A more precious relic will never come into their keeping.

(To be continued.)

⁶ Personal communication by his most kind and capable general physician, Dr. Oliver, who attended him for many years and to whom I am indebted for valuable and accurate information. When he could not walk, breathing and other sedentary exercises rowing, etc., were devised "to relieve the pressure."

MINOR SURGERY IN COUNTRY PRACTICE.¹

BY CLIFFORD S. CHAPIN, M.D., GREAT BARRINGTON, MASS.

WHEN I was asked to write a paper to be read before the Surgical Section upon some surgical subject, I said to myself, I am not a surgeon, and what I may be able to write upon such a topic will be of little value. However, the thought came to me, how often a physician has to do minor surgical work; and with a little more care, and a little more knowledge, how much better work he could do. It is in village and country practice where a physician must be an all-round man, ready for emergencies of any nature, for often there is no hospital within twenty or thirty miles to which patients can be sent. To have to do this work is certainly excellent training for any one, but more especially for the young practitioner. If we do well the minor surgery, we will be more likely to work into, and do well, the major work which may fall later to the lot of some of us to do.

I have taken up for consideration some subjects which I feel are the more important ones of minor surgery with special reference to country practice.

Bandaging. — Bandages are employed to hold dressings in contact with the surface of the body, to make pressure, to hold splints in place in dislocations and fractures and to keep in place parts which have become displaced. The importance of being familiar with the rules of bandaging and to be proficient in applying the same cannot be overestimated. The general practitioner will never have cause to regret time occupied in learning to apply neatly this form of surgical dressing. A well-applied bandage adds to security of dressing and comfort of patient, and the manner in which it is applied often secures for the physician the confidence of patients and friends; while, on the other hand, a badly-applied bandage is uncomfortable and will cause adverse criticism to the doctor. It is not necessary to know how to put on every different kind of bandage, but to be well grounded in the principles of bandaging, and to have had a reasonable experience in applying same, is essential.

Asepsis and antisepsis. — Previous to Lister's method of treatment, it was the rule in accidental and operative wounds to have suppuration, fever, pain and often septicemia, erysipelas, etc.; hence the mortality was necessarily high. Mortality from compound fractures was very great, but by modern methods it has been reduced to a minimum. Lister's method was based largely upon the idea that the infection of a wound occurred from contact with the air, which contained spores and germs, and his method was to destroy them. It was later found that the germs from the air are usually of an innocuous character. Wound infection is more often from clothing, instruments, etc., which come in contact with it. It often depends upon the quantity of germs which enter, for we know bacteria may exist in an aseptic wound. It is well known that the same germ may produce different inflammatory affections.

Some one has advanced the theory that all so-called pus diseases are simply local expressions of a general infection caused by many different micro-organisms. Acute suppuration is considered clinically to be always due to presence of bacteria, and their exclusion will prevent its occurrence. Asepsis aims at thorough sterilization of the field of operation and of all objects coming in contact with the wound, and the exclusion of micro-organisms by exclusive sterilized dressings. How important it is in all our work as physicians and surgeons to be very careful in attending to this in every detail! How much pain could be averted, how many amputations be prevented, and even major operations be saved, if only the physician who first saw the patient had simply done his duty and made the wound aseptic and continued to keep it so! It seems to me it is just here where so many of us fail. More often nature cares for the wound successfully, but even so it is our duty to always assist her when possible.

Antisepsis, on the other hand, has in view the destruction of micro-organisms by keeping germicidal agents constantly in contact with the wound. The object of antisepsis, therefore, is to produce asepsis. No one should undertake any operation or treat any wound without having clearly impressed upon his mind the importance of carrying out faithfully and scientifically all precautions necessary to prevent future infection of it. Since most wound complications are due to micro-organisms in it, it is the duty of the surgeon to prevent their entrance or employ means to destroy them. This must be done, however, without injury to the tissues of the body. Asepsis is always to be preferred to antisepsis when applicable. It seems to me so necessary that all practicing physicians should be well experienced in the ways of preparing patients for aseptic operations and caring for them afterwards. Usually these operations are performed in hospitals, but sometimes have to be done at the house. The surgeon perhaps is called from a distant city and has only a short time for operating. In hospital practice suitable rooms are provided for such work; in private practice, however, the physician is called upon to select a room and give directions as to its preparation. A well-lighted room should be selected and needless furniture removed. General directions which are usually given in textbooks seem to me to be in many cases impracticable. Often the room has to be gotten ready in too short a time to allow of removing carpets, etc., and if it is done, usually the dust created by so doing will be far greater than it would be simply to tack down upon the carpet sheets wrung out of bichloride. The great importance, in my judgment, is in paying due regard to asepsis of the wound itself. When possible prepare the patient the night before by bath, etc. The skin surrounding the site of operation should be thoroughly scrubbed with soap and water or a soap poultice applied for a few hours. Scrub the skin, not too roughly, then wash with alcohol and ether, then with sterilized water; afterwards a

¹ Read before The Massachusetts Medical Society, June 9, 1903.

dressing should be applied of either sterilized or bichloride gauze.

The instruments are best sterilized by boiling them for fifteen minutes in water to which a little washing soda (carbonate of soda) has been added. In treating infected wounds, abscesses, etc., some surgeons claim that free drainage is all that is necessary, but, in my opinion, the far better method is to treat the same antiseptically by using peroxide of hydrogen and washing with bichloride solution 1 in 2,000, and applying bichloride gauze.

Strapping. — How necessary it is to know how to do strapping and to do it well! Comparatively few country physicians pay much attention to it. If they do attempt it, it is usually done in the most crude and unfinished way. The plaster, of which I prefer the oxide of zinc adhesive plaster, can be gotten in narrow strips so that it can be neatly and evenly applied. I believe one of our best treatments for ulcer of the leg is strapping, yet I dare say but few physicians do it. In sprains it is our most useful treatment also.

Poultices. — Though poultices are used much less than formerly, they, however, do serve a good purpose at times. In inflammatory affections of the joints and of bones, when combined with rest their action is most satisfactory. In cases of deep suppuration, by their relaxing effect upon tissues they are useful and do not prevent the surgeon from using all aseptic precautions at time of operating.

Intravenous injection and infusion of saline solution. — It has been proved that normal salt solution will sustain the heart for a varying length of time as well as blood itself. Every physician should have an infusion set in his emergency bag and in his obstetric case, and should know how to use it. In profuse hemorrhage, severe cases of shock, septicemia and uremia it is invaluable. In puerperal eclampsia our best treatment, if the case will permit, is to do venesection and transfuse or infuse normal saline solution, until a sufficient quantity has been introduced into the circulation.

Anesthetics. — Anesthetics may be local, regional or general. Of the local anesthetics, the best are cocaine and chloride of ethyl. I have found the chloride of ethyl rather unsatisfactory; as to cocaine there is no question of its real efficacy, and as a rule the small percentages are as good and much safer, from a 1 to 2 % solution usually being strong enough for all practical purposes. Special care should be used when it is injected into the urethra, for frequently unpleasant effects are noted even when very small quantities of a 1 to 2 % solution are used. Cocaine, when hypodermically administered, is very useful for operating upon fingers, toes and parts easily constricted; also for opening abscesses, removal of superficial tumors, etc. It is probably used for nose and throat operations more than in any other branch of surgery. A weak solution of supra-renal extract can be used in place of cocaine. Regional anesthesia I have had no experience with as yet. General anesthesia may

be produced by administration of various anesthetics according to choice. Ether, however, is the more generally used. One of the most important things for a country physician, who is bound to meet and ought to be able to master all sorts of emergencies, is to know how to administer an anesthetic properly. I know when I was in the hospital, and undoubtedly it is so now, the most recent man on the staff always gave the anesthetic. I am glad now that the new man did give it, for if one is observant he learns a great deal by having to give it when there is an operator at work who will blame everything to him if anything goes wrong. I have often thought, when I have seen a physician trying to give ether and telling his patient at the very commencement to take long, deep breaths, that I would like to take the inhaler and crowd it over the doctor's face and make him take a few deep breaths. One has to take ether himself once to realize what that first feeling of strangulation is. It is unpleasant for any one to take, but it can be made comparatively easy by beginning rightly and having the patient breathe slowly at first, holding the inhaler at a distance, then gradually closer until anesthesia is complete, when it is astonishing how little ether will keep a patient profoundly unconscious. Every one should be aware of the possible accidents which may occur and be ready to do anything that may be necessary. I remember at one time, when I was an interne, seeing a young doctor giving ether, and suddenly a frightened expression appeared on his face — the patient's heart had stopped beating, his respiration had ceased; he was apparently dead. Various things were resorted to instantly without avail; finally the doctor said, "Damn it, why did you die on my hands?" and at the same moment struck the patient with his fist quite a severe blow directly over the heart. Almost instantly the heart began to beat and the patient to breathe and the apparently dead came to life.

I have never tried that treatment myself, as I have had no occasion to do so. No one should give an anesthetic without being ready with his hypodermic to give strychnin, atropin or digitalin as the case may need.

Treatment of hemorrhage. — It is very essential that a physician or surgeon should have a good knowledge of the anatomy of the blood vessels, that he may know at what points pressure applied will do the most good in controlling hemorrhage. The varieties of hemorrhage, arterial, venous or capillary, may be primary or secondary. Treatment should be both constitutional and local. Constitutional treatment consists in keeping the patient in a recumbent posture and avoiding any sudden change in position which might cause fatal syncope. I believe opium to be a valuable remedy in these severe cases. Some authorities think it is contraindicated on account of its raising blood pressure, but it is certainly useful where a patient is very nervous. Stimulants should be or should not be used as the exigency of the case demands. Infusion of normal saline solution should be resorted to when necessary. Local

treatment consists in using means, temporary or permanent, to control the bleeding. Digital pressure to parts, or to main artery, will control for the time arterial bleeding. A moderately tight compress will usually control hemorrhage until the parts can be sewed. Every physician ought to have in his emergency bag a tourniquet as well as hemostatic forceps for arresting hemorrhage. A tourniquet should not be allowed to remain for too long a time, lest paralysis or gangrene follow its use. It is when one is brought face to face with a severe post-partum hemorrhage that he wants to know all the various things for controlling it, but more than all he wants to know how to keep his head level and use intelligently and quickly the means he has at hand, or should have, in every case. There is one thing which I think is too often forgotten in these cases, which is quite sure to check it; that is compression of the abdominal aorta and keeping it compressed until uterine and vaginal tamponing has been done if necessary. In nose bleeding antipyrin in 5% solution has served me well when packing has not been resorted to. All arteries of any size should be ligated when possible. Secondary hemorrhages are much less frequent since the days of anti- and asepsis, but when occurring should be treated as primary.

Shock. — Shock is a condition of physical depression or prostration which may develop following severe injuries or operations. Feeble action of the heart and paralysis of the blood vessels cause an unequal distribution of the blood. Abdominal veins become distended, right side of the heart engorged and amount of blood in arteries correspondingly lessened. Brain and lungs become anemic. If this state continues, the action of the heart is stopped. The essential condition of shock is inhibition of nerve force and reflex paralysis. It may develop immediately after injury or later. The degree of it is usually proportionate to injury, but there are some exceptions, as contusion of viscera, etc., which though slight is often followed by grave or fatal shock. Burns and scalds, if they involve any considerable portion of the body, are apt to be followed by severe shock. I remember well cases of burns coming to the hospital in apparently good condition, and not an extensive surface burned, but dying within a few hours. In the treatment for this condition the first indication is to establish reaction. The patient should be kept very warm by being covered with blankets and surrounded with hot-water bottles, but using every precaution not to burn him. Foot of the bed should be raised and patient's head lowered. If he can swallow give whiskey, aromatic spirits of ammonia, by mouth, and strychnin hypodermically; when there is profuse sweating use atropin hypodermically also. An infusion of normal salt solution is to be used if necessary.

Fractures. — What an important subject to all, but especially to the country physician! I wonder how many of us younger men felt, when we graduated from college, that we knew well how to reduce and keep in place, in the best

manner, the common, to say nothing of the uncommon, fractures. I had seen during my whole college course but few fractures and dislocations attended to. I had seen appendectomies, hysterectomies, etc., without number. No one was going to be willing I should perform any of these operations at the first, but I was likely to be called upon to reduce a fracture or relocate a dislocated bone at any time. I could put a bandage around it, go to my office and look up the different ways of dressing that particular fracture, go back to my patient and do the best I could; tell him he would probably have a deformity, but if nature did her work all right he would get a useful member. The colleges have heretofore been deficient in their real practical training in the very things which are so essential to the young physician in the beginning of his practice. Work improperly done at this time militates against him perhaps for a lifetime.

Operations. — There are certain operations which a physician should endeavor to familiarize himself with, for when the emergency arises to do them he must act promptly or his patient is promptly dead. I refer more especially to the operation for strangulated hernia. To be able to operate for this a good knowledge of the anatomy of the parts is essential. The physician must also have confidence in himself, and be able to inspire the same in others, and then must go ahead feeling that it is his duty to do the very best he can for his patient, under circumstances which will allow no wavering, and when prompt action will often be rewarded with a life saved and hesitancy be reproved with a life lost.

"Call not on Hercules for help: his aid
Ne'er serves the man who will not serve himself.
Thine own arm must the conflict meet,
Thy purpose being the victory."

In conclusion I wish to say that in our thirst for major surgery and the wonderful operations which stand pre-eminently as the great advancement in the science of medicine of the present age, let us not forget our duty as physicians and surgeons to attend well to the minor surgery which must necessarily enter into our daily work. Be well prepared so as to be ready at a moment's notice to attend to any ordinary kind of emergency which may arise. For minor surgery in country practice is no small part of a physician's work and is a part which tells for or against his reputation most markedly.

"He who does the best his circumstances allow
Does well, acts nobly: angels could do no more"

DISCUSSION.

DR. STEVENS of — : After listening to this interesting paper I have very little to add. The reader seems to have covered the field, which is indeed a broad one. Speaking of bandaging and the avoidance of tight bandages — the hospital interne can see his dressings several times a day, but it is different with the country doctor. When he puts up a limb or does up a finger or hand it is

often left for twelve hours. It is well to bear in mind that it is going to swell at first probably.

As to the question of asepsis and antiseptic, rubber gloves to-day are a great help to us.

A word about bichloride tablets. It has been my misfortune in the last year to see two cases of poisoning by bichloride tablets. The country physician and surgeon often has to leave bichloride tablets at the house, and the utmost care should be taken with them.

I think that there is a great deal of value in formaldehyd solution, especially in pussy wounds, cases seen late, — 1 to 40 for maldehyd solution, a teaspoonful in a quart of water. It is pretty strong and smart. It has a fine action on pus cavities.

Lysol is a valuable addition to our antiseptic surgery. I like creolin and moist bichloride poultices rather than the old-fashioned flaxseed poultice. Covered with paraffin paper the heat is retained.

I want to congratulate the speaker on his mentioning carrying the saline apparatus. We can get to-day our normal salt solution tablets made so as to dissolve them readily in boiled water. Representing the country physician and surgeon, I always carry a large bag. We don't know what we are going to until we get to the case.

Although a Harvard man, I like chloroform used in the proper cases. When a student I heard very little spoken about chloroform. It was always ether. I use more and more each year, but confining it to proper cases, especially young subjects with fractures. I like ethyl chloride. In short operations, like tapping the chest, I think you can anesthetize the skin so that there is very little pain.

It is well to examine the urine before giving any anesthetic. Another thing that presents itself to the country doctor, especially in manufacturing places: Cases are apt to come from the factories after a meal, and you have a great deal of trouble with the full stomach; things we never used to see in hospital work.

In the matter of hemorrhage I think there is one alkaloid of great value, and that is hydrastinine. I saw last year a case where there was oozing from all the mucous membranes apparently, and various things had been tried and hydrastinine controlled the bleeding. I do not think the patient was bled out, either.

If there is anything more troublesome than to be called to a bleeding tooth cavity in the night I don't know what it can be. Take 1 to 1,000 adrenalin solution on absorbent cotton and pack the cavity firmly and it will almost instantly stop the bleeding. It is said to be good in eye and nose work, as well as for hay-fever.

As to the question of shock, one thing struck me as important — care as to overdose, because absorption is slow after shock, the whole system is devitalized, the dose does not seem to act and you repeat and finally get overaction.

As to fractures, it is well not to be in too great a hurry to apply the permanent dressing. Reduce the fracture and wait for acute inflamma-

tion to subside. Placing an ice-bag I find is a great help. I believe strongly in plaster-of-Paris bandages properly applied.

If I am to operate I always try to have the room disinfected the night before. Formaldehyd comes in candles, and the room can be disinfected in that way. If time is limited I direct not to disturb things, such as pushing curtains up and cleaning off mantels.

DR. H. O. MARCY of Boston: There are said to be no minor things in life. The criticism I make on this admirable paper is the title — minor surgery. It is not minor in the slightest sense. It does us all good to review these fundamental principles of our work, and I am quite sure that we can all learn very much from such teaching. Personally, going over the history of a long life devoted to surgery, I now criticize my seniors rather than my juniors. In earlier days I was operating all over New England, and then ether was given by the family physician, usually little skilled as an etherizer. How few physicians to-day know how to give an anesthetic! I have often said I would give half the fee if I could have my etherizer. I believe faulty instruction in regard to etherization explains why ether is not given more outside of New England instead of chloroform. An impervious cone is usually used for administration. Nothing could be more faulty. Instead of a cone we should have a cylinder. Make the cylinder sufficiently open to carry the full volume of air the patient desires to breathe — air plus ether, and avoid asphyxia. Not long ago I had a good general practitioner give ether and came near losing the patient from his incompetency. He did not know that the patient must have plenty of oxygen with the ether. Such experiences, sometimes called minor, are the reasons why older men should review fundamental principles.

I criticize the injection of the peroxide of hydrogen into deep wounds. It is not so much of a disinfectant, destroying the bacteria, as we have sometimes thought, but an admirable means of disseminating them.

I find fault, also, with the late application of fixed plaster splints in dressing fractures. Put up a fracture as early as you may in a fixed apparatus. Reduction, retention, rest, not constriction, are the three R's of importance. The very first changes within the first few hours are processes of repair. What wounds shall we drain? Emphatically no wound that is aseptic. The primal exudation of leucocytes is of perfectly normal type, and is the "first aid to the wounded" if the wound is aseptic.

DR. D. H. CRAIG of Boston: The matter of rubber gloves was alluded to. The man who has to do the whole work, who has no assistant to help him in a country practice, oftentimes cannot properly sterilize his hands and get everything ready for an operation and maintain his hands in a sterile condition. If we have everything to work with the last thing to do would be to put sterile hands into sterile gloves. But we can carry a pair of sterilized gloves to the operation,

and these may be put on hands not perfectly sterile, if one has to do everything himself.

In the shock following severe traumatism the use of the adrenalin chloride in the dosage of ten to twenty minims of the 1 to 1000 solution properly diluted is perhaps one of the best in conjunction with strychnia and we have not the danger of cumulative action of strychnia after the first shock is over.

In relation to the use of anesthetics I had a point very forcibly brought to my mind recently which I think is not very generally known. In the use of chloroform or ether the sphincter muscles are the last to yield to the influence of the anesthetic. If the patient is in the condition of collapse, and you rapidly and forcibly stretch the sphincter ani, you almost invariably produce a gasp which will result in regular breathing following.

THE DIETARY TREATMENT OF CONSTIPATION.¹

BY HENRY F. HEWES, M.D., BOSTON.

DURING my practice of medicine, in which through my hospital clinic and special branch of work I come in contact with large numbers of patients already under treatment at other hands, there is no fact which has impressed me more than the universality among the profession of the incorrect treatment of the condition of constipation.

To reinforce this statement let me take an extract from the records of my Out-patient Clinic at the Massachusetts General Hospital. In this clinic, out of a total of 1,200 cases seen during the months of July, August and September, 1902, 690, or 57%, gave a history of *habitual* constipation. Of these cases of habitual constipation, 660, or 96%, were using for this complaint a regular dosage of drugs which had been at some time prescribed for them, and had used drugs from the time of their first medical consultation on the subject, having received no other directions for treatment, excepting possibly that of a regular habit as to time of operation. Of the remaining 10% of cases a few had received general directions as to diet along with their drug prescriptions and the remainder were using no treatment at all.

A review of the records of my private practice shows a very similar set of results. In this practice, practically all the cases of constipation seen were using drugs for relief. About half these cases, as against 5% in the hospital cases, had received directions as to diet and habits in connection with their treatment. But in all cases drug treatment was associated with the diet and régime from the start, and there were no cases in which a pure dietary treatment had been instituted at the start or in which a systematic transition from a mixed drug and diet treatment to a pure dietary régime had been planned.

The result in both hospital and private cases was that in a great majority we had no real improvement in the underlying condition as the re-

sult of treatment, but on the contrary a much more fixed habit, both physical and mental, and a need for constantly increasing or changing drug dosage for temporary relief superimposed. All these cases have been treating for constipation for a year or more and in none had the necessity for drug dosage lessened.

Of course, there are physicians who prescribe diet and régime pure and simple for their cases of habitual constipation, and, of course, there are cases of constipation treated by drugs which, if the dosage and habits of the individual are carefully managed, are cured. And drugs may be useful for temporary conditions. But the general facts emphasized so clearly by these records quoted above—that the use of drug treatment with or without dietary or régime directions for *habitual constipation* is practically routine and universal in the profession and that such treatment is in a large per cent of the cases ineffective as regards cure—are undoubtedly true.

There is no necessity for me to dwell upon the fact with you that this condition of things is all wrong from the point of view of good medicine. The regular use of drugs to preserve the continuance of or to stimulate a physiological function is always a debatable measure and one which should be established or maintained only after a thorough search for and trial of more natural methods of relief. And this is particularly true where the weakened or disturbed function has become so, as is the rule in the condition of which we are treating, as a result of some faulty hygiene rather than through actual organic disease.

We wish to cure our patients, not to relieve them and certainly not to make them victims of drug habits. And when the patient shall pass from us to some other guardian we wish to leave as the result of our work not a harder but an easier task for our colleague.

The consideration of these facts, thus emphasized in practical experience, has led me to an extended study, partly experimental, of the subject of the treatment of constipation in general medicine, and it is the results of this study or of a part of it which I wish to present to you to-day.

The direct object of the study has been:

(1) To establish a method of determining as far as possible in a given case the source or underlying causes of the constipation present.

(2) To ascertain a method or methods of treatment of the condition in its various manifestations which will tend to establish the natural physiological function as far as possible as a permanent and self-supporting condition.

It is taken for granted in the study that the function is one which should go on in every individual independently of external artificial aids other than those which are always present in the natural course of hygienic existence, namely, the food, bodily exercise and a regular habit.

Where this regular physiological function is lacking, that, is in any case of constipation, we can assume that we are dealing with one of two general propositions. Either the patient has some definite pathological lesion or condition,—as some

¹ Read before The Massachusetts Medical Society, June 9, 1903.

obstruction to the intestine, some lesion of the nerve mechanism or its function, or some general disorder of metabolism which affects the normal action of the intestines, — or he is living under a faulty condition of hygiene, as a result of which the natural forces or stimulants of the physiological function are lacking. And our course in the study of our case is to determine in how far either of the above elements, the pathological or the physiological, is an underlying factor; and if the pathological, what its nature is, and then proceed directly to the removal or remedying of the cause or causes as the fundamental step in the treatment of the case.

Now acknowledging that a faulty hygiene, a lack of the natural agents or stimulants of physiological action, may be a cause and a total cause of constipation, — and this fact is proven beyond all doubt by extended research, very definitely also, as you will see, by the results of this investigation which I am presenting to you, — the proper plan of treatment in all cases is clearly, whether a definite pathological cause has been determined as an associate in our case or not, to effect at the start as far as possible a correct hygiene in this respect. If the faulty hygiene is the cause of the constipation, this measure will cure. And whatever our cause or causes may be, this step is in the right direction, as establishing at the start one correct factor of treatment and at the same time helping us to a diagnosis of the actual causal condition of our constipation by exclusion and assisting in the cure, whatever this further condition may turn out to be. If an underlying pathological condition is present and the constipation fails to yield to correct hygienic régime we can then proceed to the removal or remedying of this cause by further means.

And here again in our second step we must keep equally in mind the fact that we are working to establish a normal physiological function, which should go on of its own accord independently of artificial aids, and that whatever relief we may obtain by artificial means, as, for example, drug dosage, a cure can be said to have been established only when the function does go on unaided — excepting by natural agents, as food and hygienic measures. That is, if besides removing or remedying a definite cause — as an obstruction, a weakness of innervation, or faulty metabolism, an anemic condition — by appropriate treatment, we find it necessary to stimulate or control the intestinal functional action of secretion or motion, we must do so as far as possible by the employment of those means, increased in degree but similar in kind, which nature uses for the purpose in hand; that is, by the supplementing natural hygienic agents to intestinal action, the inclusion of special foods and extra exercise in the régime. In this manner we depart as little as possible from the normal in the habits of the patient and of his economy, and make a final resumption of normal existence under the progressively improving conditions of health more easy to re-establish. Only as a last resort or for temporary use should we avail ourselves of the assistance of artificial stim-

ulants, as cathartic drugs, which from the very nature of their action make a resumption of the normal habit more difficult.

The first step in the rational treatment of a case of habitual constipation is therefore often, regardless of what the associated pathological condition may be, the establishment of a normal hygiene, especially in regard to the function of intestinal action.

Experience has taught us that those factors of hygiene which bear most directly upon the physiological function of the intestine are:

- (1) The habit of a regular period of defecation.
- (2) A proper amount of physical exercise.
- (3) A proper diet.

We must at the start, therefore, advise as to these.

Of these factors the first two explain themselves.

In regard to the third it is necessary first to ascertain the exact nature of the patient's accustomed diet and to supplement this until it corresponds to the normal diet.

The character of the normal diet, that best suited to the average individual and correct according to a scientific study of the body metabolism, is as follows²:

The quantity of a normal diet should average, under ordinary conditions, from 40 to 50 calories per kilogram of weight, or from 2,800 to 3,500 calories in twenty-four hours.

As regards quality, the best diet for all purposes in the average individual is one which approximates for every 100 calories of food 51 of carbohydrates, 29 of fats and 19 of proteids, or for a caloric value of 2,200, carbohydrates 1,100, fats 663, proteids 427. The normal diet should be made up also as much as possible of foods in their natural state, cooked or uncooked, and not of artificial preparations of nutritious principles; that is, meat, eggs, cereals, bread, vegetables, white and green, fruit, milk, — the kind of diet man in this zone has accustomed himself to for ages. (Vid. notes 4 and 5.) It should contain in addition to the food about three pints of water daily.

When we have established a diet for our patient approximating this normal standard we must next consider what further aid to nature can be obtained along these same simple lines.

The constipation in the case may be and frequently is simply due to the absence of the proper regimen. This faulty regimen long continued may have induced sluggish habits of the intestine, so that some additional stimulus to action besides the average normal is needed. Or we may be dealing with a condition of atony of the intestine, some weakness of the muscle of the wall or of its innervation, where some extra stimulus to action is necessary.

In seeking some aid for this stimulation we look most naturally to the food, which is the one of our normal hygienic factors affecting the intestine which can be most easily varied or reinforced; that is, we include in or add to our normal diet

² Rubner : *Leyden's Handbuch der Ernährungs-Therapie*. Bd. 1, 1897.

those articles of food which are known to be, among the general foods utilized, those which have most influence on the action of the bowels.

It is a well-recognized fact that in addition to the general action of the normal food products upon intestinal action, there are certain food elements which have a more special influence upon this action.

This marked influence of special foods upon intestinal action was first impressed on my mind as a definite scientifically-demonstrated fact by some observations of Westphalen.³ This observer, in several years of practice in Russia, partly among peasants and partly among dwellers in St. Petersburg, noted the fact that while constipation was a very common affection among the citizens it was almost unknown among the peasants. The same distinction existed even where city dwellers of the same habits of exercise as the peasants were observed. In searching a cause for the fact observed, Westphalen located it in the diet of the two classes. That of the peasant in Russia consists almost entirely of vegetable food, including coarsely ground grains. That of the city dweller, as worked out in the writer's tables, is made up in much greater proportion of animal food and contains few coarse grains and much less vegetable matter. Taking these observations as a basis for his experiments, Westphalen tried placing patients with habitual constipation on the regular peasant diet, with marked substantiation of the original hypothesis deduced from his general observation, that the vegetable diet serves as a marked stimulus to intestinal action.

Starting, then, with this hypothesis, that the intestinal function may be greatly influenced by the quality of the food, we must in connection with our plan of treatment first study the special action of the various substances in this regard.

A thorough consideration of the various food substances from the point of view of their influence upon intestinal action indicates that the foods having this special action may be divided into three classes, according to their way of producing their influence.

In the first class we have all food substances possessing a large undigested or unabsorbed residue (even when taken in quantities so moderate as not to overtax the alimentary canal). These are principally vegetable substances possessing much cellulose, as the grains in coarse form, green vegetables, fruit, also foods with many seeds, as berries, figs, etc. It is this class of substances which predominated in the diet of the Russian peasants observed by Westphalen, and which was utilized by him in the treatment of constipation.⁴

³ Westphalen treated 110 cases of habitual constipation of the type known as atonic constipation by dietary measures pure and simple, using an excessive vegetable diet, occasionally reinforced at the start by oil enemata. Of these 99 were cured without resort to drugs, 11 cases only necessitating the use of drugs, as cascara.—Westphalen: Archiv. f. Verdauungs-krankheiten, Bd. vi, p. 161.

⁴ Rubner has shown experimentally that on a diet made up entirely of animal food, the intestines take three or four days to show the residue, while with a vegetable diet of corresponding nutritive value emptying occurs in from nineteen to twenty-four hours. On a diet of beets rich in cellulose (see table, page 537) emptying occurred in four hours.—Rubner, loc. cit.

While a fasting stool (observation on the faster Cetti) weighs about

The quantity of unabsorbed or undigested residue obtained under ordinary conditions from common food substances can be seen from the following tables taken from Rubner (loc. cit.):

| Food. | Dry residue. | Per cent. | Per cent. |
|---------------|--------------|------------------|-----------------------|
| | | Unabsorbed. | Unabsorbed. |
| | | Proteid residue. | Carbohydrate residue. |
| Meat | 4.9 | 2-2.6 | |
| Fish | 4.3 | 2-2.5 | |
| White of egg | 5.2 | 2.6 | |
| Milk | 8.8 | 7.8 | 1 |
| White bread | 4.2 | 21 | 2.9 |
| Rye bread | 20.9 | 46 | 14 |
| Pumpernickel | 19 | 43 | 13 |
| Rice | 4.1 | 20 | 0.9 |
| Peas | 9 | 17 | 3.6 |
| Beans | 15-18 | 30 | 7.4 |
| Potatoes | 9 | 30 | 15 |
| Crisp cabbage | 14.9 | 18 | 15 |
| Turnips | 20.7 | 39 | 18 |
| Beets | 20 | 39 | 18 |

This table shows also the carbohydrate residue which may by undergoing fermentation form products which increase intestinal action. These cellulose substances have a further value besides their production of large residue. The cellulose forms material for fermentation in the intestine with formation of organic acids, which naturally aids intestinal action.

Another food substance which may serve to reduce residue in special cases of constipation is fat. As a rule the fat taken in normal quantity leaves little if any residue. If an excess is taken, however, a considerable residue may remain, which acts also as lubricant of the intestine. Thus Berthé⁵ has shown that in a diet consisting of 350 gm. of meat, 500 gm. of bread and 60 gm. fat, 7 to 8% only of the fat appears in the feces. If to this diet 60 gm. of fat be added, the residue of fat begins to increase after an initial period of extra absorption, rising to 12 on the seventh day, 18 on the twelfth day, 49 on the thirtieth day. The use of fat to increase residue is not, however, quite so much in the purely physiological line as that of the cellulose vegetables first mentioned in this class, as these produce residue even when taken in ordinary amount.

The second class of food substances having special influence upon the intestinal action consists of foods containing considerable quantities of organic acids or other substances which by their local action, or their action upon metabolism or nerve centers after absorption, increase intestinal activity. In this class are certain fruits, especially the *tamarind*, *prune*, *plum*, *manna* and certain green vegetables.

The third class consists of substances which undergo fermentation in the intestine, with formation of organic acids. These are the carbohydrate foods generally, including the cellulose of the vegetables already mentioned.⁶

20 gm. daily, a stool from an individual on an average normal diet of meat and vegetable and fat weighs from 100 to 250 gm. A stool from an individual upon a purely vegetable diet of equal nutritive value to the normal diet averages about 500 gm.—Hammeter, "Intestines," vol. I.

⁵ Berthé, quoted by Maly, Hermann's Handbuch, vol. I, p. 243.

⁶ Bokai (Archiv. f. d. Path. u. Pharm., Bd. xxiv, 1888) shows that the fermentation of carbohydrate foods acts upon intestinal peristalsis.

In following out our plan of the dietetic treatment of constipation, then, having established our normal physiological diet for our individual, we include in it a fair proportion of the above special forms of food, varying the make-up according to the exact nature of our case and the circumstances of the patient.

Thus for the bread in the diet we advise black bread, or whole-wheat or rye bread, in place of white bread; for vegetables we give cabbage and beets, turnips, lettuce; for dessert we advise prunes or tamarinds.

If the feces show marked absence of fat we may try giving a large quantity of fat to promote a fat residue. If feces are already large in quantity, but action sluggish, we may be inclined to depend more upon the second class of foods, those containing organic acids and stimulant substances — the prunes and tamarinds — and to press these excessively.

Whatever the course we may adopt after study or experiment with our special case, we are providing a treatment for our condition entirely along physiological lines, providing natural methods of action and encouraging no mental or physical habits of artificial aids to action.

I have for the two last years been giving this system of treatment trial in all cases of simple habitual constipation which have come under my care. The general plan of treatment has been as follows:

Each case at the start, besides general directions as to hygiene and health, was instructed to give up the drugs which were in use for the constipation and to depend entirely upon the diet presented for this function.

A complete diet list, providing a diet of sufficient caloric value of mixed food elements, was written out, special emphasis being placed upon the foods of special value in constipation. As dessert, at one or two meals, depending upon the case, the patient was ordered a saucer of cooked prunes, about ten prunes at a time.

An example of the diet list which was written out for each patient at the start may be seen below. In the routine, simply the varieties of food were recorded, the quantity being to a certain extent left to the patient. With a list of this kind it is fairly safe to assume that a patient taking the usual quantities of the foods advised would get a sufficient total quantity to satisfy the normal standard of nutritive value.

The actual nutritive value of such a diet, given in prescribed quantities for each article of food, is given in the second part of the table appended.

TABLE 1.
DIET LIST FOR CONSTIPATION.

Plan diet in following manner, eating the usual quantity of foods presented and using the variety allowed in list:

sis chiefly through its products of organic acids (lactic, butyric, acetic acids and the carbon dioxide). Schmidt (D. Archiv. f. klin. Med., Bd. vi, 1898) shows that the fermentation products of cellulose act upon the intestinal function.

Breakfast:
Cereal with cream and sugar — preferably corn meal, or rye and oats.
Two soft boiled or scrambled eggs.
Bread — preferably black bread, or pumpernickel, or rye bread, with much butter.
Fruit — apples or grapes.

Dinner:
Soup — preferably vegetable soup.
Fish or meat, or both, with salad.
Vegetables — at least two kinds, preferably spinach, cabbage, beets, turnips; potatoes, beans or peas if desired.
Dessert of rice or bread pudding or custard — including daily a saucer of prunes.

Supper:
Bread and butter.
Cocoa.
Cold meat and vegetable salad.
Dessert of stewed fruit — apples or pears or figs. If necessary include a saucer of prunes.
Drink at least three pints of water daily.

TABLE 2.

| | Proteid, gm. | Calories. | Mineral Salts, gm. |
|---|-----------------|-----------|-----------------------|
| <i>Breakfast:</i> | | | |
| 200 gm. (about 6 oz.) porridge, oatmeal, rye, barley, Indian meal or wheat | 4-6 | 150-200 | 4 |
| 8 gm. sugar or porridge | | 8 | .001 |
| 1000 gm. milk or porridge | 5-6 | 120-140 | 3 |
| 50 to 100 gm. bread, 1 to 3 slices | 4-7 | 150-300 | .5 |
| 15 gm. butter | .2 | 120 | .5 |
| 2 eggs, or 50 gm. steak or chops | 12 | 150-180 | .5 |
| Fruit: oranges, apples or grapes | 0.5-1 | 50 | .1 |
| <i>Dinner:</i> | | | |
| 120 gm. consommé or chicken broth, or potato, pea or tomato purée with salt | 1-5 | 100-200 | 1 |
| 100 to 200 gm. beef, chicken, lamb, ham or sweetbread | 20-25 | 200-400 | 1 |
| Or 200 gm. bluefish, salmon, halibut, cod or mackerel | 12-20 | 150-300 | |
| 50 gm. potatoes | 1.5 | 60 | .5 |
| 100 gm. spinach, asparagus or squash | 1 | 100-200 | .5 |
| 75 gm. peas, beans, macaroni or corn | 9-15 | 300 | 3 |
| Custard, or ice cream, or Indian pudding | 6-15 | 150-250 | 1 |
| Cheese and crackers | 2-5 | 300 | 1 |
| <i>Supper:</i> | | | |
| Bread and butter | 5-7 | 200 | 1 |
| Cocoa, one cup | 6 | 150 | 1 |
| Milk, one glass | 8 | 200 | 3 |
| Stewed fruit, pears, baked apples, peaches with cake, or griddle cakes | 3-4 | 200-300 | .1 |
| | gm. | c. | gm. |
| Approximately, 80-130 2,650-3,600 21.71 | | | |

Such a diet was maintained for one or two weeks. Enemata were used when necessary at the start. If at the end of the period the diet worked without aid from enemata, as was frequently the case, the patient was instructed to continue in it, gradually cutting down the prunes and possibly to some extent the proportion of fruits or green vegetables. In this way after a time an ordinary diet with plenty of green vegetables and fruit and an occasional prune dessert was approximated in many cases as a permanent habit.

In cases which were very much the victim of drug habit for their constipation, or in all cases which did not improve after ten days to two weeks

of the above diet with the prunes, prunes stewed with a certain quantity of senna were prescribed (1 oz. of senna leaves placed in a cheese-cloth bag and stewed with three or four dozen prunes).

The patient was told to take a saucer of this dish for dessert once to thrice a day, according to need, in addition to his special diet. After one to three weeks the senna was omitted from the prunes (it was best to have this omitted without the knowledge of the patient if possible) and the patient continued on the regular constipation diet.

It was frequently necessary to use the senna at the start in cases which had depended much upon drugs. Given in the above way it was very easy to gradually lessen the dose while the general effect of the laxative diet was establishing itself, and the mental effect on the patient of the dosage given in this way was not at all the effect of giving a drug for laxative purposes.

In some special cases other methods, as the inclusion of fat excess in the diet, were tried. As a rule, however, the above plan was given and adhered to in all cases.

The treatment has now been tried upon 126 cases taken in routine with no selection of cases, excepting that cases with obvious pathological lesion as a probable cause of the condition, as tumor or definite disease of the alimentary tract, were sometimes excluded.

Of these 126 cases 100 were hospital cases and 26 private.

The plan was stated one year ago and all the cases included in the record have been under observation for six months or more. The result of the experiment up to date may be seen from the following table:

TABLE 3.

Total number of cases not heard from 68. (All hospital cases.)

Total number of cases under observation 58.

Number relieved by treatment 54.

Of the 58 cases 40 were relieved by the diet alone, including prunes.

The remaining 18 necessitated senna with the prunes at the start, but all save four of these have finally become able to continue on the diet alone without the senna.

In most cases the relief came at once and continued. In a few it was a matter of one to several months before the result was accomplished, and frequently slight adaptation of the diet varying on the routine plan had to be made for the special individual, as the inclusion of excess of fat or of more organic acid in the diet.

These results indicate two facts very emphatically:

First, that in a very large majority of the cases of constipation which occur in the routine of practice, the chief if not the only cause or underlying condition is a failure of the individual to follow a normal physiological manner of life.

Second, that in a large majority of all cases of constipation taken without reference to the cause or underlying condition, a complete cure, so that the patient can get along without the regular use

of drugs or other artificial aids, can be established by a proper direction of general régime and diet.

These results are the more encouraging since a large proportion of them were obtained in outpatient hospital patients, whose facility for carrying out the directions was limited. One cannot but feel that a treatment which could be so successful under these conditions is one thoroughly adapted to routine practice. On the whole, when we consider that all the patients treated already had the drug habit to some extent, the quick response to dietary régime is quite remarkable and was a great surprise to me, as also to the patients. It must be borne in mind, however, that these results were obtained under a method which included extreme attention to and study of the patient, much more than is accorded in the rule where a simple diet list is made out and the patient sent away to follow this indefinitely. This was, it is true, all that was done at the start, and the number of cures with this simple procedure alone was large. With many of the cases, however, very intimate study of the condition as to gastric digestion and motility investigated by study of the gastric contents, general metabolism as studied by quantitative analyses of the urine, intestinal digestion and absorption studied by examination of the feces and adaptation of the treatment to the findings in these regards, was necessary before success was forthcoming.

Taken all in all, however, the record is such as to confirm us in the surety that we have a method of treating constipation in a large majority of our cases which is effective and also ideal in that it follows the natural physiological method of accomplishing the function in question and does away with extraneous or drug stimulation.

HYPERCHLORHYDRIA.¹

BY ROSCOE W. SWAN, M.D., WORCESTER, MASS.

A FAIRLY constant set of symptoms appear in about one-half of all stomach cases. They might be described in the following manner:

Usually persons from fifteen to forty years of age; in all walks of life, well-to-do and otherwise; no respect to position or social standing; but constant sufferers.

They will tell you that after eating a meal, say from one to three hours or more, they have a sensation of fullness in the epigastrium, with pains radiating through to the back and extending to the region of the heart, or extending over the abdomen. Oftentimes they have a burning sensation which is accompanied by eructations of a warm fluid rising in the mouth and called water-brash, or is accompanied by expulsions of a foul-smelling gas, which has a choking sensation in the throat. If this gas does not make its appearance through the gullet, it remains long enough to produce marked distention of the stomach as well as acute colicky pain in the intestines.

After these conditions have lasted for months, and many different remedies have been tried

¹Read before The Massachusetts Medical Society, June 9, 1903.

without results by as many different physicians, the patient becomes very irritable, despondent and even melancholy. Headaches appear, mostly hemierianal and periodic, leaving as abruptly as they begin, only to return shortly. The memory is poor, together with insomnia and depression. They round out a set of symptoms similar to neurasthenia, or marked anemia occurs. The appetite is almost always good and the weight is not changed. There is usually intense thirst, and the urine is free and frequent, is slightly acid in reaction, is deficient in chlorides and indican is increased. But at times the acid is diminished, and this diminution of acid in the urine during digestion is a rough measure of the increase of HCl in the gastric juice. Oftentimes there is nausea, with vomiting, preceded and followed by tenderness over the epigastrium.

At the time when the stomach is empty these patients are free from pain. The ingestion of food and drink almost immediately gives relief to the symptoms for a short time. These symptoms generally end with the evacuation of the stomach.

The bowels are usually sluggish.

All of these conditions correspond to a disease known and described as hyperchlorhydria, which has been spoken of so often of late that many different views are expressed about its supposed origin, and as many more about its course and treatment.

Many of these symptoms may arise directly from the stomach, or reflexly from the central nervous system, which in these cases suffers intensely at times through the absorption of toxins from the stomach.

Some authors deny the existence of persistent disorders of secretion which are not produced by an anatomical lesion of the gastric mucosa, and the majority of writers consider all the dynamic affections of secretion to be neuroses. No one will deny that secretion may be disturbed through the nerves which control it. Prolonged study and careful investigation have led to the conclusion that disorders of secretion are not always due to an alteration of the mucosa or to a neurosis of the vago-sympathetic system.

The normal stomach does not secrete when it is empty, and at most only 10 to 20 cc. of gastric contents can be removed when the tube is introduced into the normal stomach in the early morning before breakfast, but sometimes when the stomach tube is introduced at this time it will be found to contain more than 20 cc. of a liquid rich in HCl and the digestive ferments.

When a figure of acidity of 70 is reached after an Ewald's test breakfast, there is always present a hyperchlorhydria.

Hyperchlorhydria denotes a pathological increase of the HCl in the filtrate of the gastric contents at the acme of digestion.

The causes of hyperchlorhydria are those common to a large number of other diseases of the stomach and are as often found in the constitution and temperament as in the mode of life and the alimentation.

The abuses of condiments, the eating of large quantities of red meat, and imperfect mastication, are common causes. It is most frequent in the arthritic and the neuropath, in neurasthenia, hysteria and in melancholia. It is quite frequently associated with intestinal autointoxication. It is common in colic lithiasis and renal lithiasis, in chlorosis and in nicotine poisoning and malaria.

Mental and moral causes play an important part. Cerebral fatigue may mark the beginning of the trouble and illustrates the close relations existing between the brain and the abdominal sympathetic.

The trouble may begin immediately after a particular meal, or it may be, and generally is, more gradually developed after a meal composed of starches, cereals, sweets, vegetables, fruits and fats, causing discomfort and pain at the height of gastric digestion.

The diagnosis of hyperchlorhydria can be frequently made by the existing subjective symptoms; discomfort or pain appearing one or two hours after meals, and alleviated by the ingestion of food or alkalis, speaks most prominently in favor of this condition. The diagnosis, however, is only a probable one, not yet positive. In order to make it decisive it is necessary to examine the gastric juice at the height of digestion. If too great acidity (caused by HCl) is found and the just-mentioned subjective symptoms prevail, the diagnosis of hyperchlorhydria is positive. The figure of acidity is one and one-half, sometimes double or three times as large as normal, the normal HCl being from $\frac{1}{10}$ to $\frac{2}{10}\%$.

The microscopic and chemical examination of the stomach contents after a test breakfast give us the most conclusive evidence as to existing conditions.

The examination of the blood is of great aid in drawing conclusions which will enable us to apply successful treatment to hyperchlorhydria. While all modes of research as to the pathological condition are important, the blood examinations are the most interesting if not the most important.

The differential diagnosis, in spite of the clear-cut features of the disease, may present some difficulties, and in some cases only a probable decision can be made.

Dyspepsia of liquids with supersecretion presents a very similar group of symptoms. The objective signs can alone differentiate the two diseases.

Displacements of the stomach may manifest the same subjective symptoms. The pain, however, is peristaltic, and due to the stomach trying to overcome the pyloric obstruction; is not removed by albuminous food, and milk may be badly borne. The physical and functional signs make the differentiation clear.

Hyperchlorhydria may be easily confounded with ulcer. HCl is not always in excess in gastric ulcer, although it may be a predisposing cause, and when doubt exists an ulcer cure should be prescribed. A hemorrhage large or small would exclude the functional trouble. Pain in

ulcer is not relieved by taking albuminous food. Otherwise the functional and subjective signs may be almost the same. The pain is increased by movements, and may be relieved by rest in a particular position.

Hyperasthenic gastritis resembles hyperchlorhydria even more closely than does ulcer. The gastritis is more directly traceable to diet and alcoholism.

The contents of the gastric juice after a test meal contains a large quantity of mucus and cell nuclei.

The signs differ only in degree and not in kind.

The prognosis is generally good; there are but few cases which resist all kinds of treatment, and for these in most instances complications (either some organic lesion of the stomach or of the central nervous system) must be looked for. In very old people an unfavorable prognosis must sometimes be given, as when the symptoms point to a malignant disease.

The diet for hyperchlorhydria is yet a subject of great controversy. Some clinicians forbid starchy foods entirely, and nourish their patients principally upon an animal diet. Their reason for forbidding the starches is that the amyolysis in hyperacidity is greatly diminished, the acid checking the conversion of starch into sugar quite early.

There is, on the other hand, quite a number of well-known clinicians who forbid meats to patients with hyperchlorhydria on account of their property to produce an increased flow of gastric juice. They prefer a milk diet and the carbohydrates.

On account of the variety of opinions advanced, one is justified in recommending the diet giving the best results, and in my own cases I prefer a mixed diet of a predominance of albumens and sparingly of the starchy food. Sweets increase the quantity but diminish the acidity of the gastric juice, and in moderate quantity are beneficial. Spices, condiments, acids, oils and alcoholic drinks should be absolutely prohibited.

The treatment consists in checking an excessive flow of gastric juice; and first among the remedies used is the extract of belladonna or its alkaloid, atropin. In the experiments carried out the amount of HCl was diminished from one-third to one-half the normal amount. The tendency which HCl has for combining with the different alkalies when brought in contact suggests the proper ones to use in hyperchlorhydria; that is, calcined magnesia combines with nearly twice its weight of HCl, and bicarbonate of soda combines with less than half its own weight.

The best of results are obtained by combining magnesia and soda in such proportions as the urgency of the case requires, increasing or diminishing the magnesia as the bowels are confined or loose. Carlsbad salts reduce the amount of HCl, especially when prolonged over a period of four weeks at a fashionable health resort. Nitrate of silver in dose of 1-1000 by means of the intragastric spray gives fine results.

Lavage of the stomach will relieve the pain of

a stubborn cramp in the region of the pylorus, there being nothing to do but to wash away the strong irritating acids. This is best followed by the intragastric spray of nitrate of silver.

It should not be overlooked, however, that there may be a chronic gastritis with a normal or an excess of acid. Here the alkalies are to be preferred to the salines, and should be administered warm.

Constipation will, as a rule, be relieved by the alkalies as soon as they neutralize the acidity. Then the carbohydrates to be digested pass through and stimulate the bowels to act. Rhubarb and soda, or large injections of, say, 8 oz. of olive oil, change of habitation from country to seashore, will overcome the cause. Massage of abdomen is followed by good results.

Hydrotherapy may be tried to suppress mental irritation. A cold sponge bath followed by brisk massage will accomplish much toward quieting the nerves.

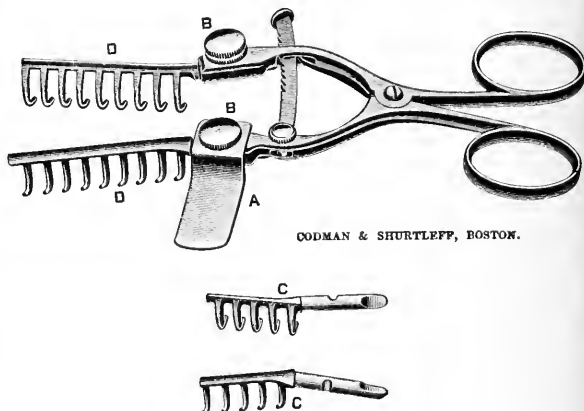
As every organ is strengthened by activity and weakened by lack of exercise, one cannot urge too strongly the importance of diminishing the amount and number of artificial digestives employed in hyperchlorhydria.

New Instrument.

A MASTOID AND AURICLE RETRACTOR.¹

BY FREDERICK L. JACK, M.D., BOSTON.

THE mastoid part of this instrument is a modification of Allport's retractor and Jansen's mouth gag. The additional simple device to hold the auricle is thought to be new. The following cut illustrates the many advantages of the instrument.



There are three sets of blades, varying in length to fit different lengths of incision. Two sets only are recommended. The teeth are placed close together and with the blades in position, the edges of the wound are widely separated so as not only to afford sufficient room for operating, but to control hemorrhage. The handles are

¹ Read before The American Otological Society, Washington, D.C., May 13, 1903.

pressed together like those of scissors and held in place by a ratchet. The instrument is quickly adjusted and absolutely self-retaining.

The auricle, which is often in the field of operation, requiring an assistant to hold it well forward out of the operative field, is now perfectly held aside by means of the ear tip. The tip (A) is simply a thin piece of metal adjusted to a groove in the head of screws. Both heads (B) are grooved so that it can be readily used for the right or left ear. After the retractor is in place, the upper half of the auricle is folded over and held in place by adjusting the tip in the groove.

Reports of Societies.

AMERICAN DERMATOLOGICAL ASSOCIATION.

TWENTY-SEVENTH ANNUAL MEETING, HELD AT WASHINGTON, D.C., MAY 12, 13, AND 14, 1903.

(Concluded from No. 11, page 298.)

SECOND DAY.

SOME OBSERVATIONS ON THE USE OF ROENTGEN RAYS IN DERMATOLOGY.

By DR. HENRY W. STELWAGON of Philadelphia. In this paper the author limited himself essentially to his own observations. He stated that in the x-rays we had a potent remedy in some cutaneous diseases, chiefly in some of the epitheliomata. It was also productive of benefit and even cure in some cases of lupus, serofuloderma and other forms of cutaneous tuberculosis, and it would probably prove a permanent curative influence in some cases of lupus erythematosus. In other skin diseases, more especially acne of stubborn type and in acne rosacea, its effects were occasionally brilliant. In certain limited keratoses, especially of the palms and soles, it might be resorted to with a good chance of its being beneficial and occasionally curative. The same might be said also of the local forms of hyperidrosis. In eczema, psoriasis and other like comparatively inoffensive dermatoses he would reserve it for those cases which proved intractable to other plans of treatment. While recognizing the great value of this therapeutic agent in dermatology and that future observations might give it a still stronger hold, he has hesitated, as yet, from his own relatively limited experience, to subscribe without reservation to its possession of the almost marvelous powers accredited to it by other writers in so large a number of dermatoses.

THE RATIONALE OF AND THE INDICATIONS FOR THE THERAPEUTIC USE OF ROENTGEN RAYS.

By DR. WILLIAM A. PUSEY of Chicago. The author stated that the microscopical changes occurring in tissues affected by x-rays have been studied by various observers and their findings showed a striking uniformity. The first changes

occurred in the epidermis. There was marked hyperplasia of the prickle-cell layer, with increase in the number of cells and increased formation of pigment and of keratohyalin, followed after further exposure by breaking up of nuclei or division of the nuclei; subsequently, there was degeneration of the cells and if the process proceeded further, complete disintegration. The changes in the corium were of a similarly striking character. The changes produced in diseased tissues were similar to those seen in normal tissues. The process was one primarily affecting the tissue cells; there was evidence first of stimulation of cellular activity and later, if the effect was intense, there followed derangement or disintegration of the affected cells. The changes occurred first and most strikingly in the epithelial structures and next in the blood vessels, but it was likely that they developed also, though to a much less degree, in the cells of all the tissues of the affected areas. From a consideration of the effect of x-rays upon tissues and upon bacteria in living tissues it was not difficult to arrive at a fairly accurate estimate of the indications for the therapeutic use of this agent. The actions of the x-rays which offered opportunities for therapeutic application were as follows:

(1) The action in causing atrophy of the appendages of the skin. (2) The destructive action upon organisms in living tissues. (3) The effect upon the metabolism of tissues. (4) The power of destroying certain pathological tissues. (5) The anodyne action, to which attention had been called by the effect upon pain in malignant growths, in neuralgias and in diseases of the skin accompanied by itching.

DR. L. A. DUHRING of Philadelphia said he was firmly impressed with the value of the Roentgen rays as a therapeutic agent in numerous diseases. He favored the use of the low vacuum tube.

DR. JAMES C. WHITE called attention to the possible injurious effects of the rays, even when the applications were made by men of great experience in the handling of the apparatus. The ultimate use of the rays should be confined to instances where the knife or cautery was not considered advisable.

DR. L. DUNCAN BULKLEY of New York emphasized the importance of measuring the dose of the remedy. He favored short exposures at close range and not too frequently repeated.

DR. F. H. WILLIAMS of Boston said that while the x-rays offered a remedy of much value in the treatment of skin diseases, it should be used with the greatest care. Some cases of even superficial new growths did not yield readily to the treatment and in some instances they were actually aggravated by it. Such cases, however, were uncommon. Another disadvantage was the long duration of the treatment.

DR. WILLIAM A. HARDAWAY of St. Louis said that while all were agreed as to the utility of the x-ray in malignant new growths of the skin, particularly in that type of growth approaching the rodent ulcer, there was some legitimate reason to doubt its value in acne and various other forms

of skin disease. He also spoke of the relapses that occasionally followed the treatment.

DR. E. B. BRONSON said the value of the x-rays was, in more ways than one, the burning question in therapeutics. In the application of the remedy there was still lacking a certain degree of precision. The essential feature was the amount of irradiation, and this depended, he thought, upon the condition of the tube. The actuating element he regarded of less importance.

DR. HARTZELL said that until physicists told us what the x-rays were and furnished us with apparatus to gauge the strength of the rays, we would be limited to the effects they produced. The time of the exposure must be determined by the effect produced. The same rule applied to other therapeutic agents. The proper dose in one case would be insufficient in another and too much in a third. He favored short exposures daily until a reaction occurred; then the intervals could be lengthened.

DR. FRANK HUGH MONTGOMERY of Chicago said that in the treatment of superficial epithelioma about the forehead, nose and cheeks with the x-rays, he had not seen one failure in at least over one hundred cases. In psoriasis the results were brilliant almost invariably, but the lesions recurred as fast as after other methods of treatment. In lichen planus the results were excellent. In acne he looked upon it as the ideal local treatment, but there were quite a number of cases in which, after the face had cleared, there was a return of the disease from outside.

DR. F. H. SHEPHERD said that x-ray burns were usually produced in the course of skiagraphic work and not in the treatment of skin diseases. He did not think the use of the x-rays should be advised in the treatment of epithelioma of the lower lip, on account of the usual involvement of the glands in the submaxillary region.

DR. MARTIN F. ENGMAN of St. Louis cited a case of epithelioma of the tongue successfully treated by the x-rays.

DR. A. P. BIDDLE of Detroit mentioned a case where the tube exploded, badly cutting the patient's cheek.

DR. JOHN T. BOWEN of Boston gave a brief review of the result of the Roentgen ray treatment in dermatology in the Massachusetts General Hospital during the past year. In all, 142 purely cutaneous diseases were treated by this method. This number was made up as follows: There were 55 cases of epithelioma, of which 27 were healed, 9 were benefited but failed to continue treatment and 19 were still under treatment. There were 4 cases of carcinoma; these were not benefited. Seventeen cases of keratosis senilis, 11 of which were cured, 4 were benefited but failed to continue treatment and 2 were still under treatment. There were 22 cases of tuberculosis, including lupus, verrucosa and scrofuloderma; 15 of these were healed, 4 were benefited but failed to continue treatment and 3 were still under treatment. There was 1 case of multiple round-cell sarcoma of the skin, which was not benefited. There were 12 cases of folliculitis, 8 of which were healed, 2

were benefited but failed to continue treatment and 2 were still under treatment. There were 7 cases of eczema, 5 of which were healed and 2 were still under treatment. There were 8 cases of psoriasis: 6 healed, 2 still under treatment. There were 4 cases of varicose ulcer, 2 healed: 1 benefited but failed to continue treatment, 1 still under treatment. There was 1 case of cellulitis of the leg, which failed to show any improvement. Two cases of varicose dermatitis: 1 healed; 1 benefited but failed to continue treatment. Two cases of acne; both healed. Two cases of hypertrichosis; both healed. Two cases of alopecia areata; not benefited. One case of erythema induratum; healed. One case of scleroderma; not improved. One case of hyperidrosis; not improved.

PROFESSIONAL DISCRETION: THE MEDICAL SECRET.

By DR. P. A. MORROW of New York. In this paper the author discussed the complicated problems that often confront the physician in dealing with patients suffering from venereal disease. On the one hand, he was bound by the obligations formulated in the precepts of the Hippocratic oath; on the other, by his duty to society at large. In the ordinary treatment of venereal disease he found it easy enough to adjust his line of conduct in strict accordance with his code of professional duty, as in such cases the individual interests of the patient alone were involved, but when a venereal patient consulted a physician in regard to marriage the situation was changed, then the interests of others might be jeopardized. His protective duty extended to the wife and future children and through them to society at large. There was no situation in the entire range of a professional man's experience so painful as to recognize himself powerless to prevent the morally culpable union of a syphilitic man and an innocent woman. What had been termed the "eternal problem" of the professional secret had long engaged the thoughtful attention of medical men. Like all problems connected with the prophylaxis of venereal disease, it was exceedingly complex and baffling. It might be said that no solution of these problems had ever been proposed, no plan of action for the regulation or control of these diseases had ever been formulated, which did not come in conflict with individual liberty, legal rights or moral principles. In the larger proportion of cases, venereal diseases were introduced into marriage from extra-conjugal infections, contracted *post nuptias*. Here it was evident that the preventive duty of the physician could not be exercised. Other phases of the subject discussed by Dr. Morrow in his paper were the relation of the physician to the syphilitic husband or wife, to the syphilitic nurse, syphilis in domestic servants and lastly, industrial infections.

DR. GILCRIST said he thought syphilis should be regarded from the same standpoint as smallpox. It should be looked upon as a highly contagious disease.

DR. STELWAGON called attention to the fact that many hospitals refused to accept venereal

patients, on the ground that it would encourage vice. Physicians themselves, he thought, were partly to blame for the increase in venereal diseases, as they were too apt to belittle this class of affections.

DR. H. G. KLOTZ of New York advised the wide dissemination of a knowledge of the dangers attending the contraction of venereal diseases. The subject should be handled without gloves. Syphilis was not a venereal disease, but a disease of the public.

NOTE ON A METHOD OF EARLY DIAGNOSIS IN A CASE OF LEPROSY.

By DR. FRANCIS J. SHEPHERD of Montreal. The patient, a Chinaman, was admitted to the Montreal General Hospital with a skin affection of an erythematous type. Leprosy was suspected and the city authorities were anxious for a positive diagnosis in order that the patient, if suffering from leprosy, might be sent home. The ulnar nerves were enlarged. A section was removed from one of them and on examination it was found to contain numbers of the bacilli of leprosy. Thus the diagnosis was positively established.

DR. FRANK H. MONTGOMERY of Chicago called attention to the early involvement of the posterior auricular nerve in leprosy. According to one authority, it was involved in 90% of all cases of anesthetic leprosy and much earlier than the ulnar nerve.

DR. MORROW said that in a very large proportion of cases of leprosy the identification of the *lepra bacillus* was easily made in the nasal secretions.

DERMATITIS VENENATA — A SUPPLEMENTAL LIST.

By DR. JAMES C. WHITE of Boston. In this paper the author placed on record for convenient reference a list of the agents which had been observed to produce inflammation of the skin by contact since the publication of his work on *Dermatitis Venenata* in 1887. Some of these had already been described by him from time to time. The list included chlorhydrat-*paraphenyl-diamin*; (found in certain hair dyes), *aureole*, also used as a hair dye; *orthoform*; *salol*; *resorein*; *aristol*; *ichthol*; *dermatol*; *europhen*; *pyoctanin*; *creolin*; *iodvasogen*; *kerosene*; *electricity*; *aurantia*, an orange-colored dye used to stain leather; *cocus wood*; *guaiacum*; *humulus*; *heracleum*; *angelica*; *hyacinth*; *Ginkgo tree*; *cotoneaster*; *humex*.

DR. MORROW called attention to the importance of a very thorough investigation in every case of *dermatitis venenata*. Many innocent plants have obtained a bad reputation for toxic effects simply from misinterpretation.

MR. V. K. CHESNUT of the United States Department of Agriculture said the most common causes of skin poisoning from plants were the poison-ivy and the sumac, both of which were very widely distributed in this country. He stated that persons who handled radishes in abundance were apt to be poisoned.

DR. STELWAGON said that the drug metol, used by photographers in the development of negatives, often produced a varying degree of dermatitis of the hands and sometimes of the face.

DR. GILCRIST mentioned a case where an eczematous eruption was produced by a weak solution of boracic acid, used as a rectal injection. DR. KLOTZ said he had observed the same thing in cases where the drug was used for irrigating the bladder in cystitis.

DR. JAMES C. WHITE in closing said that while it was a popular belief that ivy poisoning might recur spontaneously a year after the original attack, he did not regard that theory as at all plausible; there were no grounds for it. On the other hand the skin of a person who had once been poisoned by ivy was no doubt more susceptible and with the onset of warm weather, eczematous lesions or other forms of dermatitis might occur. It was well known that the poison of the ivy vine was quite evanescent.

A NEW DRUG ERUPTION OF THE IODOFORM TYPE.

DR. S. POLLITZER of New York read this paper. He reported a number of cases of dermatitis, of a vesicular and crusted type, resulting from the external use of mesotan, which was described chemically as a methyl-oxymethyl-ester of salicylic acid. Mesotan was a comparatively new remedy for rheumatism and was applied externally over the affected parts, after diluting it with an equal volume of olive oil. The local application of the remedy was promptly followed by an agreeable sensation of warmth and tingling, the skin became reddened and within half an hour after its application, salicylic acid could be detected in the urine.

REPORT OF A CASE OF DERMATITIS GANGRENOSA INFANTUM.

By DRS. J. NEVINS HYDE and E. R. LECOUNT of Chicago. The patient, an infant seventeen months old, had always been in good health, with the exception of a single attack of bowel disorder, from which it had promptly recovered. It had walked at the twelfth month and had accomplished the normal eruption of teeth. There was no history of variella, variola or vaccination. The family history was good and there was no record of unhygienic surroundings in the home. The child was admitted to the hospital on Feb. 15, 1903. Ten days before, the mother had first noticed some reddish blotches on the abdominal surface of the child. Two days later, beginning with the left hand, the fingers became yellowish-red in color and much swollen. Gradually, the involved digits assumed a darker hue. A physician was summoned on the third day, who incised the tumefaction between the fingers, with the result of liberating a "watery fluid." On the fifth day of the disease, eruptive lesions appeared on the back, the feet became swollen and much discolored. At the time of admission, the child's temperature was 104° F.; there was considerable stupor and the child moaned occasionally. The abdominal surface was symmetrically and rather

thickly overspread with superficial, globular, discrete pustules, as large as split peas, well defined and distended and having a grayish-white color. They were neither umbilicated nor superimposed upon papules of similar size. On the extremities they were less numerous and conspicuous. The back was equally involved with the abdominal surface, but the lesions were obviously more abundant in the regions of pressure. On the eleventh day a marked change occurred in the eruptive phenomena, superficial papulo-pustules cropping out among pustulo-bullous lesions and there were decidedly more numerous and more deeply encroaching gangrenous areas where the lesions were large and threatening. The parts about the radial border of the left hand were in a gangrenous state. The left foot was swollen, cold and blackened; the right foot was similarly involved, though less extensively. Several of the digits of both the hands and feet were attached to the limb merely by tags of gangrenous tissue and eventually one of them became practically separated from the limb by the morbid process. Death occurred on the fifteenth day of the disease.

REPORT OF A CASE OF SYMMETRICAL GANGRENE.

DR. E. B. BRONSON of New York reported a case of symmetrical gangrene affecting the lower extremities. The patient was a girl who had always apparently enjoyed good health. She was thirteen years old when the affection was first noticed. The family history was fairly good, although it showed some gouty and neurotic tendencies. The patient had had no severe illness and though of a nervous temperament, she possessed good self-control and normal mentality and had never given the slightest indications of hysteria. The disease began some eight years ago and from beginning to end had occupied the same regions. The lesions were exactly symmetrical. There were areas over the shins, at the junction of the middle and lower third of the legs and on each side of both ankles behind the malleoli. The first attack came on in summer and for several years the succeeding attacks occurred in that season. About five years ago they began to occur in the winter also. Their most important feature was pain, which was both burning and lancinating in character and at times intense. This was accompanied with a dusky redness, heat and swelling and occasionally excoriations; the latter the patient thought were usually the result of the severe treatment to which she was subjected, namely, caustics and at times euretting. There was never any ischemia nor coldness of the affected parts. The attacks lasted usually about six weeks and there were seldom more than two or three attacks in the course of a year. At one time, some two years ago, there was an intermission of eighteen months between the attacks. Commencing last May or June, there was a continuous attack lasting until the middle of October; it was the severest of all and attended by the development of deep gangrene — usually on the shins. After the gangrene had reached its fullest extent, the pain rather suddenly ceased, but the dry, black sloughs

showed very little tendency to separate and after waiting a month or more they were removed by the knife, it being necessary to cut almost to the bone before reaching healthy, living tissue. Since then (six months ago) there had been no recurrence of the disease.

THIRD DAY.

A CASE OF MULTIPLE ANGIOMA.

DR. ABNER POST of Boston reported this case. The patient was an under-sized but apparently healthy girl of sixteen who bore upon her right arm a series of curious outgrowths or tumors which practically occupied the whole of the palm and extended in scattered nodules to the sternum. The first growth appeared on the arm when the patient was one year old. The arm gradually became swollen, of a bluish color and an irregular, lumpy outline. Shortly afterwards a puffiness of the hand was noticed, which also underwent the same change. During the past six or seven years similar spots had developed on the chest. Six years ago, a number of the superficial elevations were cut away, but they recurred in practically the same locations. A microscopical examination of the tumors proved them to be hemangiomas.

THE PRESENT STATUS OF PHOTOTHERAPY.

By DR. FRANK HUGH MONTGOMERY of Chicago. The paper was based on the author's recent observations in the Copenhagen and other light institutes, on published reports and on the personal experience of Dr. James Nevins Hyde and his own. He stated that in lupus vulgaris no other treatment was so uniformly successful or gave such good results from a cosmetic standpoint. The x-rays had given equally good results in some cases, but were more dangerous and the resulting scars were not always so good. Phototherapy was also of great value in the treatment of lupus erythematosus. It had given good results also in some cases of rosacea, vascular nevi, alopecia areata, indolent ulcers, acne and superficial epithelioma. In the two last-named diseases, the x-rays were, however, equally efficacious, more convenient and less expensive. In Finsen's Institute (Copenhagen), as the result of improvements in the apparatus, the time (and therefore the expense) of the treatment had been reduced to one-fourth that required in cases treated prior to 1901. A new and inexpensive lamp for the treatment of a single patient had been devised by Professor Finsen and Dr. Reyn. It was built on the same principles as the larger apparatus and was equally effective. Of the many other small lamps on the market, some were of value in the treatment of superficial lesions, but, as shown by clinical and laboratory tests, none had the penetrating power of the concentrated Finsen light and all were therefore ineffective in deeper-seated disease. The most refrangible ultra-violet rays, which were highly bactericidal for surface cultures, penetrated the epidermis less than

one millimeter. The effective light was found in the visible blue and violet, with possibly a few of the immediately adjacent ultra-violet rays. Finsen believed that the reported failures of the red-light treatment of smallpox were due to imperfect technique. He hung in the room with the patient a number of sensitized photographer's plates. If, at the end of the treatment, these plates showed the influence of white light, the technique had been defective.

DR. GEORGE THOMAS JACKSON of New York showed one of the small lamps devised by Dr. Piffard, which was very rich in ultra-violet rays. The London lamp had been used at the Presbyterian Hospital during the past year, with varying success. In one case of epithelioma of perhaps six months' standing, the lesion, which was a superficial one, disappeared after three exposures to the light. Regarding the length of the exposure, Dr. Jackson said he had no fast rule. Sometimes an exposure of five minutes gave rise to an intense dermatitis, while in another case there might be no reaction after an exposure of twenty-five minutes.

DR. WILLIAM A. PUSEY of Chicago said he had been interested in comparing the effects of phototherapy and radiotherapy, and it seemed to him that there were one or two conditions in which the former was preferable. There was a field of usefulness for phototherapy in the treatment of flat nevi and in conditions where it was desirable to produce an inflammatory reaction and be on the safe side. It was safer than radiotherapy.

DR. E. B. BRONSON said the effective agent in phototherapy was not the ultra-violet rays alone or even chiefly. Finsen had demonstrated very effectively, by experiments on rabbits, that there was a wide disparity between the penetrability of the different lamps. The penetrability depended not on the ultra-violet rays alone, but on the visible rays as well.

DR. MONTGOMERY, in closing, said there was no question that light rays were highly bactericidal on the surface,—the vast majority of bacteria were destroyed very rapidly by the ultra-violet rays.

SOME PRE-CANCEROUS AFFECTIIONS OF THE SKIN, MORE PARTICULARLY PRE-CANCEROUS KERATOSES.

DR. M. B. HARTZELL of Philadelphia read this paper. He stated that a small number of diseases of the skin, after existing for a longer or shorter period as benign affections, exhibiting neither the clinical nor the histological features of malignancy, might terminate in epithelioma. This termination, although far from being the rule, occurred in a sufficient number of cases to exclude the probability of mere coincidence and to warrant the application of the term pre-cancerous to such affections. These diseases did not belong to a single pathological group, but included inflammations, neoplasms, hypertrophies and such alterations of the skin as might result from previous disease or injury. In this list of pre-cancerous affections, Dr. Hartzell included the

following: Paraffin dermatitis, a peculiar inflammation of the skin occurring in workers in tar and paraffin; the dermatitis of the scrotum met with in chimney sweeps, due to the irritation of soot; lupus vulgaris, in a small proportion of cases; other forms of cutaneous tuberculosis, such as tuberculosis cutis verrucosa; rarely, after lupus erythematosus; new growths of the skin, congenital or acquired; pigmented nevi; chronic leg ulcers; cicatrices arising from any cause, but more particularly those resulting from burns; various forms of circumscribed keratoses, such as cutaneous horns and callosities; arsenical keratoses; the so-called senile seborrhea, a better name for which was the senile keratoma of Besnier. The latter Dr. Hartzell regarded as the most frequent and perhaps the most important form of pre-cancerous keratosis.

DR. JAMES C. WHITE of Boston mentioned a case of epithelioma of the hand following a prolonged x-ray dermatitis.

DR. PUSEY said he had recently had the opportunity of studying a remarkable case of chronic x-ray dermatitis in a man who manufactured apparatus for producing the rays. He was burned from the middle of the trunk upwards, the lesions resembling those of xeroderma pigmentosa. Subsequently he developed an epithelioma, for which his hand had to be amputated.

DR. STELWAGON said he had seen a number of examples of chronic x-ray poisoning in which there were decided keratoses that pointed suspiciously towards the development of epithelioma.

DR. MARTIN F. ENGMAN of St. Louis said he thought that sunlight might possibly have something to do with the development of senile keratoses. The lesions occurred most frequently on exposed parts.

DR. L. A. DUNNING reported a case of typical lupus erythematosus followed by the development of carcinoma. He had never seen a similar case.

DR. S. POLLITZER of New York thought that epithelioma following lupus, whether of the vulgaris or erythematosus type, might depend upon the mechanical methods of treatment employed. Otherwise it was difficult to see why an inflammatory process like lupus should result in epithelioma more frequently than any other inflammatory disease.

PALUDIDES, WITH THE HISTOPATHOLOGY OF A CASE OF MALARIAL PURPURA.

By DR. MARTIN F. ENGMAN of St. Louis. In using the word "paludide," the author followed the suggestion of Vernuiel and Merklen and also Brocq to express the probable origin of certain familiar eruptions associated with malarial infection. In the cases he reported, twenty-four in all, the malarial plasmodium was demonstrated in the blood. The list included herpes simplex, herpes zoster, pompholyx, urticaria, angioneurotic edema, trophic changes in the skin (non-inflammatory pityriasis), erythema multiforme, purpura and gangrene. He did not attempt to express an opinion as to why so many different types of erup-

tion should emanate from the same source, nor did he wish to be understood as claiming that these eruptions were peculiarly malarial in origin; therefore, the term "paludide" was not used in the sense that one employed the word "tuberculide" or "syphilide." The object of the paper was to point out the necessity of blood examinations in eruptions with any semblance of periodicity of their symptoms. Many of the paludal dermatoses were not accompanied by any constitutional symptoms, pyrexia, chills, etc., the dermal symptoms being the only manifestations of the infection. In the histologic examination of a paludal purpura the lymph channels were widely dilated, the superficial vessels were empty and the deeper ones engorged. There were marked symptoms of edema and slight diapedesis of red cells from the deeper vessels. No thrombi were found.

The PRESIDENT, DR. BOWEN, said he did not think the term "paludides" was an especially fitting one. While malaria was the cause of the eruptions in the cases reported by Dr. Engman, similar eruptions were also produced by other causes.

The following officers were elected for the ensuing year: President, DR. JOSEPH ZEISLER of Chicago; Vice-President, DR. M. B. HARTZELL of Philadelphia; Secretary and Treasurer, DR. CHARLES J. WHITE of Boston. Niagara Falls was selected as the place of next meeting, which will be held early in June, 1904.

Recent Literature.

Physiological Aspects of the Liquor Problem.

Investigations made by and under the direction of W. O. ATWATER, JOHN S. BILLINGS, H. P. BOWDITCH, R. H. CHITTENDEN and W. H. WELCH, Sub-Committee of the Committee of Fifty to investigate the liquor problem. Vol. I, pp. xxii, 396. Vol. II, pp. 379. Boston and New York: Houghton, Millin & Co. 1903.

As indicated on the title pages, these books represent the work and preliminary conclusions of a systematic investigation of the alcohol problem in all its bearings, undertaken under the auspices of the so-called Committee of Fifty. The immediate research was carried out by a sub-committee, composed of men of science, and others particularly versed in the various aspects of the alcohol question in its social, physiological and pharmacological bearings. The general result is a work of very great significance, containing as it does the most reliable experimental data yet collected on the subject, and a vast number of facts regarded from various points of view bearing on the general question.

At the beginning of the first volume, the authors have very wisely given, in small compass, their report, which includes methods of investigation

as well as results. Some of the general conclusions reached may be summarized as follows: Experimental evidence is of doubtful value in determining individual susceptibility to alcohol in man; from somewhat untrustworthy data it is probable that of adult males in this country, not more than 20% are total abstainers and not more than 5% are positively intemperate; 80% of brain workers use alcoholic drinks to some extent; the injurious effect of an alcoholic drink is due mainly to the alcohol it contains; cheap liquors are not so injurious as ordinarily supposed; the question as to whether alcohol is a food or a poison depends upon idiosyncrasy and amount; alcoholic drinks may be temporary restoratives, but they probably lessen the power of the organism to resist infectious or contagious disease; so-called scientific temperance instruction in public schools is unscientific and undesirable; children should be taught certain definite facts regarding alcohol, but should be guarded against false impressions.

The book is mainly taken up with detailed papers on various aspects of the alcohol problem, considered largely from the laboratory side, of which the foregoing summary gives the main results. The report by Dr. H. P. Bowditch and Dr. C. F. Hodge on the "Present Instruction on the Physiological Action of Alcohol" will no doubt be read with very particular interest. It is an exhaustive and fair criticism and arraignment of the so-called scientific temperance instruction, with which the name of Mrs. Mary H. Hunt is chiefly identified.

Educators and legislators alike should read and ponder this section. It cannot fail to have influence in modifying the present most unfortunate state of affairs. To a careful student of the subject the articles by Chittenden, Billings, Abel, Atwater and Welch will also be read with much profit. We regret that a clinician's point of view is not appended.

The general feeling one has on putting the book down is of gratification that so systematic a treatise has been published on a subject of such vital general importance, and also that much remains to be done before the involved questions may be said to have received a definite scientific answer. In the meantime we are convinced that the publication of this book will serve as a means of enlightenment to the great mass of intelligent but uninformed persons, whose concern it is to take a sane attitude in a question of this import.

An English Handbook to the Paris Medical School. By A. A. WARDEN, M.D., with prefatory letters by LORD LISTER and Prof. W. W. KEEN. London: J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1903.

The difficulties of finding one's medical way about Paris are met by this small book. It is well arranged, and gives the information a student needs in planning a course of study in that city. It is replete with facts of importance.

THE BOSTON

Medical and Surgical Journal

THURSDAY, SEPTEMBER 17, 1903.

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THE ALLEVIATION OF TUBERCULOSIS.

ONE of the hopeful signs in the conflict with tuberculosis is the increasing tendency to spread knowledge by popular means which shall not unduly alarm the community but which shall have the tendency to spread the knowledge which should and must be known if the dangers of infection are to be avoided. So radical a change has come upon us in our estimate of the character of tuberculosis that the following statement from the pen of Dr. Lawrence F. Flick, founder of the Pennsylvania Society for the Prevention of Tuberculosis, is possible:

Some men, in their zeal to save human life, recently have ridden the false theory of heredity of consumption so far as to want to forbid by law marriage to all consumptives. The enactment of such a law would be utterly unwarranted.

Consumption is not inherited. On the contrary, immunity gradually comes to those in whose ancestry the disease has existed.

What immunity the white race enjoys has come to it through heredity. It is to children of consumptive parents that we owe the protection we now possess.

Life, therefore, would not be saved by prohibition of marriage between consumptives. On the contrary, the conserving power of nature would be handicapped in its operation.

How true this may be it is not our purpose to discuss, but the fact remains that heredity, with all the untold misery which that word signifies in the popular mind, has begun at least to be eradicated from consideration in the treatment of tuberculous persons. This is certainly valuable in so far as it lays stress upon what all must consider the essential element in prevention, that is, the care of the individual tuberculous person.

We have before us a circular issued by an asso-

ciation in a neighboring town, the function of which is to cure at home, if possible, persons suffering from tuberculosis, to relieve with food all needy tuberculous persons, to educate the entire community in the cure and prevention of the disease, and to promote the establishment of hospitals for hopeless cases. This association, although apparently organized by laymen, has the interest and co-operation of prominent physicians. This sort of propaganda, under persons of proper knowledge and ability to meet the difficult questions which are sure to arise, is wholly to be commended; in fact, it is only through the education of the public that the eradication of tuberculosis is to be expected, and this naturally may be best brought about by a general campaign inaugurated by the people themselves. This movement, of which we have just spoken, is intended to be largely educational, and among other means to this end there will be on file at designated places, and open to the public, reports from other organizations working along similar lines, reprints of medical papers relating to the general subject and pamphlets descriptive of sanatoria. We wish this society, and all others with a similar purpose in view, the greatest possible measure of success.

AN EPIDEMIC OF TYPHOID FEVER UNDER PECULIAR CIRCUMSTANCES.

NOTHING has been more conclusively demonstrated in the experience of the Merrimac River cities, as well as in other communities, than the danger of using as drinking water a supply taken from a polluted stream without purification. Measures of different character have been taken by these industrial cities for improving their water supplies, whereby the deathrate from typhoid fever has been very greatly diminished in them. In the two larger manufacturing cities of Lowell and Lawrence, systems of canals are in use for supplying the needed water for the mills, and in the mills this water is generally used for washing purposes and for the supply of closets, etc., although it is much more polluted than that of the river and consequently entirely unfit for drinking.

On the night of July 18 a serious fire occurred in Lowell at one of the mills, where, for a few hours only, it became necessary to increase the supply needed for fire purposes. By some defect the polluted water of the canals for a short time probably gained access to the pipes used for the distribution of the public supply. Within a few

days from the date of the fire, there was a marked increase in the amount of diarrheal diseases generally throughout the city and on July 31 cases of typhoid fever began to be reported until the whole number reported up to Aug. 31 was 153.¹ The number of cases of typhoid fever reported in July were only five, being one each on the 1st, 8th, 23d, 25th and 31st.

The cases reported in August were as follows:

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|--------|----|----|----|----|----|----|----|---|---|----|----|----|----|----|----|----|----|----|----|----|----|
| Dates, | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| Cases, | 6 | 2 | 3 | 6 | 4 | 6 | 6 | 9 | 8 | 7 | 5 | 15 | 8 | 8 | 9 | 3 | 7 | 8 | 7 | 9 | 5 |
| Dates, | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | | | | | | | | | | | | | |
| Cases, | 0 | 1 | 0 | 4 | 1 | 2 | 2 | | | | | | | | | | | | | | |

Total in August, 151.

The occurrence of this epidemic emphasizes the fact that measures intended for the protection of life and health are of higher importance than those which are taken for the protection of property alone, and those which are intended or used for the latter only should not be so arranged as to imperil the former.

DEPARTMENT STORE PHARMACY.

A SAMPLE of beeswax was recently obtained at a department store in Boston, which, in order to please the multitude of its patrons, maintains a drug counter. The sample was sent to the State Board of Health for analysis (since the board is authorized to carry on an inspection of food and drugs), and was found to be largely adulterated. Whereupon the board sent a notice to the proprietor of the department store informing him of the fact that his *cera flava* was adulterated.

The following reply was received by the Board:

BOSTON, July —, 1903.

Gentlemen:—We are in receipt of enclosed (notice), dated July —, and are unable to learn what you refer to. We are informed that "*Cera flava*" is the Latin for prepared meal. We have so many kinds that we cannot (if this is what you refer to) discover which one. If you will kindly make it plain to us, we will make further investigation.

Respectfully yours,

"We are also informed" that the principal items of sale at these department store drug counters are cosmetics, tonics, bitters, "blood purifiers" and other proprietary articles, while the legitimate and official articles of the pharmacopoeia are but little sought for, hence possibly the lack of familiarity with the latter on the part of the proprietor. This being the case, it would not

¹ This number 153 includes the two cases reported on July 25 and 31. The dates given above are those on which the patients were taken sick, not the actual date of reporting, the latter being occasionally unreliable.

be at all surprising if accidents should occur in such establishments, not merely on account of carelessness, but on account of sheer ignorance of pharmaceutical work.

SEX IN INDUSTRY.

THE Massachusetts Bureau of Labor Statistics has issued a reprint in advance of its Thirty-third Annual Report, in which are presented the numbers of persons of each sex employed in gainful occupations in the State in the census year 1895. The number of persons thus employed in 1895 was 1,079,090, of whom 27.1% were women as compared with 26.8% in 1890, 24.2% in 1880 and 22.1% in 1870.

In the principal groups of employed persons, females were found as follows:

In government occupations, national, state and municipal, 14.2%; professional occupations, 45.5%; domestic service, 84.3%; personal service, 43.4%; trade, 15.7%; transportation, 0.5%; agriculture, 0.7%; fisheries, 0.2%; manufactures, 29.0%; mining, 0.0%; laborers, 0.2%; apprentices, 9.6%; children at work, 41.8%. As a matter of interest it appears that one woman followed the occupation of blacksmith out of 6,604 thus employed, three were carpenters out of 28,578, nine were engineers, five firemen (or women), one teamster, one cobbler, one scissors grinder.

Out of all the female workers in the State 88% are unmarried. Over 100,000 are in factories, 79,000 are servants and 20,000 practice professions. An increasing number of women appear to prefer freedom, work and an income to married life.

Turning to the figures which are specially interesting to medical men, the results of enumeration as presented are unsatisfactory, unscientific and misleading. Under the general head of medicine are embraced 5,800 persons, 5,114 of whom are men and 686 women, but in this general class or group are included clairvoyants, chiropodists, dentists, manicures, midwives, veterinary surgeons, physicians, and physicians and surgeons.

The number of physicians and physicians and surgeons who were willing to answer to the nickname of "allopaths" was 1,432, of whom 56 were females. There were also 385 who answered to the name of "homeopaths," 83 eclectics, 77 specialists and 2,213 who were not specified. Of the 4,188 persons employed in the profession of medicine, 486 were females.

The useless character of this classification is apparent upon consulting the latest catalogues of the members of the two largest medical organizations of the State, the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, the former of which shows a list of 2,607 members and the latter 328 members. Under the head of "personal service" 4,810 persons are grouped as nurses, of whom 4,473 were women. On pp. 247-250 are reproduced several tables, said to be "drawn from official sources," that is, the State Registration reports, in which the original blunders of those reports are copied *in ipsissimis verbis*, but with the addition of others not in the original reports, the term "marriage rate" in each instance being confounded with the rate of persons married per 1,000 population.

MEDICAL NOTES.

THE CAUSE OF POPE LEO'S DEATH. — Profitless as such discussion now is, a difference of opinion has arisen among Italian physicians regarding the cause of Pope Leo's death. Professor Cardarelli has published a statement for the purpose of demonstrating that death was due either to cancer of the pleura or tuberculous hydrothorax. This is not in accord with the opinion and postmortem examination given out by Drs. Laponi and Mazzoni, who regarded the final illness as pleurisy or pleuro-pneumonia. It is probable that the matter will not now be decided to the satisfaction of either of the disputants.

ENLARGEMENT OF PORTSMOUTH, VA., NAVAL HOSPITAL. — It is said that Surgeon-General Rixey will advocate an enlargement of the General Naval Hospital at Portsmouth, Va. At present the accommodations are for two hundred patients, and it is proposed to enlarge the hospital so that it will accommodate five hundred. Isolation wards will also be provided.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 16, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 17, typhoid fever 27, measles 11, smallpox 0.

BOSTON FLOATING HOSPITAL. — The last trip of the Boston Floating Hospital for the year was made Sept. 14. The managers would have been glad to have continued further into Sep-

tember had the necessary funds been forthcoming. The summer has been, in many respects, more satisfactory, as regards work accomplished, than any preceding season, though much more could have been done with a more commodious boat.

NEW YORK.

OPENING OF MEDICAL DEPARTMENT, COLUMBIA UNIVERSITY. — It is announced that the opening exercises of the Columbia University College of Physicians and Surgeons for the academic year 1903-04 will be held Thursday, Sept. 24, 1903, at three o'clock. After a brief address of welcome by the president of the university an address will be delivered by Walter B. James, M.D., Professor of the Practice of Medicine, upon "The Old and the New Medicine." Seats will be reserved for the Trustees of the University, for members of the Faculty and for other officers of instruction.

NEW YORK'S WATER SUPPLY. — The announcement has been made that the forthcoming report of the commission of three experts, headed by Prof. William H. Burr of Columbia University, appointed by the mayor to examine into the available sources for an increased water supply for the city, will contain six propositions regarding the subject. Three will deal with the Croton watershed, one with a modified plan of the Ramapo project, which some time ago obtained notoriety as a threatened political job, a fifth with the storage possibilities of the Adirondack region and the sixth with a Catskill Mountain storage proposition that is entirely new. This last contemplates the construction of an enormous reservoir on Esopus Creek, west of the Hudson River in Ulster County. For some time engineers have been at work along the course of this stream, and one of the best reservoir sites has been shown to be at Bishop Falls, near Spokane in the western Catskills, on the line of the Ulster and Delaware Railroad. Surveys and measurements have already been made here and specifications have been outlined, so that the proximate expense of such a reservoir can be pointed out in the report. By damming up a section at this location it has been found that an area of eight square miles could be utilized as a natural reservoir, and that a very large supply of water could be obtained at comparatively small expense. The scheme suggested contemplates carrying the water in an aqueduct under the Hudson River near Kingston, and thence down the east side of the river. It is estimated

that the construction of the whole work would take ten years, at the end of which time New York would have one of the most satisfactory water plants in the world, and at a cost that would be at a minimum per gallon furnished.

MEDICAL INSPECTION OF SCHOOL CHILDREN. — Just previous to the opening of the public schools for the season on Sept. 14, the president of the Board of Health made assignment of fifty-five medical inspectors and thirty trained nurses to the stations at which examinations were to be made of all children entering the schools. The corps of physicians and nurses work under the direction of Dr. J. J. Cronin of the Health Department. All pupils found to be affected with trachoma, ringworm, whooping-cough or other contagious disease are required to be conducted by the nurses to their homes, where their parents or guardians are advised in reference to securing medical attendance for the children and as to such hygienic care as will contribute to their return to school at as early a period as possible. The inspections will, of course, be continued throughout the school year.

RECREATION CENTERS. — The Department of Education has designated seventeen school buildings in the borough of Manhattan and three in Brooklyn as recreation centers during the coming season, and an invitation to the use of these is extended to all working boys and girls. At each of the schools provision is made for systematic training in gymnastics and athletic sports, as well as for reading and quiet games and the encouragement of literary and debating clubs. In addition, a study room is provided where students can obtain special preparation for civil service and regents' examinations, and the various departments are to be open every night in the week except Sunday.

A "CHRISTIAN SCIENCE" DIFFICULTY. — Dr. L. J. McAdam of Buffalo was recently called to see a child in a Christian Science family at death's door from a "mortal thought" of diphtheria. He was not allowed to prescribe, however; the parents, who no doubt feared legal inconveniences for themselves, stating that all they wanted from him was a death certificate. Dr. McAdam very properly refused to give this, and immediately reported the case to the proper authorities.

SMALL DAMAGES TO A PHYSICIAN. — Dr. Hubbard N. Mitchell of New York has received an award of only \$700 in a suit brought by him in

the Supreme Court at Jersey City against the Jersey City, Hoboken and Paterson Street Railway Company, in which he claimed \$50,000 damages. In an accident last year, in which a car of this company in which he was riding was derailed, Dr. Mitchell was thrown down, his head striking the seat on the opposite side. In consequence of the injury received he claimed that he became deaf in his left ear, which was specially trained for auscultatory purposes, and that as a result, his practice, which he stated to have been previously worth \$30,000 a year, had been interfered with to a most serious extent.

NOTES FROM THE PHILIPPINES.

LIBRARY OF GOVERNMENT LABORATORIES. — The library of the government laboratories in Manila has recently been increased by the addition of about a thousand new books of reference, chiefly in German and French. This library is already the best and most complete scientific library in the Orient, the books all being of the latest editions and chosen with especial care, and files of all the leading medical journals of the world being maintained. While this library is primarily for the use of officials of the government, its use by the physicians of Manila is invited, and its sphere of usefulness thereby much enlarged.

WORK IN GOVERNMENT LABORATORY. — Work on the new government laboratory is progressing slowly as a result of the difficulty in obtaining suitable labor and proper material. It is semi-officially announced that the building will be ready for occupancy on Jan. 1, 1904, but the work can scarcely be completed until several months later. In the meantime the building occupied by the government laboratories has become too cramped by reason of the constantly increasing volume of work which is carried on, and the biological division has been crowded out and forced to take up temporary quarters in a rented building on Calle Iris, pending the completion of the new laboratory building.

PAIL CONSERVANCY SYSTEM. — Major G. M. Barber has just been appointed to a position under the Board of Health in charge of the operation of the pail conservancy system for the disposal of excreta and of the work of scavenging and removal of refuse. Major Barber has been connected with the street-cleaning departments of New York and Chicago, and comes directly from Cuba, where, under the direction of General Wood, he accomplished the cleaning up of the city of Santiago, and brought its street-clean-

ing and scavenging force up to a high state of efficiency. His experience should make him a valuable man for similar work in Manila, though local conditions are even less favorable here than they were in Santiago.

REMOVAL OF BOARD OF HEALTH OFFICES. — The Board of Health has lately moved its offices from the Ayuntamiento to more commodious quarters in the Potenciana building, where it will be permanently established.

APPOINTMENT OF POLICE SURGEON OF MANILA. — Dr. Albert T. Short, until lately a contract surgeon in the army, has recently been appointed police surgeon of Manila. He is one of several American physicians who have married into Filipino families, and expects to remain in the islands permanently. As the police force is composed of both Americans and Filipinos, Dr. Short's appointment will probably be agreeable to all concerned.

LEPER COLONY. — Work on the leper colony at Kulion has been abandoned for the rainy season. The work has been much delayed by the absolute impossibility of securing laborers from among the Filipinos. Progress here along all lines is much hampered from this cause. With the rigid exclusion of Chinese enforced, the manual labor proposition resolves itself into the fact that the white man cannot work, the Filipino won't and the Chinaman is not allowed to do so.

"RINDERPEST MEAT." — A committee has been appointed to investigate and report upon the use as food of meat from animals affected with rinderpest. The board found that such meat has habitually been used by the natives without apparent ill effects, and that although the use of flesh from any sick animal was undesirable, meat from rinderpest animals could not be regarded as directly injurious to health. In view of this fact, and considering the question of the effect of such prohibition upon the price of meat, the board recommended that the sale of meat from rinderpest animals be for the present authorized, provided these animals be in the early stages of the disease, the meat be stamped "rinderpest meat" and be sold only by authorized dealers placing placards in their stores stating that they dealt in such meat.

IMPROVEMENT IN CHOLERA SITUATION. — In view of the recent great diminution in the number of cholera cases, and the fact that those which occur are largely traceable to the use of infected

water from the Pasig River, the health authorities have lately felt justified in largely modifying the prohibited food list which has been in force for nearly a year. Pineapples, guavas and fruits which are peeled before being eaten are now allowed. The restrictions still remain in force as regards salad vegetables, molluscs and certain prepared articles of food used by the Chinese and natives. So far, this relaxation in the precautions relative to the foods allowed to be sold does not seem to have had any harmful results.

Correspondence.

BRADYCARDIA.

Boston, Sept. 12, 1903.

MR. EDITOR: I am pleased to read among the journals of late, an awakened interest in bradycardia, about the pathology of which we seem to have a great deal to learn. The difficulty for the general practitioner is a real one so far as treatment is concerned, at least at the present time. I have had a patient with this condition of slow pulse under my care, off and on, for two years. The patient is a man of sixty-seven years, with a pulse of 24, regular, of medium tension; he was never sick in his life, as he says, but for the past year the sight leaves his eyes momentarily, and he has learned the trick of standing as erect as possible, making his spine rigid to find relief — "in a minute 'tis all gone."

He has a burning feeling over his heart — by this he means in the skin, "nothing to do with the stomach." This "burning" only exists when he is working, his occupation being street cleaning, and he imagines the whole side is coming out at this part. At times he falls forward, as the scars on his head testify, and just as soon as he strikes the ground, he gets right up again and recovers his "senses." It must not be inferred from his use of the word "senses" that he loses consciousness. What he means is "that the blood stops" in his head. He cannot lie on his left side, for he has a feeling of oppressive "weight on his heart." He cannot stoop down without being dizzy. His brachial arteries are tortuous, locomotive, and may be well called pipe-stem arteries; these are the only arteries that are so affected. The cardiac apex impulse is in the sixth interspace, a finger's breadth outside the nipple line. On light percussion cardiac dullness does not begin until the fourth costal cartilage is reached. The right border of the heart is apparently at the mid-sternal line. He feels perfectly well but for this burning over his heart and these attacks of falling and the sight leaving his eyes momentarily, as above mentioned. I stopped his work for a while, and put him on iodide of potash, which gave him relief for a time, but its good effects did not continue. I made a very careful examination again, and then found a slight edema of both ankles scarcely observable to the man himself, but there it was unmistakably. I put him on digitalis, moderate doses, and cautiously, with much benefit. The man said his feet never swelled until he stopped work, or he never noticed if they did. This may be so. I think idleness would not benefit him as much as moderate work, and I have advised him to seek such, and abandon the more laborious street cleaning. If I had not sought carefully and found the slight edema above mentioned, I would be at a loss to know what medicinal treatment of such a case should be given. The digitalis helps my patient, and he is taking it cautiously right along. The description "*Pouls lent permanent avec attaques syncopales et epileptiformes*" applies to this man's case very nicely.

JOHN J. HANLEY, M.D., M.R.C.S. (Eng.)

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 5, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . . | 3,785,156 | — | — | — | — | — | — | — |
| Chicago . . . | 1,885,000 | 464 | 165 | 36.96 | 8.02 | 2.95 | 27.53 | 4.64 |
| Philadelphia . . | 1,378,527 | — | — | — | — | — | — | — |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 147 | 47 | 35.37 | 4.08 | 2.72 | 12.24 | 4.08 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | 128 | — | 44.53 | 7.81 | 1.56 | 14.06 | 9.37 |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 83 | 34 | 27.71 | 3.61 | 2.41 | 20.48 | — |
| Boston . . . | 603,163 | 208 | 86 | 37.02 | 4.80 | 1.44 | 18.27 | 3.36 |
| Worcester . . . | 132,044 | 42 | 8 | 19.04 | 4.76 | — | 11.90 | — |
| Fall River . . . | 115,549 | 42 | 25 | 40.47 | 11.90 | — | 38.09 | — |
| Lowell . . . | 101,959 | 34 | 20 | 44.11 | 11.76 | — | — | 4.76 |
| Cambridge . . . | 98,639 | 23 | 8 | 21.74 | — | — | 17.39 | — |
| Lynn . . . | 72,497 | 20 | — | 20.00 | — | 5.00 | 5.00 | — |
| Lawrence . . . | 69,766 | 20 | 8 | 20.00 | 5.00 | — | 15.00 | 5.00 |
| Springfield . . . | 69,389 | — | — | — | — | — | — | — |
| Somerville . . . | 68,110 | 13 | 2 | 23.10 | 7.70 | — | 7.70 | — |
| New Bedford . . | 67,198 | 30 | 13 | 56.66 | — | 3.33 | 30.00 | — |
| Holyoke . . . | 49,286 | 11 | 5 | 45.45 | — | — | 27.27 | — |
| Brookline . . . | 44,873 | 7 | 4 | 14.30 | — | — | — | — |
| Haverhill . . . | 42,104 | 12 | 2 | 33.33 | 8.33 | — | 8.33 | — |
| Newton . . . | 37,794 | 11 | 4 | 63.63 | — | — | 27.27 | 9.09 |
| Salem . . . | 36,876 | 11 | 5 | 18.18 | 9.09 | — | — | — |
| Malden . . . | 36,286 | 7 | 12 | 57.20 | — | — | 28.60 | — |
| Chelsea . . . | 35,876 | 13 | — | — | — | — | — | — |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 16 | 7 | 18.75 | — | — | 12.50 | — |
| Everett . . . | 28,620 | 4 | 3 | — | — | — | — | — |
| North Adams . . | 27,862 | 9 | 6 | 33.33 | — | — | 11.11 | — |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — |
| Quincy . . . | 26,043 | 5 | 2 | 60.00 | — | — | 40.00 | — |
| Waltham . . . | 25,198 | 1 | — | — | — | — | — | — |
| Brookline . . . | 22,608 | 3 | — | 33.33 | — | — | — | — |
| Pittsfield . . . | 22,589 | — | — | — | — | — | — | — |
| Chicopee . . . | 21,031 | 4 | 3 | 25.00 | 25.00 | — | 25.00 | — |
| Medford . . . | 20,962 | 5 | 2 | 20.00 | 20.00 | — | — | — |
| Northampton . . | 19,883 | 3 | 1 | — | — | — | — | — |
| Beverly . . . | 15,302 | — | — | — | — | — | — | — |
| Clinton . . . | 15,161 | 3 | — | 33.33 | — | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . . | 14,478 | 4 | 0 | — | 50.00 | — | — | — |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — |
| Hyde Park . . . | 14,175 | 7 | 1 | 14.30 | — | — | 14.30 | — |
| Adams . . . | 13,745 | 4 | — | 75.00 | — | — | 25.00 | 25.00 |
| Attleboro . . . | 13,677 | 1 | — | — | — | — | — | — |
| Marlboro . . . | 13,609 | 4 | 2 | 50.00 | — | — | 25.00 | — |
| Melrose . . . | 13,600 | 3 | 1 | — | 33.33 | — | — | — |
| Westfield . . . | 13,418 | 5 | 2 | 20.00 | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 2 | — | — | — | — | — | — |
| Frammingham . . | 12,534 | 6 | 3 | 33.33 | — | — | 33.33 | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,844 | 1 | 1 | — | — | — | — | — |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 3 | 1 | 33.33 | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 1,419; under five years of age, 480; principal infectious diseases (smallpox, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 503, acute lung diseases 87, consumption 136, scarlet fever 6, whooping cough 10, cerebrospinal meningitis 6, smallpox 15, erysipelas 1, measles 4, typhoid fever 52, diarrheal diseases 243, diphtheria and croup 27.


From whooping cough, Baltimore 1, Pittsburg 2, Boston 3, Salem 1, Newton 2, Westfield 1. From erysipelas, Pittsburg 1. From measles Chicago 1, Pittsburg 1, Providence 2. From smallpox, Pittsburg 15.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Aug. 22 the death-rate was 15.7. Deaths reported, 4,548; acute diseases of the respiratory organs (London) 120, whooping cough 54, diphtheria 35, measles 84, smallpox 2, scarlet fever 36.

The death-rate ranged from 4.0 in Hornsey to 32.6 in Bootle; London 14.4, West Ham 14.1, Brighton 12.9, Portsmouth 15.2, Southampton 18.5, Plymouth 16.8, Bristol 11.7, Birmingham 16.4, Leicester 14.0, Nottingham 19.3, Bolton 22.6, Manchester 19.5, Salford 20.3, Bradford 15.5, Leeds 15.8, Hull 21.3, Newcastle-on-Tyne 21.8, Cardiff 13.0, Rhondda 13.9, Liverpool 22.1, Reading 6.9, Bootle 13.7.

METEOROLOGICAL RECORD.

For the week ending Sept. 5, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. | | | |
|---|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|-----|------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. | | |
| | | | | | | | | | | | | | | | | |
| S. 30 | 30.13 | 58 | 60 | 56 | 89 | 97 | 93 | N | E | N | E | 24 | 20 | R. | R. | .53 |
| M. 31 | 29.97 | 58 | 62 | 53 | 97 | 92 | 94 | N | N | N | N | 14 | 3 | R. | O. | .19 |
| T. 1 | 29.99 | 68 | 77 | 58 | 84 | 83 | 84 | N | W | S | W | 5 | 9 | O. | C. | 0 |
| W. 2 | 30.12 | 67 | 74 | 60 | 94 | 88 | 91 | N | W | S | W | 3 | 5 | O. | C. | 0 |
| T. 3 | 30.16 | 62 | 66 | 57 | 100 | 92 | 96 | S | W | S | E | 4 | 10 | G. | C. | 0 |
| F. 4 | 30.09 | 72 | 84 | 60 | 87 | 88 | 88 | W | S | W | E | 9 | 12 | C. | C. | 0 |
| S. 5 | 29.93 | 74 | 82 | 65 | 93 | 100 | 96 | S | W | E | 8 | 5 | O. | R. | .66 | |
|  | 30.06 | | 72 | 58 | | | 92 | | | | | | | | | 1.38 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

SOCIETY NOTICE.

AMERICAN PUBLIC HEALTH ASSOCIATION.—The thirty-first annual meeting of the American Public Health Association will be held at Washington, D. C., beginning Oct. 26 and continuing for five days.

THE PRIZE ESSAY OF THE AMERICAN MEDICAL ASSOCIATION.

THE AMERICAN MEDICAL ASSOCIATION offers annually a gold medal, value of \$100, for the best essay on any subject relating to medicine or surgery. The recipient of this prize will be given the option of the gold medal, or a bronze replica of the medal and the balance of the appropriation (about \$90) in money, or the entire amount (\$100) in money.

Inasmuch as the Association annually sets apart the sum of \$500 for original research, this prize is offered to stimulate the production of a superior practical paper, based either upon experimental studies or clinical investigation, or both. The committee will give preference to papers having the greatest brevity consistent with thorough consideration of the subject, and recommends that the paper shall not exceed 5,000 words. The committee, while not restricting the choice of subjects, recommends as an important subject for consideration, "The Therapeutic Value of the Digestive Ferments."

Competing essays must be typewritten, and bear no mark revealing their authorship; but instead of the name of the author there must appear on each essay a motto, and accompanying each essay a sealed envelope containing the name of the author and bearing on its outer surface the motto of identification. No envelope will be opened by the committee until a decision has been reached as to the most deserving essay. The other essays will be returned to their respective authors. The committee reserves the right to reject all essays if none are found worthy of the Association medal. Competing essays must be in the hands of the chairman of the committee not later than April 1, 1904.

LEWIS S. MCMURTRY, Louisville, Ky., Chairman.
BURNSIDE FOSTER, St. Paul, Minn.
M. H. FUSSELL, Philadelphia, Pa.

Committee.

RECENT DEATHS.

LUIS P. WALTON, M.D., a well-known New York physician, died suddenly of cardiac disease at the Bath Club, London, on Sept. 8. He was graduated from the College of Physicians and Surgeons, New York, in 1870. He was an Englishman by birth, and was buried at Kensal Green Cemetery on Sept. 14.

NORTON FOLSOM, M.D., M.M.S.S., died in Cambridge, Sept. 12, 1903, aged sixty-one years.

JOSEPH PEARSON OLIVER, M.D., M.M.S.S., of Boston, died in Paris, France, Sept. 11, 1903.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of the Diseases of Women. By Thomas A. Ashby, M.D. Illustrated. Baltimore: Williams & Wilkins Company. 1903.

Original Articles.

THE ILL HEALTH OF FRANCIS PARKMAN.

BY GEORGE M. GOULD, M.D., PHILADELPHIA, PA.

(Continued from No. 12, p. 309.)

Farnham writes as follows:

He passed through at least four severe crises of pain and disability within a period of twenty years. The extent of his sufferings is nowhere revealed, only hinted at in writing; he is remembered, however, by an intimate friend or two to have said that death would often have been a welcome end of his trials. Generally he passed acute attacks either in turning his thoughts and conversation to light and jocose topics, or in silent and patient endurance. Once, when his physician, during a bad attack, encouraged him by saying that he had a strong constitution, Parkman replied quaintly, "I'm afraid I have." There is nothing to tell of these crises beyond the patience and fortitude with which he endured them. Sometimes, however, he felt so strongly that he had had more than his share of suffering, that a fresh attack would cause him to explode in a few very forcible expressions; then his quiet patience soon regained the mastery.

Parkman has said:

From a complete and ample experience of both, I can bear witness that no amount of physical pain is so intolerable as the position of being stranded and doomed to lie rotting for year after year. However, I have not yet abandoned any plan which I ever formed, and I have no intention of abandoning any.⁸

Driven to horticulture.—With a productive ability limited to about six lines a day, and the use of "the gridiron" to do so much, even Parkman's stout heart was daunted. But he met fate most courageously, and the manner of doing it again shows plainly the lesson to be found in his previous experiences. That he was not an eager and spontaneous nature-lover is clear from the fact that the woods were left by him unvisited for forty years after that phase of the reaction had passed in his youth.⁹ That he cared nothing for chemistry comes out in the fact that he never busied himself with it a minute after the enthusiasm of his boyhood had passed. That travel and journeys among Indians, etc., in search of materials for his histories was not demanded by the historical mind is again manifest that the "Oregon Trail" had exhausted that necessity. All these, his rage for athletics and

similar facts, demonstrate that these methods of spending energy served the sole purpose of satisfying the demands of his nervous mechanism for an outlet for derouted energy. They were caught up compromises with the compelling demon, who denied legitimate and logical obedience, forced the boy and the man to a morbid and excessive activity in any way that circumstance pointed. But at every step in life there was the growing impossibility of carrying out the ideal, even by the most abnormal energies or the most pathetic self-renunciation. Only the tragedy of Carlyle's similar life and experience can be compared with that of Parkman, and in exquisite poignancy Parkman's seems the more awful. Just as all previous attempts to meet the ingravescient evil had been morbid methods of disposing of the energy of the reflex ocular neurosis, which was his abiding source of mischief, so now Parkman was compelled to turn his attention to horticulture. From 1851 to 1865 there was published no considerable work; a novel and a book of verses gave glimpses only of the imprisoned soul crying out in the night. His sister tells me that during these years not all preparations for historical work were renounced. Something was always going on, at least in his mind.

His biographer says of him that as to his health he showed a commendable docility when advised by his physicians, but that "in one particular he persistently refused obedience—he would not give up his literary labor wholly, even when the doctors forbade it under threats of the most serious consequences; and when they told him to prepare for death, he straightway prepared to write books." At last, however, driven entirely to the wall, being unable to use his eyes even to sign his name, he adopted horticulture as an outlet for his energy and to fill the time with some occupation as close to his hand and as interesting as possible.

When able to walk he would go at a rapid gait from place to place, and sit down on a stool carried for the purpose; he would then do some of the lighter work, such as sowing seeds, planting borders, weeding and cultivating. . . . Sometimes the sensitiveness of his eyes prevented him from being out of doors in the sunlight. He acquired great fame as a horticulturist.

There are abundant evidences that he was not profoundly interested in this subject, and all his botanical successes and fame did not keep his mind's eye from the one aim of his life to which he returned so soon as his eyes and health permitted.

Fighting it out with "the enemy."—Parkman was accustomed to anthropomorphize the hidden sources of his physiologic evils as "the enemy" or his "cerebral devil." He had no mind to be defeated in the battle, and least of all to acknowledge defeat. Lamed though he was, his brisk step and alert manner made a French friend call him by the nickname of the *cerf agile*. "He could never abide weakness," says Farnham, "either physical, mental or moral; men, women, opinions, emotions, to command his admiration must show strength and energy." "Even when confined to his wheelchair he would split wood, hoe in the garden, rake or cut grass,

⁸ Farnham was doubtless justified in quoting as having a personal significance and application a passage from Parkman's novel:

"It is but a weak punishment to which Milton dooms his ruined angel. Action, enterprise, achievement,—a hell like that is heaven to the cells of Ehrenberg. He should have chained him to a rock and left him alone to the torture of his own thoughts; the unutterable agonies of a mind preying on itself for want of other sustenance. Action! mured in this dungeon, the soul gasps for it as the lungs for air. Action, action, action!—all in all! What is life without it? A marsh, a quagmire, a rotten, stagnant pool. It is its own reward. The chase is all; the prize nothing."

And how personal are his reflections on the prospect of no escape from his misfortunes:

"Yet it is something that I can still find heart to face my doom; that there are still moments when I dare to meet this death-in-life, this slow-consuming horror, face to face, and look into all its hideousness without shrinking. To creep on to my end through years of slow decay, mind and soul famishing in solitude, sapped and worn, eaten and fretted away, by the droppings of lonely thought till I find my rest at last under these cursed stones."

⁹ It is surprising that he should never once have sought the wilderness during forty years after his trip to the Rocky Mountains. His lameness naturally made travel in the woods difficult; yet he often journeyed far to collect historic material. But it is probable that he loved the adventures of a wild life more than the wilderness itself; and therefore neither the woods nor the prairies had of themselves power to attract him after his infirmities denied him perfect freedom in physical activity. Certainly he drove on his literary labors in spite of obstacles, with a persistence, courage and energy that would have enabled him frequently to visit the wilderness had the love of nature been his dominant passion.

etc." "One day in talking over a biographical notice in which a friend had dwelt on the historian's feebleness, he exclaimed, 'Damn it, I'm not feeble!'"

Shortly after the death of his wife he went abroad, and spent the winter of 1858-59 in Paris, at the Hôtel de France et de Bath. His brain was then in such a condition that the most eminent specialists of Paris warned him against insanity and forbade him all literary labor; but while spending his time chiefly in observing the life of the streets from the tops of omnibuses, he yet managed to make some investigations in the archives and to arrange for the copying of documents. Returning to Boston without any improvement in his alarming condition, he joined the family of his mother and sisters.

1868 was a year of exceptional suffering, rendering all work impossible, although he accepted election as overseer of Harvard College. Finding that complete idleness now seemed necessary, and preferring Paris to any other place for such a life, he went abroad for the winter, establishing himself in lodgings at No. 21 Boulevard Saint Michel. Here he was vainly sought after by some of the writers of Paris and the élite of the Faubourg St. Germain. In the course of the winter his health improved sufficiently to enable him to enjoy sightseeing and even make some researches, so that at his return in the spring of 1869 he resumed his labors and saw "La Salle" through the press.

In 1886 he camped a month with me. . . . His lame knee. . . . He could not walk enough to do more than fire a few rounds in camp at a target. . . . His infirmities never allowed him to make the journey a second time.

His maladies compelled him in 1888 to resign his office of Fellow of the Corporation of Harvard after a service of thirteen years.

The close of Parkman's life was both happy and characteristic: his work done, his reputation still in the ascendant, his friends increasing in number and appreciation. He had always hoped to die before reaching the lingering weakness and decrepitude of old age, for such a soul could not but dread anything that even pointed towards a diminution of power. When a friend once spoke with pride of the work he had done, his energy flamed out with the promise to do still more if he should live. His last summer was a very happy one; comparative freedom from pain and the absence of anxiety as to the completion of his work brought both comfort and peace.

He had phlebitis of the leg in 1892, and for the first time he was then compelled to take to his bed.

On coming in from his last row, on a Sunday, he felt ill and took to his bed. Peritonitis set in, but he rallied so much by Tuesday evening that a successful surgical operation was thought possible. This hope had to be dismissed when he began to sink on Wednesday morning. He died peacefully about noon of that day, on the 8th of November, 1893.

Parkman's method of carrying on literary work.—The following quotations seem necessary to give the student of this case an adequate sense of the difficulties and cost of Parkman's ocular abnormality. They are from the autobiography:

He then entered upon the subject of "France in the New World," a work, or series of works, involving minute and extended investigation. The difficulties which met him at the outset were incalculable. Wholly unable to use his eyes, he had before him the task, irksome at best when there is no natural inclination for it, of tracing out, collecting, indexing, arranging and digesting a great mass of incongruous material scattered on both sides of the Atlantic. Those pursuing historical studies under the disadvantages of impaired sight have not hitherto attempted in person this kind of work during the period of their disability, but have deputed it to skilled and trusty assistants, a most wise course in cases where it is practicable. The writer, however, partly from the nature

of his subject and his plan, though in special instances receiving very valuable aid, was forced in the main to rely on his own research. The language was chiefly French, and the reader was a girl from the public schools, ignorant of any tongue but her own. The effect, though highly amusing to bystanders, was far from being so to the person endeavoring to follow the meaning of this singular jargon. Catalogues, indexes, tables of contents in abundance were, however, read, and correspondence opened with those who could lend aid or information. Good progress had been made in the preliminary surveys, and many books examined and digested on a systematic plan for future reference, when a disaster befell the writer which set his calculations at naught.

This was an effusion of water on the left knee.

In the severer periods of the disorder, books were discarded for horticulture, which benign pursuit has proved most salutary in its influences. One year, four years and numerous short intervals, lasting from a day to a month, represent these literary interruptions since the work in hand was begun. Under the most favorable conditions, it was a slow and doubtful navigation, beset with reefs and breakers, demanding a constant lookout and a constant throwing of the lead. Of late years, however, the condition of the sight has so far improved as to permit reading, not exceeding, on the average, five minutes at one time. This modicum of power, though apparently trifling, proved of the greatest service, since, by a cautious management, its application may be extended. By reading for one minute, and then resting for an equal time, this alternate process may generally be continued for about half an hour. Then, after a sufficient interval, it may be repeated, often three or four times in the course of the day. By this means nearly the whole of the volume now offered has been composed. When the conditions were such as to render systematic application possible, a reader has been employed, usually a pupil of the public schools. On one occasion, however, the services of a young man, highly intelligent, and an excellent linguist, were obtained for a short time. With such assistance every difficulty vanished, but it could not long be continued.

How far, by a process combining the slowness of the tortoise with the uncertainty of the hare, an undertaking of close and extended research can be advanced, is a question to solve which there is no aid from precedent, since it does not appear that an attempt under similar circumstances has hitherto been made. The writer looks, however, for a fair degree of success.

In the second letter he said: "While engaged on these books, I made many journeys in the United States and Canada in search of material, and went four times to Europe with a similar object. The task of exploring archives and collecting documents, to me repulsive at the best, was under the circumstances difficult, and would have been impossible but for the aid of competent assistants working under my direction."

In writing his second letter he said: "Taking the last forty years as a whole, the capacity of literary work which during that time has fallen to my share has, I am confident, been considerably less than a fourth part of what it would have been under normal conditions."

Farnham adds:

In looking at the great mass of manuscript he collected and digested, one partially realizes by the material evidence of mere bulk how much he did for the sake of thoroughness, but fully only when one remembers the weakness of eyes and brain that increased his labors tenfold. In the preface to "A Half Century of Conflict" he thus referred to his collection at the close of his labors:

"The manuscript material, collected for the preparation of the series now complete, forms about seventy volumes, most of them folios. These have been given by me from time to time to the Massachusetts Historical Society, in whose library they now are open to the examination of those interested in the subjects of which they treat. The collection was begun forty-five years ago, and its formation has been exceedingly slow, having been retarded by difficulties which seemed insurmountable, and for years were so in fact. Hence the completion of the series has required twice the time that would have sufficed under less unfavorable conditions."

While he was in the Law School his sister Miss Eliza S. Parkman remembers that he was ill in bed, and that she began at this time reading to him. She does not know of what he ailed at that time. She was his helper in his literary labors for much of the remainder of his life. Whenever he was able to do any such work it was usually as follows: He made his notes, if able to do so, in the method stated, by writing for a minute or two and then stopping to look at a distance to rest his eyes. He prepared for his dictation by thinking, and usually while lying on his back upon a lounge. He went to his room at nine o'clock in the morning, and if he could dictate for an hour it was considered a good day's work. He could not generally continue so long, a half-hour in the forenoon and less in the afternoon being all he could get through with. He usually held a screen before his eyes while dictating. At first he used no notes while dictating, but later he constantly consulted them. He could only read at best but a few minutes, generally but one or two, and he never did any reading or writing whatever at night. He habitually avoided looking at any one or at any object steadily. In any sort of literary work, or even while being read to, he would often have to stop with the remark that his head was all "stirred up." A continuous noise tormented him and quiet was always desired. His power to read or write seemed to depend upon his eyes rather than upon his head.

Parkman's estimate of his own case. — It is evident that the mystery of his own ailment weighed so deeply upon his mind that it gave him the strong incentive needed to break over his natural reserve and disinclination to speak of himself. This mystery, he felt, must some time be solved, and the autobiographic letter was his attempt to hand to some aftercomer a document giving so far as in him lay the facts of his strange disease. It must be remembered that it was written in 1868, just prior to his going abroad for medical advice and historical research. It was sealed and inscribed as "not to be used during my life." These are the opening sentences:

Allusion was made at the outset to obstacles which have checked the progress of the work, if the name of obstacles can be applied to obstructions at times impassable and of such a nature that even to contend against them would have been little else than an act of self-destruction. The case in question is certainly an exceptional one; but as it has analogies with various other cases, not rare under the stimulus of our social and material influences, a knowledge of it may prove of use. For this, as for other reasons, the writer judges it expedient to state it in full, though in doing so much personal detail must needs be involved.

In the introductory note he had said:

It resulted from a desire — natural perhaps, but which may just as well be suppressed — to make known the extreme difficulties which have reduced to very small proportions what might otherwise have been a good measure of achievement. Having once begun it, I went on with it, though convinced that it was wholly unsuited to see the light. Physiologically considered, the case is rather curious. My plan of life from the first was such as would have secured great bodily vigor in nineteen cases out of twenty, and was only defeated in its aim by an inborn irritability of constitution which required gentler treatment than I gave it. If I had my life to live over again,

I would follow exactly the same course again, only with less vehemence.

In this recognition of "an inborn irritability of constitution" which defeated his life purpose, Parkman puts his finger, or rather points it, to the heart of the mystery. Again the same inerrant perception appears in his words:

It was impossible that conditions of the nervous system, abnormal as his had been from infancy, should be without their effects on the mind, and some of these were of a nature highly to exasperate him. Unconscious of their character and origin, etc.

Though the seat of derangement may be the nervous system, it does not of necessity follow that the subject is that which, in the common sense of the word, is called "nervous." The writer was now and then felicitated on "having no nerves" by those who thought themselves maltreated by that mysterious portion of human organism. This subterranean character of the mischief, early declaring itself at the surface, doubtless increased its intensity while it saved it from being a nuisance to those around.

None to whom was hidden the truth of the cerebral and psychic effects of great eyestrain could more accurately describe the tormenting mystery of his case than Parkman has done in the foregoing citations. By this time in his life he was able to see the folly of his athleticism and especially of the "Oregon Trail" to overcome "the enemy," concerning which he now wrote:

As to the advantages of this method of dealing with that subtle personage, some question may have arisen in his mind, when, returning after a few months to the settlements, he found himself but ill adapted to support his theory.

In 1851 he was confined for two years by "an effusion of water on the left knee." And Parkman adds:

The effects of the confinement were as curious as unenjoyable. All the irritability of the system centered in the head. The most definite of the effects produced was one closely resembling the tension of an iron band, secured around the head and contracting with an extreme force, with the attempt to concentrate the thoughts, listen to reading or at times to engage in conversation. This was, however, endurable in comparison with other forms of attack, which cannot be intelligibly described from want of analogous sensations by which to convey the requisite impressions. The brain was stimulated to a restless activity impelling through it a headlong current of thought, which, however, must be arrested and the irritated organ held in quiescence on a penalty to avert which no degree of exertion was too costly. The whirl, the confusion and strange, undefined torture attending this condition are only to be conceived by one who has felt them. Possibly they may have analogies in the savage punishment once in use in some of our prisons, where drops of water were made to fall from a height on the shaved head of the offender, soon producing an effect which brought to reason the most contumacious. Sleep, of course, was banished during the periods of attack, and in its place was demanded, for the exclusion of thought, an effort more severe than the writer has ever put forth in any other cause. In a few hours, however, a condition of exhaustion would ensue; and, both patient and disease being spent, the latter fell into a dull lethargic stage far more supportable. Excitement or alarm would probably have proved wholly ruinous.

This account is so incomparably accurate and descriptive of the cerebral effects of severe eyestrain that it may be incorporated in textbooks. Innumerable patients have perhaps less exactly but with the same intent and vehemence, and in similar terms, described their symptoms to their

oculists. The "iron band about the head," the vague but intolerable anguish, the "whirl," the "confusion," the "strange, undefined torture," "all the irritability of the system centered in the head" — such are precisely the expressions used by these sufferers. And these symptoms disappear with proper glasses.

The so-called heart trouble. — In 1844 Parkman referred to "a painful beating of his heart." Farnham says that some thought his sudden journey to Europe in 1844 on account of ill health was a trouble of the heart resulting from overstrain in the gymnasium at Harvard. Parkman in his diary, in 1844, speaks of the "cursed injury that brought me to Europe," adding, "as I find no great improvement, I judge it best to see what a French doctor can do for me, instead of running about Spain."

Farnham adds:

This affection, however, does not seem to have been a persistent trouble; it did not prevent him, even at that time, from walking, climbing mountains and ascending cathedral spires as only a vigorous man can do; and the malady does not figure among the chronic troubles of his after life. There is no subsequent mention in his diaries either of disease or medical treatment.

The matter is of no medical importance except to note that, as with several of the other cases studied, this patient also had for a time his cardiac worry.

Rheumatism and lameness. — The arthritis of the knee came on in 1851, and for two years he was unable to walk much. In 1852 he had to be carried out of the house when starting on his trip to the water cure establishment in Northampton, Mass. For many years his lameness did not prevent free walking at times nor horseback exercise; he used also to do what digging and other work he could in his garden. Fortunately his arms remained serviceable till very near the close of his life, so that he could generally enjoy some form of exercise with them. Even when confined to his wheelchair he could split wood, hoe in his garden, rake or cut with a sickle the grass along the walks; he even did some carpenter work in making foot benches or other objects of utility. During much of his later years he was obliged to use canes or crutches and to carry a stool when working in his garden. Disliking eccentricity of all kinds, he was much annoyed at having to walk in the streets in his peculiar manner; yet he would not give up exercise or social intercourse so long as he could enjoy them by any means whatever. The pain and the loss of freedom caused by his lameness led him for a time to consider amputation of the leg; but the relief hoped for was too doubtful to justify the operation. When rheumatism finally came in the shoulders and stopped the last of his out-of-door exercises, he accepted massage, practiced deep breathing and such other movements as could be executed in a chair.

Wheelwright says of his lameness in his later years:

Long years afterward, when crippled by disease and needing two canes to support his step, he might often be seen in the streets of Boston, walking rapidly for a short

distance, then suddenly stopping, wheeling around and propping himself against the wall of a house to give a moment's repose to his enfeebled knee. Whatever he did, he must do it with all his might. He could not saunter, he could not creep; he must move rapidly or stand still. On these walks in the country he often carried his rifle, "Satan." He also did some rowing on Fresh Pond.

Even when his life work was practically over, when completed presbyopia allowed him to enjoy more reading and an untortured brain, the fates would still not relent. There was an exacerbation of the knee trouble, and this, keeping him from exercise, led to an increase of insomnia, etc.¹⁰

During the last years of his life his lameness was so troublesome that he had an elevator in his house which he was able to operate by his own arms, and in this way he went up stairs and down. This intercurrent affection has of course no significance as regards the disease-producing ocular condition, except that it confined him more, and thus increased his tendency to read or write, which at once resulted in a heightening of his cerebral and nervous reflexes.

Parkman's insanity. — The collocation of the words "Parkman" and "insanity" arouses a scornful smile. Insanity was as impossible to that splendid and sound mental and cerebral mechanism as to any in the world. The best proof is that the awful irritation, insult, injury and strain which it endured did not cause it to swerve from its perfect poise and self-control for a minute. And yet the absurd suspicion was entertained by some, and with the thought Parkman was forced to play. He never seriously believed in the theory, but he could play with it as only an eminently sane mind can with such things. Like all eyestrain sufferers, like those especially we have studied, Parkman had the greatest need, physically, mentally and particularly ocularly, of much out-of-door life and exercise. The irritable reflexes from the eyes were always surcharging the battery of his brain,

¹⁰ For illustration of this period I cannot forbear quoting a letter kindly given me by Dr. Oliver. It is as follows:

SARAGOSSA, SPAIN, 14 April, 1887.

My dear Dr. Oliver. — Excuse the pencil scrawl. Persistent sleeplessness and the fatigue of travel on the damned Spanish trains, which go chiefly by night, has made my head too shaky for a pen. Since landing I have slept, when stationary, from two to four hours, with two favorable exceptions of five or six hours each (helped by chloral and bromide). I am sorry not to report more brilliant results. I should hope, however, for better luck were it not that the old lameness in my left knee — the result of water on the knee thirty-six years ago — has mysteriously returned after leaving me tolerably in peace for more than twenty years. The consequence is that I cannot walk above a few moments at a time without pain. Sometimes I can scarcely walk at all. This has lasted eight or nine days, and, though it fluctuates a good deal, it has not yet improved. Hence my plans are upset. As I lose ground here, and as traveling by rail is excessively difficult under the circumstances, I have beguiled Coolidge — who is the most disinterested of men — into making a straight course for the Mediterranean coast. We hope to find a steamer at Barcelona to carry us to Gibraltar, whence, if things improve with me, we will go together to Grenada, etc. But if the lameness continues, I see no use whatever in remaining on this side of the water. Therefore, unless there is perceptible improvement, I shall probably take a steamer at Gibraltar either directly for New York or indirectly by Southampton.

Yours very truly,
F. PARKMAN.

Postscript:

BARCELONA, 17 April.

Change of plan. No available steamer here for Gibraltar. Lameness rather worse. Mean to start for Paris by day train. When there if lameness is in a better way than now, I mean to go at once to Schlangenbad. If on the other hand it shows no signs of improvement, I shall take passage for Boston, since living alone at Schlangenbad with no possibility of exercise cannot conduce to health. This cursed lameness is a thing which neither you nor I could foresee and which changes the whole situation.

Yours, F. F.

which, chronically in a state of overtension, needed the physical exercise and the ocular rest. His captivity from lameness must have been grievous to bear, and he sought compensation for it in many ways. There is another reason why his lameness must have greatly embittered his mind, although he alludes to it but once. When the war broke out in 1861, what suffering it must have caused him that he could not join the army! What a general he would have made!

This virtue (cheerfulness) had exceptional value in his case, because of his *inherited affection* of the brain; and he was fortunate in early coming to the belief that insanity often begins in moods and mental conditions that at the beginning can be avoided. (Farnham.)

Of course we now know that Parkman had no "inherited affection" and no "affection of the brain." The same superfluous insinuation is shown in Farnham's "The overstrain of his early life was most regrettable in helping to develop some inherited tendency to disorders of the brain and nervous system." There was no more "overstrain of his early life" than thousands of others have endured unharmed. What overstrain there was had no causal relation with his lifelong suffering. He had no "inherited tendency to disorders," and he had no "disorders of the brain and nervous system." Farnham is correct when he writes of Parkman, "He had an 'inborn irritability of constitution,' as he said, which made 'labor a passion and rest intolerable.' His mysterious affection of the brain seems to have consisted in good part of this spurring force." To have hit the truth so patly and to have missed it so completely is strange when every fact of Parkman's life tragedy was glaringly bound up with ocular function.

Miss Parkman in a personal communication to me says she judges that the symptoms that suggested insanity were pressure upon, in or about the head, his "stirred up head" and the rushing activity of the brain. All these are most common symptoms of eyestrain.

Farnham, in another place, says:

His most insidious enemy was brain trouble. His physician in Paris, the most noted specialist of his day, had said that he might go insane and that his cure was extremely doubtful. The wisdom of making known this diagnosis to the patient has been questioned; but it perhaps was the only course, in view of the precautions that had to be an important element of his daily life. In his autobiography he speaks of the medical opinions and his danger in the jocose way frequent with him in mentioning even his worst condition. But the inevitable weighed at times upon his mind. He occasionally expressed wonder at not going insane with so much nervous exhaustion from insomnia, and he asked one or two intimate literary friends to watch for signs of mental disorder in his writings.

Parkman doubtless enjoyed the fun of setting two friends upon such a quixotic hunt! Of a similar chase by expert sportsmen, Parkman himself wrote:

One physician, with grave circumlocution, lest the patient should take fright, informed him that he was the victim of an organic disease of the brain which must needs dispatch him to another world within a twelve-month; and he stood amazed at the smile of an auditor who neither cared for the announcement nor believed it. Another, an eminent physiologist of Paris, after an acquaintance of three months, one day told him that, from the

nature of the disorder, he had at first supposed that it must, in accordance with precedent, be attended with insanity, and had ever since been studying him to discover under what form the supposed aberration declared itself, adding, with a somewhat humorous look, that his researches had not been rewarded with the smallest success.

Mr. Parkman's home physician, Dr. Oliver, writes me that he thinks it was Brown-Sequard who made the statement that there was danger of insanity, and who told Parkman to go home at once, as he would soon be out of his mind. The "danger" was very far from "weighing on Parkman's mind," however puzzled he might be as to the mysterious nature of his malady. Thank heaven the sane mind and heroic character of the man "neither cared for the announcement nor believed it."

Parkman's insomnia.—Farnham has written of the "Oregon Trail" journey:

Suffering as he did from troubles of digestion, he was unable to sleep during the night; when at dawn he dozed off exhausted, his guide had to call him to depart. Thus began the insomnia that wearied him persistently all the rest of his days. From that time onward, during long periods of time, he would get but two or three hours of sleep out of the twenty-four; he often had less than this, or even none, and when four or five hours of unconsciousness came, he enjoyed an unusual blessing. His confidence in nature made him doubtful of physicians and drugs, and gave him most hope in the natural powers of the body. Insomnia so prolonged and persistent was one of the greatest of his physical trials; it indeed seemed that insanity must at last result from this exhausting and irritating form of suffering.

His sister, Miss Eliza S. Parkman, told me in regard to the insomnia that to sleep none at night was uncommon, to sleep about an hour was common and latterly under his physician's advice, and, by the aid of sulphonal, trional or some other hypnotic, to get from four or five hours of sleep was possible. Oculists are now well aware by the reiterated statements of their patients that almost all severe eyestrain produces insomnia. The irritated and surcharged brain, "stirred up" as Parkman described it, during the day cannot be quieted, and the healing power of rest is denied the very organ that brings healing to the rest of the organism.

Parkman's eyes.—Although the method of Zadig is the method of symptomatology and diagnosis, neither the numerous physicians he consulted during his life, nor the patient himself, neither his relatives nor friends, recognized that he had five symptoms which among others are common in eyestrain. These are, in order of their distinctness, redness of and pain in the eyeballs; photophobia, or sensitiveness to light; blepharitis, or inflammation of the edges of the eyelids; inability to use the eyes "at near range,"—reading or writing,—and sundry cerebral reflexes, whenever this near use was attempted. The reverse of this order is that of importance, and the fact is suggestive of the dullness of perception and slowness of recognition of the rôle of eyestrain in medicine and in all modern life.

(1) Miss Parkman tells me that her brother did not have what would be called "bloodshot" eyes. In Parkman's nature physical and neural matters never went to the positively fatal ex-

tremes. A wise restraint even in the severest disorders prevented the fatal exaggerations. He stopped in time. But he had red and painful eyes. The pain in the eyes was nearly constant.

(2) *Photophobia*. — In the two pictures of Parkman given in Farnham's biography one will notice that across the coat lapels and shirt front are the lines made by a loop of cord passed about the neck and disappearing beneath the coat. It is striking that few remember his use of these lenses, but this is a common fact, illustrated by many historic cases, notably that of the musician Wagner. Farnham does not speak of the fact that Parkman (as told me by his sister) habitually or often wore eyeglasses after middle life, and he also wore colored glasses when the light was strong. The colored lenses were the old-fashioned "goggles," with wire meshes about the glass. The silk cord was not, of course, used with these. He chose northern rooms for his studies, and when traveling; he disliked reflections of light from other houses, walls, etc., and he chose the shaded portions of the room to sit in, or kept the room itself in a twilight condition of illumination. According to Miss Parkman he was more comfortable in cloudy weather. His eyes, while in Switzerland, gave out entirely in sunny days, and he was especially liable to attacks of cerebral irritation ("stirred up head") during such days. At Blois, France, Miss Parkman remembers that in 1871 he could not walk out in the daytime at all, and driving in the dark was disliked because it strained his eyes and seemed to hurt him to attempt (as he felt impelled to do) to see objects. He therefore was able to be out of doors only in the twilight. Light or multiple lights arouse accommodative effort, and, as we know, Parkman's accommodation was always strained to its utmost. For this reason he never went to the theater, opera, concerts, lectures, etc. His photophobia also doubled his suffering in another way, as it prevented the life out of doors, which he needed so much. He was confined, therefore, to a vicious circle — his sensitiveness to light confined him too much, thus intensifying his ocular and brain irritation, and in its turn making light still more harmful to the eyes. Patients with severe eyestrain showing the reflexes to the head and eyes most commonly complain of this dread of light, and in many cases it is a source of bitter suffering and trouble. Parkman himself thought he could not repeat his "Oregon Trail" experience because the sunlight would have blinded him. Glasses correcting his ametropia would have banished his photophobia instantly. A curious fact in this connection is his use of orange-colored paper for writing upon in the last part of his life. I have known three patients with severe eyestrain who chose such paper, and who believed that its use was almost necessary for their comfort in writing.

(3) *Blepharitis*. — Farnham writes that "his gray, penetrating eyes were, in youth, of good size, but in later years they seemed smaller because of chronic inflammation of the lids." Miss Parkman tells me that she often noticed "scales"

on the lid edges and that he had "irritable lids." She also says he habitually used some lotion, probably solutions of boric acid and camphor (now constantly ordered by physicians for such lid affections), usually applied at night. I have learned that he was subject to another result of eyestrain, the lid tumors called "meibomian cysts." Two of these were excised by two of his oculists. Parkman never winced during the operation. Farnham makes an excusable error in supposing the narrowing of the palpebral opening, which he calls smaller eyes, was due to the lid affection. It was, of course, due to the habitual attempt to shut out the painful light by partially closing the lids. In this way the width of the opening of the lids was chronically reduced, and he seemed to have "smaller eyes." All albinos have the same appearance and from the same habit. Although Parkman was not a myope, it may be noted that the word "myopia" is derived from Greek words which mean to close the eyes. The reason that myopes also habitually narrow the lid opening is a different one.

Even in England it is now and at last recognized that blepharitis is usually due to eyestrain, so that whatever palliative measures may be ordered for scaly and ulcerous lid edges, all oculists now tell their patients that the only permanent cure of the condition is properly correcting lenses of the ametropia.

(4) *Inability to use the eyes at near range* is the most glaring symptom of eyestrain. It now seems to us incomprehensible that even in Parkman's early and adult life he, and especially his physicians, should not have recognized that the cause of this anomalous and tragical fact lay in an abnormalism of the optical functions of the eyes. The vast majority of his friends and of all civilized people could work at sewing, reading, writing, and other hand work, and for many hours a day without resultant symptoms and in complete unconsciousness. Parkman shirked study as a boy, as a student and as a young man and each year of added life lessened his accommodative power and narrowed his ocular working ability, until finally this was reduced to a minute or two at a time, and in all to a half hour or so a day.¹¹ Finally came the "gridiron" period, when he could not even write his name without pain, and he had to renounce all near-range work whatsoever. With the most sympathetic imagination one cannot realize the awfulness of such a fact to a man of Parkman's tastes and will. Ten years of my own life lost in the same way, and from precisely the same causes, help me to understand the workings of the mind of Parkman under this terrible blow of a mysterious fate. If Parkman had lived at the present time he could have found the relief from his disability and suffering in the same way that thousands have done. "The pity of it!"

¹¹I have a suspicion that in some cases, especially in such intense natures as that of Parkman, there may be some eyestrain even in dictating with eyes closed. The effort to visualize (and that is the usual mechanics of intellect) the images and sentences might arouse both convergence and accommodation of the eyes, and thus during composition and nonwalking intellectual activity there would not be entire ocular rest.

THREE CASES OF TUMOR OF THE CEREBELLUM.¹

BY JOHN JENKS THOMAS, A.M., M.D., BOSTON.

It having been my fortune to have the opportunity to observe recently three cases of tumor of the cerebellum, in two of which the diagnosis was confirmed by autopsy, it seemed to me that a report of these cases might not be without interest to this society.

The first case was in an adult. The patient, Lizzie B., aged twenty years, was referred to me by Dr. Edmund W. Clap of Boston, to whom I am indebted for much information about the condition of the eyes, and who has kindly permitted me to report the case. She was first seen by me on April 9, 1900. She was a dressmaker, single, and was born in England. The family history was of no significance, though her father had had an attack of hemiplegia in January of that year. There was a history of her having a fall and hurting the head when a baby, and when very young she had had the measles, but no other injury or illness.

Her present illness began in the preceding October with headache, which was both frontal and occipital. Three weeks before her first visit she had had an attack of vomiting, and also one on that day, and about the same time she noticed a blurring of the vision. The headache is throbbing in character and practically continuous, but perhaps slightly worse in the morning, and it is increased by stooping. The vomiting is not projectile in character. There has been no diplopia, no convulsive movements or twitching of any part of the body, or attacks of unconsciousness. There has been no paresthesia or numbness. Dr. Clap wrote that he saw her first on April 4, five days before her first visit to me, and at that time she had a violent neuro-retinitis in both eyes, with numerous flame-shaped hemorrhages and some exudate. The disk was swollen at least two diopters. On the 7th the swelling of the disk had increased to three diopters, and there was more exudate. The macular region was not much affected, although there was slight edema. Vision O. D. was 20-40, not improved by any glass. Vision O. S. was 20-30 with + 0.75 = 20-20.

On examination the gait is normal except for a slight limp at times, which is due to a blow upon the hip which she received not long ago. There is only slight swaying on standing with the eyes closed. The pupils are normal to light and accommodation. There is no diplopia, and no affection of any of the cranial nerves. The watch is heard at an equal distance, 15 cm., from each ear. There is no paresis of any of the extremities, and no inco-ordination. Sensation to touch, pain, heat and cold is everywhere normal. The reflexes in the arms are equal and normal. The knee jerks are lively and equal. There is a front tap contraction on both sides, but no ankle clonus. There is no tenderness of the head to percussion

or pressure. The urine and the heart are normal, and the patient is not anemic.

She had been taking the yellow iodide of mercury in doses of a quarter of a grain three times a day. On April 14 Dr. Clap wrote me that the vision had fallen greatly. Vision O. D. was 6-200, not improved by glass. Vision O. S. was 20-200; with + 1.0 = 20-100. The neuritis then was a marked choked disk, with four to five diopters of swelling in each eye, and a few hemorrhages out in the retina as well as many in the nerve head. There was much exudate extending out from the disk in both eyes. The macular region was edematous in both eyes, which was probably the cause of the low vision. No change was found in her general condition upon examination April 20. She was then put upon the red iodide of mercury, grain 1-16 t. i. d., and the iodide of potassium in increasing doses. In a few days after this she returned to England, and I am indebted to Dr. Mark Farrant, Jr., of Exeter, England, for a report of the further progress of the case, which he kindly sent to me. Writing on July 27, 1900, he states that at first he found nothing more than we had previously found. At first the knee jerks were active and equal, but soon the left one became rather diminished. The vomiting continued. The vomiting varied with the pain in the head, that is, when one was severe the other was. There were no localizing signs at all, and no ataxia. This continued until the middle of May, when there was an almost complete intermission of the symptoms, which lasted until the beginning of July, when they returned. On July 17 ptosis of the left eye and dilatation of the left pupil appeared. About that time the vomiting ceased, but the patient became dull, and finally died in semi-coma on July 20. For the last ten days there was a little fever, reaching 101.6° as the highest on the 17th. The temperature previously had been nearly normal, and a good deal of the time subnormal. The pulse kept about 70 to 80 until just before death, when it was noted as 160.

A post-mortem examination was obtained, and Dr. Farrant found the pia slightly thickened and opaque, especially along the vessels and in the ventricles. There was an excess of cerebrospinal fluid, and the brain was fairly firm, with the convolutions much the usual shape, not flattened. There was a firm tumor, about the size of a large walnut, in the posterior and bi-ventral lobe of the cerebellum on the right side. It shelled out easily. It had not extended to the superior vermiciform process, which Dr. Farrant suggests was the reason why we had no ataxic symptoms. The tumor under the microscope showed a large amount of fibrous tissue, with much round cell tissue, presumably, Dr. Farrant says, a fibrosarcoma.

The second case, Herbert N., a boy five years old, was referred to me by Dr. Durant of Haverhill. The family history was entirely normal. The labor and the development of the child was normal in every respect, except that when one and a half years old and again at two and a half years he had a few slight convulsions, six in all.

¹ Read before the Boston Society of Psychiatry and Neurology, Dec. 18, 1902.

The longest lasted three minutes. They apparently consisted of a slight loss of consciousness only, as the parents noticed no movements of the limbs, and each had been preceded by some indiscretion in diet. Aside from this the child had always been well except for occasional digestive trouble. In November, 1901, he fell and cut the head. He was seen by me first on April 30, 1902. Nine weeks previously, about the last of February, he began to feel poorly and vomited, and there was fever of 103°. He improved for a week and then became worse. At this time there was no fever, but he began to have headache and vomiting. There was some vomiting in the morning, and the child was very constipated. For the three weeks previous to his first visit to me the headache had been better, but for the preceding week he had not been willing to walk, and the parents had noticed some staggering for some three and a half or four weeks. About two and a half weeks before they had noticed that the left eye turned in. No failure of his vision had been noticed. There was certainly no marked mental dullness, and the child noticed everything going on about him as usual. There had been no convulsions, and the hearing was good.

On examination there is considerable unsteadiness in standing and sitting. The pupils are large and react sluggishly to light and accommodation. There is marked optic neuritis in both eyes, with swelling of the disk and tortuous veins. There is a paresis of the left external rectus muscle; no nystagmus, although there is a slight twitching of the eyes at times. There is also a slight but distinct paresis of the muscles of the left side of the face. The watch is heard in each ear at the same distance, 30 cm. Air conduction is better than bone conduction in both ears, and Weber's test is negative. The tongue is protruded straight. The knee jerks are absent, there is no ankle clonus and no front tap contraction. The abdominal and cremasteric reflexes are normal. There is slight inco-ordination and slight tremor of the hands, but this is not marked. There is slight tenderness of the occipital region to light percussion, and the circumference of the head is 55 cm. The pulse is 108.

Operation was declined by the parents. Later the child was seen by Dr. F. H. Williams, who took x-ray pictures of the skull, which he kindly allowed me to see, but these showed nothing definite.

The father reported on June 9 that the child for some time had had no headache, and that the vomiting had lessened, but that he did not seem to see as well, and had lost strength. At this time arrangements were made for an operation.

On June 14 Dr. Lund and I, on seeing the child previous to the operation, learned that twenty-four hours previously he had become markedly dull. On examination the knee jerks were absent, as was also the plantar reflex. The right eye seemed to diverge to the temporal side and the right pupil was widely dilated. The nasolabial fold on the right side was less marked than on the left.

The child was in a soporose condition, and could not be roused enough to protrude the tongue or make any voluntary motion. Upon consultation it was decided to operate with the hope of relieving the symptoms of intracranial pressure, leaving until later the decision whether to attempt removal of the growth, or any further procedure.

OPERATION. DR. F. B. LUND.

The patient lay on the right side with the head flexed. A \cap -shaped flap was made with the base at the superior curved line of the occiput on the left, the left limb starting at the posterior border of the mastoid and below the level of its tip, and the right limb extending down the median line of the neck to the same level. The incision was carried down to the bone, and the flap of skin, muscle and periosteum quickly dissected downward with a periosteum elevator. The occipital bone was very thin and bulged downward as if from a high degree of intracranial pressure. The external occipital protuberance could not be felt, in fact, there was rather a depression in its place, and the lines on the occiput and other landmarks on the thin and poorly marked skull were hard to find, apparently on account of the bulging of the skull from internal tension. The flap was carried backward nearly to the foramen magnum, and the hemorrhage was easily controlled by ligature of one or two branches of the occipital artery and veins, and pressure with gauze pledgets in the angle of the flap. A three-quarter inch trephine was applied to the occipital bone between the superior and inferior curved lines, and on removing the button the dura bulged, tense and without pulsation, through the opening. The opening was enlarged to a diameter of a little more than an inch with rongeur forceps, and a semicircular flap of dura was made with the knife and forceps. Edematous cerebellar tissue immediately protruded through the opening with such force that the brain was lacerated against the edge of the dura. A small portion of the tissue was removed for examination, but the condition of the patient precluding any further work, the dural opening was enlarged to the limit of the opening in the skull, and the operation completed by the suture of the periosteum-muscular flap with continuous catgut, and the skin with interrupted silkworm gut sutures. A drain of rubber tissue was left in the lower inner angle of the incision, and an aseptic gauze dressing applied. The patient suffered but little shock from the operative manipulations, which occupied about twenty minutes. Ether was the anesthetic, though owing to the semicomatose condition of the patient only a small amount was required. The pulse at the close was 160 to 180, as before the operation.

The patient did not improve. The coma gradually deepened, and he died at 5 A.M. the next morning, June 15. The examination of the pieces of tissue removed at the operation showed nothing but cerebellar tissue.

At the autopsy the head only was opened. The cerebrum showed nothing abnormal beyond a certain amount of flattening of the convolutions.

The posterior surface of the left lobe of the cerebellum was lacerated.

The vermis of the cerebellum is nearly replaced by a tumor mass which measures about 3 x 2 x 2 cm., and is slightly lobulated on the surface. About the tumor, which is sharply defined, was found a small amount of pus. At the posterior and anterior portions of the tumor, more on the right side, are seen some normal convolutions of the cerebellum. The tumor on section is rather soft, opaque, whitish in color, homogeneous, with here and there softened areas of varying size. The tumor mass has pressed upward and forward into the left cerebellar hemisphere, which shows a marked depression in which the tumor lies; but this hemisphere of the cerebellum appears perfectly normal, except for the marked compression.

Microscopical examination of fresh scrapings of the cut surface of the tumor shows many small mononuclear cells and a few fibrillae resembling neuroglia cells and fibrillae. The tumor was hardened in formalin and sections were made of the tumor, of the medulla at the upper border of the pyramidal crossing and of the left cerebellar hemisphere, and stained with hematoxylin and eosin, hematoxylin followed by picric acid and acid fuchsine, Mallory's phosphotungstic acid hematoxylin method for neuroglia fibers, Weigert's myelin sheath stain, Pal's myelin sheath stain followed by picric acid and acid fuchsine, by Marchi's method and by Mallory's connective tissue stain.

The sections of the left lobe of the cerebellum show no changes, except the distortion from the compression.

The sections of the medulla show no changes, except that in the sections stained by Marchi's method there are seen many myelin sheaths which show black drops replacing the sheath or in its periphery, or occasionally a black circle completely replacing the sheath. Fully one-third of all the fibers are affected, and the degeneration is about equal throughout the medulla, no tracts or areas of the medulla appearing more affected than others.

The sections of the tumor show numerous large and small blood vessels, which are without regular arrangement. These are accompanied by a considerable amount of connective tissue, and here and there bands of connective tissue are seen in the tumor substance without any apparent relation to blood vessels, but there is no connective tissue stroma or capsule. The tumor is composed of a closely packed mass of small round or oval cells, with little cellular protoplasm, and oval or round nuclei, which, in general, are distinctly vesicular, though many of them are quite dense and stain deeply and nearly homogeneously. Mitoses, while somewhat rare, are found occasionally. Among the cells are seen a very few neuroglia fibers, and here and there are small areas, with very few nuclei, composed of neuroglia fibers, most of which, however, stain poorly. Larger and smaller necrotic areas are seen often, scattered throughout the tumor.

Anatomical diagnosis.— Glioma of middle lobe of the cerebellum.

The third case is a somewhat uncertain one, though I feel fairly confident that it also is one of tumor of the cerebellum, though the diagnosis was not confirmed by any post-mortem examination.

The patient, Jeanette S., three years and four months of age, was seen by me first on Jan. 26, 1902. The family history was good, except that the mother's grandmother had died of phthisis, and that the same disease had occurred three generations before in the father's family. The child was one of twins, the other child being healthy, as also one younger child. The birth and development had been normal. The only illness had been measles in the summer of 1901. In May of 1901, nine months before, it was noticed that she was inclined to fall, usually backward. No headaches had been noticed. The child complained simply of being tired. She was perfectly bright, and there had been no mental impairment and no convulsions. She had had six attacks of rather severe vomiting. No failure of sight had been noticed.

On examination there is slight staggering and unsteadiness in walking and standing. The circumference of the head is 53.2 cm., and the occiput is rather large. The head is not sensitive to light percussion. The pupils are equal, and react to light and upon accommodation. The external ocular muscles are normal, and there is no nystagmus and no strabismus. There is no paresis of the face or extremities. There is considerable inco-ordination of the movements of both arms and legs. The knee jerks are increased and equal. There is also ankle clonus and Babinski's sign on both sides. The optic nerve appears normal, though it is difficult to obtain a good view of the fundus.

On March 3 the circumference of the head had increased to 54.3 cm., and the patient seemed more unsteady. The optic nerve appeared normal. There was no paralysis anywhere, and the reflexes were the same as at the previous examination. On May 26 there had still been no headache, and the vomiting had been absent for some weeks. The circumference of the head had increased to 55.2 cm., but the inco-ordination in the use of the hands was less, though the child was still very unsteady on standing, but she could stand and with support could even take a few steps. There was no strabismus or nystagmus and no facial paresis and no change in the reflexes. On Aug. 19 the circumference of the head had increased to 56.0 cm., and the parents thought the child had not seemed as well for the week previous, and she had vomited once or twice. The inco-ordination had not diminished, but no new symptoms were present.

Dr. H. K. Faulkner of Keene, N. H., under whose care the child had come, very kindly wrote me in regard to the ending of the case. He stated that the child had remained much the same all summer, though she could not walk, until, on Oct. 14, he was called to see her for what the

parents thought a cold. He found her with edema of the lungs, the pulse 130, temperature 101.5° and respiration 32. There was slight occasional paralysis of the external motor muscles of the eyes, the pupils were dilated, contracting slowly and incompletely to accommodation. The child was unconscious, and remained in this condition for ten hours before death came. This case for a long time seemed to me to be a doubtful one, and I was inclined to look upon it as one of hydrocephalus; but the sudden termination with symptoms of increased intracranial pressure, and with paralysis of the ocular muscles, make it seem fairly certain that this case should be classed with the two preceding ones as a case of tumor of the cerebellum.

In two of the cases reported the symptoms were very indefinite, and in the first case for a long time it was impossible to say more than that we had to do with an intracranial new growth, as none of the characteristic symptoms of cerebellar tumor were present, unless the ptosis, which appeared three days before death, can be so regarded.

The second case cannot be considered to throw any light upon the chance of success of operation in these cases, as the operation was done *in extremis*, yet it may not be without advantage to note that in this case we had to deal with a glioma of the cerebellum and yet one that was sharply defined and that could have been easily removed by an early operation if it had been in a more accessible part of the cerebellum. It should also be noticed that in this case the diagnosis of location of the tumor upon the left side from the involvement of the cranial nerves upon that side did not lead us astray, as the tumor although in the middle lobe of the cerebellum, had grown almost entirely into the left hemisphere. It is well, however, to note that the conclusions from the involvement of the cranial nerves towards the last, when the patient was in an unconscious condition, would have been misleading, as at that time the right oculomotor nerve was affected, and possibly the right facial, though this was uncertain, as it was impossible to produce any contraction of the facial muscles either voluntary or emotional. In this case it is possible that the injury to the head from a fall which occurred a little over three months before the rather sudden onset of the symptoms may have been an exciting cause of the growth of the tumor, though it seems to me that the interval is rather too great for this to have been the case where we have what was evidently a rapidly growing tumor, judging both from the course of the disease and the histological examination. The entire duration of the disease from the first onset of the symptoms was in this case only about fifteen weeks. In this case we obtained no further light upon the possibility of the diagnosis of the position of intracranial growths from the use of the x-ray, because the pictures were unfortunately taken in such a position as to prevent the comparison of the two sides of the cerebellum.

In two of the cases, the first and the third, we should note the curious intermission in the

symptoms, in the first case for a period of about six weeks and in the other for a still longer time, though in this case the most troublesome symptoms, the ataxia and difficulty in walking, did not change materially during the course of the disease.

Another point which should be noted is the condition of the knee jerks in these cases. In the first case the knee jerks were lively and there was a front tap contraction when the case was first seen, and the knee jerks remained the same until far along in the course of the disease, when Dr. Farrant reports that the left one became diminished. The tumor was found in the right side of the cerebellum. In the second case the knee jerks were persistently absent, and the diffuse acute degeneration found in the medulla could hardly account for this condition, as might have been the case if only certain tracts connected with the cerebellum had been found affected. Unfortunately, the autopsy not being a complete one, an examination of the lumbar portion of the cord was impossible. In the third case the knee jerks were increased and there was double ankle clonus and Babinski's sign was present, which I considered to be evidence of pressure upon the motor tracts from increased fluid in the cerebral ventricles. Certainly this case if it were one of cerebellar tumor does not bear out the statement often made that the knee jerks are generally absent in these cases. The diminishing of the knee jerk upon one side only in the first case is, however, suggestive that this disappearance of the knee jerks so often noted in tumor of the cerebellum, as in our second case, is not a mere accident, but the effect of impairment of function of some cerebellar tract affecting this reflex.

TUBERCULOSIS OF THE SPINE. A STATISTICAL STUDY OF THE CASES IN THE ORTHOPEDIC DEPARTMENT OF THE CARNEY HOSPITAL.

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

THE following cases are reported in the hope that the facts as presented, even though incomplete, may be of some value to those interested in this class of disease. The analysis includes all of the cases of tuberculosis of the spine which were treated at the Orthopedic Department of the Carney Hospital in the eight years previous to 1902. The cases in which there could be any question of the diagnosis have been excluded. These represented many cases which in the early years of the clinic, before the spinal diseases were better understood, were considered to be tubercular ostitis, but which later experience showed to be osteo-arthritis, disease of the mesenteric glands, osteo-myelitis, etc.

There are many facts which would be of value in this report but which cannot be included, owing to the imperfect condition of the early records, and because of the impossibility of locating many of the cases in order to obtain a final examination.

In all, 108 cases applied for treatment in the

period mentioned. Of these, 46 failed to carry on the treatment which was prescribed, and were lost sight of. The remaining 62 have been kept under observation and followed the treatment with more or less consistency, and have all recently reported as to their present condition. The interval which has elapsed since the initiation of the treatment averages in these cases 2.1 years, and of this number (62) 36 were males and 26 females.

The ages have been arranged in decades, and as no cases under twelve years of age were treated, there were no representatives of the first period. Twenty-seven cases were from 10 to 19 years of age; 14 cases from 20 to 29; 12 cases from 30 to 39; 4 cases from 40 to 49; 3 cases from 50 to 59; 2 from 60 to 69.

Duration of the disease. — When first seen 18 of the cases had suffered from deformity or other symptoms for a period of one year or less; 16, 1 to 5 years; 11, 6 to 10 years; 6, 11 to 20 years; and 4, above 20 years.

Complications. — In 20 cases there was one or more discharging sinuses at some period of the disease. Of these 20 cases at last report, 8 were improved, the sinus having closed in almost every case; 4 were in poor condition; and 8 were dead.

In 11 cases paraplegia to a varying degree occurred at some period in the disease. At last report the paralysis had disappeared in 7 cases; in 2 this facture was not noted; and 2 were dead.

Results. — At last report 20 were entirely free from symptoms, and the disease was apparently quiescent, with resulting deformity of varying degree. In 18 cases the condition is greatly improved, but in 13 cases there has been no improvement, and the present condition of the patient is poor. Eleven of the cases are dead. Two of these, both of many years' standing, died of intercurrent affections, and of the remaining 9, the cause of death in 4 cases was given as Pott's disease and in 5 as Pott's disease and phthisis. Of the fatal cases, 2 were between 10 and 19 years, 4 between 20 and 29 and 5 between 30 and 39 years of age. The shortest interval from the first symptoms to date of death was less than one year, the longest six years, the average four years. Five were complicated by phthisis, 2 were paraplegic and in 5 there was abscess formation with accompanying discharging sinus.

Conclusions. — The report represents a consideration of all of the cases of Pott's disease which applied to the Orthopedic Department of the Carney Hospital prior to 1902. In all there are 108 cases, of which number 62 reported more or less regularly for treatment. Of this number (62) 41 were under 30 years of age, and in 21 of the cases the disease had existed for from 6 to 20 years before applying for treatment. In 20 cases there was abscess. Of this number 8 died and 4 are at present in poor condition.

In 11 cases there was paraplegia, and of this number 2 died.

Of the 62 cases 11 died, and in nearly all death was due to the extension of the disease locally or to some other part of the body, the average time

between the onset of the disease and the time of death being four years.

In considering the report it is to be remembered that the cases here studied are entirely hospital patients, living for the most part necessarily under poor hygienic conditions. A similar number of private cases studied would possibly and probably show more favorable results.

A NOTE ON THE ASSOCIATION OF A RISE IN SYSTOLIC BLOOD PRESSURE WITH THE ONSET OF PERFORATIVE PERITONITIS IN TYPHOID FEVER.

BY JOHN BRADFORD BRIGGS, M.D., BALTIMORE, MD.,

Resident House Officer, the Johns Hopkins Hospital.

DURING the past two years I have frequently observed a sharp rise in systolic blood pressure, as measured by a modified Riva-Rocci sphygmomanometer, occurring in patients undergoing laparotomy, and produced by mechanical irritation of the peritoneum. Dr. Harvey Cushing suggested that a similar rise in blood pressure might possibly be produced at the onset of intestinal perforation in typhoid fever, by the mechanical and chemical irritation due to the extravasated bowel contents, and might prove of value in the early recognition of typhoid peritonitis. It was soon found, from the observations of Dr. Cook and myself, that patients suffering from acute general or rapidly spreading peritonitis, from whatever origin, uniformly showed, unless in moribund condition, a state of hypertension of the pulse. Similar observations have been made and reported by Dr. G. W. Crile,¹ and the association of high systolic blood pressures with general or rapidly extending peritonitis may be regarded as a constant one. It remained to study the development of the increased pulse tension in these conditions, and with that object in view we have in the past year kept a close watch on the state of the blood pressure in many of the typhoid patients admitted to Dr. Osler's service in the Johns Hopkins Hospital. In two patients, out of a large number followed, abdominal symptoms justifying exploratory laparotomy have arisen, and the relation in each of these of the symptoms to the blood pressure has been of the greatest interest. It is with the idea of stimulating further observations along this line during the approaching "typhoid season" that brief notes of the two cases are here reported.

CASE I. The patient was a young white man, admitted about the end of the second week of a typical attack of typhoid fever of considerable severity. His condition was not good, and he soon became delirious. The temperature was high, there was no diarrhea and no intestinal hemorrhage. The abdomen was soft and natural, and remained so during the ten days following admission. During that time from 20 to 200 measurements of systolic blood pressure were made each day, for purposes not connected with the present subject. The pressures ranged from 98 to 115 mm. Hg., with a general downward tendency as the disease progressed, and never rose as high as 120 mm. Hg., except within the hour

¹ Journ. Am. Med. Assoc., May 9, 1903.

following the administration of strychnia hypodermically. At 8 P.M. on the night of Jan. 16, the blood pressure was found to be 106 mm. Hg. At midnight it was 144 mm. Hg. (same observer), the patient's abdominal condition being the same as it was four hours earlier, — absolutely negative with regard to pain, tenderness, rigidity of the muscles or distention. At 4 A.M. the next morning the patient cried out suddenly with severe pain in the abdomen, and was found with knees drawn up, restricted respiratory movements of the abdomen, great tenderness over the right lower rectus muscle and some muscular rigidity at the same point. The signs developed rapidly, and about five hours later laparotomy was done, two perforations being found low down in the ileum. There was rapidly spreading peritonitis with some pus in the pelvis. There had been no sudden drop in the temperature, and the leucocytes had shown no change in frequent counts. The blood pressure remained high, falling slightly in the hours just before operation, but never approaching its pre-perforative level.

CASE II. A young white woman, very well nourished and with slight general arterio-sclerosis, in the fifty-seventh day of a severe attack of typhoid fever. For six weeks the blood pressure had been carefully followed, and had ranged between 104 and 125 mm. Hg., following a rather high level for so severe an attack. Three weeks before the patient had several intestinal hemorrhages. She had passed through one intercurrent relapse, and at the time of the development of grave abdominal symptoms was at the end of the first week of a relapse following two days' apyrexia. Temperatures had been very high, the pulse rapid, and there was slight tympanites; there was low muttering delirium, especially at night, but the patient could be roused to answer questions intelligently. For some days there had been occasional complaint of abdominal pain, never at all extreme, and there had been some tenderness on deep palpation, never well localized. Leucocytes had ranged constantly below 7,000. During the night of the fifty-sixth day there was sudden rapid increase in the abdominal distention. The complaint of pain in the abdomen became more constant and insistent, and the tenderness on palpation increased markedly, while remaining fairly general. The thighs were not flexed, and there was no outcry, and apparently no paroxysmal pain. Abdominal distention progressed, and could not be relieved by turpentine by mouth and locally applied, nor by enemata. The pulse rate was from 150 to 172 per minute, the general condition bad, and evidencing a profound toxemia. Leucocytes rose rapidly to 17,000 at noon of the fifty-seventh day, when in view of the increasing severity of the abdominal signs and symptoms, operation was decided upon. Though the diagnosis was not positively made, it was considered by the surgeon who saw the case "that in the absence of signs of hemorrhage into the bowel, perforation had probably occurred, with extravasation of intestinal contents."

The patient's blood pressure had been carefully recorded. During the relapse it had ranged slightly below 120 mm. Hg., and during the period of abdominal symptoms it followed the same level, rising occasionally as high as 125 mm. Hg. as the result of free stimulation with strychnin and digitalin. In the absence of any fall in blood pressure, it was very improbable that any retained intestinal hemorrhage had caused the abdominal symptoms. The absence of any considerable or abrupt rise in blood pressure, on the other hand, was considered by the writer to be positive evidence that perforation had not occurred, and to justify the expression which I made of that opinion before operation. At 3.20 P.M. the abdomen was opened by an ample incision through the right rectus muscle, under cocaine anesthesia. The intestine was carefully examined, but no perforation could be found, and there was no peritonitis, aside from a light coating of filmy fibrin over the bases of two ulcers low down in the ileum.

The first case was remarkable in that the blood-pressure rise, characteristic of typhoid perforation, occurred so long before the onset of any other suggestive symptoms. At operation the con-

dition of the peritoneum was such as to cause the comment that its inflammation was apparently eight or ten hours old; which would correspond almost exactly with the first observed rise in blood pressure, and not at all with the sudden onset of abdominal pain. I am convinced that perforation in this case had already occurred when the first high blood pressure was noted. It is conceivable that the extravasation at that time was entirely among intestinal coils, and that subjective pain was not felt until the resultant inflammation had extended to the parietal peritoneum. The case suggested to Dr. Cushing the advisability of determining experimentally in animals whether a blood-pressure-raising peritoneal reflex can be elicited which is not associated with sensations of pain.

In the second case the evidence given by the blood pressure was entirely negative. The objection was made during the consideration of the case that the low blood pressure might be due to the profound toxemia; the vasomotor center (and periphery) being perhaps unable to respond typically to peritoneal afferent impulses. That the vasomotor irritability of the patient was not in abeyance was proven by the fact that shortly before operation she reacted to painful stimulation of the skin by characteristic transient elevations in blood pressure, while central stimulation with strychnin also produced a decided and more lasting increase in pulse tension. It seems certain, then:

(1) That patients with general or rapidly spreading peritonitis have constantly, at least in the early period, abnormally high blood pressures.

(2) That in perforative peritonitis a sharp rise in blood pressure may precede the onset of other symptoms.

(3) That in doubtful cases, like my second one, where perforative peritonitis is suspected, and the general previous blood-pressure level is known, the course of the blood pressure after the onset of grave symptoms should receive consideration in determining the propriety of operation.

It is to be hoped that the few observations so far recorded will be amplified by other workers in the coming autumn. In general hospitals, at least, it is easily possible to keep run of the blood pressure in all typhoid patients with bi-daily or more frequent determinations with the Riva-Rocci instrument. In this way it will be possible to have valuable data at hand in case of the development of intra-abdominal mischief, when the subsequent more frequent measurements of pulse tension will prove of greater value than if the patient's usual blood-pressure level were unknown. Rapidly rising blood pressures in cases with developing abdominal symptoms will probably prove more significant than any later stationary pressures, at whatever high level. It is the curve of changing direction in a well-plotted blood-pressure chart, rather than the position of that curve with reference to the base line of zero pressure, that should first challenge the attention of the clinician under these conditions.

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., AND W. D. HALL, M.D., BOSTON.

THE USE OF THE X-RAY IN TRACHOMA.

MAYOU¹ shows that by means of the x-rays we can set up a leucocytosis with minimum destruction to epithelial and other tissues, and by it we can produce inflammation from a very slight leucocytosis to actual gangrene of the part, which, with care and experience, may be under perfect control. As we do not know the organism which causes trachoma, we cannot say whether the irritants which are used in its treatment or the x-rays have any effect on it. But we have in the x-rays a method of producing leucocytosis in any degree of severity, from that following a mild application of perchloride of mercury up to that induced by jequirity, and further, this leucocytosis is much more prolonged than that in any method previously adopted and the destruction is not nearly so great. Although the granules disappear rapidly under the x-rays, operative methods which remove the diseased tissue must be preferred to some extent. The x-rays, however, may be used to complete the work in preference to other irritants now in use. Operations, however, should never follow x-ray treatment until after a considerable lapse of time. The author reported the first case early in 1902. At that time it was the custom to cover the whole face, with the exception of the affected eye, with a metal mask. (Since then he has discarded the mask altogether.) The upper lid is everted and the lower pushed up so as to cover as much of the cornea as possible, although in bad cases of pannus the cornea is exposed. He has never had any trouble with the globe following this treatment, and even in a case of rodent ulcer of the lid, in which the treatment was used for six months, there was only a conjunctivitis noticed, the patient's vision (six-ninths) remaining the same throughout. The patient is placed about nine inches from the anode, with a moderately soft tube and a current of six amperes. Two minutes' exposure from four to six days is given. If much injection, or if the case be acute, four are usually sufficient. After a week's rest, if there has been any reaction, the patient is exposed twice a week until the appearance of a slight photophobia. About this time the granules begin to disappear from the lids. Exposures are then carried on from one to three times a week, until they have disappeared, upon which all treatment must be stopped, as it requires several weeks for the infiltration set up by the x-rays to settle down, and it is difficult to tell whether the disease is eradicated until this injection has disappeared. The final results are very satisfactory, as, instead of the white, puckered conjunctiva there is a supple, non-contracted, non-scarred conjunctiva. Recent pannus then clears up with great rapidity, patients claiming to see more clearly even after

the first exposure. Dense corneal opacity, however, requires some time. The granulations sometimes seem to disappear at the first exposure; others do not until after eight or ten. The chronic cases are most suitable for treatment and will stand more frequent exposures. Acute diffuse infiltrations, with lid thickening and photophobia, require much care and longer time. Old cases in which the lid trouble has nearly disappeared, but in which there is dense corneal opacities, will improve under exposure of long intervals after the first mild reaction. There is less deformity resulting, the treatment is practically painless and the pannus clears more thoroughly. It is especially suitable for hospital patients, who cannot attend daily.

Sydney Stephenson and David Walsh² refer to the only recorded case thus far of Mayou, and report four cases of their own, in all of which marked improvement was noticed. All were affected with severe trachoma, and corneal involvement in three of the cases. A twelve-inch Cox's coil was used, with the "Record" focus tube of the same maker. At first the apparatus was run with a strong battery and spring break, and afterwards by a Mackenzie-Davidson mercury break, together with current run direct from the main. The focus tube was "hard," with an average existence equal to a seven or eight-inch spark gap on the coil. The anticathode of the focus tube was placed at about eight inches from the eye, and the exposure was from ten to fifteen minutes. They used a mask of lead foil. An average current strength of five amperes and twenty to twenty-five volts was used. They state their results as follows: of the four cases of trachoma treated with the focus tube, the eyes appeared to be cured in two, while such improvement took place in the other cases as to promise equally favorable result with a continuance of the treatment. A slight superficial dermatitis of the lids was noted, and in one case it became a blister. The face was similarly affected once or twice. A moderate dermatitis occurred on the fingers and back of the hand of the nurse who held the lids everted during a four-inch exposure. A shield and mask of lead prevented any further mishaps of this kind. Other cases showed improvement from the first exposure. The immediate effect of the focus tube was to render the granular bodies redder and more prominent, followed by a stage of rapid absorption. Of the five eyes treated in the four patients, two appeared cured at the time of writing, while the others were on the road to cure. On the other hand, the three eyes untreated by the focus tube remain the same as when the patients were first put under this special treatment. During the focus tube exposures, the eyes not exposed have been treated daily with an antiseptic wash. The eversion or otherwise of the lids appears not to make the least difference, which is fortunate, as it is no light task for the operator to keep a child's lid everted for ten minutes at a time.

¹ The Lancet, Feb. 28, 1903.

² Med. Press and Circ., Feb. 18, 1903, and the Lancet, Jan. 24, 1903.

The apparent cure of the two eyes resulted from seventeen exposures in one case and from sixteen in another. With regard to the trachoma apparently cured by the high frequency current, the results were obtained after twenty-two applications. A twelve-inch spark coil was run from the main connection with a D'Arsenal high-frequency apparatus. One end of the solenoid was earthed, the other being connected with a vulcanite electrode, with which the closed right lids were gently massaged. A small brush discharge of about half an inch was obtained from the electrode. At times the orbicularis and the corrugator supercilii muscles were thrown into action. This is probably the first application of high frequency current to the eye. Treatment by the focus tube and by the high frequency current is painless, and it is common for the children to fall asleep. The rapidity of recovery is an important factor, and almost if not quite absolute safety may be claimed for both forms of treatment if applied with skilled hands. The application of the focus tube to the eye by an unskilled or careless person may, however, play havoc. In addition to surface burns, the eyelashes become thinner in some of the eyes treated by focus tubes. In one case, after ten exposures with everted lids, a small infiltration resembling an ordinary phlyctenular appeared in the lower quadrant of the cornea, followed in the course of a week by several similar deposits, both of which developed into small ulcers.

PARAFFIN AFTER ENUCLEATION.

Dr. G. H. Suker³ of Chicago employs paraffin injected into the scleral cup as a substitute for the Mules operation, or into the capsule cavity instead of the Frost-Lang method, or instead of the glass or gold ball method of Fox, and finally to take the place of such absorbable material, as agar, sponge, etc., as used by Claiborne and others. He considers the final result as far better, inasmuch as there is practically no contraction due to cicatricial formation, resulting from absorption of the media employed. It may be mentioned, however, that there is a very slight absorption and contraction due to the vaseline, necessarily used with the paraffin, to obtain the required melting point and consistency. As a result of this, the paraffin may be said to become encysted and partially fenestrated. The paraffin can be injected immediately into the capsule cavity, after the hemorrhage has been stopped, or at some subsequent time. If at the time of the operation, pack the cavity with gauze and suture the wound, leaving a small opening at one end, through which the gauze may be withdrawn and the paraffin injected. By this means you can control the hemorrhage, a matter of great importance, and also better suture the cavity when packed. Careful coaptation is necessary in order to avoid oozing of the paraffin, as considerable force must be used at the time of injection in order to fill out the cavities. The reaction

with edema and infiltration of the orbital and adjacent tissue will be considerable, but not more than is noticed in other methods of implantation. He prefers to inject the paraffin about a week after the primary operation, during which time the cavities are to remain packed with gauze, which can be removed through a small opening, and thereby will be obtained a firmer union of the edges of the wound and time for the edema infiltration to subside; besides, all hemorrhage will be absent. He thinks the greatest field for usefulness will be in the restoration of the sunken socket after a remote enucleation, the method of which is as follows: "After thoroughly cocaineizing the socket and using freely adrenalin (1-1000), with a pair of tissue forceps, pick up the apex of the socket-pit; then with a narrow scalpel you enter the subconjunctival space at the apex to the extent of 3 mm.; then make an elliptical cut at about the point of entrance," thereby obtaining a pocket in both cul-de-sacs, with but a single opening. The higher you cut into the cul-de-sac, the more prominent will be the stump after the injection. After checking the trivial hemorrhage, inject about a drachm of paraffin, properly prepared, or enough to give the desired fullness, but do not overdistend the cavity, on account of the great pain, sloughing and probable ultimate expulsion of the paraffin. It is well to put a suture in place, in order to be able to close the opening immediately after the injection, as it will be difficult to do so afterward. The reaction is quite severe, but may be controlled by a cold pack. The artificial shell may be inserted within a week or ten days. Although the opening may not close readily, even though sutured, granulation will usually accomplish this. The paraffin used for this purpose is chemically pure, white and mixed with pure vaseline, in the proportion of 3-5 of the latter and 2-5 of the former, which mixture melts at 102° F., and does not solidify too rapidly. If the syringe is of proper construction so as to retain the heat for a length of time, and the tip is not of too fine a caliber, there will be no trouble about the injection. One advantage in using paraffin in this class of cases is that should one injection prove inefficient a second or third may be undertaken at a subsequent time. That excessive heat does not liquefy the paraffin when injected into the socket is shown by the fact that it has been used among men employed about furnaces. Neither do high fevers cause liquefying, because the vaseline being practically absorbed, the melting point is materially raised. Pure paraffin has a higher melting point than any patient may have under ordinary circumstances. The melting point may be regulated by the amount of vaseline added.

EMBOLISM AND THROMBOSIS OF THE CENTRAL VESSELS OF THE RETINA.

Panas,⁴ reviewing this condition, states that, although sudden loss of vision, the characteristic

³ Annals of Ophthalmology, January, 1903.

⁴ Archiv. d'Ophthal., October, 1902.

appearance of the arteries and diminution in caliber of the veins, the cherry spot at the fovea and cloudiness of the surrounding retina, absence of signs of stasis and want of prominence of the papilla, suggest complete obstruction of the central artery by an embolus, still hemorrhage into the vaginal sheath and certain forms of acute retrobulbar neuritis may produce similar changes. After the lapse of a few months it becomes impossible to differentiate between an embolus and a thrombus by the microscope, inasmuch as the majority of patients so affected are of advanced age or affected with some condition in which arterio-sclerotic changes, due to syphilis, alcoholism, diabetes, etc., are well marked. He has found that changes noticed in thrombosis are much more common than those caused by embolism, and in this opinion he claims to have been supported by an increasing number of authorities. Haab may be especially mentioned as supporting this opinion. Michel has demonstrated a number of cases of thrombosis of the retinal veins, and it has been noticed that out of fifteen such cases ten developed glaucoma within a few months after the onset of the blindness, tending to prove that the process in the veins was not primary but consecutive to disturbances arising from senile changes. Ischreyt reports complete obliteration of the nasal branch of the vein by a thrombus with foci of obliterating endarteritis in the eye removed for glaucoma. The diagnosis of venous thrombus depends upon the retention of some visual power, the alternating distention and contraction of the veins, the absence of the venous pulse, small caliber of the arteries and retinal hemorrhages near the disc. He considers the prognosis to be less serious than in cases of embolism. Little can be done in the treatment of this condition, but mydriatics should be avoided. Alcohol should not be used, but iodide of potassium in small doses may be prescribed.

THE PROGNOSIS IN VISUAL DISTURBANCE OF ELECTRIC ORIGIN.

Terrien⁵ has collected forty-five cases of ocular disturbances resulting from exposure to intense light produced by short circuits. In only one case did the current pass through the body of the patient. He notices three classes of symptoms—inflammatory, functional and nervous. In the first are noted transitory redness and swelling of the skin and burns accompanied by conjunctival injection without great chemosis or edema, and followed frequently by mucopurulent secretion. He has noticed neither corneal involvement nor changes in the lens, but hyperemia of the iris and a neuroretinitis were frequently present. Of the functional disturbances, a dazzling, which came on almost immediately, its severity being directly dependent upon the intensity of the light and the individual susceptibility, was noted. Vision when affected usually improved in a few hours. There might be erythropsia. The diminution in vision was

usually accompanied by contraction of the field. Seven per cent of the cases seemed to have sustained considerable and permanent impairment of vision. In 14% the visual loss was not so great. Asthenopic symptoms were frequent, and continued for some time. Hemeralopia was quite common, as was also photophobia. Of the nervous disturbances, the photophobia bore a direct relation to the degree of severity of the lesion. Cephalalgia was quite constant early, while ocular and periorbital pain, often severe, came on at variable periods. Later, however, these pains were not continuous, were usually worse at night and might be entirely absent in mild cases. Tenderness of the globe and along the course of the supraorbital nerves occurred in severe cases. Blepharospasm was almost always present. The pupil, generally quite small immediately after the accident, recovered its normal size in a few days, although in severe cases mydriasis was sometimes present. Although the diagnosis is rarely a matter of doubt, where simulation is suspected an examination of the fundus and a diminution in the visual field will aid in determining the real condition. It is sometimes very difficult to say that it is not a case of traumatic hysteria. In making a prognosis, the duration of the symptoms is more important than the question of the degree of initial severity. Mydriasis, contracted fields, severe neuralgia and pain on pressure, tardy improvement of the vision are suggestive of a serious condition. As regards the treatment, the wearing of colored glasses interferes with return to work, and should therefore be ordered. For the ocular pains, cold compresses and cocaine may be tried; and for the neuralgia, one of the bromides, quinine and antipyrin. For the functional disturbances nux vomica, nitrate of amyl, lactate of zinc and electricity may be tried. Almost any procedure will, however, unfortunately be unsatisfactory.

(To be continued.)

Reports of Societies.

AMERICAN THERAPEUTIC SOCIETY.¹

REPORT OF MEETINGS HELD AT WASHINGTON, D. C., MAY 11, 12 AND 13, 1903.

DR. THOMAS E. SATTERTHWAITE (New York) in the Chair.

The address of welcome was delivered by DR. ROBERT REYBURN (Washington), DR. R. W. WILCOX (New York), responding for the visiting members.

Presidential address by DR. SATTERTHWAITE:

RECENT ADVANCES IN MEDICAL THERAPEUTICS.

The greatest achievement of recent years has been the suppression of yellow fever in Havana by our Government Commission, consisting of Drs. Reed, Carroll, Lazear and Agramonte, appointed in 1901. They soon proved that the ste-

⁵ *Archiv. d'Ophthal.*, November, 1902.

¹ Prepared exclusively for this JOURNAL.

gomyia fasciata is the immediate host of the germ, and after eight months' work of extermination, yellow fever disappeared entirely from Havana, and, to the writer's knowledge, there has not been a case there since. Several diseases have recently become of interest to Americans on account of immigration from our new possessions. In the treatment of cholera, which is epidemic in the Philippines, Freer and Marshall obtained good results from benzoyl-acetyl-peroxide as an intestinal antiseptic. The guaiacol carbonate and calomel treatment has also been used, and appears to have reduced the mortality one-half. After reviewing the etiology of the plague and the history of the recent epidemic in San Francisco, Dr. Satterthwaite refers to treatment by the Yersin-Roux serum and Haffkine's prophylactic; the former gave satisfaction, but the latter appeared to be of doubtful value. Unless our colleges rise to the emergency, the government will be compelled to found schools of tropical medicine. The recent discovery of uncinariasis in our Southern States shows what an intelligent study of these affections will accomplish. After referring to the terrible mortality from tuberculosis, Dr. Satterthwaite discusses the advantages and cost of sanatorium treatment. Statistics prove its superiority for suitable cases. The expense at Bedford, N. Y., was found to be only 76.8 cents per day for each patient. Dr. MacDonald has treated patients in tent hospitals at even less expense. The method deserves further trial. A campaign of education is needed to teach the laity how to avoid consumption, and how to avoid giving it to others. Statistics show that we are already reducing the mortality. The mortality from typhoid also has been reduced from 20 to 10%. Abt, of Chicago, claims a mortality of only 5% in 40 cases in children, using benzoyl-acetyl-peroxide. Hirshfeld uses hot baths, and claims a reduction in mortality of over one-half. The mortality from diphtheria has fallen 50% since the introduction of the antitoxin treatment. In considering dosage, Dr. Satterthwaite states that in one case the administration of 92,000 units was followed by recovery. In the treatment of cardiac affections the tendency is to use indirect rather than direct methods; hydrotherapy, exercise, diet, tonics and purgatives are assuming deserved prominence, while the nitrites are substituted as far as possible for digitalis and similar drugs. Many surgeons now admit that simple acute appendicitis is best treated by internal medication, the chronic and relapsing forms calling for surgical intervention. The paper concludes with a plea for a central supervision of the materia medica supply. Pharmacists are not sufficiently controlled by the sanitary authorities. If we are losing faith in the efficacy of drugs, it is largely because of the wide difference in the drugs of commerce as regards purity and strength. Methods have been devised for determining the precise medicinal value of drugs, and all medicinal substances, before being put up for sale, should be subjected to these tests.

SYMPOSIUM: THE TEACHING OF THERAPEUTICS.

DR. REYNOLD W. WILCOX of New York, in introducing the subject, said that there is much room for improvement in medical school teaching. If post-graduate instruction is elementary at times, it is because of the necessities of those who demand it. When the undergraduate shall be brought to his doctorate as well equipped for treating as he is now for recognizing disease, the work of the post-graduate school will be post-graduate in deed as well as in name. He suggested the following topics for discussion as indicating causes of failure in the past: (1) A practical acquaintance with remedial measures and remedies, and methods of preparing the latter. (2) A knowledge of their action acquired by experimentation and demonstration under the teacher's eye. (3) Their application to diseased conditions, under proper supervision. (4) The rational and logical prescription of remedies and physical agencies.

ON THE TEACHING OF PHARMACOLOGY AND THERAPEUTICS IN OUR MEDICAL SCHOOLS.

DR. JOHN J. ABEL (Baltimore). The great value of laboratory experimentation is evidenced by the brilliant discoveries of the past, the promising investigations of the present and the ever-increasing importance of laboratory methods in diagnosis. A knowledge of experimental details teaches conservatism; it makes the student hesitate to accept a current hypothesis as a general law of nature; it tends to arouse an appetite for the fundamental in medicine; it stimulates to inquiry and to a logical analysis of phenomena. At Johns Hopkins, the course in Pharmacology is preceded by a study of the intoxications. Accompanying this is a chemical course dealing with the isolation of alkaloids, tests for poisons, blood, etc., There are also numerous recitations and conferences, but little didactic instruction. Pharmacology is taught by experiments and demonstrations, the object being to illustrate the effects of the more important drugs. Such a course is valuable even if the student can perform only six or seven experiments himself. The teacher, while not necessarily an active practitioner, should be familiar with clinical work. Therapeutics, however, is best taught by the various clinicians. A course in Practical Therapeutics is desirable. Detailed instruction in Materia Medica is unnecessary. A brief course in Pharmacy is desirable, but not indispensable. DR. OLIVER T. OSBORNE (New Haven), in discussion, described the method used at the Yale Medical School. After a brief course in Pharmacy, the students take up Materia Medica in their second year; it is made as practical as possible. Experimental Pharmacology follows, and then, in the junior year, the students take up Pharmacology. The drugs are studied in groups, according to their therapeutic uses. The teacher should be familiar with clinical work. As a rule the men write better prescriptions early in their

course than they do later, because later they come in contact with those who use the old system, which introduces an element of confusion. They memorize an average dose for each remedy rather than the range of dosage. Therapeutics is introduced in the latter part of the junior year; it is taught by lectures, recitations and clinics. In the last, case-history cards are carefully filled out by the students; they serve to aid the memory, and when completed furnish a complete history of each case, with the object of treatment and result plainly stated.

DR. TORALD SOILMAN (Cleveland): The objects of medical school instruction are best gained by lectures, recitations and practical work. The lectures should not be too full, or the student will depend upon them to the exclusion of outside reading. Lectures, however, are indispensable; the personal influence of the teacher is of great value. The recitations teach men to think. In teaching Pharmacology, laboratory instruction is desirable, but not absolutely indispensable. Generally speaking, it is not advisable for a professor to be also engaged in practice. He agreed with previous speakers as to the best methods of furnishing clinical instruction. Only the essential portions of *Materia Medica* should receive attention. As a rule, the less Pharmacy taught, the better. The metric system is the system of the future.

FROM PHARMACOLOGICAL SCIENCE TO THERAPEUTIC ART.

DR. ELI H. LONG (Buffalo). Medical school instruction in the first two years is better than in the last two, because the earlier work is more definite in character, more teachers are engaged in it and the student does more for himself; third and fourth year classes are taught together, which minimizes individual instruction and leads to a faulty adaptation of the needs of each class. Pathology and diagnosis are emphasized at the expense of treatment. In the earlier years the student acquires a groundwork of facts; in the final years he should be taught to use them — to associate facts, to recognize principles and to form conclusions. Mind training rather than fact getting should be the main object. In his opinion these objects are best gained by informal conferences between teacher and class. Clinical instruction must also be provided, and the courses in Pathology and Practice should be correlated to that in Therapeutics. The student must be guarded against the prevalent scepticism as to the efficacy of drugs, and the tendency to use commercial preparations. Two features should be given especial prominence: the clinical sessions and an endeavor to train the students to use their own efforts in all that pertains to treatment.

DISCUSSION.

DR. HOWARD VANRENSSELAER (Albany) described the method used in the Albany Medical College. The first two years are largely didactic; the third is didactic and laboratory; and in the

fourth the lectures are eliminated as far as possible. Clinical instruction is given to classes of about eight men each. The physiological effects of drugs are illustrated by actual administration. The case-history card requires too much time, and does not teach the student to think for himself.

WHAT OUGHT WE TO EXPECT FROM CARDIAC DRUGS IN HEART DISEASE?

DR. OLIVER T. OSBORNE (New Haven). Important causes of early cardiac disease are the "strenuous life" and abuse of alcohol and tobacco. Acute weakness calls for cardiac stimulants — alcohol, ammonia, etc.; chronic weakness calls for cardiac tonics — digitalis and drugs of its class. Digitalis is the queen of heart tonics. After reviewing indications and contraindications for the use of digitalis, Dr. Osborne states that strophanthus is the best substitute, and it is even preferable in some conditions. Sparteine is not a substitute. Fresh fluid extract of cactus regulates and quiets the heart. It is useful as an adjuvant to digitalis, and is preferred in cardiac debility of convalescence, in old age when digitalis is contraindicated and in functional diseases. Convallaria and adonidin proved unsatisfactory in his hands. Barium chloride is a powerful heart stimulant. Suprarenal extract is a vasomotor and cardiac stimulant only when absorbed from the nose or mouth. Notwithstanding its value we are inclined to give too much strychnia. It should be reserved for emergency. Caffeine is a useful substitute for alcohol in prolonged fevers; it is also an adjuvant and temporary substitute for digitalis. The beneficial effects of alcohol are due to reflex stimulation; it is not a stimulant after absorption; if too much is absorbed it acts as a depressant. Hence it is the poorest stimulant we can use to combat continuous heart failure.

DISCUSSION.

DR. ELI H. LONG (Buffalo). The first effect of digitalis, the direct effect upon the heart, is the most desirable; the slowing comes later, aetritis, or may not be desirable. Formalin solution "kinetic" and "potential" and in a week if necrotic stimulants — digitalis and the vaginal route in stimulants; strychnia, which is a potential stimulant of tissue, is a potential stimulant of extirpating REYBURN (Washington) advocates cautery clamps. of digitalis, strychnia and alcohol given for almost everything. in which it caused cerebral hemorrhage. Protective ing arterial pressure. It is often a good bacillus digitalis and aconite. DR. T. E. SAMPSON (New York) ascribed the increasing mortality of diseases of the heart and arteriality to syphilis, gout, the "strenuous life," alcohol, tobacco, coal-tar products, and favor-nitrites are often preferable to digitalis in determining treatment it is necessary to use guish between functional and organic heart affections, and also between cardiac stimulants and tonics. Serious mistakes have resulted from a failure to observe the first precaution. In functional derangements digitalis often (a)

harm, but the antispasmodics do good. A slow or a fast pulse in heart affections has little significance. In his experience suprarenal extract has acted well as a heart tonic when given by mouth. He usually prohibits tea, coffee and tobacco. Coffee is a poison to about one-third. DR. ARTHUR T. HALL (Washington) commended caffeine as a valuable heart tonic. DR. OSBORNE, in closing, spoke of the connection between the declining function of the thyroid gland, which begins at about the forty-fifth year, and arterio-sclerosis. Thyroid extract, in small doses, tends to minimize the changes resulting from atrophy of the gland.

WHO MAY BE BENEFITED BY ALTITUDE TREATMENT?

DR. J. N. HALL (Denver). Unfortunately, many patients are sent to higher altitudes who cannot possibly be benefited thereby, either through faulty diagnosis or lack of judgment on the part of the physician. If patients with pulmonary tuberculosis are sent away *early*, a recovery may be expected in 90% of cases; after considerable dullness and even excavation has occurred at one apex there is a fighting chance of arrest and a good chance of delayed progress; but involvement of both lungs, unless purely catarrhal, generally precludes hope of complete arrest. Those who are predisposed to tuberculosis may well consider removal to a high, dry region. Other conditions which are benefited are glandular tuberculosis, asthma, chronic bronchitis, malaria and some forms of anemia and hay fever. In the presence of a complication of organic heart disease, one should respect the predominant condition. Little difference is observed if compensation is good; but if it is on the point of failing, it is risky to send the patient to any great elevation.

THE RATIONALE OF THE CURE OF MORBID GROWTHS BY PHOTOTHERAPY AND X-RAYS.

DR. ROBERT REYBURN (Washington). After toxin treour knowledge of the x-rays and Finsen Satterthwaite state expresses the opinion that istration of 92,000 unors in lupus and epithelioma In the treatment of flect. Continuous applica-ency is to use indirec.ms a zone of lymph around hydrotherapy, exerciich protects the body from tives are assuming they are superior to other the nitrites are suby do not cause such a waste-digitalis and similassue. The opinion is growing admit that sirrficial growths are amenable to treated by in relapsing for The paper c

DISCUSSION.

supervision MORTON (New York) said that Finsen maicists arrived its purpose and had retired to the sanitary ad. Superficial growths, like squamous the efficana, can be cured by phototherapy in wide diff cases; deeper growths are also bene-gards pit not to the same extent. He had cured devise cases of early primary cancer of the valust by phototherapy. He did not think that befaction is like that of caustics; also, the pro-tion is more through leucocytosis than the

formation of a "protective wall." The treatment should be tried before resorting to the knife.

DR. J. H. METZEROTT (Washington) com-mended Dr. Morton's remarks. There is still, however, a field for Finsen light, for example, in lupus. He related instances of successful treatment by phototherapy. He had cured some cases of deeper malignant growths. He believed that the x-rays will have a brilliant future.

THE THERAPEUTICS OF POTASSIUM COPAIVATE.

DR. LOUIS KOLIPINSKI (Washington). Potas-sium copaivate is the potassium salt of copaivic acid, and is made by the action of potassium hyd-roxide upon copaiba. It is a clear, reddish-brown fluid, gelatinous at 50° F., oily at 65° and liquid at 70-80°; taste, peppery; odor, like copaiba; dose, 50 to 150 gr. daily, best in capsules. The untoward effects are like those of copaiba, but are much less marked. It is useful in chronic eczema, acne vulgaris and rosacea, etc. Applied to ulcerating cancerous surfaces it removes fetor, arrests purulent discharge and prevents hemor-rhage. Two or three drops to the ounce makes an agreeable detergent spray for nose and throat. Internally, its uses resemble those of copaiba. He had used it to advantage in non-obstructive anuria, acute and chronic cystitis and choleli-thiasis. Its main use is in acute gonorrhea; if given early, it will in some cases produce a cure in a few days; it lessens the liability to compli-cations, and is superior to copaiba.

CAFFEINE IN THE TREATMENT OF ALCOHOLIC TOXEMIA.

DR. ARTHUR J. HALL (Washington). Caffeine is directly antagonistic to alcohol in effect, and is almost a specific in alcoholic toxemia. After contrasting the action of the two drugs, Dr. Hall states that when given in 1 or 2 gr. doses every two or three hours it will usually within twenty-four to forty-eight hours effectually quench the appe-tite for liquor so that the *habitué* will voluntarily give up its use. He cites four cases in illustration, and advocates its use in all forms of alcoholic toxemia.

DRUG STANDARDIZATION IS ABSOLUTELY NECES-SARY TO ACCURACY IN DRUG THERAPEUTICS.

DR. F. E. STEWART (East Orange, N. J.). Dr. Stewart emphasizes the importance of the subject, and states that the profession is largely responsi-ble for the present deplorable lack of uniformity of drugs in quality and strength. Physicians and pharmacists should co-operate to secure remedial legislation. What is needed is a *profes-sion of pharmaceutical experts* who shall ensure a standard *materia medica* supply. It must be created by legislation limiting the manufacture and sale of medicinal products to pharmacists, forcing them to carry on their vocation on a pro-fessional plane, and protecting them from unfair competition by obliging manufacturers to publish the true composition of their medicinal products and to tell the truth about them in their adver-tisements.

CONTROL OF THE PURITY AND STANDARD QUALITY OF DRUGS.

DR. H. W. WILEY (Chief Bureau Chemistry, United States Department Agriculture Washington). After emphasizing the importance of drug control Dr. Wiley told of the investigation now being pursued by the Department of Agriculture. The object is to ascertain by analyzing thousands of samples purchased in the open market, the extent to which adulteration and fraud are carried in the drug trade, and then by bringing the facts before Congress to secure legislation which will protect pharmacists and the public against fraud, and guarantee to the physician drugs pure and of standard quality. This method was used successfully in securing the Pure Food Law, which went into effect July 1.

DR. SATTERTHWAITE spoke of the importance of the subject. He was glad that the work had been taken up by the government, and hoped that it would be carried to a successful termination. Publicity as to the quality and composition of medicinal products is the great thing necessary. He commended the investigation under the direction of Dr. Wiley.

SYMPOSIUM: RECENT ADVANCES IN SPECIAL THERAPEUTICS. SURGERY.

DR. CARL BECK (New York). Schnitzler's statement that leucocytosis is present in cases of purulent appendicitis has been corroborated by many observers. Kyroscopy gives valuable information in the diagnosis and prognosis of renal affections calling for nephrectomy. X-rays have simplified the diagnosis of many disorders. Phototherapy has given good results in the treatment of external malignant growths. Senn also reports curative effects in two cases of Hodgkins' disease. The treatment will not, however, replace surgery; it should be reserved for inoperable cases. Edebohl's statement that stripping the kidney capsule will cure some renal disorders requires further confirmation. Kehr's work in the surgery of the biliary passages marks a new epoch. Czerny shows that renal tuberculosis is generally unilateral. Kronlein concluded from 264 cases of gastric carcinoma that unoperated patients will live one year; gastro-enterostomy prolongs life three and a half months; extirpation of the growth also adds fourteen months more.

LARYNGOLOGY.

DR. CHARLES H. KNIGHT (New York). Paraffin prosthesis for nasal deformities has become an established method. The paraffin is best introduced in a semi-solid state. It ultimately becomes organized, and ceases to be a foreign body. Some untoward effects have been noted. Some even claim for it curative effects in atrophic rhinitis. Suppurative affections of the accessory sinuses are receiving more attention, particularly the sphenoidal sinus. Grunwald claims that intranasal atrophy is due to suppurative disease of the sinuses; Minder claims the reverse. Conserva-

tive treatment, free drainage and irrigation give good results in most cases. The value of the new silver preparations is still *sub judice*.

ROENTGEN RAYS IN SKIN DISEASES.

DR. E. B. BRONSON (New York). Dr. Bronson discusses the nature of the rays, and contrasts the beneficial effects with those resulting from reckless usage. The agency requires careful management, and is potent for good or evil according to how it is used. The principal factors in the production of reactions are, the susceptibility of the individual, the condition of the tube, the distance from the focus and the duration of exposure. After considering each of these in detail, he states that the effect of successive irradiations is in a sense cumulative; if the first is sufficient to produce a therapeutic effect, additional irradiations may produce a burn. Hence some begin with a weak dose and increase; others, however, like Schaltz, begin with the maximum, having first tested the susceptibility of the patient. The method, viewed as a therapeutic measure, is still in the experimental stage.

GYNECOLOGY.

DR. H. J. GARRIGUES (New York). Subcutaneous injections of gelatin to control hemorrhage are falling into disuse; suprarenal extract is preferable. Wernitz combats sepsis with rectal enemata of normal salt solution, continued an hour each time until temperature falls and diuresis is established. Two new mercury antiseptics have been introduced, the citrate and sulphate; they are bland, and equal the bichloride in antiseptic power. The Alexander operation for correction of retroflexion is gaining ground. Kreutzmann rejects ventro-fixation and ventro-suspension; in several instances it has necessitated subsequent Cæsarean section. He recommends low vaginal fixation, or shortening of the round ligaments. Garrigues does not favor the former. Oldebrecht has adopted Menge's method of treating chronic endometritis, the application of a fifty per cent formalin solution for one or two minutes, repeated in a week if necessary. The tendency to use the vaginal route in every possible case is abating. Downes of Philadelphia has perfected Skene's method of extirpating cancer of the uterus with electro-cautery clamps.

MATERIA MEDICA.

DR. A. A. STEVENS (Philadelphia). Protective vaccination with sterile cultures of typhoid bacillus has been used with some success in the British Army. Statistics do not credit antistreptococcus serum with any decided reduction of mortality. Leyden reports fourteen cases of scarlet fever treated with serum from convalescents with favorable results. After discussing lumbar puncture and phototherapy, Dr. Stevens refers to the use of benzoyl-acetyl-peroxide in typhoid fever; it has been recommended by several writers, but it seems doubtful whether any intestinal antiseptic has power to stay the course of the disease.

Adrenalin chloride has gained a reputation as a vaso-constrictor. Untoward effects have been noted in animals; among them, glycosuria and degeneration of the islands of Langerhans of the pancreas, after intraperitoneal injection of a 1 to 1,000 solution in dogs. This suggests that diabetes may be due to disease of the suprarenals. Kelynaek demonstrates that alcohol predisposes an individual to tuberculosis. Gelatin maintains its value as a hemostatic. Methylene blue, while not as potent an antimalarial as quinine, deserves trial when quinine cannot be given. Thiosinamin is recommended for softening keloid growths, cicatricial tissue, etc.

OPHTHALMOLOGY AND OTOTOLOGY.

DR. J. E. WEEKS (New York). Acoïn has been recommended in 1 to 3% solution as a local anesthetic for the eye; Randolph claims that it does not affect pupil, accommodation or intra-ocular tension. It is inferior to cocaine, but is useful in some conditions. Ethylmorphine hydrochlorate in 5% solution produces anesthesia which may last 36 hours; it is useful in inflammatory diseases of the eye. Benzoylmorphine hydrochlorate, an anesthetic and mydriatic, is recommended in 1% solution as an adjuvant to cocaine, atropine, etc. Holocain, in 1% solution, is antiseptic and anesthetic, and is more energetic than cocaine. Haab of Zurich uses small iodoform rolls or plates in the anterior chamber in beginning panophthalmitis, post-operative infection, etc. The drug is gradually absorbed. In twenty-three cases he obtained good results in ten, fairly good in five and failure in eight. Injections of bichloride of mercury deep into the orbital tissues for cellulitis have given good results. Loss of sight from diphtheria is now entirely avoidable; before the introduction of antitoxin it occurred in 95% of cases.

ORTHOPEDIC SURGERY.

DR. H. L. TAYLOR (New York). The writer commends Dr. Lorenz' work, and states that within the age limit the bloodless method is the method of choice. The present tendency is toward radical interference by simple methods. Forceful correction of the kyphotic spine has largely been abandoned, corrective postures without anesthesia taking its place. Early incision for joint disease in children has been abandoned, and excision of the knee absolutely rejected except to save life. X-rays have proved an invaluable aid to diagnosis. The brilliant work of Goldthwait upon joint affections of adult cripples deserves especial mention. It has been demonstrated that Paget's disease of the bones is a fairly common cause of pain and disability in adult life. Locke of Boston reports twenty-one cases; only eleven had previously been reported in this country. Transference of function by tendon grafting has proved disappointing. Function transference through nerve suture is in its infancy and of uncertain value.

GENITO-URINARY DISEASES.

DR. JAMES PEDERSEN (New York). Advances have been made in the surgery of the kidneys,

ureters and prostate, in the medical aspects of gonorrhea, asepsis of the genito-urinary tract and in the determination of the functional integrity of the kidneys. Young shows that calculi can be removed from the ureters and strictures divided in the intrapelvic portion extraperitoneally, by an iliac incision beginning above Poupart's ligament and running upward and outward one inch anterior to the anterior-superior spine; on stripping up the peritoneum, the ureter is usually found adherent to it. Castration, vasectomy, and ligation of the vas have been discarded. After describing the latest methods of performing prostatectomy, Dr. Pedersen mentions a unique operation performed by a French surgeon, "prostatomonoë," or isolation of the gland. The prostate is reached by a prerectal incision and freed from surrounding tissues; this is supposed to cause atrophy. The paper concludes with a reference to newer remedies and the method of determining the functional activity of the kidneys by the freezing point of the blood.

OBSTETRICS.

DR. CHARLES M. GREEN (Boston). The paper first deals with the treatment of puerperal infection; interest in antistreptococcic serum has waned, but hope is not yet dead. The intravenous injection of formalin has proved a failure. Prophylaxis is, after all, the best therapeutics. After discussing this subject, the writer advocates the scopolamine-morphine method of producing narcosis in labor in suitable cases. Von Steinbuechel concluded that this is an ideal method. Dr. Green relates nineteen cases, sixteen primiparæ and three multiparæ, in which he used the remedy with marked success. Scopolamine hydrobromate and morphine nitrate were so combined that a dose of ten minims contained $\frac{1}{100}$ gr. of the former and $\frac{1}{4}$ gr. of the latter. The beneficial effects were very marked. The treatment is of especial value in primiparæ of nervous and hyperesthetic organism. The remedy should be given hypodermically as soon as nervous symptoms appear. In heroic doses it is also a potent remedy for controlling the convulsions and nervous manifestations of eclampsia. The paper concludes with a report of three cases in which it gave perfect satisfaction.

PEDIATRICS.

DR. N. P. BARNES (Washington). Dr. Barnes commends dessicated thyroid in mammary inactivity, and reports four cases in which it acted beneficially. Neisser reports eight cases in which nursing children failed to contract diphtheria from diphtheritic mothers; possibly the milk acts as an antitoxin to the child. After discussing infant feeding the writer quotes the conclusions of the United States Bureau of Animal Industry as to the infectious quality of milk from tuberculous cows. Convulsions of childhood are always, according to his experience, associated with intestinal indigestion. They demand immediate relief. Reports differ as to the value of anti-scarlet-fever serum. Aronson's appears to have given the best results. It has been shown that measles

and pertussis are amenable to serum obtained from convalescents; Silvester reports good results in seven cases of whooping cough. Elberson claims that potassium guaiacol sulphonate has a specific effect in pneumonia, causing crisis in twenty-four to seventy hours. Lumbar puncture has become a valuable diagnostic and therapeutic measure in certain cases.

The following officers were elected for the ensuing year:

President, DR. H. H. BARKER, Washington; First Vice-President, DR. J. N. HALL, Denver; Second Vice-President, DR. OLIVER T. OSBORNE, New Haven; Third Vice-President, DR. CARL BECK, New York; Secretary, DR. N. P. BARNES, Washington; Recorder, DR. W. M. SPRIGG, Washington; Treasurer, DR. J. S. McLAIN, Washington.

Recent Literature.

Tuberculosis. By NORMAN BRIDGE, A.M., M.D. Philadelphia, New York and London: W. B. Saunders & Co. 1903.

Under the above comprehensive and terse title the author has written a small and compact volume meant for the use of the profession at large, although the chapters are practically didactic lectures intended for students.

The first few chapters are devoted to the discussion of the etiology and pathology of the disease, and, while containing nothing especially new, present the subject in a condensed form suitable for the general reader. In the chapter upon methods of examination, the author evidently believes that in percussion the fingers are the best instruments, although other devices may be of use at times. He has little regard for so-called "auscultatory percussion." He believes that the monaural wood stethoscope is the best one for faithfulness of transmission and accuracy of tone, and yet feels that it is one not so easily or correctly used by the majority of medical men as the double stethoscope originally devised by Camman, or some modification of the instrument.

The author rightly shows skepticism as to the confessed ability of many to discover the existence of cavities in the lung, believing that misstatements are often made upon this point.

He believes in the diagnostic value of tuberculin, and shares the common belief that no possible harm can come from such use of the substance. Later he discusses the therapeutic use of tuberculin, and somewhat at length quotes the experience of others upon whose judgment we have learned to rely, notably Trudeau, in support of the theory that the substance produces an apparent immunity in a small percentage of cases, and yet he would seem to be uncertain in his conclusions as far as permanent benefit to the patient is concerned.

The author's somewhat extreme views upon the great value of absolute rest for a diseased lung and his well-known attitude upon the sub-

ject naturally bring much criticism from those who believe that he goes too far in claiming that every diseased lung should be kept quiet and that the more common practice of moderate expansion of the lungs in incipient cases should be avoided. The writer of this review, while believing that judgment must be used in every case, differs in opinion almost entirely from what he considers the author's unwarranted claims. Naturally Dr. Bridge's belief leads him to support the theory of the Murphy treatment, which immobilizes the lung by injections of nitrogen into the pleural cavity, a method which the writer believes will fall into disuse, as have many other highly-vaunted methods of cure in the past.

The chapters upon the climatic and sanatorium treatment are all characterized by good sense and judgment, based, evidently, upon the author's well-known, long practical experience in the treatment of the disease in widely different sections of the country,—Chicago and Los Angeles and their vicinity. One could wish, however, in his discussion of sanatorium treatment, that he had emphasized the vital importance of keeping all such institutions absolutely to the purpose for which they were intended and of not attempting to make them hotels and sanatoria at the same time, a method which can only prove disastrous to the cause of the sanatorium treatment of tuberculosis, which has justly received such marked attention in recent years.

The book is embellished with several excellent illustrations, is of clear plain type and is worthy of a permanent place in every medical library.

A Manual of Refraction and Motility. For Students and Practitioners of Medicine. By WILLIAM NORWOOD SUTER, M.D., Assistant Surgeon to the Episcopal Eye, Ear, and Throat Hospital, Washington, D. C. 12mo. 382 pp., with 101 engravings and 4 colored plates. Philadelphia and New York: Lea Brothers & Co.

It has been the endeavor of the author to place in the hands of the advanced student and practitioner a manual on refraction and motility of the eye which shall contain the essentials of the more elaborate treatises without at the same time being too elementary in character. In this respect certainly Dr. Suter has succeeded very well, as the volume is of a convenient size and contains only about three hundred and eighty pages of text, which is divided into the following four parts: The theory of refraction and incidentally the optical principles upon which rest the various examination methods; the normal eye; errors of refraction; disorders of motility. Only such formulæ have been included as seem necessary for a proper comprehension of the theory of refraction, but still if the reader is not inclined to follow carefully the various demonstrations the rest of the book may be as intelligently read by simply attending to conclusions. The presswork is of excellent quality, and the illustrations are many and apt.

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THE OPENING OF THE SCHOOLS.

It is the laudable custom of our contemporaries, the *British Medical Journal* and the *London Lancet*, to devote practically an entire issue in the fall to the general question of medical education. This year the numbers of these two journals for Sept. 5 are given up to what the *British Medical Journal* calls an educational number and what the *Lancet* calls a students' number.

The *British Medical Journal* discusses at the outset the advantages and disadvantages of the profession of medicine. It can hardly be said that this contribution savors of originality, but nevertheless it contains many facts which the young man about entering upon his professional work will do well to ponder. The profession is discussed from the physical, financial, intellectual, ethical and social standpoints, with the general conclusion that it "affords a fairly certain means of livelihood with unrivaled opportunities for that development of the faculties which, as Goethe said, is a duty of the highest importance for every man; moreover, it opens a field for the exercise of his faculties in which he will have the sense of doing good with more certain purpose than in any other." This incentive should certainly prove sufficient to lead many a wavering youth into the ranks of medicine. The "portals" and "prospects" of the profession are likewise discussed in a separate article, and herein are noted many facts concerning choice of a medical school, cost of a medical education, waiting time, with its dangers, all of which again are to be commended to the young student. The medical curriculum also demands attention, and the remainder of the number is taken up with

details which concern British medicine more particularly than medicine at large.

The *Lancet* does a similar service for prospective students. The leading article is entitled "An Address to Students," in which again advice of the most fatherly sort is given to the young matriculant. Surely the youth of Great Britain should appreciate the solicitude which these leading medical periodicals devote to their future. This number of the *Lancet* contains in addition a vast amount of information concerning universities in the United Kingdom, and we can easily see that this information may be of the greatest advantage to postgraduate as well as undergraduate students in determining their selection of hospitals and schools for later study.

Conditions of medical instruction in this country are such that at present there is no demand for such an exhaustive yearly consideration of various schools and their particular claims to recognition. The time is, however, no doubt coming when just such a statement of facts connected with medical education will be of the greatest possible advantage to intending students. As our medical schools attain to a higher degree of uniformity of requirement, and our state registration laws become more complex, it will be altogether desirable that students and physicians alike should be kept informed of the details which are sure to develop. When such a time comes, we may well take as a model these remarkable yearly issues of the *Lancet* and the *British Medical Journal*.

THE CONSUMPTION OF HORSE MEAT AS FOOD.

THE high price of meat as compared with other articles of food, the frequency of different diseases among animals whose meat and milk are used as food, raises the question whether the meat of some other animal may not be employed advantageously for food purposes.

When we consider the fact that hogs, and especially those which are kept in the neighborhood of large cities, are fed upon the most putrid of all substances, city offal, it is not a matter of surprise that the pork of such animals should often cause serious illness. Nor is it to be wondered at that the meat and especially the milk of cows is not regarded as a perfectly wholesome food, when such animals are often fed upon exhausted and fermented food, such as distilling refuse, brewer's grains, gluten meals, cotton seed meal and ensilage, in some of which the most nutritious

portions have been extracted and in others fermentation has taken place, the object being to increase the flow of milk, but not to improve its quality, or that of the animal.

In times of emergency, conditions of siege in war and of great scarcity of meat, the meat of the horse has been introduced and used without injury to health. Many horses are killed on account of some accident when in perfect health, or on account of lameness, which may not affect their general health. The possible use of diseased horses could easily be prevented by a system of inspection such as is employed for other slaughtered animals at the abattoir. The food of the horse is much cleaner than that of most animals used as food, consisting as it does chiefly of hay and grain, and the horse is scarcely ever attacked with tuberculosis.

In a recent Italian health report,¹ the author, Dr. Frassi, presents some interesting facts relating to the consumption of horse meat in the city of Parma, as well as in the country of Italy at large. He does not agree with the common opinion that the sale of horse meat injures the sale of other meat on account of its lower price, but believes that the food supply of the working classes has improved in proportion to the introduction of horse meat as an article of food. The number of horses slaughtered varies much at different seasons, the greatest number being killed in November and December, the difference being accounted for by the higher cost of feeding in winter and the decrease in the demand for horses.

There were fifteen shops in Parma in 1901 where horse meat was sold, most of which were open only from October to April, only one or two remaining open later in the season. In this category nearly one-half of the animals included were asses and one-tenth mules. The customers are mostly of the working classes. About 20% of the meat is used in hotels, and some goes to restaurants. A considerable quantity is employed in making sausages. The author considers the use of this meat as a matter of decided hygienic importance, in consequence of the almost absolute immunity of the horse to one of the most common of all diseases to which other food animals are subject, — tuberculosis.

OPPOSITION TO MANILA BOARD OF HEALTH.

THE Board of Health usually experiences little opposition in carrying out measures among the

poorer class of Filipinos and Chinese in Manila, but the Spanish element and more wealthy Filipinos have bitterly opposed the Board of Health, particularly with respect to sanitary improvements relating to the disposal of excreta and the installation of waterclosets in lieu of the filthy sinks and vaults which were the rule under Spanish administration. The latter class is largely the landlords in Manila, who resent any effort to make them spend money in improving the sanitary condition of houses for which they exact a relatively enormous rent. As a result of their neglect to obey sanitary regulations, a number of prominent Filipinos and Spaniards have lately been sent before the courts and fined. One wealthy banker who had been fined ten dollars appealed his case to a higher court, where the decision of the lower court was not only confirmed, but the sentence increased to one hundred dollars fine, with thirty days in jail in addition; but sentence was suspended for fifteen days on condition that the banker place his premises in good sanitary condition. As this case had been largely regarded as a test case, a reversal of the verdict of the lower court would have seriously impaired the efficiency of the Board of Health. As it is, the opposition has been effectually disposed of, and the eagerness manifested on all sides to comply with any sanitary requirements imposed by the Board of Health is somewhat amusing. A strong point of the American government is its absolutely unbiased and incorruptible judiciary, which is not understood by the wealthy native element, accustomed in the old Spanish days to buy any kind of "justice" it was willing to pay for. The American judges have uniformly supported the sanitary authorities in carrying on their work, and have thus rendered it possible to obtain good results in Manila and the larger cities. The native judges in the smaller towns take an entirely opposite stand and render the enforcement of sanitary regulations practically impossible where such cases are brought before them for decision. It is most fortunate that the right of trial by jury cannot yet be demanded in the islands, as under such conditions it would be practically impossible to convict a Filipino on any charge preferred by a white man, and laws governing sanitary matters would be a dead letter all over the Philippines, as they now are in the provinces and country districts. Manila is the Paris of the Philippines, however, and with it in good sanitary condition there is an ever-present object lesson which cannot fail to ultimately impress

¹ Dr. Frassi: *Atti del Ufficio d'igiene della Città di Parma*, 1902.

itself upon the other people of the islands and tend to raise their sanitary standards.

MORTALITY STATISTICS.

A PAMPHLET has recently appeared from the United States Census Office on the question of the "Relation of Physicians to Mortality Statistics," being the international classification of causes of death adopted by the United States Census Office and approved by the American Public Health Association. This circular is published for the benefit of physicians who are obliged to make out death certificates in compliance with registration laws.

As stated in the introduction, it is clear that statistics, to be comparable, must be uniform and also accurate. A proper classification demands that the cause of death be accurately stated, and, inasmuch as the chief value of these statistics is in the distribution of death by causes, it is clear that physicians must supply the necessary information with certainty and after a more or less definite plan. An error into which physicians fall is to define the cause of death by some indefinite term which frequently is a cloak for their ignorance of the exact cause. This naturally is in a measure excusable, but it is none the less desirable that a general and comprehensive plan be in use so far as possible to avoid the uncertainties which are sure to arise.

The circular before us is designed to furnish just this information. It will be sent to every physician in the country, and it is suggested that they will manifest their appreciation by conforming as far as possible to the suggestions made. The classification offered is essentially a selection and arrangement of titles merely, under which deaths variously reported must be compiled. The classification itself is arranged with such explanations that it is easy of understanding, and should prove of the greatest use in stimulating accuracy in this matter in which physicians are notoriously lax. Inasmuch as the pamphlet is to be generally distributed throughout the profession, it is not necessary that we should call attention to details of its arrangement beyond saying that for purposes other than death certifications it should prove valuable reading.

MEDICAL NOTES.

APPOINTMENTS TO HENRY PHIPPS INSTITUTE FOR STUDY OF TUBERCULOSIS. — The following additions to the staff of the Henry Phipps Insti-

tute have been made: Dr. M. P. Ravenel has been appointed Assistant Medical Director and Chief of the Laboratory; Dr. E. A. Shumway has been appointed Ophthalmologist; and Dr. J. F. Wallis has been appointed Dermatologist.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 23, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 30, scarlatina 9, typhoid fever 41, measles 15, smallpox 0.

A CENTENARIAN. — Mrs. Ruth Curtis has recently died in Kennebunkport, Me., at the reputed age of one hundred and four years. She had spent her entire life in Kennebunkport, and presumably at the time of her death was the oldest person in Maine.

BEQUESTS TO HOSPITALS. — By the will of the late Francis J. Lawrence of Waltham the Waltham Hospital receives \$5,000, the Leland Home for Aged Women \$1,000, the Massachusetts General Hospital \$1,000 and what remains, after various other bequests are made, goes to the Waltham Hospital.

AN ITEM IN THE LONG ISLAND HOSPITAL INVESTIGATION. — It is reported in the daily press that the bill for stenography presented to the city in the recent investigation of the Long Island Almshouse and Hospital amounts to nearly \$8,000. In view of the result of the investigation, this will be regarded in the popular mind as a wholly useless expenditure of city money.

WALTHAM, MASS., TRAINING SCHOOL FOR NURSES. — With the graduation of the present class at the training school of the Waltham Hospital, certain changes will be made in the course. Up to this time two classes have been graduated annually, spring and fall. Hereafter but one class will be graduated, in the spring. A four years' course will be substituted for the former course of three years and six months, but a certain reduction in the age of those entering the school will be made to meet this extra requirement. This training school, although connected with a relatively small hospital, has established for itself a most enviable reputation for thoroughness and efficiency.

NEW YORK.

DEATH FROM ETHER. — A death under ether is reported to have occurred at the New York Eye and Ear Infirmary on Sept. 14. The patient

was a girl thirteen years of age, and the fatal accident occurred in the middle of a trephining operation for the relief of mastoiditis.

REQUESTS TO HOSPITALS. — By the will of Dr. Joseph Schnetter, formerly of New York, who died recently in Germany, \$50,000 is left in trust to be invested in State or United States Government bonds, the interest of which is to be paid regularly to a certain legatee. On the death of this individual \$35,000 of the amount is left to the German Hospital and Dispensary, New York, and the remaining \$15,000 to the Mount Sinai Hospital, New York; the money in each instance to be used to endow free beds for women. The residue of the estate, which is said to amount in all to about \$140,000, is left to the widow, with the request that at her death she bequeath it to the German Hospital.

STRAUS MILK DEPOTS. — The various Straus depots for the dispensing of pasteurized and sterilized milk were recently closed for the season. During the summer 1,593,726 bottles of milk and milk foods were dispensed, besides 600,000 glasses of milk in the public parks. This has no doubt been an important factor among the various agencies which have contributed to the reduction of mortality among infants and young children, which in the summer of 1892, the year before the charity was inaugurated, reached the rate of 136.1. In 1893 the rate was 117.9, and since then, with the exception of the year 1895, when there was a retrogression of about 4%, it has steadily declined, until during the summer of 1903 the rate was only 63.6. The past summer has, of course, been an unusually cool one, but this was the case last year also, when the rate was 71.1.

DR. THOMAS ADDIS EMMET, AUTHOR. — In recognition of the centenary of the death of Robert Emmet, which occurred Sept. 20, 1803, the Putnams have just published an elaborate work on "Ireland under English Rule," from the pen of Dr. Thomas Addis Emmet, the distinguished gynecologist, who is a grandnephew of the Irish patriot.

A VENERABLE LIFE INSURANCE POLICY. — On Sept. 13, 1803, Charles Henry Booth of Englewood, N. J., who enjoys the distinction, so far as can be ascertained, of being the oldest person in the world holding a life insurance policy, celebrated his one-hundredth birthday. In 1843 he insured in the Mutual Life Company, then in the first week of its existence, and the policy has

been kept up ever since. In honor of the event the company has had prepared for Mr. Booth a testimonial handsomely engrossed on parchment, and inscribed "The Oldest American Company to Its Oldest Policyholder."

NOTES FROM THE PHILIPPINES.

X-RAY AND FINSSEN LIGHT. — An x-ray machine and a Finsse-ray apparatus have been received by the Board of Health, and will be installed at the San Lazaro Hospital, where they will be given a thorough test on the more than two hundred lepers now isolated there, with respect to the cure of this disease through their agency.

CHOLERA. — The report of the Board of Health for the month of May, just issued, shows a mortality for the month at the rate of 30.02 per annum. This was a considerable increase over the rate for April, 22.12, but was much less than that for May, 1902, which was 65.81. The increase for the present month was due almost wholly to a sudden rise of cholera cases, there being 230 during the month, of which number 92.17% ultimately died. This rise was not unanticipated, as the general history of cholera in the tropics shows a sharp increase coincident with the beginning of the rains, when infectious material, rendered temporarily harmless through local conditions, is washed into the water-courses and perhaps widely spread through a source of water supply. The May outbreak occurred under such conditions. It was noteworthy that the greater part of those who contracted cholera were boatmen, laundresses, fishermen and others whose occupations brought them into close contact with the Pasig River and certain esteros. Most of the cases occurred in districts along the water front, and of these cases a large part occurred on boats moored in certain back-water reaches. Careful examination of the waters of the Pasig River and the larger esteros was therefore made, and the presence of cholera germs in large numbers determined, particularly in the slack water anchorages, where the greatest number of cases had occurred on boats. This latter fact was attributed to the throwing overboard of the discharges from cholera cases, and in some instances the disposal of the dead in this way. The water so contaminated was backed by the rising tide into the esteros, and the infection was thus conveyed to other quarters of the city. It was quite impossible to entirely prevent the boat population from using the river

water for domestic purposes. In some instances attributed by the natives to the use of infected foods purchased in the Tondo market, investigation usually determined the fact that such food had subsequently been washed in river water and had probably become infected after purchase. The Board of Health met the situation by increased vigilance in respect to sanitary inspections, more stringent oversight of the markets and by the issue of 35,000 circulars giving a few simple rules for the prevention of cholera, one of these circulars being posted in every house and on every water craft in the city. There was an immediate decrease in the number of cases of cholera, and by the end of the first week in June the outbreak was entirely under control and the cases few and scattering. During the outbreak of the month more than twice as many males as females died of cholera, and of the 194 deaths reported as occurring during the month but twelve occurred in children under the age of fifteen years.

DECREASE IN PLAGUE.—During a recent month there were 27 cases of plague as compared with 52 the previous month. This decrease was apparently in direct response to the special efforts made for its control, including the destruction of plague houses, rat-catching and, of most importance, the general inoculation of the Chinese population, inaugurated during the month. A total of 10,051 rats were destroyed by rat-catchers, and of those examined none were found to be affected with plague. It cannot be fairly expected, however, that the proportion of plague in captured rats will be the same as for the general rat population, as the diseased rats soon die and their physical condition is such that they are not liable to be tempted to destruction by baited traps or poison.

Miscellany.

LECTURES ON TUBERCULOSIS.

THE Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis has arranged for the coming fall and winter a series of lectures by well-known physicians on the various phases of tuberculosis. Some of these lectures will be more or less popular in character, and all will be free to the public. The auditorium of the Witherspoon Hall, at Juniper and Walnut streets, Philadelphia, has been selected for the purpose, having a seating capacity of nearly twelve hundred people.

The first of these lectures will be given by Dr.

E. L. Trudeau of Saranac Lake, N. Y., during the last week in October, his subject being, "The History of the Development of the Tuberculosis Work at Saranac Lake."

The following gentlemen have been invited to give the subsequent lectures: Dr. Pannwitz of Germany, in November; Dr. William Osler of Baltimore, in December; Dr. Calmette, Director of the Pasteur Institute at Lille, France, in January; Dr. Herman M. Briggs of New York, in February; and Dr. Maragliano, of Italy, in March. All of them have accepted with the exception of Dr. Calmette, who will come if it is possible for him to leave his work in connection with his institute and the International Congress on Tuberculosis, to be held in Paris in 1904. Subjects and exact dates will be announced as soon as possible.

The director and members of the staff of the Henry Phipps Institute extend a most cordial invitation to the profession in general to attend these lectures. It is greatly desired that this inaugural series of lectures given by these gentlemen will prove a success and be largely attended.

VIVISECTION IN ENGLAND.¹

UNDER the provisions of an Act of 1876 (39 and 40 Victoria, 77) licenses are granted for the performance of experiments on living animals. A report for the year 1902 presents a summary of the names of all persons who held licenses or special certificates under this Act, together with a statement of the registered places at which the licenses were valid, and of the persons who applied for licenses and granted certificates. It also states the total number of experiments performed in 1902, classified according to their nature.

The total number of persons licensed was 319, of whom 112 performed no experiments.

The tabular statements show: (1) That licenses and certificates have been granted and allowed only upon the recommendation of persons of high scientific standing.

(2) That the licensees are persons who, by their training and education, are fitted to undertake experimental work and to profit by it.

(3) That all experimental work has been conducted in suitable places.

Another table shows the number and nature of the experiments performed by each licensee, specifying whether these experiments were done under the license alone or under a special certificate. In another table the experiments performed without anesthetics are separated from those in which anesthetics were used.

The total number of experiments reported under the Act was 14,906, or 3,261 more than those which were reported in 1901. The number involving serious operations were 2,130 the larger part of which were unattended with pain

¹ Return showing the number of experiments performed on living animals during the year 1902, under licenses granted, distinguishing painless from painful experiments. Ordered by the House of Commons to be printed, June 8, 1903, London.

because they were performed with anesthetics, the animal experimented upon being kept under their influence during the whole experiment. In these cases, if the pain is likely to continue after the effect of the anesthetic has ceased, or if serious injury has been inflicted on the animal, it must be killed before it recovers from the effect of the anesthetic.

The experiments without anesthetics were 12,776, mostly inoculations, with a few feeding experiments and others involving the abstraction of minute quantities of blood for examination. Among this number there were 3,857 inoculation experiments for the testing of antitoxins and 3,997 others performed by official bodies, including the Local Government Board, the House of Commons Venereal Committee, the Loyal Commission on Tuberculosis, the Board of Agriculture and several minor local authorities. A large number of experiments were performed for the purpose of testing milk for tuberculosis, others for ascertaining whether hair is infected with anthrax and for the examination of sewage. Numerous inoculations were made for the diagnosis of disease in animals, and many were performed in the course of cancer investigations.

The number of injections made during the year for the diagnosis of rabies in dogs was 153.

Correspondence.

LUSCHKA'S TONSIL—THE SITE OF INFECTION IN ARTICULAR RHEUMATISM.

Boston, Sept. 18, 1903.

MR. EDITOR: My acceptance of the doctrine of infection as a cause of rheumatism has enabled me to discover, clinically, the usual channel by which the micro-organisms or their toxins enter the economy to produce this disease. An undoubted connection between attacks of rheumatic arthritis and sore-throat (tonsilitis), together with many published observations regarding the microbe origin of rheumatism (v. *Edin. Med. Journal*, August, 1902), gives the necessary suggestion of this true source of infection. Because of long experience with diphtheritic and other similar infections of the faucial tonsils, which promptly ceased after direct sterilization of the post-nasal tonsil *through the nose*, I was made cognizant of this important fact. After selecting severe cases of acute articular rheumatism I treated thoroughly this (Luschka's) tonsil with local applications of hydrogen peroxide and astringents, and obtained immediate results in entire relief of the constitutional and local symptoms, with rapid convalescence in a few days.

It is unusual for either physician or patient to trace any connection between early local symptomatic manifestations and other apparently more important ones in distant parts of the body, because of the accompanying pain (in the joints), and for which ordinary remedies for rheumatism (alkalis and salicylates) are prescribed.

Rheumatic throats have been recognized for years, but the original and probably the only site of infection, namely, Luschka's tonsil, has not been pointed out (unless Woakes of London did this incidentally in his admirable description of the process of "catching cold"). The cause was undiscovered, the remedy was wanting.

The duty of bacteriologists is to decide upon the character and life history of these "cocci" and "toxins" of rheumatism, while it is the privilege and duty of the physician to record the location of the original site of entrance

of this disease as well as to distinguish between cause and effect in the measures adopted in treatment of it.

One would imagine that the mere suggestion of a local cause for a systemic affection so serious, with its possible cardiac complications, as acute rheumatism would suffice to arouse every physician to investigate the matter. One might then weigh his knowledge against the empiricism of ages, which has piled up an array of drugs greater in the aggregate than the impedimenta of a Roman army! Their daily use likewise provides similar impediments to progress.

Truly yours,

EDMUND D. SPEAR, M.D.

AN INCORRECT ANNOUNCEMENT.

PATHOLOGICAL LABORATORY,

McGILL UNIVERSITY, MONTREAL, Sept. 18, 1903.

MR. EDITOR: Upon my return from abroad a few days ago, I learned for the first time that I had been announced as one of the honorary presidents of the American Congress of Tuberculosis. This announcement had been made without my knowledge and had been communicated to the public press before ever I had been approached in the matter. After that communication (June 11) I find that I was addressed upon the subject (June 12). The notice which I have before me is in the form of a copygraph letter upon the flimsiest of yellow paper, dirty and badly folded, and is not to the effect that I had been appointed honorary president, but merely a curt reference to an enclosed list of officers elected at a recent session, ending with the expression of the hope that I would accept. The enclosure consists of two columns cut out of the *New York Daily Tribune*, which, it is true, contains my name (misspelled) on the list of honorary presidents. I am not in the least surprised that my first assistant when opening my correspondence in my absence mistook the communication for a second-class advertisement, or something of the kind, and never realized that this was matter which should be forwarded to me.

Under no circumstances would I have consented to allow my name to be connected with the organization in question. The employment of that name as that of an honorary president is, and has been, wholly unauthorized, and I have written asking that it be withdrawn.

Yours faithfully,

J. GEORGE ADAMI, M.D.

Obituary.

NORTON FOLSOM, M.D.

NORTON FOLSOM, M.D., was born in Boston, April 15, 1812, and died in Cambridge, Sept. 12, 1903. He was educated in the Cambridge schools, to which city his parents removed soon after his birth. In 1859 he entered the Harvard Medical School. He was appointed medical cadet in the United States Army Sept. 21, 1861, and served until Sept. 25, 1862. He returned to the medical school, and took his degree in 1864. April 10, 1864, he was appointed surgeon of the Forty-fifth Regiment of colored troops. He was soon appointed on the staff of General Weitzel, where he served as acting medical inspector and director. April 10, 1865, he was made Brevet Lieutenant-Colonel of United States Volunteers. He was mustered out of service Nov. 4, 1865. He was soon after appointed assistant physician to the state hospital for the insane at Taunton, where he remained for several years. He then began practice in New York City, but soon accepted the appointment of resident physician at the Massachusetts General Hospital. He held this position from 1872 to 1877, leaving it on account of failing health. He resumed practice in Boston and Cambridge, paying special attention to mental diseases. He never regained his health, and for several years has been unable to practice his profession. He discharged the duties of all the positions he held with distinguished ability.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 12, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,785,156 | 1,177 | 458 | 32.88 | 10.28 | 2.38 | 15.72 | 2.04 |
| Chicago . . . | 1,885,000 | 504 | 183 | 26.78 | 7.54 | 1.98 | 8.35 | 4.16 |
| Philadelphia . | 1,378,327 | 370 | 117 | 27.56 | 5.13 | 1.35 | 6.21 | 2.43 |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . | 533,712 | 175 | 49 | 28.57 | 6.86 | .57 | 8.57 | 3.42 |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . | 351,745 | — | — | — | — | — | — | — |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . | 285,103 | — | — | — | — | — | — | — |
| Providence . . | 191,230 | 63 | 25 | 24.63 | 8.69 | — | 11.59 | 2.89 |
| Boston . . . | 603,163 | 197 | 71 | 31.98 | 6.09 | 2.03 | 14.21 | 2.03 |
| Worcester . . | 132,044 | 38 | 26 | 34.20 | 5.26 | — | 28.94 | — |
| Fall River . . | 115,549 | 50 | 21 | 36.00 | 2.00 | — | 26.00 | 4.00 |
| Lowell . . . | 101,959 | 48 | 19 | 27.08 | 6.25 | 4.16 | 14.58 | 4.16 |
| Cambridge . . | 98,639 | 24 | 11 | 37.49 | 4.16 | — | 25.00 | — |
| Lynn | 72,497 | 27 | 11 | 3.70 | — | — | — | — |
| Lawrence . . | 69,766 | 18 | 10 | 5.55 | 5.55 | — | — | — |
| Springfield . | 69,389 | 23 | 10 | 17.39 | 4.35 | — | 13.04 | — |
| Somerville . . | 68,110 | 14 | 5 | 42.84 | — | — | 21.42 | — |
| New Bedford . | 67,198 | 29 | 19 | 55.16 | 6.90 | — | 44.82 | — |
| Holyoke . . . | 49,286 | 17 | 11 | 58.81 | 5.88 | — | 41.17 | — |
| Brookton . . | 44,873 | 9 | 1 | — | — | — | — | — |
| Northampton . | 42,104 | 9 | 1 | 22.22 | 11.11 | — | 11.11 | — |
| Newton . . . | 37,794 | 6 | — | — | — | — | — | — |
| Salem | 36,876 | 12 | 7 | 33.33 | — | — | 33.33 | — |
| Malden . . . | 36,286 | 7 | 3 | 42.90 | — | — | — | — |
| Chelsea . . . | 35,876 | 12 | 3 | 16.67 | 8.33 | — | — | — |
| Fitchburg . . | 35,069 | 17 | 5 | — | — | — | — | — |
| Taunton . . . | 33,656 | 6 | 5 | 29.41 | — | — | 17.64 | 11.76 |
| Everett . . . | 28,620 | 7 | 1 | 14.30 | — | — | — | — |
| North Adams . | 27,862 | 9 | 1 | 33.33 | — | — | — | 11.11 |
| Gloucester . . | 26,121 | — | — | — | — | — | — | — |
| Quincy . . . | 26,042 | 6 | 4 | 33.33 | — | — | 33.33 | — |
| Waltham . . . | 26,198 | 6 | 3 | 33.33 | — | — | 16.67 | — |
| Brookline . . | 22,608 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,589 | 5 | — | 20.00 | — | — | — | — |
| Chicopee . . . | 21,031 | 5 | 2 | 60.00 | — | — | 20.00 | — |
| Medford . . . | 20,962 | 1 | 1 | 20.00 | — | — | — | — |
| Northampton . | 19,883 | 5 | 1 | 40.00 | — | — | — | — |
| Beverly . . . | 15,302 | 6 | 3 | 66.67 | — | — | 50.00 | — |
| Clinton . . . | 15,161 | 6 | 2 | — | — | — | — | — |
| Leominster . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . | 14,478 | — | — | — | — | — | — | — |
| Woburn . . . | 14,300 | 10 | — | 20.00 | — | — | 20.00 | — |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — |
| Adams | 13,745 | 5 | — | 60.00 | — | — | 20.00 | — |
| Attleboro . . | 13,677 | 3 | 1 | 66.67 | — | — | 33.33 | — |
| Marlboro . . | 13,609 | 4 | 1 | — | — | — | — | — |
| Melrose . . . | 13,600 | 3 | 1 | — | — | — | — | — |
| Westfield . . | 13,418 | 7 | 3 | — | 28.60 | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 3 | — | 33.33 | — | — | — | — |
| Framlingham . | 12,534 | 3 | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . | 11,344 | 4 | 0 | 50.00 | — | — | 25.00 | — |
| Southbridge . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . | 11,077 | 8 | 1 | — | 12.50 | — | — | — |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 2,964; under five years of age, 1,097; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 888, acute lung diseases 224, consumption 317, scarlet fever 16, whooping cough 21, cerebrospinal meningitis 7, smallpox 5, erysipelas 2, measles 7, typhoid fever 73, diarrheal diseases 386, diphtheria and croup 50.

From whooping cough, New York 12, Philadelphia 4, Baltimore 2, and Boston, Springfield and Beverly 1 each. From erysipelas, New York 1, Chicago 1. From smallpox, Philadelphia 5. From scarlet fever, New York 6, Chicago 2, Philadelphia 4, Baltimore 1, Fall River 1, Cambridge 1, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Aug. 29 the death-rate was 16.0. Deaths reported, 4,616; acute diseases of the respiratory organs (London) 114, whooping cough 61, diphtheria 62, measles 60, smallpox 2, scarlet fever 32.

The death-rate ranged from 3.5 in Devonport to 26.3 in Sheffield; London 14.3, West Ham 18.3, Brighton 20.8, Portsmouth 17.1, Southampton 11.4, Plymouth 18.6, Bristol 9.8, Birmingham 18.7, Leicester 15.9, Nottingham 21.0, Bolton 16.5, Manchester 19.3, Salford 20.5, Bradford 14.5, Leeds 18.2, Hull 21.9, Newcastle-on-Tyne 20.4, Cardiff 11.5, Rhondda 15.3, Liverpool 20.8, Hornsey 10.0, Bootle 18.0.

METEOROLOGICAL RECORD.

For the week ending Sept. 12, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. |
|----------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily maximum. | Daily minimum. | Daily maximum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 6 | 30.03 | 62 | 66 | 58 | 63 | 63 | 63 | N | N | W | 14 | 3 | C. | 0 |
| M. 7 | 30.19 | 60 | 67 | 52 | 69 | 61 | 66 | N | N | W | 7 | 3 | C. | 0 |
| T. 8 | 30.37 | 56 | 63 | 48 | 65 | 61 | 63 | N | N | W | 7 | 3 | C. | 0 |
| W. 9 | 30.36 | 60 | 71 | 50 | 65 | 69 | 67 | N | N | W | 6 | 15 | C. | 0 |
| T. 10 | 30.14 | 68 | 76 | 60 | 79 | 85 | 82 | N | N | W | 10 | 12 | C. | 0 |
| F. 11 | 30.08 | 74 | 83 | 64 | 82 | 55 | 68 | N | N | W | 8 | 5 | C. | 0 |
| S. 12 | 30.28 | 66 | 74 | 58 | 67 | 67 | 67 | N | N | W | 5 | 5 | C. | 0 |
| Mean for week. | 30.21 | 71 | 56 | 68 | | | | | | | | | | .00 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. \overline{m} Mean for week.

BOOKS AND PAMPHLETS RECEIVED.

University of Pennsylvania. Contributions from the William Pepper Laboratory of Clinical Medicine. (Reprints.) No. 3. Illustrated. Philadelphia. 1902.

Transactions of the American Association of Obstetricians and Gynecologists. Vol. XV. For the year 1902. New York: Stettin Brothers. 1903.

A Handbook of the Diseases of the Eye and Their Treatment. By Henry R. Swanzey, A.M., M.B., F.R.C.S.I. Eighth Edition. Revised. Illustrated. Philadelphia: P. Blackiston's Son & Co. 1903.

Quiz-Compend. No. 16. A Compend of Diseases of the Skin. By Zay F. Schamberg, A.B., M.D. Third Edition. Revised and Enlarged. Illustrated. Philadelphia: P. Blackiston's Son & Co. 1903.

Quiz-Compend. No. 1. A Compend of Human Anatomy. By Samuel O. L. Potter, M.A., M.D., M.R.C.P. (Lond.). Seventh Edition. Revised and Enlarged. Illustrated. Philadelphia: P. Blackiston's Son & Co. 1903.

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Original Articles.

URETHRAL TUBERCULOSIS, WITH REPORT OF A CASE.*

BY ARTHUR L. CHUTE, M.D., BOSTON.

RELATIVELY few cases of urethral tuberculosis are reported; of the reported cases nearly all show extensive lesions of other portions of the genito-urinary tract, so that this lesion appears more as an incident in a urogenital tuberculosis than as a distinct disease. There are, however, instances in which the urethral lesion is the prominent one, though the disease is rarely, if ever, strictly confined to this organ. Urethral tuberculosis assumes the character of a distinct disease in proportion to the extent of involvement of the anterior urethra. When the posterior urethra only is involved, it is hardly to be distinguished from tuberculous cystitis or prostatitis.

The case which I have to report shows some particularly interesting features, in that the disease, while not confined to the urethra, was most marked in the anterior portion. The acute stage of the disease ran a favorable course without any treatment; healing of the urethral process was accompanied by calcification of the submucous lesions. Of this last condition I have been unable to find a similar instance.

P. C., a married laborer, thirty-five years old, was first seen in March, 1902. He had always been well with the exception of his present trouble. His family history was good. He never had any venereal trouble. Two years before he began to pass urine frequently, both night and day; urination was painful. At the same time the glands in his left groin enlarged very rapidly and were painful for some two or three months. He had several attacks of hematuria, the source of which seemed from the history to be the posterior urethra. Now and then he noticed a little discharge from his urethra, but this was neither constant nor profuse. He had discomfort referred to his perineum and rectum, particularly when he sat down. For a time he had painful erections, and coitus was impossible. During the following two years his stream gradually became smaller and his urinations more frequent; they remained painful. For some minutes after micturition urine would exude from his meatus a drop at a time.

Two weeks before he was seen, he felt a sudden pain during coitus; this was referred to the general region of the peno-scrotal angle; following this he had the feeling as of "something moving" at that point. There was increased difficulty in passing urine, and he felt that the obstruction was at the peno-scrotal angle. When seen he was having to urinate four times or more at night and very often during the day.

The man's general condition seemed good. There was no urethral discharge. He was able with difficulty to pass a few ounces of urine; the stream was very small. Following urination there

was for some minutes a dripping of urine, a drop at a time. The urine was very pale, acid, specific gravity 1009; it showed a very slight trace of albumin. The urine contained a few shreds, which when stained showed pus and urethral cells, a few cocci and bacilli, but no gonococci. No renal elements were found in the sediment.

On palpating his urethra it had the feeling of a stiff tube of about the size of a 24 F. sound. At a point one and a half inches from the meatus there was a bulbous enlargement which was very hard; there was a similar enlargement near the peno-scrotal angle, at the point where he felt the sensation as of "something moving." By moving the urethra laterally at this point a perfectly distinct crepitus was gotten.

An attempt was made to explore his urethra with various sized instruments; finally a small silver probe was passed to the bulb; with this in place it was impossible to get crepitus. The probe gave a grating sensation when it passed the two bulbous enlargements.

His left groin contained a mass of glands three or four inches long and about an inch wide; they were very hard and felt as though they were calcified. These glands were not tender. The skin over them was thin but neither red nor attached. He said these glands had been painless and had not changed for more than a year. In his right groin the glands were only slightly enlarged.

His prostate was enlarged, particularly on the right, where there was a small, very hard mass, which felt like a calcified area. There was no tenderness in the renal regions. The kidneys were not palpable. There was no suprapubic tenderness. The testes, epididymes and vesicles showed no signs of disease.

Although at this time the etiology of the trouble was not at all clear, the indications for treatment seemed evident.

Gradual dilatation gave immediate relief to his frequency and difficulty in micturition. At first there was moderate bleeding; this gradually grew less. When dilatation had progressed somewhat, a third area of calcification could be felt in his deep urethra. After a few dilatations, I was able to remove with alligator forceps several irregular bits of calcified material; some from the point near the peno-scrotal angle and some from the point one and a half inches behind the meatus.

Since that time he has rarely had to urinate during the night. His diurnal frequency has been within the limits of normal. Urination has been painless and he has had less dribbling. A search for tubercle bacilli was made in this little material which could be gotten from the urethra, also in the urine; the results were negative, as was an inoculation test made in September, 1902. A second inoculation, made in January, 1903, was also negative.

In July, 1902, the glands in his left groin were removed. This was done largely in the hope that their examination might clear up the diagnosis. Dr. George B. Magrath of the Pathological Department of the Harvard Medical School reported that these glands showed amyloid infil-

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tration, a condition which apart from general amyloid disease is very rare, and usually means tuberculosis somewhere in the territory of the lymphatics involved.

Dr. William B. Hills of the Chemical Department of the Harvard Medical School found the concretions were made up for the most part of carbonate and phosphate of lime, with traces of the corresponding magnesium compounds, also a minute trace of triple phosphate.

The patient is still under observation. At the present time (April, 1903), his urethra allows the passage of a 25 F. sound. Slight grating can be felt at a point one and a half inches from the meatus, at the peno-scrotal angle and at a point in the membranous urethra. On several occasions small pieces of calcified material have been removed, and frequently after instrumentation he has passed fragments of the same. He has at present no subjective symptoms other than an occasional feeling of discomfort in the rectum. Endoscopic examination shows an abnormally pale, fibrous-looking canal, for the most part smooth, but with an occasional small eroded spot, also with little fibrous tabs which project into the lumen. The canal is very stiff, and instead of rolling in about the end of the endoscope stands rigidly open, as though distended with air. At one or two places little whitish points are seen, which are apparently little bits of calcified material projecting through the mucous membrane.

His prostate remains about as at first, larger on the right with the same apparently calcified nodule. The left lobe is smaller but more sensitive. After very gentle massage the urine contains bloody shreds, showing that the prostatic process is not entirely quiescent. The rectal discomfort which he occasionally feels he refers to the left.

In spite of not finding tubercle bacilli, the non-venereal origin, the symptoms, the course of the disease and the outcome warrant the conclusion that this patient had an urethral tuberculosis. The condition of the inguinal gland adds confirmatory evidence.

In this instance the tuberculosis involved particularly the glandular elements of the canal. During the healing process there was a deposition of lime salts in the diseased glands, similar to that seen from time to time in other tuberculous glands. These masses gradually ulcerated through the mucous membrane into the urethra. The mass at the peno-scrotal angle was apparently more or less cylindrical, and after fracture, the two sections not being in perfect alignment, the difficulties of urination were increased. The feeling of "something moving" was produced by the ends rubbing together.

The condition found in this patient bears no resemblance to the many reported cases of urethral calculi. I have been unable to find any reported case in which a similar deposition of lime salts has taken place. Case I of Berard and Trillat is the nearest approach. This refers to a child with urethral tuberculosis, in whose urethra they felt what seemed to be points of calcification. The

child was under observation only a very short time. The description of the case is very meager.

A brief review of tuberculous urethritis is of interest in connection with this case. What follows applied more particularly to tuberculosis of the anterior urethra. Tuberculosis of the posterior urethra is so intimately connected with tuberculosis of the bladder and prostate that it does not present a distinctive picture.

All writers agree that it is a rare disease. Few textbooks give it more than casual mention. The lesions of the anterior urethra are much rarer than those of the posterior urethra.

Ahrens¹ gives the findings of several observers as to the frequency of urethral tuberculosis; all of these are based on autopsies. Steinthal is quoted as having found 6 instances of urethral involvement in 24 cases of urogenital tuberculosis; Krzywicki, 5 instances in 29 cases; Pavel in 1,455 autopsies on tuberculous subjects found urogenital tuberculosis 380 times, but urethral lesions in only 7 of these cases.

Halle and Motz² state that for the past twelve years there have been at the Hospital Necker from 12 to 15 deaths a year from genito-urinary tuberculosis; that during this time they have found but 12 cases of urethral tuberculosis.

The disease occurs in early childhood and in old age, but is, like all forms of urogenital tuberculosis, much more common during the years of sexual activity. In the reported cases men have been affected much more often than women. This greater frequency in men can be attributed to several very evident reasons: the greater length of the male urethra; the fact that it is more often the seat of post-gonorrheal lesions; the ease with which the urethra can be infected in tuberculosis of the genital organs proper.

It is probable that a previous gonorrhea has some influence on the occurrence of urethral tuberculosis, especially when it is followed by chronic urethral lesions. A previous gonorrhea has been noted in a large number of reported cases, and it seems reasonable to suppose that a diseased urethra is a more favorable soil for tuberculosis than a healthy one.

Keyes³ and Alexander⁴ both believe that pus infections of the urethra predispose to tuberculosis.

While a previously infected urethra is probably a more favorable soil, many cases are reported in which there seems to be no question of a previous gonorrhea, as cases by Berard,⁵ Stone,⁶ Halle and Motz² and other writers.

The source of the infection in urethral tuberculosis has excited a good deal of interest and some controversy.

Baumgarten is cited by Ahrens as having produced a classical urethral tuberculosis by injecting tubercle bacilli into the urethra of a buck rabbit. The conclusion which he drew from this was *not* that infection was usually from without, but that the urethra had no peculiar immunity to the tubercle bacillus. He felt that the opportunity for infection from without was usually lacking, because, according to his statement,

patients with genito-urinary tuberculosis ordinarily have little sexual desire.

Paladino Blandini⁷ found that it was possible for tubercle bacilli, when introduced into the urethra of animals, to traverse the canal and set up a tuberculous epididymitis. He found the bacilli could be diffused through the whole genito-urinary tract in a relatively short time. He reported no instances in which he noticed urethral tuberculosis following the introduction of tubercle bacilli into the canal.

Several cases of tuberculosis of the glans penis are reported in which the process extended to the urethra either by perforation, (Poncet,⁸ Kraske,⁹ Hartmann¹⁰) or by extension through the meatus (Erhmann¹¹). In these instances the infection was by continuity.

These facts point to the possibility of infection through coitus, but I have been unable to find a single reported instance in which it seemed probable. Hogge¹² goes so far as to say that there is not on record a single case of primary tuberculosis of the anterior urethra.

Kraske⁹ thought that in his case of tuberculosis of the glans, which extended to the urethra, the infection was probably through the blood stream, as no tuberculous lesions of the genital or urinary apparatus could be discovered. The case did not come to autopsy.

Alexander⁴ has suggested the possibility of a well kidney excreting tubercle bacilli, and that these bacilli might, in an urethra previously damaged by pus infection, set up a tuberculosis. Halle and Motz² speak of the difficulty in any given instance of ruling out the possibility of a small area of renal tuberculosis.

While it is impossible to say that the urethral infection found in rare instances be primary, either from without or by the blood stream, the weight of clinical evidence shows that it is in almost all instances secondary to other tuberculous lesions of the genito-urinary tract.

In the cases which have come to autopsy there have been present, almost without exception, other lesions of the genital or urinary tract. Usually some of these other lesions have had the appearance of antedating the urethral trouble. In almost every instance there has been disease of the deep urethra. In some instances the disease in the anterior urethra has been less marked, as it approached the meatus in Kidd's¹³ case. In young children the process is necessarily secondary, except for the possibility of hematogenous infection.

Urethral tuberculosis may be secondary to a purely genital tuberculosis or to a tuberculosis of the urinary tract. The first is illustrated by the case I have reported, the second by Michaut's¹⁴ case. Usually there is disease of both the urinary and genital tracts.

Lesions of the prostate, epididymes and vesicles are nearly always associated with urethral tuberculosis, and the extension to the urethra seems commonly to be by way of these organs.

It seems rather improbable that the mere passage of urine can often infect a healthy urethra,

even when that urine contains tubercle bacilli in considerable numbers. When there are old lesions of the canal, either infiltrations, which interfere with the action of the accelerator urinae, or obstruction to the passage of urine, the probability of this manner of infection is increased. I have found but one instance in which an autopsy has shown a urethral tuberculosis as secondary to a purely urinary lesion. This is the case reported by Michaut.¹⁴ In this patient there were no lesions of the genital organs or of the prostatic urethra, and the infection must have been by way of the urine. The patient gave the history of two attacks of gonorrhea, the last three years previous to the time of observation. As the urethral discharge had persisted since the second attack, it is reasonable to suppose that there were chronic lesions of the urethra which made it particularly susceptible. The patient had renal tuberculosis. In both genital and urinary infections the process seems usually to get a foothold in the prostatic urethra and then gradually to extend to the anterior part of the canal.

The lesions in urethral tuberculosis can be conveniently grouped under three headings: those of the mucous membrane; those of the corpus spongiosum; and those of the periurethral tissues.

Two sorts of lesions of the mucous membrane are commonly seen — the granulation and the ulcer. To these lesions Ahrens¹ and Halle and Motz² add the diffuse caseous infiltration.

The granulations or tubercles vary considerably in color and size. They may be either gray or yellow; they may be the size of a pin-point, as in Halle and Motz's² Case III, or the size of a pea, as in Michaut's case. Sometimes few are present, at other times the urethra is studded with them.

The ulcers also differ within wide limits. They may be small and superficial, as when the covering layer of a granulation has been destroyed, or the mucous membrane of nearly the whole urethra may be destroyed to its full depth.

Diffuse caseous infiltration is the name applied when a considerable area of the membrane has undergone the pre-ulcerative tuberculous infiltration.

Of the mucous lesions, the ulcer is the most common. The granulations and diffuse infiltrations are less often seen, presumably because they give place to ulcerations within a relatively short time. In the case reported by Michaut,¹⁴ he had the opportunity of watching the evolution from granulation to ulcer.

Lesions of the corpus spongiosum are for the most part direct extensions of lesions of the mucous membrane; they may be infiltrations, ulcerations extending into the substance, or cavities filled with pus and granulations. Occasionally the process is for the most part confined to the urethral glands, with relatively little disease of the spongiosum, as illustrated by my case. Instances have been noted where the spongiosum was infiltrated without any neighboring lesion of the mucous membrane and separated from it by an area of non-tuberculous tissue (Halle and Motz²). The process in the spongiosum is, how-

ever, usually a direct extension of the disease from the mucous membrane.

The name "periurethral" has been given to all processes extending outside the fibrous sheath of the corpus spongiosum. They may be little abscesses which resemble the suppurative folliculitis seen in pus infections; when they open externally they usually leave persistent fistulæ. In the other extreme the whole perineum may be infiltrated, or converted into one or several cavities filled with pus and granulations. These pus collections may open spontaneously, but more often they are incised to relieve symptoms. They are usually followed by fistulæ with pouting granulations.

Quite a distinct type of periurethral tuberculosis is that affecting the glands of Cowper. Engliš¹⁵ was one of the first to call attention to the nature of this lesion. In typical cases there is a slowly-growing, more or less circumscribed tumor in the perineum, which usually goes on to supuration, and either opens spontaneously or is incised, leaving a urinary fistula. Where the process bursts through the capsule of the gland, the perineum may present a general boggy, infiltrated condition. Instances have been reported in which this process in a Cowper's gland has become cystic.

While the periurethral lesions usually extend from the under surface of the urethra, some extend from the roof and appear in the septum between the corpora cavernosa, or invade the corpora themselves. This extension is supposed to take place commonly through the urethral glands.

Symptoms. — Since in urethral tuberculosis there is almost always a certain amount of involvement of the posterior urethra, frequency and tenesmus are early symptoms. For the same reason hematuria is often seen. This hematuria, however, is not necessarily from the prostatic urethra. Michaut's¹⁴ case, in which there were no lesions of the deep urethra, presented it. In that instance it was presumably of renal origin. So, too, the frequency and tenesmus may be due to associated renal or bladder disease. Incontinence has not been a very unusual symptom; Senn¹⁶ and Malécot¹⁷ report cases, as do others. It is presumably due to involvement of the posterior urethra.

The symptoms which are due solely to involvement of the anterior urethra are: discharge, pain on urination, nodular enlargements of the urethra, signs of obstruction to urination.

The discharge in urethral tuberculosis is commonly scanty and whitish rather than purulent. It has the appearance of the so-called "gleety discharge." It not infrequently follows without appreciable interval the discharge of a gonorrheal urethritis. Senn¹⁶ reports a case in which there was a profuse purulent discharge and the meatus had the puffy appearance seen in gonorrheal urethritis.

Pain on urination is a pretty constant symptom. Its location and extent depend on the situation and amount of the urethral disease. It is usually a moderate sensation of burning. It has been

likened in some patients to the ardor of acute gonorrhea. It differs from this in that it usually persists for a much longer time.

A nodular condition of the urethra is less common than the discharge or pain. It is probably never seen while the disease is strictly confined to the mucous membrane. The nodes are more numerous than those seen in the glandular involvement of gonorrheal urethritis. They are usually along the floor of the canal.

In certain of the reported cases obstruction to urination has been a prominent symptom. In some instances it is undoubtedly due in part to a previous pus infection. In others it is purely the result of the tuberculous process, as in Case I, Berard and Trillat,⁵ Stone's⁶ case, Malécot's¹⁷ case, Halle and Motz's² eleven-year-old child, my patient and others.

In the instances where the obstruction is purely the result of the tuberculous disease, it may be of two sorts — that due to stricture and that due to infiltration. Because of the deep ulceration of the urethra true stricture may come on relatively early. These strictures are not infrequently multiple (Berard,⁵ Stone,⁶ Halle and Motz²). The other type of obstruction may arise even earlier, and is caused by a submucous infiltration which encroaches on the lumen of the canal (Halle and Motz, Case II; my patient).

The painful erections from which my patient suffered for a time seems to be an unusual symptom. Judging from his description, they were not of the acuteness of gonorrheal chordee.

Diagnosis. — The finding of tubercle bacilli in the urethral discharge is undisputable proof. Granulations or multiple ulcers of the urethra are almost pathognomonic. A urethral discharge with no history of exposure to venereal infection is very suggestive, especially so if no gonococci can be found. This last condition when combined with tuberculous lesions of the urinary, or particularly of the sexual organs, makes the diagnosis fairly certain. Stricture or the symptoms of urinary obstruction, coming on relatively soon after the onset of a urethritis, should raise the question of a tuberculous origin, as should the presence of any considerable number of indurated points in the corpus spongiosum. If there are enlarged inguinal glands, their examination may throw light on the nature of the condition.

Prognosis. — As this disease is so essentially a secondary one, the prognosis depends very largely on the extent and importance of the primary focus. If we base the prognosis on the reported cases it is very bad indeed; the great majority have terminated fatally. The disease has as yet received so little attention from clinicians that I doubt if the reported cases give an accurate idea of it. There can be no doubt that the prognosis is grave, and that the cases that recover will run a long and tedious course. It is to be expected too that in a large proportion of the recovered patients the urethra will show marked secondary changes.

Engliš¹⁵ reports a case that recovered; the patient was under treatment for a number of

years. Poncet⁸ has reported recoveries, as have Kraske,⁹ Halle and Motz² and others.

Treatment.—Treatment must depend in the first instance on the extent of the primary tuberculous disease. In a considerable number of cases it will have to be purely palliative, it being manifestly improper to subject a patient with a hopelessly advanced pulmonary or renal tuberculosis to any considerable procedure for his urethral trouble.

In all patients with urethral tuberculosis the hygienic treatment should hold the most important place. In connection with this, forced feeding, arsenic, guaiacol, creosote, together with the aids to appetite and digestion, are of service.

I wish to call particular attention to the advantages of seashore camping for patients with the various forms of genito-urinary tuberculosis. It is of great advantage in the case of poor patients, as the expense can be made very slight. In this climate the tent life can be carried out for at least four months of the year and sometimes for longer. The work of camp life, fishing and the like, keeps the patient occupied and out-of-doors. He is of little danger to others as a source of infection. If he is troubled with frequency of urination, he is where he can relieve himself at almost any moment, without embarrassment. A patient with a marked tuberculosis of the bladder improved greatly under such conditions during last summer, and the expense, which was to him all important, was very small.

As regards the local treatment by applications to the urethra, I feel there is a great question as to its utility or desirability. Any instrumentation is usually very painful in urethral tuberculosis, and the possibilities and dangers of a mixed infection must be borne in mind. Hogge,¹² however, recommends the use of injections or irrigations. Solutions of nitrate of silver, so commonly used in chronic urethral troubles, seem to be particularly badly borne by these patients. Very weak corrosive solutions, or iodoform suspended or in emulsion, seem more desirable.

When the lesion is of the mucous membrane, or consists of a moderate involvement of the corpus spongiosum, I feel that one should depend on general hygienic treatment during the acute stage. I would make the only exception to this, those instances where a stricture or infiltration offers obstruction to urination; here internal urethrotomy should be done. In the instances where the disease in the spongiosum goes on to the formation of tuberculous cavities, these should be laid open and either curetted or cauterized. This applies to all sorts of periurethral disease with pus cavities. When the urethra is greatly ulcerated, perineal urethrostomy, as carried out by Poncet⁸ and in Berard and Trillat's⁵ second and third cases, will give great relief and may bring about recovery.

In some instances of very advanced disease, amputation is the best procedure, as in Kraske's⁹ and Hartmann's¹⁰ cases. When the disease is marked, but almost wholly confined to the anterior part of the canal, a temporary perineal fistula

would probably be of help. I know of no instance where this has been purposely carried out. In Englisch's¹⁵ Case I, a fistula resulted from opening a perineal abscess; this fistula persisted for some years, the urethral disease recovering during that time. Whatever operative procedure may be indicated, the importance of keeping up hygienic treatment must not be overlooked. The patients who recover will probably all require more or less treatment for the secondary lesions of the urethra: dilatation or urethrotomy for strictures or narrowed places; plastics for the closure of persistent fistulae. When the strictures are multiple and intractable, or when there are fistulae with so much loss of substance that they cannot be closed, Poncet's operation of perineal urethrostomy may be advisable.

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A NOTE ON THE TRANSMISSION OF WHOOPING-COUGH BY INDIRECT CONTAGION.

BY JOHN LOVETT MORSE, A.M., M.D., BOSTON.

Instructor in Pediatrics, Harvard Medical School; Assistant Physician at the Children's Hospital and at the Infants' Hospital, Boston.

DURING the epidemic of whooping-cough in Boston last winter I was repeatedly asked whether or not whooping-cough could be carried by third persons or by clothing, and whether the disease could be contracted by going into a house in which there was whooping-cough, providing there was no contact with the patient. On the answers to these questions depended, of course, the management of the isolation. When I attempted to answer these questions I at once found that, although I had pretty definite opinions on these points, they were not based on any reliable data. I then attempted to get some more accurate information from the various textbooks, but found in them nothing but the most general statements, which showed very plainly that their authors were in much the same predicament as myself.

I then wrote a circular letter to the members of the American Pediatric Society, thinking that they, if any, would be able to furnish answers to these questions. The letter was as follows:

I am anxious to get some data as to whether whooping-cough may be transmitted by clothing or third persons. I am also anxious to get some data as to whether it may be

contracted by going into a room or house in which there has been a patient with whooping-cough, there being no direct exposure to the patient.

Some textbooks say that whooping-cough may be transmitted through third persons; others that it may be, but probably rarely is; others refrain from making any statement.

You will oblige me greatly by giving me your personal opinion on these points, and also any data which you may have which prove that whooping-cough may be transmitted through clothing, third persons or houses.

Replies were received from forty men. Thirty-seven gave no data; three reported five cases, one of which seemed to me rather doubtful. These cases were briefly as follows:

Dr. C. W. Townsend, Boston: A baby of eighteen months had never been in a railway car or in any house or carriage but its own. A friend came directly from a whooping-cough house, wearing the same clothes and muff that she had worn there. She allowed the baby to play with the muff which she had held in her hand when she was visiting and talking with the children with whooping-cough. No other exposure was known.

Dr. C. G. Jennings, Detroit: The eight-months-old child of a physician was very carefully watched and guarded. The children of its wet nurse lived about a mile away, and were taken sick with whooping-cough unbeknown to the doctor. Their mother visited them two or three times during the first two weeks of their cough. Within ten days of her last visit the physician's infant came down with whooping-cough. There was no other exposure.

Dr. C. G. Jennings, Detroit: An infant who was very carefully guarded from exposure was taken sick with whooping-cough, the source of which could not be made out. Repeated inquiry drew out the fact that about a week before the child began to cough the mother had unpacked a trunk containing a number of articles of child's clothing, among them a quilted hood that several months before had been worn by an infant through the greater part of an attack of whooping-cough. This hood was worn by the infant in question throughout one day.

Dr. D. J. M. Miller, Philadelphia: A family of adults loaned one of two copies of a book to the children of some friends who had whooping-cough. After four weeks the book was returned and placed upon the shelf alongside of its fellow. The son, twenty-four years old, who had never had whooping-cough, desiring to ascertain which of the copies had been used by the children with whooping-cough, and, knowing that a cresolene lamp had been used in the treatment, picked up one of the volumes which happened to be the one loaned to the children and smelt of it, passing the leaves to and fro before his nose as one does in looking rapidly through a book. In twelve days he developed whooping-cough. Other exposure, although unknown, cannot be positively excluded in this case.

Seven gave no opinions on the questions asked, probably because, as two of them said, opinions are of no value. Five thought that third persons may carry the contagion; six that they may, but rarely do; two that they probably may carry it; seven that they possibly may carry it; three that they may possibly carry it if they are coughed or vomited on and the exposure occurs very quickly. One thought that the contagion is not likely to be carried by third persons; one that it practically is not carried; four that it is very doubtful if it can be carried.

Two thought that clothing may carry the contagion; four that it may, but rarely does; two that it probably may carry it; and three that it possibly may carry it. One thought that it is not likely to be carried in the clothes; one that it is practically not carried; and four that it is very doubtful if it can be carried.

One thought he had seen whooping-cough develop after entering a room in which a whooping-cough patient had been. Six thought that whooping-cough may be contracted from rooms which have been occupied by patients with whooping-cough, but that it rarely is so contracted. Two thought it may possibly be contracted in this way. One suspected that it may be contracted in this way, while four were very doubtful if it can be.

Three men gave hospital experience going to show that contagion is not carried by third persons; and another, hospital experience going to show that it is not carried in clothing.

Two stated that they took slight precautions against carrying contagion when seeing cases of whooping-cough. Three stated that they took none. I regret that one of my questions was not what precautions were taken against contagion when seeing cases of whooping-cough. It seems to me that the answers to this question would have shown more truly how the men really felt as to the chances of carrying contagion themselves or in their clothing than do those to the others.

It seems hardly possible to draw any very positive conclusion from these replies, except that very little is known as to the indirect contagiousness of whooping-cough. The cases reported, although very few, seem to justify the presumption that whooping-cough may be carried by third persons or by clothing and other articles. The fact that forty men of such wide experience have seen such a small number of cases in which they could satisfactorily to themselves exclude direct contagion shows, however, that it must be very seldom that whooping-cough is carried in this way.

THE ILL HEALTH OF FRANCIS PARKMAN.

BY GEORGE M. GOULD, M.D., PHILADELPHIA, PA.

(Concluded from No. 13, p. 338.)

(5) *Cerebral reflexes*.—In his boyhood Parkman had headaches, and was spoken of as "a head-achy child;" but in his adult life, according to his sister, he did not have what was ordinarily called headache, although Farnham speaks of "pains in the head" as continually sapping his force. The most revelatory statement I have been able to get from Miss Parkman is that the expression he used most was that his head was "stirred up," and that this was used by him when he could not work or listen to reading any longer. Miss Parkman understands by this expression what physicians call subjective vertigo and an indescribable confusion. Objects did not whirl or seem unstable, but the patient himself. There was also a rush of vague and uncontrollable sensations. Sometimes these were roused by talking or noises, so that silence was necessary even at meals in order not to bring on irritation. From a study of the few hints I can gather I feel that the morbid reflexes from the eyes kept his brain in a chronic state of hyperesthesia, the centers so surcharged

that he was in a constant state of great tension, and a slight excess of irritation at any time was more than could be correlated or drained off physiologically. It was his splendid will and by infinite precautions that he could prevent harmful results.¹²

From this cause also what is commonly called irritability or temper was never shown. His sister remembers no cross, unkind or petulant expression to have escaped him, however great the provocation. His beautiful mind seemed guarded against such outbreaks by a subtle feeling that it was his own nervous mechanism that was at fault. He never mistook the "wild whirl" in his head as caused by any whirl of the outside world. When it was impossible for him to listen longer to reading, or to conversation, or to apply himself mentally to any work, he seemed to find relief in inventing a string of nonsensical or ridiculous stories *à propos de rien*. Introspective he was not, and as to neurasthenia, hysteria or melancholy, the words are not to be thought of. Finally it must not be forgotten that the vagueness of the cerebral symptoms is no proof of their unreality or lack of intensity, as shown by the fact that he was supposed to be on the verge of insanity, and that first and last he consulted many physicians about his condition of mind and nerves. There was nothing vague, however, about his terrible and lifelong insomnia, which was certainly a consequence of his eyestrain.

The reactions or responses of each organism under the morbid stimulus or "insult" of eyestrain differ from those in any other case. That every case of disease is individual, impossible to bring into any narrow or exact classification is of course a truism in medicine. The typical case exists only in the textbook. But holding the essential fact in view one easily recognizes a common law that runs through and harmonizes all individual variations and renders clear the unity in all exceptions. All this is illustrated and verified by Parkman's case. In a general way the symptoms in severe cases of eyestrain roughly divide patients into three classes: (1) Those in whom the reflexes are to the eyes themselves, resulting in inflammations, disordered function and local diseases of many varieties. (2) Those to the brain, followed by a large variety of kinds of headache, psychic and nervous abnormalism, insomnia, etc. (3) Those to the digestive and nutritional systems, with "biliousness," anorexia, dyspepsia and any of the diseases of denutrition. It goes without saying that these types may be mixed in infinite degrees of complexity and intensity, but as a rule a certain case belongs in one of these three classes.

When the reflex is exclusively to the organs of nutrition, as in Carlyle's case, the mental concomitant is likely to be hypochondriasis, irascibility, etc. In Parkman's case the morbid reflexes expended themselves upon the eyes and the cere-

bral centers. Cheerfulness and a noble high-heartedness are noteworthy characteristics of the man, although none ever had better reason for despair and complaint. That neither black bile nor yellow bile tinged Parkman's brain is shown by the following sentence written of himself:

His dislike of everything morbid — melancholy, misanthropy, depression — amounted to abhorrence, and if he could not be cheerful he went away if he was able; and if not, he held his tongue or turned to merry thoughts.

In many cases of reflex ocular neuroses we can find crises of the resultant symptoms occurring at certain life periods. In Parkman's case these crises are not evident. But one exists with any clearness, that of presbyopia. The others are at best masked. But one can see why they are masked. As in everything else this man was exceptional, logical to the limit. Every day and year was critical. He was of the heroic type, and not measurable by our little rules of thumb, applicable to the weaker and commoner man. Evidently his eye defect was of an exceptional kind, such as a low degree of unsymmetric astigmatism and anisometropia would produce. I say a low degree, because Parkman had sharp distant vision, showing that he could neutralize the abnormalism for distant vision. Most surely he could only do so for a minute or so at a time for near vision. A man of his iron will and exactness would also never give up the attempt to do so as long as it was humanly possible. I have known hardly any patient so incapable of reading and writing as he, or with a photophobia so intense. His astigmatism was of a kind that his ciliary muscle or his accommodative power could in adult life bear the strain of the attempt to neutralize it at near range for but a minute or two at a time. Even as a boy it produced headaches and truancy, and the crisis of adolescence is represented by the breaking off the college course by the trips to Europe. Using up each minute every infinitesimal gathering of accommodative power, both ocular and cerebral, by his studies and by the intensity of his nature, crises could not be as marked and differentiated as in less stalwart men and less resistant cases. Hence the steady decrease of reading and writing power went on exactly *pari passu* with the yearly lessening of the power of the ciliary muscle to overcome the lenticular inelasticity. The eyeglasses prescribed or that he picked up could only further mask the critical periods that would normally have appeared in early manhood and at the usual presbyopic time of life.

Even with the life of terrible suffering he had lived, and with the resultant injuries to the ocular and cerebral centers, the completion of presbyopia at about sixty brought him, as it does all others, a comparative ease and happiness and power of using the eyes during the last ten years of life. "During the last few years of his life," says Farnham, "his eyes allowed him to write quite freely for very short periods of time. Thus he was able to write out by himself with pencil on orange-colored paper the greater part of his

¹² Influences tending to depress the mind had at all times proved far less injurious than those tending to excite, or even pleasurably exhilarate, and a lively conversation has often been a cause of serious mischief. A cautious vigilance has been necessary from the first, and this cerebral devil has perhaps had his uses as a teacher of philosophy. (Autobiography.)

'Half Century,' and 'Montcalm and Wolfe.' " "He was better and a happier man after sixty," said his sister to me. "From the earliest of his married life," adds Farnham, "onward till near the close, the condition of his brain seemed to make it necessary for him to be silent and alone most of the time. But, as years rolled on, the improvement in his health, the easier progress of his labor and the development of his sympathy enabled him at last to meet life with happier moods and habits."

There can be no doubt in the mind of the modern ophthalmologist as to the cause of Parkman's eyestrain and hence of all its results. Every symptom enumerated can be entirely and only accounted for on the supposition that he had hyperopic astigmatism, probably unsymmetrical, and with anisometropia. There is every reason for the conviction that he had no organic disease of the eyes. He saw as well at night as other people, and so had not any form of retinitis. He recognized things and people so accurately in the daytime that one may be sure there was no considerable amblyopia or other limitation, or organically-caused defect of vision. No operation except upon the lids was ever performed upon his eyes.

I had written thus far from all the data that I could gain by reading and correspondence. It now occurred to me that a personal search might win the confirmation of my view which, not needed by oculists to bring conviction as to the true nature of Parkman's disease, would serve to prove the necessary inferences I had drawn, and would also make the fact plainer to general physicians and laymen. I therefore made a journey to Parkman's home, and after an active hunt of the records of oculists, physicians and of opticians I secured precisely the scientific confirmation of my theory desired. I found that Parkman from the first had not failed, at least partially, to recognize — how could he fail to do so? — the importance of his ocular condition. In 1849 he had gone to New York, and for a long time placed himself under the care of an oculist. No good, of course, came of it, and as this specialist is now dead we could not learn much of value from any case records that might still exist. The ophthalmoscope had not yet been invented, and as for astigmatism none had thought of it as having a pathogenic significance.

By the courtesy of an optical firm I found the following filed prescriptions:

(1) One from an excellent oculist dated April 12, 1881, ordering:

For the right eye + Sph. 2 + Cyl. 0.50 ax. 108°.
For the left eye + Sph. 2.75.

(2) From another equally competent specialist in 1883:
R. + Sph. 2.75 D.
L. + Sph. 2.75 D.

(3) From the same oculist, in 1885:
R. + Sph. 3.00 D.
L. + Sph. 3.00 D.

(4) In December, 1890, another equally trustworthy oculist ordered:

R. + Sph. 3.25 D.
L. + Sph. 3.25 D.

In addition he was wearing prior to 1881 from a famous European oculist:

R. + Sph. 2.25 D.
L. + Sph. 2.60 D.

I was greatly aided in my search by the courtesy of several oculists, who kindly placed their case records at my disposal.

I may at this point settle the question as to any abnormal or inflammatory disease of the retina. One oculist had kept no case records of Mr. Parkman's case. A second had made no entry as to any retinal condition, and being a capable ophthalmoscopist he would have noted the fact had the funduses of the eyes not been normal. The third positively placed in his notes "Fundus normal." Had this testimony not been found, the ignorant-wise might have said that Parkman must have had some retinal disease that caused the inability to read and the photophobia.

The notebook of one oculist says that the patient had recently consulted a most famous nerve specialist whom he had journeyed to see on account of "pressure and confusion in the head," which symptoms came on with literary overwork or excitement. This man had ordered some bicarbonate of soda and wet packs. Many years before Parkman had tried hydropathy and he would no more of it.

We see, therefore, that one European oculist found some difference in refraction in the two eyes but no astigmatism. An American oculist found a similar difference in the hyperopia of the two eyes, and he alone of all found astigmatism "against the rule." Three other prescriptions by two different oculists were for nonastigmatic lenses, alike in both eyes. A revelatory and explanatory fact was found in the case records of one of the latter oculists. This was that the astigmatic lines of the test card running at about axis 120° (judging from the penciled diagram drawn in the notebook) were chosen by the patient as being the plainest at fifteen feet distance, as seen by the right eye, and those running about 155° or 160° were seen more clearly with the left eye. Why glasses correcting this astigmatism were not ordered I do not know. Why the astigmatic correction ordered for the right eye by the other oculist was put at 180°, and why no correction of astigmatism was ordered for the left eye is also not clear.

I may parenthetically state that one oculist found the acuteness of vision in the right eye with — Cyl. 0.5 D. ax. 90° a little less than normal, and with + Sph. 0.25 that of the left eye was about the same. The oculist who noted that the patient chose the asymmetric astigmatic lines found the "media good," and that without any correcting lenses the visual acuteness was with the right eye 12/20, and with the left less, that is, a little more than one-half that of normal eyes.¹³ If any deduction is justified by this it is only that there was a decided lessening of the 20/20? visual acuteness from 1881 to 1889, when it was men-

¹³ He also notes — what was to be expected — that there was no hyperphoria and, as measured by vertical prism diplopia, no considerable exophoria or esophoria.

tioned as only 12/20 or less. As the "media were good" at the latter date no cataract was present. Retinal sensibility was doubtless dulled by the life of abnormal function. Confirmatory of this is the fact that Parkman used a crossed cylinder hand lens during the last years of his life, besides his spectacles, to magnify the size of printed letters.

Incidentally we may understand how it was that Parkman did not get all the relief from completed presbyopia that others do. It was because, with his intense will and powerful innervation, presbyopia was probably never quite complete, and some ability to overcome his hyperopia and astigmatism would remain farther into old age than with others. The same fact also suggests that his astigmatism and hyperopia were always masked, and consequently underestimated without mydriasis, by the patient's exceptional ability to conceal it by his accommodation. Hence, in part, at least, the differences among oculists in estimating the ametropia and in discovering the very existence of astigmatism. It should also be noted that with an organization both mental and neurologic, dominated as it were by a passion for exactness, the comparatively low astigmatism and anisometropia that could be neutralized for only a minute or two at a time would be exceptionally tormenting, its conquering never renounced, nor never for more than an instant overcome.

From comparison of all the data the demonstration is therefore perfect that:

(1) Parkman had unsymmetric astigmatism.

(2) There was a certain difference in the hyperopia (that is, anisometropia) of the two eyes.

(3) There was a probable difference in the amount of astigmatism of the two eyes. Most important is the fact that it was unsymmetric.

(4) This unsymmetric astigmatism and anisometropia was not corrected by any of the glasses that were ordered for him.¹⁴

(5) These ametropic defects were of such a low degree that prior to completed presbyopia they did not prevent fairly accurate distant visual acuteness, the power of accommodation being sufficiently great to neutralize them for this purpose.

(6) But they were so high that even with Parkman's marvelous vigor of will and innervation they could not be overcome for but a minute or two, or at best five, at near range (that is, in reading and writing), and during many years, not even for a minute.

(7) The effort of overcoming the unsymmetric astigmatism and anisometropia was so great and so expensive of nerve force that it resulted in the ocular and cerebral symptoms enumerated.¹⁵ The almost unexampled severity of these symptoms was exceptional, because of the heroic resolution of the man and his indomitable perseverance in his chosen work.

The professional lesson. — Parkman had the best professional advice that the medical science of his time could offer. He consulted the best physicians of Europe and of America, but all, in fact, in vain. During the last fifteen years of his life, after Dr. S. Weir Mitchell and other Philadelphia physicians, about 1875, had demonstrated the relief of reflex ocular diseases by means of the correction of astigmatism, Parkman might have and should have found at least some relief, and at least might have learned the solution of the terrible mystery of his life which had made tragedy of its every day. Prior to 1868 he had written as follows of his experiences with our profession:

Meanwhile the faculty of medicine were not idle, displaying that exuberance of resource for which that remarkable profession is justly famed. The wisest indeed did nothing, commending his patient to time and faith; but the activity of his brethren made full amends for this masterly inaction. One was for tonics, another for a diet of milk; one counseled galvanism, another hydropathy; one scarred him behind the neck with nitric acid, another drew red-hot irons along his spine with a view of enlivening that organ. Opinion was as divergent as practice. One assured him of recovery in six years; another thought that he would never recover. Another with grave circumlocution, lest the patient should take fright, informed him that he was the victim of an organic disease of the brain which must needs dispatch him to another world within a twelvemonth; and he stood amazed at the smile of an auditor who neither cared for the announcement nor believed it. Another, an eminent physiologist of Paris, after an acquaintance of three months, one day told him that, from the nature of the disorder, he had at first supposed that it must, in accordance with precedent, be attended with insanity, and had ever since been studying him to discover under what form the supposed aberration declared itself, adding with a somewhat humorous look that his researches had not been rewarded with the smallest success.

Farnham also says:

His general troubles were believed by the doctors to "come from an abnormal state or partial paralysis of certain arteries of the brain."

The last statement, while we smile, may afford a little instruction, because it is so characteristic of some puzzled practitioners when in the presence of a baffling mystery to fly to a word or term, or a far more mystifying explanation, and call that diagnosis.

The query remains as to Parkman's quizzical but no less terrible arraignment of us. There can be no more loyal member of the medical profession than I, none who believes more thoroughly that it is motivated upon an earnestness and unselfishness of purpose unequalled in any so large body of men, none who is more deeply convinced that the brethren of his guild are doing more for civilization and the world's regeneration than any other; and yet, in the face of the long delay before the pathologic significance of ametropia was discovered, before the still more criminal silence and neglect and even opposition to that truth by so many physicians since the discovery was made, — the philosophic observer gets a decided shock. This is all the more startling when we learn that many of the leaders of the profession were consulted by Parkman and since 1875,

¹⁴ Two of the sets of lenses I have before me as I write, and the fact is proved true by "neutralization."

¹⁵ People who cannot hold their arm horizontal for five minutes think it is exaggeration when a worse muscular and nerve strain cannot be endured by steady innervation of the ciliary muscle for ten or fifteen hours a day!

with no word of the explanation they should have known and of the cure they might have given. Many of them did not even keep any records or notes of the symptoms, diagnosis and treatment in his case. And yet more close comes the lesson when it is observed that despite the existence of hundreds of oculists at present capable of diagnosing and curing such diseases there are to-day in America at least a million such sufferers unrelieved, and in Europe many millions. In the presence of those who sneer at "exaggeration" and who kill by silence, before such wilful, not to say selfish ignoring, knowing the tons of "headache powders" sold by quack drug stores and even prescribed by medical men, viewing the vogue of the permitted and even encouraged "eyes-examined-free" criminal optician,—pondering upon the dignity of the "leading practitioner" and the "ophthalmic surgeon," who cannot bring himself to become "a spectacle peddler,"—one is constrained to echo Parkman's splendid indignation as to the pompous historical writer who is more concerned about himself and his profession than about prosaic truth. Once when upbraided for some accurate but "undignified" truth he broke out with, "Damn the dignity of history! Straws are often the best materials." The same splendid spirit should motive us. Let us cure our patients!

The following is the second autobiographic letter, now preserved by the Massachusetts Historical Society, and copied by the kindness of Miss Parkman. As it has never been printed I reproduce it herewith, because it presents his own view somewhat differently from the first letter, and as seen from a later time in life.

My dear Brimmer,—I once told you that I should give you some account of the circumstances under which my books were written. Here it is, with some preliminary pages to explain the rest. I am sorry there is so much of it:

Causes antedating my birth gave me constitutional liabilities to which I largely ascribe the mischief that ensued. As a child I was sensitive and restless, rarely ill, but never robust. At eight years I was sent to a farm belonging to my maternal grandfather on the outskirts of the extensive tract of wild and rough woodland now called Middlesex Fells. I walked twice a day to a school of high but undeserved reputation about a mile distant, in the town of Medford. Here I learned very little and spent the intervals of schooling more profitably in collecting eggs, insects and reptiles, trapping squirrels and woodchucks, and making persistent though rarely fortunate attempts to kill birds with arrows. After four years of this rustication I was brought back to Boston, when I was unhappily seized with a mania for experiments in chemistry involving a lonely, confined, unwholesome sort of life, baneful to body and mind. This lasted till the critical age of fifteen, when a complete change came over me—I renounced crucibles and retorts and took to books; read poetry and fancied for a while that I could write it; conceived literary ambitions, and, at the same time, began to despise a literary life and to become enamored of the backwoods. This new passion—which proved permanent—was no doubt traceable in part to fond recollections of the Middlesex Fells, as well as to one or two journeys which I was permitted to make into some of the wilder parts of New England. It soon got full possession of me, and mixed itself with all my literary aspirations. In this state of mind I went to college, where I divided my time about equally between books and active exercises, of which last I grew inordinately fond, and in which I was ambitious beyond measure to excel.

My favorite backwoods were always in my thoughts. At first I tried to persuade myself that I could woo this new mistress in verse; then I came down to fiction, and at last reached the sage though not flattering conclusion that if I wanted to build in her honor any monument that would stand, I must found on solid fact. Before the end of the sophomore year my various schemes had crystallized into a plan of writing the story of what was thus known as the "Old French War;" that is, the war that ended in the conquest of Canada; for here, as it seemed to me, the forest drama was more stirring and the forest stage more thronged with appropriate actors than in any other passage of our history. It was not till some years later that I enlarged the plan to include the whole course of the American conflict between France and England; or, in other words, the history of the American forest; for this was the light in which I regarded it. My theme fascinated me and I was haunted with wilderness images day and night.

From this time forward, two ideas possessed me. One was to paint the forest and its tenants in true and vivid colors; the other was to realize a certain ideal of manhood, a little medieval, but nevertheless good. Feeling that I fell far short of it, I proceeded in extreme dissatisfaction to apply heroic remedies. I held the creed that the more hard knocks a man gets, whether in mind or body, the better for him, provided always that he takes them without flinching; and as the means of forcing myself up to the required standard, I put my faith in persistent violence which I thought energy. I held that the true aim of life was not happiness but achievement; had profound respect for physical strength and hardihood when joined with corresponding qualities of character; took pleasure in any moderate hardship, scorned invalidism of all kinds, and was full of the notion, common enough with boys of a certain sort, that the body will always harden and toughen with exercise and exposure. I remember to have had a special aversion for the Rev. Dr. Channing, not for his heresies, but for his meager proportions, sedentary habits, environment of close air and female parishioners, and his preachments of the superiority of mind over matter; for, while I had no disposition to gainsay his proposition in the abstract, it was a cardinal point with me that while the mind remains a habitant of earth, it cannot dispense with a sound material basis, and that to neglect and decri the corporal part in the imagined interest of the spiritual is proof of a nature either emasculate or fanatical. For my own part, instead of neglecting, I fell to lashing and spurring it into vigor and prosperity.

Meanwhile I diligently pursued my literary scheme. While not exaggerating the importance of my subject, I felt that it had a peculiar life of its own of which I caught tantalizing glimpses, to me irresistibly attractive. I felt far from sure that I was equal to the task of rekindling it, calling out of the dust the soul and body of it and making it a breathing reality. I was like some smitten youth plagued with harrowing doubts as to whether he can win the mistress of his fancy. I tried to gauge my own faculties and was displeased with the result. Nevertheless I resolved that if my steed was not a thoroughbred I would at least get his best paces out of him, and I set myself to a strenuous course of training for the end in view. A prime condition of success was an unwearied delving into dusty books and papers, a kind of work which I detested; and I came to the agreeable yet correct conclusion that the time for this drudgery was not come; that my present business was, so to speak, to impregnate myself with my theme, fill my mind with impressions from real life, range the woods, mix with Indians and frontiersmen, visit the scenes of the events I meant to describe, and so bring myself as near as might be to the times with which I was to deal. Accordingly I spent all my summer vacations in the woods or in Canada, at the same time reading such books as I thought suited, in a general way, to help me towards my object. I pursued these lucubrations with a pernicious intensity, keeping my plans and purposes to myself, while passing among my companions as an outspoken fellow.

The danger into which I was drifting rose from the excessive stimulus applied to nerves which had too much stimulus of their own. I was not, however, at all nervous in the sense in which that term is commonly understood,

and I regarded nervous people with more piety than esteem. The mischief was working underground. If it had come to the surface the effects would probably have been less injurious. I flattered myself I was living wisely because I avoided the more usual excesses, but I fell into others quite as baneful, riding my hobbies with unintermitting vehemence and carrying bodily exercise to a point where it fatigues instead of strengthening. In short, I burned the candle at both ends.

The first hint that my method of life was not to prove a success occurred in my junior year, in the shape of a serious disturbance in the action of the heart, of which the immediate cause was too violent exercise in the gymnasium. I was thereupon ordered to Europe, where I spent the greater part of a year, never losing sight of my plans and learning much that helped to forward them. Returning in time to graduate with my class, I was confronted with the inevitable question, What next? The strong wish of my father that I should adopt one of the so-called regular professions, determined me to enter the Harvard Law School.

Here, while following the prescribed courses at a quiet pace, I entered in earnest on two other courses, one of general history, the other of Indian history and ethnology, and at the same time studied diligently the models of English style; which various pursuits were far from excluding the pleasures of society. In the way of preparation and preliminary to my principal undertaking, I now resolved to write the history of the Indian War under Pontiac, as offering peculiar opportunities for exhibiting forest life and Indian character; and to this end I began to collect materials by travel and correspondence. The labor was not slight, for the documents were widely scattered on both sides of the Atlantic; but at the beginning of 1846 the collection was nearly complete.

I had been conscious for some time of an overstimulated condition of the brain. While constantly reminding myself that the task before me was a long one, that haste was folly and that the slow way was the surer and better one, I felt myself spurred forward irresistibly. It was like a rider whose horse has got the bit between his teeth, and who, while seeing his danger, cannot stop. As the mischief gave no outward sign, nobody was aware of it but myself. At last, however, a weakness of the eyes, which was one of its symptoms, increased so fast that I was forced to work with the eyes of others. I now resolved to execute a scheme which I had long meditated. This was to visit the wild tribes of the far West, and live among them for a time, as a necessary part of training for my work. I hoped by exchanging books and documents for horse and rifle to gain three objects at once — health, use of sight and personal knowledge of savage life. The attempt did not prosper. I was attacked on the plains by a wasting and dangerous disorder, which had not ceased when I returned to the frontier five months later. In the interval I was for some weeks encamped with a roving band of Sioux at the Rocky Mountains, with one rough though not unfaithful attendant. It would have been suicidal to accept the part of an invalid, and I was sometimes all day in the saddle, when in civilized life complete rest would have been thought indispensable. I lived like my red companions, and sometimes joined them in their hunting, with the fatiguing necessity of being always armed and on the watch. To one often giddy with the exhaustion of disease, the strain on the system was great. After going back to civilization the malady gradually subsided after setting in action a train of other disorders which continued its work. In a year or more I was brought to a state of nervous prostration that debared all mental effort, and was attended with a weakness of sight that for a time threatened blindness. Before reaching this pass I wrote the "Oregon Trail" by dictation. Complete repose, to me the most detestable of prescriptions, was enjoined upon me, and from intense activity I found myself doomed to helpless inaction. Such chance of success as was left lay in time, patience and a studied tranquility of spirit; and I felt, with extreme disgust, that there was nothing for it but to renounce past maxims and habits and embrace others precisely the opposite. An impulse seized me to return to the Rocky Mountains, try a hair of the dog that bit me, and settle squarely the question to be or not to be. It was the time of the Mexican War, and I well remember

with what envious bitterness I looked at a colored print in a shop window, representing officers and men carrying a field battery into action at the battle of Buena Vista. I believe that I would willingly have borne any amount of bodily pain, provided only I could have bought with it the power of action.

After a while — as anything was better than idleness — I resolved on cautiously attempting to make use of the documents already collected for the "Conspiracy of Pontiac." They were read to me by friends and relatives at times when the brain was least rebellious, and I wrote without use of sight by means of a sort of literary grid-iron, or frame of parallel wires, laid on the page to guide the hand. For some months the average rate of progress did not exceed three or four lines a day, and the chapters thus composed were afterwards rewritten. If, as I was told, brain work was poison, the dose was homeopathic and the effect was good, for within a year I could generally work, with the eyes of others, two hours or more a day, and in about three years the book was finished.

I then began to gather materials for the earlier volumes of the series of France and England in North America, though, as I was prevented from traveling by an extreme sensitiveness of the retina which made sunlight insupportable, the task of collection seemed hopeless. I began, however, an extensive correspondence, and was flattering myself that I might succeed at last when I was attacked with an effusion of water on the knee which subsided in two or three months, then returned, kept me a prisoner for two years, and deprived me of necessary exercise for several years more. The consequence was that the devil which had been partially exorcised returned triumphant. The evil now centered in the head, producing cerebral symptoms of such a nature that, in 1853, the physician who attended me at the time, after cautious circumlocution, said in a low and solemn voice that his duty required him to warn me that death would probably follow within six months, and stood amazed at the smile of incredulity with which the announcement was received. I had known my enemy longer than he, and learned that its mission was not death but only torment. Five years later another physician — an eminent physiologist of Paris, where I then was — tried during the whole winter to discover the particular manifestations of the insanity which he was convinced must needs attend the symptoms he had observed, and told me at last what he had been about. "What conclusion have you reached?" I asked. "That I never knew a saner man in my life." "But," said I, "what is the chance that this brain of mine will ever get into working order again?" He shook his head and replied, "It is not impossible" — with which I was forced to content myself.

Between 1852 and 1860 this cerebral rebellion passed through great and seemingly capricious fluctuations. It had its ebbs and floods. Slight and sometimes imperceptible causes would produce an access which sometimes lasted with little respite for months. When it was in its milder moods I used the opportunity to collect material and prepare ground for future work, should work ever become practicable. When it was at its worst the condition was not enviable. I could neither listen to reading nor engage in conversation, even of the lightest. Sleep was difficult and was often banished entirely for one or two nights, during which the brain was apt to be in a state of abnormal activity, which had to be repressed at any cost, since thought produced the intensest torture. The effort required to keep the irritated organ quiet was so fatiguing that I occasionally rose and spent hours in the open air, where I found distraction and relief in watching the policemen and the tramps on the malls of Boston Common, at the risk of passing for a tramp myself. Towards the end of the night this cerebral excitation would seem to tire itself out, and gave place to a condition of weight and oppression much easier to bear.

Having been inclined to look with slight esteem on invalidism, the plight in which I found myself was mortifying; but I may fairly say that I never called on others to bear the burden of it, and always kept up a show of equanimity and good humor. The worst strain on these was when the Civil War broke out and I was doomed to sit an idle looker on.

After it became clear that literary work must be indef-

initely suspended, I found a substitute in horticulture; and am confident that I owe it in good measure to the kindly influence of that gracious pursuit that the demon in the brain was gradually soothed into comparative quiet. In 1861 I was able, with frequent interruptions, to take up my work again. At the same time there was such amendment as regards sight that I could bear the sunlight without blinking and read for several minutes at once without stopping to rest the eyes, though my chief dependence was still in those of others. In 1865 "The Pioneers" was finished, and the capacity of work both of brain and eye had much increased. "The Jesuits" was finished in 1867; "The Discovery of the Great West," in 1869; "The Old Régime," in 1874; and "Frontenac," in 1877. "Montcalm and Wolfe," which involved more labor, was not ready till 1884.

While engaged on these books I made many journeys in the United States and Canada in search of material, and went four times to Europe with a similar object. The task of exploring archives and collecting documents, to me repulsive at the best, was, under the circumstances, difficult, and would have been impossible but for the aid of competent assistants working under my direction.

Taking the last forty years as a whole, the capacity of literary work which during that time has fallen to my share has, I am confident, been considerably less than a fourth part of what it would have been under normal conditions. Whether the historical series in hand will ever be finished I do not know, but shall finish it if I can.

Yours faithfully,

F. PARKMAN.

JAMAICA PLAIN, 28 Oct., 1886.

Clinical Department.

REPORT OF CASES FROM THE SURGICAL SERVICE OF THE CHILDREN'S HOSPITAL.

BY DRs. H. L. BURRELL, H. W. CUSHING AND J. S. STONE.

Reported by Dr. W. C. Howe.

1. Simple papilloma of abdominal wall; 2, scalp wound: concussion; 3, branchial cyst; 4, bullet wound of left chest; 5, abscess of abdominal parietes; 6, congenital deformity of hands and feet.

SIMPLE PAPILOMA OF ABDOMINAL WALL.

O. M., a boy of eleven years, admitted Feb. 5, 1903. Family history negative; previous history negative. At birth showed a minute verrucous growth on abdominal wall, which gradually grew to size of a pea. Four weeks ago it was irritated by the child's finger-nails, some bleeding occurred and it has since then increased in size (Fig. 1). Physical examination: Well developed and nourished. Marked glandular enlargement in neck, glands size of beans. No glands in axillæ; few in groin. Heart sounds regular, normal, no murmurs. Lungs show numerous wheezy râles, scattered throughout front and back; percussion normal. Abdomen negative. Upper and lower extremities normal. On abdominal wall, 2 inches below lower end of sternum, is a reddened area $1\frac{3}{4}$ inches long, $1\frac{1}{2}$ inches wide. In the center of this area is a verrucous growth $\frac{3}{4}$ inch long, $\frac{1}{2}$ inch wide, elevated $\frac{1}{4}$ inch. This growth is very vascular and bleeds easily; not painful. Operation; Dr. Cushing: The papilloma, with the surrounding skin at its base, was removed. The growth evidently did not extend below the skin. Slight

bleeding. Wound closed with a subcutaneous catgut suture. Crêpe lisse dressing. Bandage. Sixth day: The wound was dressed and found closed by first intention. Linear cicatrix firmly healed. No bulging on cough. Tenth day discharged well. Pathological report from Dr. H. A. Christian stated that the growth was a simple papilloma with lymphoid and plasma cell infiltration.

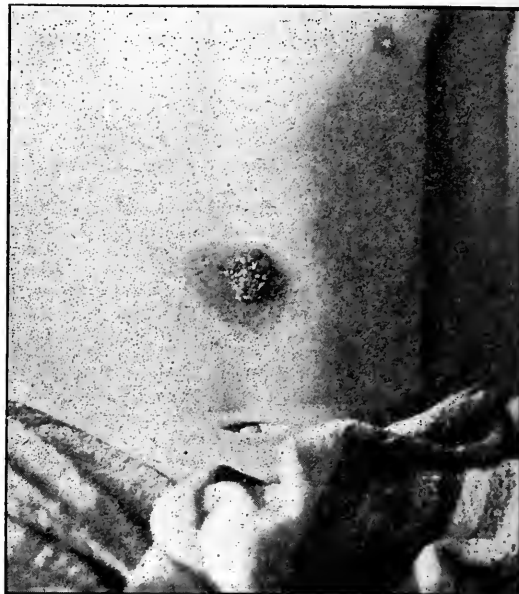


FIG. 1.—Simple papilloma of abdominal wall.

tion. We are also indebted to Dr. Christian for the photomicrographs which follow (Fig. 2 and Fig. 3). This case is of interest in that it had the gross appearance of an epithelial carcinoma. It was a simple papilloma which had increased in size as the result of irritation.

SCALP WOUND: CONCUSSION.

F. K., a boy of ten years, admitted March 30, 1903. Family history negative. Previous history: Diphtheria six years ago; following this there has been internal strabismus of right eye. There has also been paralysis of right arm since birth. Present illness: At 5.30 p.m. to-day, boy was struck on head with stone about size of a fist. At 6 p.m. was seen by a doctor, who cleaned up the wound, put in one suture and dusted wound with iodoform. While being dressed, the boy became drowsy and could be aroused only with difficulty. He was brought to the hospital at 9 p.m. Physical examination: Well developed and nourished. Pupils semi-dilated, left slightly larger than right, both react to light. Internal strabismus of right eye. Pulse regular, 76, good volume and tension, alike in the two wrists. Temperature 98.8°. On posterior aspect of head, at base of left parietal bone, is a contused wound 1 inch long. No depression or fracture can be made out. Boy not drowsy; is clear mentally. Heart, lungs and abdomen negative. Knee jerks normal. Right arm 21 inches, left arm 23 inches in length.

No muscular atrophy. The wound was cleaned with corrosive solution; corrosive dressing. On third day the wound was dressed; it was found to be clean. No symptoms. On sixth day the boy was up and about the ward. He showed no symptoms. On tenth day the patient was seen by Dr. W. N. Bullard, who made diagnosis of obstetrical paralysis, right arm. The patient was discharged well.

Injuries of this description in children are not uncommon, and unless one has seen the clinical picture of concussion, with pupils semi-dilated, one slightly larger than the other, internal strabismus of one eye, one might be led to localize a cerebral injury and operate. This patient, immediately following the injury, was mentally clear; but while the wound was being dressed stupor, a serious symptom, appeared. We have seen instances in which convulsions occurred which were so alarming as to cause the attending surgeon to operate.

BRANCHIAL CYST.

T. S., a girl of seven years admitted April 6, 1903. Family history and previous history negative. Present illness: When two years of age, the mother noticed a small lump, size of a pea, on left side of neck. This lump ruptured spontaneously and discharged. The patient was operated four years ago at another hospital by an incision and curetting. Two weeks ago the tumor reappeared and began to discharge a thin, purulent fluid.

Physical examination: Situated on anterior aspect of neck, at the level of the thyroid cartilage and at the apex of the left submaxillary triangle, is a raised reddened area about the size of a pea, covered with a slight crust in the center. It is superficial and freely movable and not tender. It has a deep attachment running in toward the median line (Fig. 4).

April 13, operation, Dr. Burrell. An elliptical incision was made circumscribing this raised, reddened area and a dense, tubular sinus found which extended downward to the wing of the left thyroid cartilage. The sac was dissected free from the cartilage. In removing the tubular sac, the dissection opened the crico-thyroid membrane, which was sutured with fine silk. The dissection was difficult, and to remove the whole of the branchial cyst it was necessary to recognize clearly the difference between the cyst wall and the adjacent tissues. The separated muscular tissue and fascia were sutured with catgut and the skin was closed with silkworm-gut sutures. In a week's time the wound was united and the patient was discharged well. In removing a branchial cyst it is necessary to dissect out the continuity of the sac. Otherwise there will be a relapse from the secreting membrane that is left from the incomplete removal.

BULLET WOUND OF LEFT CHEST.

C. G., a boy ten years of age, admitted March 23, 1903. Family history and previous history negative. On March 20, 1903, the patient was one of a band of "white settlers" who were defending a town on Cape Cod from the attack of "Indians;" the Indians ranged in age from eight to twelve years; both the white and red men were armed for the most part with bows and arrows, but the Indians were fortunate in the possession of one 22 cal. revolver. The attacking party was rapidly being repulsed, until their solitary firearm, which throughout the conflict had been discharged over the heads of the whites, was turned against the patient, at a distance of about six feet. The bullet entered his left chest. The wound was dressed with gauze and corrosive sublimate; and was not probed by the attending physician. In the afternoon he had considerable pain in the left chest. No evidence of hemorrhage. Temperature 99.5. Pain on respiration. Morning of 21st, temperature normal, respiration 30, pulse 110; evening of 21st, temperature 100, pulse 120, respiration 32; 22d, temperature 101, pulse 120, respiration 35, wound looked well; evening of 22d, restless, temperature 102, pulse 124, respiration 40; 23d, temperature 101, pulse 124, respiration 36. Physical examination: Well developed and nourished. Expression anxious; tongue slightly coated; pupils equal and react. Slight glandular enlargement in left axilla and groin. Heart rapid, regular, no murmur. No friction rub. Heart's dullness extends to right, $\frac{1}{4}$ inch beyond the right border of sternum. Right



FIG. 4.—Branchial cyst, showing opening of sinus just to left of median line.

lung normal. Left lung shows good resonance in front, becoming dull in posterior axillary line, dulness over lower third of back. Just inside nipple on the left is a slight discoloration in fourth interspace; 1 inch inside and $\frac{1}{2}$ inch below nipple is a circular wound in the skin, with surrounding yellowish discoloration (Fig. 5.). Wound $\frac{1}{4}$ inch



FIG. 5.

in diameter. Swelling and tenderness over pectoral muscle. No râles in lung. Slight discoloration in back over lower end of scapula. March 24, some pain in left chest. Physical signs in left lung have increased and lower third of back is flat, with bronchial breathing and increased voice sounds. March 25, seen by Dr. T. M. Rotch, who made diagnosis of pericarditis with effusion. Cardiac dulness now extends to line midway between right nipple and sternum. Slight friction rub over third space on left. Lung on left is now flat for lower two-thirds of back. March 27, respirations have dropped to 30. No râles in lung. Physical signs in heart and lungs the same. Small amount of bloody sputum to-day. March 28, heart's dulness $\frac{1}{4}$ inch to right of sternum. Lung is not so flat. No râles. March 29, just below angle of left scapula, slough seen in back. Bullet not felt. April 1, pericardium evidently not so markedly stretched to right as before. April 5, temperature 99.5, respiration 30, child comfortable. Dulness in lower left back, several moist râles. Condition satisfactory. April 10, steady improvement since last note. April 13, child is improving in general condition and temperature is falling. Dulness in left back persists. April 17, this morning child developed swelling in region of right parotid. Some tenderness to touch and pain on opening mouth. Isolated on suspicion of epidemic parotitis. Dr. Rotch confirms diagnosis. April 22, temperature down. Throat

not sore. Isolation stopped. April 27, last night temperature was up. No cause found. Up on go-cart in sun parlor. May 2 boy has been up and dressed about the ward. May 6, x-ray shows bullet about in middle of lung. May 7, physical examination: Heart sounds regular, not rapid, no murmurs. Relative dulness from anterior axillary line, third rib down to seventh rib. Area of dulness below and to right of angle of left scapula. Breathing somewhat diminished in left back in region of scapular angle. In left axilla, from fourth to seventh rib, extending to post-axillary line, is a region where breathing is almost entirely absent. Boy discharged relieved.

It is a fair presumption, from the situation of the wound externally, the situation of the bullet in the lung and the existence of pericarditis, that the apex of the heart muscle was perforated. A few years ago such injuries were assumed to be fatal, but to-day we know that punctured wounds of the heart may recover under suitable treatment. The immediate dangers are profuse, overwhelming hemorrhage, or a hemorrhage which trickles into the pericardial sac and thus gradually compresses the heart and stops its action. Life has been saved by operating and removing the clots which interfered with the action of the heart and suturing the heart muscle.¹

ABSCESS OF ABDOMINAL PARIETES.

A. A., age six years, was admitted March 2, 1903. Family history and previous history negative. Present illness: Three weeks ago was struck with a club on right side of abdomen. Has not been in bed; has walked, but with considerable pain, leaning to one side. Bowels have moved with aid of castor oil. Sleep is prevented by pain; appetite very poor. Physical examination: Fairly developed and nourished. Looks sick. Lies by preference with thighs flexed. Pupils equal and react. No efflorescence. Throat normal. Linear scars behind each ear and on left side, in posterior triangle. Heart and lungs normal. Glands in each groin. Hyperextension of right hip limited. Limbs otherwise normal. Spine held somewhat stiff, especially to hyperextension. Child cannot be made to stoop or bend over while sitting. Walks rather guardedly, but not with the characteristic gait of Pott's disease. In right side of abdomen, just above McBurney's point, is a visible and somewhat indefinitely palpable tumor about two inches in diameter. No redness, increased surface temperature or fluctuation. Tumor moves with respiratory movement of abdominal wall and appears confined to abdominal parietes. Extremely sensitive. No general abdominal tenderness or distention. No evidence

¹ L. L. Hill: N. York Med. Rec., Dec. 15, 1900, p. 921. Case of C. H. Mastin: Transactions of American Surgical Association, vol. xiii, p. 273.

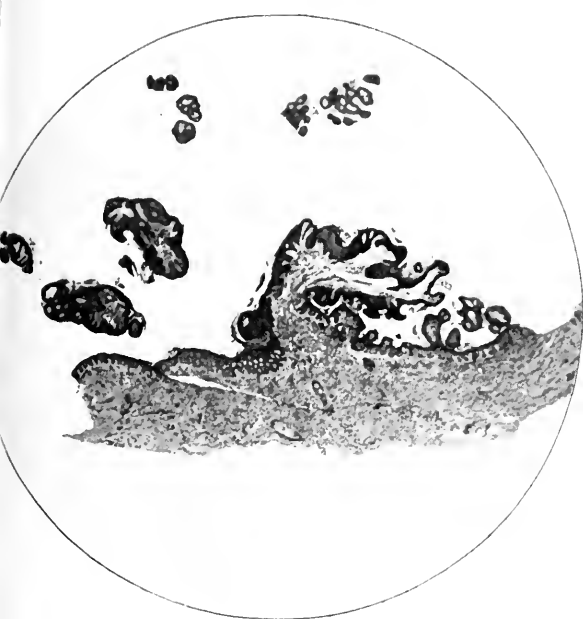


FIG. 2. — Photomicrograph of section of papilloma.



FIG. 3. — Photomicrograph of section of papilloma, showing that the growth is superficial, and does not involve the deeper layers.



FIG. 7. — Radiograph of hands.



FIG. 9.

of ascites. Right rectus more tense than left. Whole abdomen, except upon pressure over tender area, is flaccid. Operation, Dr. Cushing; Ether. Incision one inch long over abscess and small amount of pus evacuated. Abscess evidently between external and internal oblique. Irrigated with peroxide. Iodoform wick. Dressing. Good recovery from ether. One week later the wound was nearly healed, the granulations were healthy, slight discharge. Motions of hip apparently normal. Flexibility of lumbar spine normal. Lumbar spine slightly flattened. Discharged relieved. Blood examination, March 3: 21,400 leucocytes. Bacteriological record: *Streptococcus pyogenes aureus*. Apparently this was a hematoma, following the injury, which later suppurated. The case was sent to the hospital with the diagnosis of appendicitis with abscess.

CONGENITAL DEFORMITY OF HANDS AND FEET.

P. F., a boy of eleven years, admitted Dec. 5, 1902. Family history negative. Only child. Previous history: Normal labor, full term, measles. Present illness: Right hand operated on at another hospital when one year old. No other treatment. Since that time, so far as known, the child has had no trouble of any sort except the deformity. Physical examination: Peculiarly developed, strong, well nourished, good color. Tongue large, flat and fissured. Intelligence good. Ears outstanding. Forehead low and slightly retreating. Head, normal shape, rather small. Chest flattened at the sides. Costal cartilages prominent. Heart and lungs normal. Abdomen soft and full; normal. Penis small. Testicles in scrotum. Thighs large. Spine normal. Right arm normal. Right thumb, terminal phalanx, turned out at angle of

30°. Right little finger abnormally wide at base, as though there were an extra metacarpal. At base, scar of old operation for supernumerary finger. Left arm normal. Left thumb similar to right. On left hand the supernumerary finger beyond little finger, which seems to consist



FIG. 8.

entirely of an extra metacarpal; between it and main body of hand is a web $\frac{1}{2}$ inch wide, which runs up on outer side of little finger (Figs. 6 and 7). Movements of fingers not interfered with. Each foot presents six webbed, rudimentary toes, with imperfectly formed nails. Right foot apparently has five distinct metatarsals with corresponding phalanges and on inner side of these, an imperfectly formed metatarsal, with which articulate distally and internally irregular phalanges, three or four in number, forming a broad, flattened great toe. The left foot is similar in conformation. (Figs. 8 and 9). The great toe of



FIG. 6.



FIG. 10.

each foot is turned in at an angle of 30° with the axis of the foot. Operation, Dr. Burrell: Ether. *Left hand:* Incision starting at end of ulna and coming up around extra finger, forming an oval. The dissection was carried down to the joint of supernumerary finger and the finger was removed. Skin sutured with interrupted catgut sutures. Sterile dressing. *Feet:* Great toes removed. Incision at joint of toe and metatarsal up and around toe. Skin dissected back. Muscles cut and toes excised at joint. Skin sutured with catgut. Sterile dressing. On the seventh day the wounds were dressed and found to be healed by first intention. On the fourteenth day the patient was discharged (Figs. 10 and 11).



FIG. 11.

Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., AND W. D. HALL, M.D., BOSTON.

(Concluded from No. 13, page 347.)

FUNCTIONAL OR HYSTERICAL AMBLYOPIA.

GUNN⁶ divides this class of patients into idiopathic, usually occurring in women, sometimes in children, and traumatic, occurring probably to an equal degree in both sexes, but always in adults, according to his experience. He thinks that we do not understand the nature of the affections of the nervous system resulting in hysterical manifestations, although many forms admittedly

have an element of simulation. In many cases a single central lesion will not account for all the symptoms. When such lesions actually exist it is not a pure functional disorder, but an obscure early manifestation of real organic disease. Many hysterical persons subsequently become affected with an ailment such as insular sclerosis, consequently these symptoms should be considered carefully. It may be assumed that in most of these cases there is a temporary, partial or complete loss of the power of conduction between the lower or middle visual centers and the highest conscious centers. Gunn has noticed in cases of supposed blindness in very young children that the child pays no special attention to moving objects, although ophthalmoscopically nothing appears to be wrong. He thinks the prognosis to be favorable in such cases, and considers it an instance of delayed visual consciousness, in which there may be retarded development of higher association fibers. He thinks that there may be some similarity between this class of cases and those which later in life are called "hysterical amblyopia," inasmuch as in both the retinae are perfect, the optic nerve seems to be perfectly able to transmit impressions, the tracts seem normal, the sight centers presumably are fit for work and actually are receiving impressions, and yet there is no consciousness of these impressions, or a consciousness lessened to the degree occasioning no response. In hysteria the association fibers have been normally developed and efficient, but from some unknown cause their functions seem to have been suspended. This loss of conducting power may be re-established by shock, suggestion, surprise or even a voluntary exertion, on the part of the patient, of his own will power. In hysteria a peculiarly susceptible nervous organization is to be considered. As regards the treatment, change of scene if it can be arranged; but if not, friends must be careful to avoid drawing attention to, or showing regard for, the symptoms. Nourishing diet, assafoetida and faradism may be of value.

THIOSINAMINE.

Dr. George F. Suker⁷ has carried on a series of experiments to determine the efficacy of this remedy as an absorbent of corneal opacities, cicatricial contraction of the lids, exudative chorioiditis, symblepharon, capsular opacities and cicatricial ectropion. It is an active alterative belonging to the same group as iodide of potash and mercury, and has been favorably mentioned as a resolvent of cicatricial tissue in other locations. Experiments made to determine whether it would prevent the maturing of cataracts were without results. The best mode of administration is in 3-gr. capsules once or twice a day, and after it has been used for five or six weeks, it is well to intermit for a week or ten days. It occasionally produces vertigo when first taken, which is an indication for diminishing the dose. Therapeutically it is a marked tonic, favors the absorption of exudates, transudates

⁶ Ophthal. Rev., October, 1902.

⁷ Journ. Amer. Med. Assoc. Aug. 9, 1902.

and clears corneal nebulae, produces local reactions without general disturbances, reduces glandular enlargements, causes cicatricial tissue to become pliable. The writer has used it in 6 cases of exudative chorioiditis, with improvement in 4; in 10 cases of dense corneal opacities, with improvement in 6; in 8 cases of opacities less dense, with marked improvement in 4, moderate in 2; in 6 cases of plastic iritis, with benefit in 3; in 3 cases of capsular cataract, with not the slightest improvement. The author recommends it only as one of many drugs which have been used for similar purposes with possibility of improvement, but it should not be given in cases where there are cicatrices resulting from operation, when the scars are expected to act as supports.

OPHTHALMOL LINDEMANN.

Dr. Donath⁸ believes this to be the best remedy for trachoma and other diseases of the eye. It is a carefully sterilized, oily product, showing the presence of iodide and traces of arachin acid. In the healthy eye it causes slight burning and redness of the conjunctiva, slight blepharospasm and photophobia, all of which disappear in a few minutes. In acute inflammatory conditions, after its use relief from the unpleasant symptoms is noticed. In those diseases characterized by secretion, these latter at first increase after its use and then rapidly diminish, and at the same time the swelling of the lids and chemosis of the bulb greatly subsides. Corneal ulcers are favorably affected through the formation of new blood vessels and reaction of corneal tissue. The opacities become certainly more transparent. In chronic inflammatory conditions, as, for instance, old trachoma with diffuse infiltration and hypertrophy, this drug at first causes an increase in the symptoms, but after the reaction the swelling subsides. Pannus is favorably affected by it, the ulcerative form especially, which at first shows an increase in circulation and new blood vessel formation, followed by resorption and clearing. The author prefers this drug to the nitrate of silver and sulphate of copper, as there is neither pain nor danger in its use. It may be said to favor resorption, increase the vitality of the tissues, act as an antiseptic by the laceration it produces and as a protective through its oily consistency.

SUBCONJUNCTIVAL INJECTIONS OF HETOL.

Dr. Lezenius⁹ uses either a 1 or a 5% solution of hetol in water or salt solution. The solution must be clear, neutral or slightly alkaline; never acid. After two or three days the irritative symptoms of herpes cornea disappear. It relieves pain in a marked degree. The ulcers rapidly clear, and a cure takes place in ten days or even less. No constitutional treatment was used. In ulcers of the cornea, especially when sluggish in nature, this method of treatment is valuable, in that it starts up an acute

process, which precedes healing. The duration of treatment of interstitial keratitis is very much shortened by the injection method. Of course atropine and internal medication should not be omitted. The injections do not seem to have much effect upon pannus. Iritis and chorioiditis of the non-purulent variety, although not especially benefited, were not affected unfavorably, and possibly the duration was somewhat shortened. The same was noticed in diseases of the sclera. The action is probably due to the diffusion of the drug into the lymph vessels of the conjunctiva and thence into the corneal lymphatic spaces. Its principal action seemed to be exerted upon the cornea and its immediate neighborhood, the effect diminishing as the distance increased.

VASOMOTOR DISTURBANCE OF THE EYE.

Lodge,¹⁰ as a result of the examination of the eyes of patients in whom there were undoubted signs of vasomotor disturbance in other parts of the body, has noticed spasmodic contraction of the central artery of the retina and its branches, and marked dilatation of the retinal veins, with, in some cases, palpitation. Visual fields were greatly contracted in the temporal and lower temporal portions, but not so on the nasal side. Whenever an ophthalmoscopic examination has disclosed contracted arteries and dilated veins, it is apt to be the case that such appearances and changes in the visual fields accompany vasomotor disturbances elsewhere in the body, although they may be very slight and not considered important enough for treatment, as would be in severe cases of the definite Reynaud type. Such patients complain of frontal and parietal headaches; their eyes ache after use, even though ametropia may be properly corrected. These patients are generally neurotic, and have an anxious expression; sometimes there is proptosis and occasionally edema of lids. Dilated episcleral veins, myosis and ciliary spasms may be present. The thyroid may be enlarged, but, with the exception of the proptosis, there are no signs of exophthalmic goiter. The diagnosis of vasomotor disturbances of the eye is unmistakable if a subconjunctivitis comes and goes while the patient is under observation. Without corroborative symptoms the diagnosis of the chronic form is difficult. The author suggests that the so-called "hot eye" of Hutchinson, the subconjunctivitis of Graefe and the periodic transient episcleritis of Fuchs is really a vasomotor affection of the eye. "Suprarenal liquid" locally is advised, together with the internal administration of the gland substance.

THE PRESENT STATUS OF SUBCONJUNCTIVAL INJECTIONS.

Charles Stedman Bull, M.D., in a paper read this summer before the American Ophthalmological Society, after reviewing the literature of the subject of subconjunctival injections and showing thereby how contradictory has been

⁸ Med. Chirurg. Centralbl., Feb. 13, 1903.

⁹ Monatbl. f. Augenh., October, 1902.

¹⁰ Brit. Med. Journ., Nov. 1, 1902.

the evidence offered as to their real value, concludes that "the efficiency of these various solutions injected beneath the ocular conjunctiva cannot be ascribed to the increased local acceleration of the lymph currents and so-called leucocytosis nor to the antiseptic action of the remedies employed, since the presence of these processes cannot be demonstrated in the eye after such injections. The chief change seems to be in the composition of the aqueous humor. This is said to become much richer in albuminoids, due to the irritating action of the injected substances upon the blood vessels." As the protective substances in the blood are always in combination with the albuminoids of the blood, any increase of the serum albumen in the aqueous humor would coincide with an increase in protective substances. After an injection of sublimate or sodium chloride, the aqueous humor becomes markedly hemolytic. Although during the last three years he has treated various diseases of the eye by this method, making use of a number of different solutions, Dr. Bull has not been able to determine any important difference in the mode of action or their effect between salt solution and a solution of mercuric cyanide extolled by Darier, neither has he had the success claimed by Haitz in central choroiditis and vitreous opacities by use of solutions of mercuric cyanide, and he has found the solution to be very painful. Hetol injections were less painful, and seemed to influence favorably herpes, interstitial keratitis and acute uveitis. This good effect was noticed in superficial cases but not in the chronic, notably failing in scleritis. Persistent use in tubercular disease of the iris and choroid was apparently without the slightest effect.

BROMIDE OF METHYL-ATROPINE AS A MYDRIATIC.

Darier¹¹ recommends this new mydriatic, in that it lacks certain inconveniences of atropine and possesses certain good qualities. In the larger and repeated doses it is said to have the same action on the iris and ciliary muscle as the sulphate of atropine. When used in solutions of one per cent strength, the dilatation of the pupil only lasts about one day, while the cycloplegia lasts but a few hours. In solutions of one half of one per cent with one per cent of cocaine, mydriasis alone is produced.

ELECTRIC HEAT AND DIONIN IN RHEUMATIC AFFECTIONS OF THE EYE.

Maddox¹² has found it convenient, when applying artificial heat to the eye, to use a one-half or seven-tenths strength ampère current passed through very fine wire which has been wrapped in cotton flannel. This current may be taken from an ordinary lighting wire and controlled by a transformer. He considers this form of dry heat to be especially indicated in rheumatic affections of the eye and certain forms of glaucoma. As a rule, he thinks dionin may be used

when heat is indicated, but advises adrenalin when cold is more applicable.

THE ORIGIN OF THE VITREOUS BODY IN VERTEBRATES.

Tornatola,¹³ as a result of his investigations upon this subject, believes to have demonstrated the normal vitreous as being always composed of fibrillæ that have no granule; that pseudo-cells are not to be made out at the intersections of these fibrillæ; that when there exists a rosary-like arrangement of fibers it is of pathological origin; that there is no hyaloid membrane; that there is no true internal limiting membrane of the retina; that it comes from cells without nuclei, which form the base of the pars ciliaris retinæ and from elements which in the differentiated retina constitute neuroglia.

DIAGNOSIS OF INTRAVAGINAL HEMORRHAGE OF THE OPTIC NERVE WITH THE OPHTHALMOSCOPE.

Gonin¹⁴ concludes his article as follows: A papillomacular haze with ischemia of the retinal arteries in a suddenly blind eye does not warrant this diagnosis. Profuse hemorrhages on the borders of the disk or in the vitreous do not necessarily signify an apoplexy of the sheath. They are in no way characteristic. A slight degree of papillary stasis is the only ophthalmoscopic appearance which the facts warrant considering an indication of retrobulbar effusion. The absence of all fundus changes does not exclude even an abundant hemorrhage into the sheath of the nerve. We are still ignorant of visual disturbances which are caused by hematoma of the nerve sheath, unless this hematoma is complicated by a more serious lesion, as, for example, fracture of the base or cerebral hemorrhage.

A PERIPATETIC EYE CLINIC.¹⁵

It is stated in the *Lancet* that Sir Ernest Cassel has given a large sum of money to the Egyptian government for the relief of ophthalmia in Egypt. It has been decided to send traveling dispensaries into the country for the relief of those who are unable to attend the already existing hospitals. There will be at first one of these dispensaries or ambulance hospitals, which will have a couple of tents with beds for patients who have to be operated upon, and for the treatment of the more serious cases. This will travel about from place to place under the direction of an ophthalmic surgeon. The system will be organized by a chief clinical assistant of the Royal Ophthalmic Hospital (Moorfields).

UNDER WATER FIVE MINUTES. — According to the *Medical News*, to settle a dispute, George Kistler, swimming instructor at the University of Pennsylvania, recently remained under water five minutes and five seconds without injury.

¹¹ La Clinique Ophtalmologique, November, 1902.

¹² La Clinique Ophtalmologique, Dec. 10, 1902.

¹³ Rev. Gen. d'Ophtal., March, 1903.

¹⁴ Annal. d'Oculist., Feb., 1903.

¹⁵ Med. Rec., July 11, 1903.

Reports of Societies.

AMERICAN GYNECOLOGICAL SOCIETY.

PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL MEETING,
HELD IN WASHINGTON, D. C., MAY
12, 13 AND 14, 1903.

JOSEPH E. JANVRIN, M.D., of New York, President.

An address of welcome was delivered by DR. I. S. STONE of Washington, D. C., which was responded to by the President.

There was a symposium on the subject of

WHAT SHALL BE THE TREATMENT IN CASES OF
PREGNANCY COMPLICATED BY FIBROID TUMOR?

The first paper with this title was read by DR. HENRY C. COE of New York City, who stated that fibroid tumors complicate pregnancy because they interfere with the normal development of the pregnant uterus; they cause distressing symptoms, or they jeopardize the life of the fetus or of the mother. Each case must be studied separately, and the decision as to the treatment will vary with the patient, the tumor, the experience and bias of the surgeon. He spoke of the influence of the tumor on pregnancy, and of pregnancy on the tumor—increased growth, degenerative changes, environment, etc. He mentioned three "semesters" of pregnancy:

(1) Up to the fourth month. (a) Empty the uterus in the case of large interstitial or broad ligament tumors, or where they are situated in the lower uterine segment; also in cases of impacted intrapelvic growths. Cases were cited in point. (b) Small tumors should be enucleated *per vaginam*, if possible, though pregnancy will usually be interrupted. Intrauterine polypi should be removed, if accessible. (c) Enucleation should be done by the abdominal route. Subperitoneal pedunculated growths should be removed. (d) Impacted growths should be liberated under anesthesia, when no adhesions are present, and they should be kept out of the pelvic cavity until they are kept out of the way by the growing fetus. The wishes of the patient should be followed so far as this can be done with safety.

(2) Fourth to seventh month. The location of the tumor is important, as well as its size and variety. Pain and pressure symptoms furnish indications for treatment. (a) Large interstitial growths. The uterus may be emptied, although the danger of hemorrhage from such a course is greater. (b) He advises enucleation by the abdominal route, and spoke of the propriety of removing multiple small tumors which do not encroach on the uterine cavity. (c) The patient should be kept under observation. The patient may go to full term and be delivered normally. (d) Impacted tumors, pressing on the bladder, bowel, ureter, may call for radical operation. (e) Twisted pedicle, degeneration of tumor, disease of the adnexa, peritonitis, etc.,

may require interference without reference to pregnancy.

(3.) After sixth month. Viability of the fetus should be obtained if the life of the mother is not actually jeopardized. Can the woman be delivered at term? Yes, (a) with subperitoneal growths, if they are not too large and favorably situated. (b) Small interstitial fibroids, if they are not in the lower uterine segment. (c) Polypi presenting at the os can be easily removed at any time. After the eighth month the Porro-Cesarean operation, suprapubic amputation or hysterectomy should be performed, preferably by election, that is, before full term.

Conservatism should be practiced here, as in other gynecological operations, but not carried to extremes.

The author discussed the question of marriage and subsequent risks of pregnancy in women with fibroids. He said the time for conservative surgery is often before there is a chance of conception. In general, if a fibroid is to be regarded as a menace to life before pregnancy, the condition must be still more grave after conception occurs. Is it not the duty of the gynecologist to ward off this danger?

DR. JOSEPH TABER JOHNSON of Washington, D. C., read a paper on

MYOMECTOMY OR HYSTERECTOMY.

He said the treatment depended on the size, variety and location of the tumor, as well as the size of the pregnancy. Myomectomy in favorable cases should be the operation of election. However, cases occasionally present themselves with such urgent symptoms as to require supravaginal hysterectomy as a life-saving operation. He described briefly successful operations of both varieties. He discussed the questions of abdominal and pelvic operations during pregnancy; also the propriety of inducing premature labor, as well as the policy of trusting to the *vis medicatrix naturæ*.

DR. GEORGE TUCKER HARRISON of New York followed with a paper on

PREGNANCY AND LABOR COMPLICATED BY MYOMATA.

No general rules can be laid down with reference to the treatment, as each case must be carefully studied in all its circumstances before recourse is had to operative intervention. The dangers of this complication of pregnancy as a cause of dystocia were formerly overestimated. The plan of treatment during pregnancy, as a rule, is an expectant one.

DR. EDWARD REYNOLDS of Boston spoke of the treatment of large incarcerated fibroids at or near term in advance of the fetal head. He had seen ten such cases. No one of these tumors was smaller than the seventh-month fetal head. In each instance the woman was delivered either normally or by forceps.

DR. J. DUNCAN EMMET of New York City said there is no question but that certain myomata must be removed either by myomectomy or by

the radical removal of the uterus, while there are other cases in which the tumors do not interfere with the course of pregnancy. He was glad one of the essayists had emphasized a preference for myomectomy rather than the removal of the uterus, for the reason that the latter is such a serious procedure in its after effects, etc.

DR. WM. R. PRYOR of New York City expressed himself in favor of conservatism in the treatment of fibroids associated with or complicating pregnancy. If the tumors are situated in the anterior wall of the uterus, and are very small, they would slide up over the pubes without much trouble. Even before the seventh month, while some of these tumors may seem to be an actual bar to delivery, they accommodate themselves by their softness to the situation. Subperitoneal fibroid tumors complicating pregnancy demand operation as a rule.

DR. HENRY D. FRY of Washington, D. C., in referring to Dr. Coe's paper, spoke of emptying the uterus, saying he thought the cases are rare where this procedure is called for. The treatment is either expectant or radical. Those tumors which indicate emptying the uterus are necessarily located in the lower uterine segment, and yet some of these occasionally rise in the pelvis and give very little or no trouble.

DR. WALTER P. MANTON of Detroit, Mich., looked upon cases of fibroid tumors complicating pregnancy as very rare. Personally, he has seen but six such cases out of approximately five or six thousand cases of labor in both private and hospital practice. In the majority of cases of interstitial submucous fibroids, abortion almost inevitably occurs between the third and fifth months.

DR. REUBEN PETERSON of Ann Arbor, Mich., spoke of a case on which he had operated. The tumor was located in the lower uterine segment, and was of the interstitial variety. He did a myomectomy, the woman went on to full term, and was delivered of a child.

DR. GEORGE J. ENGELMANN of Boston had twice seen the disappearance of fibroids following confinement.

The subject was further discussed by Drs. CHARLES M. GREEN of Boston, ARTHUR W. JOHNSTONE of Cincinnati, JAMES CLIFTON EDGAR of New York, and the discussion closed by the writers.

DR. GEORGE H. NOBLE of Atlanta, Ga., read a paper entitled

COMBINED BISECTION OF TUMORS AND UTERUS, WITH ENUCLEATION OF THE FORMER, IN ABDOMINAL HYSTERECTOMY FOR LARGE FIBROID TUMORS.

In case of large fibroid tumors in the body of the uterus, the author recommends bisecting the tumor, bisecting the uterus and then enucleating the bisected tumor. In intraligamentous tumors the uterus should be bisected, the capsule of the tumor brought out from the cavity of the uterus and the tumor enucleated from its capsule.

The advantages of this method are: Saving of time, prevention of hemorrhage, increased working space, easy manipulation, accessibility to the blood supply in the deep pelvis and freedom from liability of injury to the ureters and uterine arteries.

DR. NOBLE then discussed

THE ENUCLEATION OF INTRALIGAMENTOUS AND POSTPERITONEAL FIBROID TUMORS IN THE DEEP PELVIS.

He stated that he had received a reprint from Dr. Pryor, in which he, Pryor, anticipated him in the treatment of intraligamentous tumors or postperitoneal fibroids in the deep pelvis. As the principle is the same, and the difference is merely in technique, the essayist endorses it. Intraligamentous tumors are partially enucleated by penetrating their capsules from the cavity of the uterus after bisecting the organ. They should be turned out with the fingers and morcellation forceps, then drawn up and rotated outward as described. The portion of the tumor attached to the capsule everted the latter as it is drawn out of the abdominal incision, and often to such a surprising extent that it may be included in the ligature placed around the upper border of the broad ligament. In this way the capsule in some cases may be entirely removed, and in others only cut away, and if within the ligature of the pedicle, avoided the necessity of suturing the edges of the capsule. He said that Dr. Pryor did complete enucleation of the tumor and sutured the capsule, while he partially enucleated the tumor, utilizing its attached portion to pull up the capsule, transfix and tie off, in part or entire, with the ligature of the broad ligament.

DR. CHAUNCEY D. PALMER of Cincinnati, Ohio, discussed

THE RELATION AND CORRELATION OF GYNECOLOGICAL AND NERVOUS AFFECTIONS.

He spoke of this relationship from two standpoints: (1) What influence do female pelvic diseases have in the induction of nervous disorders? (2) What affections of the female pelvic organs arise from nervous derangements?

He ruled out any thought of the occurrence of any organic, so-called structural lesions of the nervous system as resulting, unless indirectly and quite remotely, from pelvic diseases. The morbid changes to which reference was made were hysteria, neurasthenia, neuralgia, chorea, epilepsy, hystero-epilepsy, certain paralyzes, migraine, convulsions of certain kinds, including tetanus, also mental aberrations and vasomotor changes.

While many hysterical women have no anomaly of the sexual organs, a certain proportion of them have some imperfection in the development of their sexual apparatus, especially the uterus. Hence the justifiability of an oöphorectomy in some such cases. Should the sexual organs be diseased in hysterical women, one could not say that the hysteria was secondary.

Psychical causes are at work, which are more potent than the local disease.

Errors in diet, in general hygiene, in lack of rest and in various indulgences of the mind and body in girlhood lead to physical anomalies and give rise to abnormal mobilities of the nervous system. The functions of ovulation and menstruation play more than the ordinary rôle in the inauguration of nervous phenomena.

The author spoke of cases of insanity having been promptly relieved by gynecological operations. Likewise insanity had immediately followed operations. Such sequelæ were probably more common than after other operations.

In the treatment of women for the special diseases of their sex, there is too much of a tendency to place undue stress on real or supposed lesions of their reproductive organs. This is particularly true in reference to some so-called ovarian affections. Gynecology of to-day would not amount to much without an appropriate surgery, but indiscreet surgery, like over-medication, may be an abuse. Every theory in medicine must be the outgrowth of an extended experience. "Knowledge comes, but wisdom lingers."

(To be continued.)

Recent Literature.

Handatlas der Anatomie des Menschen. Mit Unterstützung von WILHELM HIS, bearbeitet von WERNER SPALTEHOLZ, Professor an der Universität Leipzig. Dritte Band, Zweite Theil. Leipzig: S. Hirzel. 1903.

The second and concluding part of the third volume is at length before us. It is a worthy conclusion of a very excellent work. We have praised the previous parts as they appeared successively and we are glad now to praise the work as a whole. The part just issued deals with the nervous system and the organs of sense. The figures of the brain are very good, and will be welcome to both student and practitioner. There are among them many of Held's more or less diagrammatic figures with distinctive coloring. All parts are satisfactory. We may venture to regret that there is not a representation of an actual section through the eyelid instead of a borrowed diagram. Among the illustrations of the ear is a very ingenious one of the base of the skull seen from above and treated as transparent, while a copy of a cast of the internal ear shows the labyrinth in position. It is impossible to criticise such a work in detail; and it is the less necessary because we can heartily recommend it.

Spectacles and Eyeglasses. By R. J. PHILLIPS, M.D. Third edition, revised, with 52 illustrations. Philadelphia: P. Blakiston's Son & Co. 1902.

This little book of one hundred and nine pages is the third edition of a publication which ap-

peared about ten years ago as the outcome of systematic instruction given by Dr. Phillips to successive classes at the Philadelphia Polyclinic. Its pages are well worth careful consideration by general practitioner and optician, as they contain information of much practical value to both. That which relates to bifocal lenses and prisms has been carefully rewritten. The presswork is of excellent quality, the illustrations frequent and to the point.

Handbook of Climatology. By DR. JULIUS HANN, Professor of Cosmical Physics in the University of Vienna and Editor of the *Meteorologische Zeitschrift*. Part I: General Climatology. Translated with the author's permission from the second revised and enlarged German edition, with additional references and notes, by ROBERT DE COURCY WARD, Assistant Professor of Climatology in Harvard University. New York: The Macmillan Company. 1903.

The increasing attention paid of late to the therapeutic use of climatic surroundings has disclosed even in the writings of many excellent clinicians a surprising lack not only of accurate knowledge, but of some of the simpler principles of meteorology and climatology. Mr. Ward, therefore, has done a most welcome service in placing within the reach of the large number of our profession to whom the reading of German works is sufficiently difficult to prevent free study, this standard work of Hann's upon climatology.

The volume itself needs little review. It is without doubt the standard treatise upon the subject at the present time. Its scientific fullness has not lifted it above the level of practical medical use, and many of the sections should be studied hard by those who wish to write of climatic conditions in new health resorts. The comments upon irregular variations of temperature and variability of the monthly means are especially pertinent.

Mr. Ward's additional references to recent literature are numerous and extensive, so that it is a surprise that in Chapter V no reference is made to the numerous phenological data collected and analyzed by Professor Herrera and Dr. Vergara Lope in their volume "La Vie sur les Hauts Plateaux."

Great praise is due Mr. Ward for his work. The translation, in marked contrast to many recent medical books, is into such smooth, clear English that the reader forgets the double authorship and wonders why this or that example is chosen from German or Austrian fields rather than from nearer home; and then, only, recalls that the book is a translation.

The book should be in the library of every physician interested in the subject, and will do much to fulfill the translator's hope and "lead to the extension and improvement of the teaching of scientific climatology in the United States."

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STOKES-ADAMS DISEASE.

THE subject of the so-called Stokes-Adams disease, which in recent years has excited a very considerable degree of interest, has received renewed attention at the hands of Dr. William Osler, who discusses the whole subject in a recent number of the *Lancet*. In 1895 Dr. Osler referred briefly to the condition in his lectures on angina pectoris, and later, in 1901, Dr. R. T. Edes reported a series of cases and discussed at length the literature of the subject. The condition is now likely to receive a definite place in textbooks of medicine.

Dr. Osler writes a concise and highly satisfactory account of the disease, giving his own very considerable personal experience. He defines the condition commonly known as Stokes-Adams disease as characterized by a profound disturbance in the automatic mechanism of the heart, a true bradycardia; by various nervous symptoms simulating often severe organic disease; and by secondary symptoms, among which may be mentioned Cheyne-Stokes breathing, cardiac asthma and vasomotor accompaniments of heart shock.

The condition which has been naturally much more adequately studied within the last years dates back to Adams' description in 1827, and it is rather remarkable that during the long intervening time relatively little interest has been excited on the subject either on the Continent or in England, although various authors allude to the symptom-complex, among whom may be mentioned Charcot. Dr. Osler discusses the conditions under which slow pulse may be met as physiological, neurotic, toxic and due to cardiac and cardio-vascular lesions, and lays

stress upon the fact that Stokes-Adams disease is rather to be regarded as a syndrome than a disease in the proper acceptance of that term.

He finds that the cases may be arranged in three general categories: First, a post-febrile group; secondly, a neurotic group; and thirdly, an arterio-sclerotic group. His own experience has been confined almost wholly to the third group. He has had twelve cases, all in males, most of whom were above fifty years of age, and several above seventy-five. The histories of these cases are appended in systematic form, and serve to show the very great variety in symptomatology in cases which have a certain common resemblance. Vertigo, faintness, cardiac weakness, syncopal attacks, epileptiform attacks, discrepancy between heart and slow pulse rate, pseudo-apoplectic attacks, convulsions, anginal attacks, cardiac dyspnea, loss of consciousness, are some of the symptoms associated always with an extremely slow pulse, which these various cases present. It will be seen that many of these symptoms are on the part of the nervous system, and might most easily lead to grave errors in diagnosis.

Dr. Osler refers particularly to a case of this sort in which he felt confident that the patient was suffering from an apoplectic attack, which subsequently, however, proved to be an attack of syncope without grave significance. It occurs to us that not infrequently the unusual disturbances of consciousness in the form of attacks which are often perhaps rather loosely included under the general heading of epilepsy may find a possible explanation in this too much neglected symptom-complex of which we are speaking. Particularly is this true in the case of elderly persons who, without apparent cause, develop attacks simulating but frequently not identical with a typical epileptic seizure. The same may be said of the not infrequent apoplectiform attacks which one meets with in elderly men.

One lesson at least, therefore, which this careful résumé of Dr. Osler teaches is that we should give renewed attention to the cardio-vascular system in patients developing symptoms such as we have alluded to late in life. The combination of slow pulse with one or another of these nervous symptoms should at least lead to the suspicion of this Stokes-Adams syndrome, or one closely allied to it.

Dr. Osler finds the pathological anatomy of the condition altogether obscure, and, although arteriosclerosis is a very constant accompaniment of

many of the cases, he declines to commit himself as to the fundamental alterations producing the condition. The prognosis on the whole he finds bad, although life may be prolonged for many years with more or less serious periodic attacks. When the severer nervous symptoms have begun, however, there appears to be little prospect of complete relief, and sudden death is the usual outcome. With so uncertain a knowledge of the etiology and pathology of the condition, it is clear that treatment must usually be unavailing. There appears to be no remedy which will accelerate a permanently slow pulse, and the resort must be, particularly in elderly persons, to general hygiene and treatment of symptoms as they arise. In general, we hope that the clinical work which has recently been done upon this apparently important subject will conduce to an increase in our knowledge, and perhaps thereby to a clearer comprehension of the manifold and subtle disorders which attack the individual in his declining years.

THE WATER SUPPLY OF NEW YORK.

THE expert commission appointed by the Mayor of New York has just sent in the preliminary report in regard to the water supply of the city, reference to which was recently made in the JOURNAL. The estimate of \$50,000,000 is declared by the commission to be sufficient to cover the completion of the necessary dams, reservoirs, aqueducts, tunnels and filters, and to acquire the necessary lands and rights sufficient for a daily supply of upward of 200,000,000 gallons. The summary of work to date has been submitted at the request of the commissioner of water supply, and includes several general conclusions, although the final conclusions on many details must depend upon surveys, estimates, etc., not yet completed. The main conclusion is that, notwithstanding the most favorable anticipations regarding the prevention of waste, the immediate construction of an additional supply is urgent. They find that it is possible to obtain such an adequate additional supply of excellent water from streams lying wholly within the state of New York. It is possible also to secure an additional supply larger than the present Croton and Bronx supply, plus the present Brooklyn supply, and capable of gradual development up to 500,000,000 gallons per day, from the following sources: (a) From certain of the eastern tributaries of the Hudson (the names of these are given). (b) From a portion of those just

named in combination with the head waters of Esopus Creek on the easterly side of the Catskill Mountains. (c) By pumping and filtering water taken from the Hudson River, six miles or more above Poughkeepsie; the flow in time of drought to be reinforced from storage reservoirs in the Adirondacks, for the purpose of preventing the upflow of salt water to the intake.

The members are unanimous in a preference for the upland water to that of the Hudson, although the latter may be made pure and palatable by filtration, and should be regarded as in reserve for the more remote future. They recommend that the next aqueduct be built of a capacity of 500,000,000 per twenty-four hours, and also that the city should at once begin the construction of filters, both for the Croton water and for all other waters taken from surface streams. They consider that the surface streams which form so large a part of Brooklyn's present supply should either be filtered (as already in progress), taking the most polluted first, or that the ground water, being naturally filtered, should be taken, so far as practicable, by means of carefully planned wells or intercepting galleries of a design yet to be perfected. It is stated that the one great natural obstacle which limits the date of the early introduction of an additional supply from any and every adequate source within the state of New York is found in the long and deep tunnel which must be constructed for the aqueduct under the mountains and hills north and east of Peekskill. There are also some high dams needed in some of the projects, and it would appear that under the most prompt action, and with the best management, fully five years will be needed before the water of any up-country supply can be delivered in New York.

OPIUM TRADE IN THE PHILIPPINES.

THE controversy going on in the Philippines over the bill proposing to place the whole opium trade in the hands of a single concessionaire has waxed so bitter that the whole matter has been indefinitely tabled and a committee appointed to investigate and report upon the results of the use of opium in other Oriental countries, and the methods in vogue in dealing with the opium traffic in those countries. The committee appointed will consist of Major E. C. Carter, Surgeon U. S. Army, the commissioner of health; the Reverend Dr. Brent, bishop of the Protestant Episcopal Church in the Philippines; and Commissioner

Lagarda, representing the Filipinos. The committee is directed to proceed to Japan, Formosa, Hong Kong and China, Burmah, the Straits Settlements and Java, for the purpose of making the necessary investigation, and is given four months in which to render its report. The committee left Manila early in August, and will be absent until the last of November, utilizing the last few weeks of the period allowed to prepare its report.

The Philippine Commission was apparently desirous of selling the opium concession to a syndicate, but this was opposed by a political alliance of the church people, represented by the Evangelical Alliance and the Chinese. The church people opposed the bill because they thought that opium should not be admitted to the islands, and the Chinese objected because they felt that under a concession it would be difficult to obtain an unlimited supply of opium at a price within reach of the humble coolie. The Filipinos, Spaniards, physicians, business men and Catholic clergy apparently took no interest in the matter. The commission desired to sell the concession, so as to realize a reasonable sum for the insular revenues, as opium can be so readily smuggled that probably only a small part of that which enters the islands pays the heavy custom duties demanded. Whatever may be the report of the Committee of Investigation, it is safe to say that the bill is dead and that the unholy alliance of American church people and Asiatic opium smokers — like the banding of the W. C. T. U. and saloonkeepers against the army canteen — will win. The church people can then sit down in the proud consciousness of having won an ethical victory, while the wily Celestial, as he smokes more smuggled opium at a less price and under less restriction, can smile to himself at the easy way the white man can be fooled when he looks at a practical subject through the glasses of sentiment. The fight was not without its amusing features. The would-be concessionaires claimed that opium smoking prolonged life, and was an absolute preventive and cure for most of the ills that flesh is heir to. The Evangelical Alliance made much of a petition presented against the bill by the Chinese Chamber of Commerce, "containing ten thousand Chinese signatures," which on examination proved to consist to a considerable extent of fictitious signatures and bits of Chinese humor. One signature was that of a Chinese general long since dead, and another purported to be that of a monkey famous in Chinese history.

EYESTRAIN.

IN this issue of the JOURNAL we complete the publication of an explanation of the ill-health of Francis Parkman. The author of this entertaining paper, Dr. George M. Gould, has recently come before the profession as an advocate of the important rôle of eyestrain in the production of various nervous disorders and in the consequent modification of character. That Dr. Gould carries his theory to an extreme, no one who has read his paper can for a moment doubt; that he is absolutely sincere in his own convictions is as little open to doubt; and it must also be said that relatively few will be able to follow him to the ultimate conclusions of his theory. Whether he be right or wrong as to the all-important rôle of eyestrain in the modification of character, and the indirect influence on genius, we may certainly admit that he has done distinct service in the attempt to analyze closely, even from the point of view of a somewhat overworked theory, the peculiarities of certain distinguished men. We are so apt to regard exceptional talent or unusual idiosyncrasy as an inevitable consequence of the lives of our ancestors that it is a positive relief to find a writer who is willing to trace with minuteness peculiarities and eccentricities to a rational or at least understandable physical source. Without endorsing Dr. Gould's extremely radical attitude toward the influence of eyestrain, we commend his method as scientific and conducive to a far juster appreciation of the influence of apparently minor events in the development of the man of genius. Anything tangible and definite as a basis of study is preferable to the vagaries and pseudo-science of some of the recent writers on genius.

MEDICAL NOTES.

BRITISH PHYSIQUE. — Owing to the widely-disseminated discussion regarding the physical deterioration of certain classes in England, a committee has been appointed by the Duke of Devonshire to make a preliminary inquiry into the facts. Until such an investigation is made it is certainly premature to draw conclusions.

MEDICAL SCHOOL BUILDINGS AT THE UNIVERSITY OF CHICAGO. — The University of Chicago has recently been negotiating for a large tract of land upon which it is rumored that medical school buildings are to be erected. The nucleus will be the Rush Medical College, supplemented

later by a memorial institute for infectious diseases and possibly by a hospital.

PROBABLE REAPPOINTMENT OF HEALTH COMMISSIONER REYNOLDS OF CHICAGO. — It seems altogether probable that Arthur R. Reynolds, present Health Commissioner of Chicago, whose energy in matters of health and hygiene has been constant and efficient, will be reappointed to his present office. Should this be the case, he will be publicly vindicated for the course he has pursued in administering his duties, which in the past has not been free at times from aspersions.

CHAIR OF EXPERIMENTAL PATHOLOGY AND BACTERIOLOGY. — It is announced that the Cornell University Medical College has made provision for a chair of experimental pathology and bacteriology, the work to be carried on at the Loomis Laboratory in New York. Dr. Bertram H. Buxton, assisted by Dr. Victor C. Vaughan, Jr., will be in charge of the work of this professorship.

ORAL HYGIENE IN MEDICAL SCHOOLS. — At a recent meeting of the National Dental Association it was "Resolved, that it is the sense of the 'National Dental Association' that each medical college in the United States should include in its curriculum a lectureship on 'Oral Hygiene, Prophylaxis and Dental Pathology.'"

The dental profession feels with the introduction of the teaching of oral hygiene in the public schools, which it is striving to accomplish, and the co-operation of medical men who have been specially instructed on this subject, that a great stride will have been made toward the prevention of caries of the teeth, not to mention many other good results to the general system, which would surely follow a better care of the oral cavity.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Sept. 30, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 36, scarlatina 26, typhoid fever 17, measles 20, smallpox 0.

BEQUEST TO HOSPITAL. — By the will of the late Richard W. Foster of Clinton, Mass., the Clinton Hospital Association receives the sum of \$10,000.

NEW HARVARD MEDICAL SCHOOL BUILDINGS. — Work on the group of new buildings for the Harvard Medical School has begun.

EXPERIMENTAL STUDIES IN NUTRITION. — It is announced that the War Department will co-operate with Professor Chittenden of the Sheffield Scientific School at New Haven, in a physiological investigation of the minimum quantity of food required to maintain health and strength under ordinary conditions. For the purpose of the experiments twenty volunteers have been detailed from the army, who will live in New Haven during the progress of the investigation. The special object to be attained is a determination of the character of a physiologically economical diet.

A CASE OF SMALLPOX IN CAMBRIDGE, MASS. — A case of smallpox is reported from Cambridge, Mass., the first which has appeared in that city for several months. No fear is entertained of a spread of the disease.

EVENING LECTURES ON NURSING. — A course of training in emergency surgical work and nursing is to be given this winter at the Charlestown, Mass., evening high school. Lectures will also be given in advanced physiology.

NEW YORK.

NEW BUILDING FOR ST. MARY'S HOSPITAL. — The corner stone of the new building of St. Mary's Hospital in Jamaica, Borough of Queens, which when completed will accommodate about three hundred patients, was laid with religious ceremonies on Sept. 20. The present rather contracted quarters of the hospital, which is under the charge of the Little Sisters of the Order of St. Dominic, have proved inadequate for its growing work.

SALE OF HOSPITAL PROPERTY. — The property of the Memorial Hospital for Women and Children in Brooklyn has been sold at public auction for \$96,500, which includes a mortgage of \$50,000, and it is understood that the purchaser was the Jewish Hospital Society of Brooklyn, which will occupy the premises for its own work. The Memorial Hospital is one of the best-equipped institutions of its kind in the borough, but the managers were unable to support any longer the burden of the heavy mortgage, on which the holder brought foreclosure proceedings.

DEPARTMENT STORE PHARMACY. — Through the serious consequences suffered by a lady who used one of the tablets for a nasal douche, it was recently ascertained that at one of the large New York department stores they were selling for Seiler's tablets, tablets of mercuric bichloride

for making antiseptic solutions. Each tablet had the word "poison" stamped on it, and the intelligent person who had put them in the bottles for sale had evidently "mixed the babies up." The label on the bottle purchased by the lady was marked Seiler's tablets, and contained directions for using these.

GIFT TO AMHERST PHYSICAL EDUCATION DEPARTMENT.—A daughter of the late Charles Pratt of Brooklyn has made a gift to the Department of Physical Education of Amherst College, by which the department is to receive an additional annual income of \$1,500. Under the conditions of the gift a graduate of the college, complying with certain requirements, may by a year or more of work in the theory and practice of physical education, fit himself to become a teacher in this branch, while in the meanwhile assisting in the work of the department at Amherst. From members of the same family the college has during the last fifteen years received the present fine gymnasium and athletic field and various other generous gifts, including the college "health-cottage," which is stated to combine sanitarium facilities with those of a hospital.

Miscellany.

COMPULSORY VACCINATION IN FRANCE.

THE lawmakers of France, after enduring for several years the irritating thrusts which had annually been published by the German health authorities, showing the great advantages enjoyed by the German cities as compared with those of France in the matter of immunity from smallpox, enacted a compulsory law in 1902, which in some of its provisions is preferable to that of Germany. This law became operative in February, 1903. By the terms of the act primary vaccination is required during the first year of life, and revaccination during the eleventh and the twenty-first years. The parents and guardians are held personally responsible for the execution of the provisions of the statute.

The French Academy of Medicine and the Consulting Committee of Public Hygiene were charged with the duty of recommending the methods of procedure for carrying out the provisions of this act.

The following is a digest of the recommendations as now published:¹

(1) Vaccination to be exclusively performed with bovine lymph. Vaccination direct from the heifer to arm to be preferred in those cities where it is practicable, otherwise with glycerinated pulp.

(2) The preparation of lymph to be in charge of the government.

Vaccine not to be used when over three months old. Vaccinating physicians to keep registers, to be used, and all items of importance properly entered at each vaccination.

(3) The vaccinal service to be organized upon a uniform plan throughout the country.

(4) The Academy of Medicine which has for many years performed a worthy voluntary service, to have charge:

(a) Of the maintenance of investigations relating to the best vaccinal stocks, and the distribution of the same.

(b) Of the improvement of the modes of production, and of vaccination.

(c) Of the examination of the vaccine offered for sale.

The academy is to submit an annual report upon the vaccinal service, and upon the number of cases of smallpox occurring in the country.

(5) One or more *séances* are to be held annually in each commune for the purpose of affording gratuitous vaccination. Parents to be required to furnish information as to their children who are subject to vaccination and revaccination under the act.

(6) Vaccinators to be appointed by proper authority. Private physicians may be employed when preferred.

(7) Vaccinations not to be performed in a district where an infectious disease (other than smallpox) is prevailing, or threatens to become epidemic. Subjects for vaccination living in a house in which an infectious disease exists are to be vaccinated separately and not at the regular vaccinal *séance*.

(8) Lists of persons subject to vaccination to be made.

(9) These lists to contain dates and results of vaccination.

(10) Provision made for postponement on account of condition of health of subject.

(11) Investigations to be made when an unusual number of vaccinations prove unsuccessful.

(12) Provision made for repeated vaccinations in case of non-success.

(13) Provision made for inspection of issue of certificates.

(14) The lists of persons subject to vaccination comprise:

For primary vaccinations.—(a) All children born in the commune and entered upon the civil registration lists who are between three months and one year old on the day of the *séance*.

(b) Infants of the same age, born elsewhere but residing in the commune.

(c) Older children who for some reason have escaped vaccination.

(d) Those who have been vaccinated without success.

For the first revaccination.—The list comprises all children according to lists furnished by public and private school authorities who are enrolled in the schools and are eleven years old, and those of any ages who have neither submitted to vaccination nor revaccination.

Children who receive instruction at home are embraced in the same conditions.

For the second revaccination.—This list embraces all persons who have attained their twentieth year and are living in the commune.

(15) Provides for the publication of bulletins of information.

(16) Relates to the sanitary condition of the room or hall used for vaccination.

(17) Children to be brought for vaccination and kept afterward in a scrupulously clean condition.

(18) Children to be carefully examined, and their parents questioned as to their health before vaccination is performed.

(19) The operation to be considered a surgical one, and great care taken to avoid infection.

(20) Inspection to be made on the seventh day after vaccination. Provision for exceptions.

(21) Treats of the responsibility of parents, guardians and others.

(22) Reports to be made of vaccinations and of violations of the law.

(23) Foreigners and their children to be subject to the law.

¹ Revue d'Hygiène, Feb. 20, 1903, p. 109.

THE MEDICAL PROFESSION IN AUSTRIA.

ACCORDING to the *British Medical Journal* there appears to be one country in Europe which is not overstocked with doctors, namely, Austria-Hungary; nevertheless our Austrian brethren are not happy. At a congress recently held in Vienna it was stated that 20,000 communes of the Austro-Hungarian Empire, that is to say, 86% of the total number, are too poor to pay for a medical officer, and 30%—or taking Galicia alone 75%—of persons who die are buried without a medical certificate. The number of medical students is also steadily decreasing. Only 32% of the students of the Austrian universities belong to the medical faculty. The total number of medical students this year is 2,120, whereas in 1888-9 it was 5,277, showing a decrease of some 60% in about twelve years. The causes of the growing unpopularity of the medical profession is said to be the legislation which has made assurance against sickness compulsory among the working classes. About one-third of the population of Vienna is now so assured. It is further stated that, owing to the progress of hygiene, the number of cases of sickness has diminished one-half.

Correspondence.

A POSSIBLE USE FOR SPODUMENE IN MEDICAL DIAGNOSIS. — FURTHER PRECAUTIONS IN USING X-LIGHT IN DIAGNOSIS.

WHITEFACE, N. H., Sept. 28, 1903.

MR. EDITOR: Recently there has been found in California a new variety of spodumene, which has been named Kunzite. It has been examined by Dr. Kunz and Professor Baskerville, and found to absorb energy when exposed to x-light, afterward continuing to radiate short ether waves for some minutes. If in a finely divided state, the mineral retains these properties. It will be of use in taking rapid x-light photographs, as the action of the fluorescent light on the photographic plate will continue, thus enabling the exposure to be much shorter than at present. This would be of great advantage, especially in instantaneous x-light photography of the heart.

In former notes attempts were made (by describing experiments on animals) to show that x-light was a dangerous agent, and to discover methods of diminishing the risk to the patient and physician. Some of these methods have already been sufficiently described. In the present note the matter is further considered. As x-light is a dangerous agent it should be allowed only to shine through the tissues under examination. The total amount striking these tissues during a given time should be the smallest which will allow an accurate diagnosis to be made. The time will come when physicians will realize that no examination of the chest is adequate unless the organs are seen by x-light. Then with these examinations advantage must be taken of the time during which a fluorescent screen gives light and of the persistence of vision to reduce the total amount of x-light required to make the diagnosis. The best way to do this is the one already recommended in earlier notes for prolonging the life of the tube used in such examinations—namely, sending the electric current in surges, each of very short duration, producing pulses of x-light that persist as fluorescent light on the screen and in the eyes, thus allowing intervals between the surges, during which, though the light appears continuous to the eye, no x-light is shining on the tissues.

Truly yours,

WILLIAM ROLLINS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 19, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|--------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,113 | 430 | 30.27 | 10.12 | 2.02 | 14.17 | 1.41 | |
| Chicago . . . | 1,885,000 | 469 | 153 | 35.25 | 6.54 | 2.11 | 16.25 | 2.43 | |
| Philadelphia . . . | 1,378,527 | 418 | 121 | 30.85 | 3.11 | 2.15 | | | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 159 | 50 | 42.76 | 2.51 | 1.89 | 15.72 | 5.03 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 103 | 39 | 32.36 | 5.82 | 1.94 | 10.67 | 7.76 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | 80 | 25 | 35.00 | 11.25 | 6.25 | 18.75 | | |
| Providence . . . | 191,230 | 80 | 76 | 30.70 | 9.30 | 1.39 | 16.27 | 2.32 | |
| Boston . . . | 603,163 | 215 | 76 | 30.70 | 9.30 | 1.39 | 16.27 | 2.32 | |
| Worcester . . . | 132,044 | 41 | 19 | 34.14 | 4.88 | — | 24.39 | 7.32 | |
| Fall River . . . | 115,549 | 44 | 22 | 43.16 | 4.54 | 2.27 | 27.26 | 2.27 | |
| Lowell . . . | 101,959 | 39 | 21 | 23.07 | 7.69 | — | 17.94 | 5.13 | |
| Cambridge . . . | 98,639 | 23 | 9 | 47.83 | 4.35 | — | 30.43 | 4.35 | |
| Lynn . . . | 72,497 | 22 | 6 | 9.09 | — | 4.54 | 4.54 | — | |
| Lawrence . . . | 69,766 | 18 | 13 | 61.10 | — | — | 44.44 | 5.55 | |
| Springfield . . . | 69,389 | 8 | — | 25.00 | 12.50 | — | — | 12.50 | |
| Somerville . . . | 68,110 | 24 | 10 | 41.66 | 8.33 | 8.33 | 12.50 | 8.33 | |
| New Bedford . . . | 67,198 | 28 | 17 | 42.85 | 7.14 | 7.14 | 25.00 | 3.57 | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brookton . . . | 44,873 | 5 | 2 | 20.00 | — | — | — | — | |
| Haverhill . . . | 42,104 | 10 | 2 | — | — | — | — | — | |
| Newton . . . | 37,794 | 4 | 3 | — | — | — | — | — | |
| Salem . . . | 36,876 | 13 | 2 | 15.40 | — | — | 15.40 | — | |
| Malden . . . | 36,286 | 8 | 5 | 25.00 | — | — | 12.50 | — | |
| Chelsea . . . | 35,876 | 15 | 6 | 33.33 | — | — | — | 13.33 | |
| Fitchburg . . . | 35,069 | 8 | 2 | 25.00 | — | — | — | — | |
| Taunton . . . | 33,656 | 11 | 2 | 36.36 | — | — | 18.18 | 9.09 | |
| Everett . . . | 28,620 | 5 | 3 | 20.00 | — | — | — | — | |
| North Adams . . . | 27,862 | 9 | 4 | 33.33 | — | — | 33.33 | — | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 8 | 4 | 25.00 | — | — | 12.50 | — | |
| Waltham . . . | 25,198 | 4 | 1 | 50.00 | — | — | 25.00 | — | |
| Brookline . . . | 22,608 | 5 | — | 20.00 | — | — | — | — | |
| Pittsfield . . . | 22,589 | 5 | — | — | 20.00 | — | — | — | |
| Chicopee . . . | 21,031 | 5 | 1 | 20.00 | — | — | — | — | |
| Medford . . . | 20,962 | 2 | 2 | — | — | — | — | — | |
| Northampton . . . | 19,883 | 6 | 1 | 16.67 | — | — | — | 16.67 | |
| Beverly . . . | 15,302 | 5 | 1 | 20.00 | — | 20.00 | — | — | |
| Clinton . . . | 15,161 | 7 | 2 | 42.90 | 14.30 | — | 28.60 | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . . | 14,478 | 6 | 2 | 16.67 | — | — | 16.67 | — | |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | 4 | — | 25.00 | 25.00 | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Mariaboro . . . | 13,609 | 6 | 3 | 16.67 | — | — | — | — | |
| Melrose . . . | 13,600 | 1 | — | 16.67 | — | — | — | — | |
| Westfield . . . | 13,418 | 3 | — | — | 33.33 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 7 | 3 | 33.33 | — | — | — | — | |
| Frammingham . . . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 2 | 1 | 100.00 | — | — | 50.00 | — | |
| Weymouth . . . | 11,344 | 7 | 2 | 57.20 | 28.60 | — | 28.60 | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 3 | 1 | 33.33 | — | — | 33.33 | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 2,978; under five years of age, 1,066; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 968, acute lung diseases 218, consumption 329, scarlet fever 18, whooping cough 21, cerebrospinal meningitis 9, smallpox 7, erysipelas 5, measles 7, typhoid fever 84, diarrheal diseases 432, diphtheria and croup 62.

From whooping cough, New York 6, Chicago 4, Philadelphia 6, Baltimore 1, Pittsburg 2, Boston 1, Chelsea 1. From erysipelas, New York 2, Philadelphia 1, Taunton 1, Clinton 1. From smallpox, Chicago 1, Philadelphia 1, Pittsburg 5. From scarlet fever, New York 6, Chicago 1, Philadelphia 6, Baltimore 3, Providence 1, New Bedford 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Sept. 5 the death-rate was 15.7. Deaths reported, 4,548; acute diseases of the respiratory organs (London) 123, whooping cough 61, diphtheria 51, measles 51, smallpox 7, scarlet fever 30.

The death-rate ranged from 3.3 in King's Norton to 25.2 in Middlesbrough; London 14.1, West Ham 14.8, Brighton 15.0, Portsmouth 16.8, Southampton 16.6, Plymouth 13.5, Bristol 12.2, Birmingham 17.8, Leicester 16.8, Nottingham 15.9, Bolton 18.0, Manchester 19.9, Salford 19.6, Bradford 15.6, Leeds 15.5, Hull 24.4, Newcastle-on-Tyne 20.6, Cardiff 14.2, Rhondda 13.9, Liverpool 21.9, Devonport 14.1, Bootle 22.3.

METEOROLOGICAL RECORD.

For the week ending Sept. 19, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather.* | | Rainfall in inches. | | |
|----------------|-------------|--------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|----|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| S. 13 | 30.14 | 74 | 86 | 61 | 66 | 74 | 75 | S W | S S | 8 | 14 | C. | C. | 0 |
| M. 14 | 30.10 | 81 | 91 | 71 | 71 | 69 | 70 | W | W | 2 | 8 | C. | C. | 0 |
| T. 15 | 30.16 | 79 | 88 | 70 | 74 | 82 | 78 | W | W | 14 | 14 | C. | C. | 0 |
| W. 16 | 30.08 | 74 | 80 | 67 | 80 | 80 | 86 | S W | S E | 6 | 24 | F. | O. | .63 |
| T. 17 | 29.84 | 76 | 81 | 70 | 84 | 93 | 88 | S W | S W | 9 | 15 | O. | O. | .73 |
| F. 18 | 30.08 | 63 | 70 | 56 | 58 | 46 | 52 | W | N | 14 | 7 | O. | C. | 0 |
| S. 19 | 30.42 | 56 | 62 | 50 | 57 | 66 | 62 | N | S E | 7 | 7 | C. | C. | 0 |
| Mean for week. | 30.12 | | 80 | 64 | | | 72 | | | | | | | .63 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING SEPT. 17, 1903.

GLENNAN, A. H., assistant surgeon-general. To proceed to Wilmington, Del., for special temporary duty, upon completion of which to rejoin station. Sept. 11, 1903.

VAUGHAN, G. T., assistant surgeon-general. Granted leave of absence for fifteen days from Sept. 18, 1903.

PECKHAM, C. T., surgeon. Granted leave of absence for one and one-half months, from Sept. 16, 1903.

GREENE, JOSEPH B., passed assistant surgeon. Granted leave of absence for one day, Sept. 16, 1903. Sept. 15, 1903.

VON EZBORN, R. H., passed assistant surgeon. To proceed to New Orleans, La., and wire arrival. To proceed to Laredo, Texas, for special duty. Sept. 16, 1903.

RICHARDSON, T. F., assistant surgeon. Relieved from duty at Tampico, Mexico, and directed to rejoin his station at New Orleans, and inspect en route Linares, Monterey and Victoria, Mexico, and Laredo and Eagle Pass, Texas. Sept. 14, 1903.

RICHARDSON, T. F., assistant surgeon. Bureau order Sept. 14 amended so that Assistant Surgeon Richardson will return direct to Laredo, Texas, and inspect service en route to New Orleans. Sept. 16, 1903.

BEAN, L. C., acting assistant surgeon. Granted leave of absence for four days from Sept. 15. Sept. 15, 1903.

GOLDSBOROUGH, B. W., acting assistant surgeon. Granted three weeks' leave of absence from Sept. 10. Sept. 10, 1903.

MARSU, W. H., acting assistant surgeon. Granted leave of absence for three days from Sept. 18, 1903. Sept. 16, 1903.

SMYTH, F. R., acting assistant surgeon. Granted two weeks' leave of absence from Sept. 10, 1903.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence Sept. 14 to 18, inclusive. Sept. 11, 1903.

ECHENMENDIA, D. M., acting assistant surgeon. Granted leave of absence for seven days from Aug. 27, 1903, on account of sickness. Sept. 9, 1903.

GOODMAN, F. S., pharmacist first class. Granted leave of absence five days from Sept. 5, 1903, under provisions of paragraph 210, Regulations P. H. and M. H. S.

RICHARDSON, S. W., pharmacist first class. Relieved from duty at Portland, Me., and directed to report at Bureau for temporary duty. Sept. 15, 1903.

MCBRIDE, CHARLES R., pharmacist third class. Relieved from duty at Stapleton, N. Y., and directed to proceed to Manila, P. I., and report to Passed Assistant Surgeon V. G. Heiser, Chief Quarantine Officer, Philippine Islands, for assignment to duty. Sept. 16, 1903.

BIERMAN, C. H., pharmacist third class. Directed to report at bureau for duty. Sept. 12, 1903.

VAN NESS, GEORGE I., pharmacist third class. Directed to proceed from McLean, Ill., to Stapleton, N. Y., and report to medical officer in command for duty and assignment to quarters. Sept. 12, 1903.

BOARDS CONVENED.

Board convened to meet at San Francisco, Cal., Sept. 25, 1903, for purpose of making physical examination of applicant for position in Revenue Cutter Service. Detail for Board: Passed Assistant Surgeon W. G. Stimpson, Chairman; Assistant Surgeon Carl Meinus, Recorder. Sept. 16, 1903.

Board convened to meet in Boston, Mass., Sept. 15, 1903, for the physical examination of First Lieut. George M. Daniels, Revenue Cutter Service. Detail for the Board: Surgeon R. M. Woodward, Chairman; Assistant Surgeon W. C. Rucker, Recorder.

APPOINTMENTS.

Clarence H. Bierman, pharmacist third class.
George I. Van Ness, Jr., pharmacist third class.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING SEPT. 26, 1903.

H. C. CURL, passed assistant surgeon. Detached from the "New York" and ordered to the "Boston."

E. R. STITT, surgeon. Detached from duty as a member and recorder of the Naval and Medical Examining Boards, Washington, D. C., and ordered to resume usual duties.

C. F. STOKES, surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C.

A. STUART, assistant surgeon. Ordered to the Naval Hospital, Naval Home, Philadelphia, Pa.

J. L. TAYLOR, acting assistant surgeon. Appointed acting assistant surgeon from Sept. 16, 1903.

F. W. TYREE, acting assistant surgeon. Detached from the Naval Hospital, Port Royal, S. C., and ordered home to wait orders.

J. M. STEELE, surgeon. Ordered to the Naval Hospital, Port Royal, S. C.

SOCIETY NOTICE.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.—The semi-annual meeting of the society will be held at Hosack Hall, New York Academy of Medicine, 17 West 43d Street, on Oct. 13 and 14, 1903. The first afternoon session will be given to a symposium on the Röntgen Ray. The second afternoon session to a symposium on typhoid fever.

RECENT DEATHS.

GEORGE HAVEN, M.D., M.M.S.S., died in Boston, Sept. 27, 1903.

CALVIN SKINNER, M.D., a well-known physician, and one of the most prominent citizens in the northern part of the state, died at his home in Malone, Franklin County, N. Y., on Sept. 24. He was born in Royalton, Vt., May 29, 1818, and was graduated from the University of Vermont in 1836, and from Dartmouth Medical College in 1840. He was a close personal friend of the late Vice-President William A. Wheeler, and was a delegate to the Chicago Convention that nominated Abraham Lincoln for President. In the Civil War he served as surgeon of the 106th Regiment, New York Volunteers. In 1884 he took a prominent part in the founding of the Northern New York Institution for Deaf Mutes, and for ten years he was a trustee and medical officer of the institution.

BOOKS AND PAMPHLETS RECEIVED.

The Negro Problem from the Physician's Point of View. By W. T. English, A.M., M.D., of Pittsburg, Pa.

Circumcision and Flagellation among the Filipinos. By Lieut. Charles N. Barney, M.D., U. S. N. Reprint. 1903.

Traumatic Pneumonia. By W. T. English, A.M., M.D., of Pittsburg, Pa. Reprint. 1903.

Perichondritis of the Larynx, with Report of a Case. By Emil Mayer, M.D., of New York. Reprint. 1903.

The Cause and Specific Treatment of Hay Fever. By Emil Mayer, M.D., of New York. Reprint. 1903.

A Text-Book of Diseases of Women. By Barton Cooke Hirst, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A System of Physiologic Therapeutics, a Practical Exposition of the Methods, other than Drug-giving, useful for the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A.M., M.D. Vol. VIII. Philadelphia: P. Blakiston's Son & Co. 1903.

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Addresses.

MEMORIAL MEETING TO JOHN HOMANS, M.D.

ADDRESSES READ BEFORE THE BOSTON SOCIETY OF
MEDICAL IMPROVEMENT, MARCH 30, 1903.

MAURICE H. RICHARDSON, M.D., BOSTON.

DR. HOMANS' work in abdominal surgery began with his first ovariectomy in 1872. I had the good fortune to assist, though usually in a subordinate capacity, both at the Carney Hospital and at St. Margaret's. Many of the young men who received at his hands their earliest and best training in abdominal surgery have arrived at middle age in the practice of that great branch of general surgery. In their work at the present time one can detect the deep and lasting impression which Dr. Homans' teaching made upon them. Stimulated by his zeal and emulating his example, they have carried the pursuit of abdominal surgery from the narrow field of ovariectomy to the remotest areas of the abdomen. In all their work they have been aided by their early training more perhaps than they can fully realize, glad as they are to acknowledge their great indebtedness to Dr. Homans. In many respects the methods practiced when they were assistants are carried out to-day.

Take, for example, the operation of ovariectomy. In every respect, save in some minor details, the methods of Dr. Homans are still followed. His teachings as to diagnosis, as to indications for and against operation, as to technical details, after-treatment and prognosis, are as fresh in my mind, through constant application during the past fifteen or twenty years, as when they were spoken. I find myself repeating daily what he said in regard to this or that thing; what he did under certain conditions; what he said as to certain unfavorable symptoms; what made him think one kind of case unfavorable for operation, and another kind favorable; why one should always do this and never do that; why the neglect of a certain detail might be fatal; why he never had repeated a certain apparently promising procedure; why under certain disastrous complications he blamed himself first of all, and why he blamed himself alone.

One remark about the necessity of care in cutting across the uterine canal, lest the peritoneal cavity be dangerously infected, has influenced my technique in hysterectomy up to this very day. The rigid insistence upon the possibilities of contamination from the uterine cavity has, I fully believe, been the means of making the operation of hysterectomy one of practically no mortality.

His belief that ovarian tumors are frequently malignant when apparently benign has been justified time and again by deaths from disseminated abdominal cancer after the removal of a simple ovarian cyst. This disastrous sequel to a brilliantly successful ovariectomy has led me whenever possible to deliver ovarian tumors whole, lest the ovarian contents, possibly malig-

nant, should infect the peritoneum. On the other hand, no matter how evil the tumor might look, he believed an effort should be made to remove it, unless the case was absolutely hopeless; for some of the tumors that are apparently malignant may prove benign, or at least their removal may result in a long period of health before recurrence.

In the through-and-through suture of the abdominal wall, Dr. Homans insisted upon the greatest care in passing the needle, lest there should be hemorrhage from the deep epigastric vessels; and he gave up entirely the cutting needle for the round and smooth. I have never sewed up an abdominal wound without calling to mind this precaution, especially after seeing a death from hemorrhage caused by the cutting of the deep epigastric artery by a glover's needle.

The extraordinary thing about his teaching and example is that as time goes by the wisdom of the former and the soundness of the latter have been demonstrated in hundreds and hundreds of cases. It is fitting, therefore, that those of us who were his assistants should recall some of the things which Dr. Homans, in the intimacy of our relations and in the privacy of his daily work, taught us; and to which, from his failure to recognize the weight and importance of his words, he never gave public utterance.

Dr. Homans' first work in abdominal surgery was confined chiefly to ovarian tumors. The investigation and removal of ovarian tumors naturally led him in certain instances to other tumors of the lower abdomen, through the impossibility of making accurate diagnoses. Questions therefore came before him regarding uterine tumors, tumors of the tubes, of the peritoneum, of the intestine, of the abdominal wall, of the retroperitoneal areas, — in a word, questions regarding all sorts of diseased conditions affecting the lower abdominal viscera. Through accidents of technique, through environment, through extension of ovarian and other diseases, — he was brought gradually to face lesions of great diversity and extent. As each new procedure was understood and mastered, his work began to include all sorts and conditions of disease throughout the abdominal cavity, until he himself realized — what after-comers are taught in the beginning — that he who opens the abdomen for some little, simple thing may suddenly and unexpectedly be confronted by those grave emergencies which tax the knowledge and skill of the most experienced.

Dr. Homans' first ovariectomy, performed in 1872, was fatal; the second, in 1873, the third and fourth, in 1874, and the fifth, in 1875, were all fatal. The first four were all serious and unpromising cases. Of the fifth he said in 1887, "I think I could easily cure a similar one now." The first four were adherent; the fifth was not.

His first successful ovariectomy was performed on Feb. 27, 1877. At this operation he used, for the first time, the carbolic spray. The next four patients recovered. Five consecutive operations, successful under antiseptic con-

ditions, following five consecutive unsuccessful operations performed without antiseptics, naturally made a profound and favorable impression upon Dr. Homans. It is no wonder that this great change was attributed entirely to the carbolic spray, for the cysts in these successful operations were all adherent and most of them multilocular. Indeed, in later years, when the spray was being generally given up, and when aseptic methods were supplanting the antiseptic, Dr. Homans was one of the last to abandon this cumbersome and now worse than useless detail. The regret with which he gave up the spray was characteristic of one who in other things was always faithful to a friend that had served him well.

The cases of ovariectomy rapidly increased in number: in 1878 there were 6; in 1879, 8; in 1880, 26; in 1881, 32; in 1882, 45. As his experience increased, his results became better and better. Up to 1887 there had been a run of 38 consecutive recoveries.

Though the results of operations gradually improve with experience in performing them, that improvement is too generally attributed entirely to increased experience and better technique — the most important factor being forgotten: that the early operations were regarded as justifiable only under urgent conditions. Dr. Homans' experience in the removal of ovarian tumors, as well as in that of uterine, shows the truth of this statement. Of his first seventeen ovariectomies, sixteen were of the adherent variety. What that word *adherent* meant, only those who saw the operations of those days can understand. The tumors were old, large and usually multilocular; they had been the seat of localized inflammations, ruptures, tappings. Their removal meant digging and tearing; escape of contents; a blood-oozing and slimy field; wounds of bladder and intestine — in a word, operations of the most difficult and formidable nature, which it required courage of the highest order to meet, especially after repeated failures. No wonder that the mortality was great; the wonder is rather that recoveries took place at all. The greatest element in the fatalities was the forbidding nature of the lesion itself, with its invariable accompaniment of a constitution enfeebled by long suffering.

So, too, in Dr. Homans' earlier hysterectomies — of which he had, up to 1887, twenty-seven; and of the treatment of which he modestly said, "My success has not been great;" but of which he said further, "I never do the operation unless the patient seems in danger of her life from hemorrhage, mechanical pressure or exhaustion, or else suffers such pain that life is not worth living." And yet of the 27 hysterectomies performed under these unfavorable conditions 17 recovered — 63 %. Twenty-seven hysterectomies at the present time are frequently performed without a death; and yet there may not be, and often is not, a single case among them in which there is either "hemorrhage, mechanical pressure, exhaustion or pain." The pioneers like John Homans led the way along the difficult

and dangerous path by which uterine surgery has been brought to the brilliant possibilities of the present day.

The earliest operations of Dr. Homans which I remember seeing were performed at the Carney Hospital. The work was done in a high-studded room in the Chapel building — a room with a southern exposure, well ventilated and clean. Besides an etherizer there were two assistants and one or two Sisters. Sister Mary-Michael, who after operation was in charge of the patient, and in whom Dr. Homans had implicit confidence, was an efficient and faithful nurse. She shared in the enthusiasm of the times. To her untiring devotion in the after-care of his patients Dr. Homans attributed, in no small measure, the success of his earlier efforts.

No preparations of the patient were made until the time of operation, when the skin was washed with 1-20 carbolic acid solution, after the pubic hair had been shaved and the skin thoroughly scrubbed with soap and water. The instruments were immersed in 1-20 carbolic just before the operation. The same solution served for dipping the instruments prior to their use. The field was in a spray of 1-20 carbolic acid, produced by the elaborate and powerful sterilizers of that time. The sea sponges, then used exclusively, had been prepared by two or more days' immersion in 1-1000 corrosive sublimate. They were then kept in 1-20 carbolic until ready for use, when they were dried by being wrung out in an ordinary clothes wringer.

The first assistant stood opposite Dr. Homans; the second at his left hand. The first assistant did the direct assisting; the second, the heavy work of lifting the patient, compressing the abdomen, and the like. The operator stood on the right of the horizontal patient, the Trendelenburg position not being then in use. Incision, grasping of cyst, plunge of trocar, separation of adhesions, delivery of tumor — were rapidly accomplished. In non-adherent tumors the incision was about two inches in length. When necessary, the cut was carried upward; when extending above the umbilicus, it was always to the left of it. The pedicle was grasped with a clamp, — usually called "Mr. Dawson," — and tied with silk in a Staffordshire knot. The silk was passed through the pedicle upon a round needle, grasped by a peculiar holder. The escape of fluid was hastened by the second assistant, who squeezed the lateral and posterior walls of the abdomen. Who can forget the remarks made from time to time during the operation? If things went well they were abundant, cheery, humorous; if ill, not a word of any kind except quick, decisive, imperative words of command; or if the case was unfavorable, the outlook grave, the decision doubtful, the hopeful, "Let us make an effort!"

Before, during and after the operations we were treated to remarks which have proved of the greatest value under numerous similar conditions. How many times I have regretted that I have not followed the common-sense advice of

those days! I would almost say: "As many times as I have failed to follow that advice."

As to diagnosis, he would say: "Never fail to percuss the abdomen; always auscult when the tumor is large; never fail to consider the commonest tumor of women,—pregnancy,—no matter what the social life may have been, provided the patient is of child-bearing age; never tap an ovarian tumor through the abdominal wall; never use an aspirator in abdominal tumors; never fail carefully to examine both externally and internally when the patient is etherized, and before making your incision."

As to operative technique: "Look out for the bladder in making your incision, even if that incision is remote from the usual position of the bladder; be sure not to cut too boldly, lest you go through abdominal wall, tumor and all, or wound the intestine; separate adhesions carefully, lest you tear intestines; look out for ureters, especially if the tumor lies deep in the pelvis; beware of a slipping pedicle; use round needles in closing the abdomen, lest you cut the epigastric artery; be sure you have left no sponges or instruments in the abdominal cavity; do not burn your patient with hot water bottles."

Not long after Dr. Homans' work was well begun at the Carney Hospital, and when patients from all sides were flocking to that institution, he felt compelled to go elsewhere. The time and enthusiasm which Dr. Homans devoted to ovariectomy at the Carney Hospital were transferred to St. Margaret's. The Sisters of St. Margaret in Louisburg Square were asked to extend their charitable work to the care of the sick. Nos. 15 and 17 Louisburg Square were fitted up as a private hospital. Transferred to St. Margaret's, his untiring zeal soon made the name of that hospital known wherever his own was known. Other surgeons were allowed the privilege of treating their patients there; and St. Margaret's soon became the home of private surgery in Boston. The accommodations were gradually enlarged; more houses were transformed into hospitals, until now there are four separate establishments, all sprung from the small beginnings of the early eighties.

Though a private hospital, St. Margaret's received then, and has ever since, many poor patients, either at a very small rate or for nothing. Dr. Homans' enthusiasm for abdominal surgery, before he was appointed to the Massachusetts General Hospital, led him not only to take without fee all patients who could pay their board, but even to take some and pay their board himself!

Early in his abdominal work Dr. Homans was appointed surgeon to out-patients at the Massachusetts General Hospital. Not long after this he entered the house as visiting surgeon. At that time abdominal surgery was looked upon as a specialty. By long-established precedent the introduction of specialties into the hospital was not looked upon with favor. For this reason the introduction of abdominal surgery into a general hospital met with some oppo-

sition. It is hard to realize that within twenty years abdominal surgery was regarded at the Massachusetts General Hospital as a specialty—a hospital in which more than one thousand abdominal operations were performed in 1901 and 1,155 in 1902!

I do not know that there was ever any definite rule regarding the introduction of abdominal surgery into the Massachusetts General Hospital. My recollection of what Dr. Homans said at the time is that a friend on the staff advised him not to perform ovariectomies there—or, at least, not to bring abdominal surgery into undue prominence. Be that as it may, abdominal surgery had already gained in the surgical world an impetus before which all conservative objections to its introduction into the hospital vanished. What had been perhaps a branch of special knowledge on the part of Dr. Homans was soon transmitted to his colleagues upon the staff, all of whom, though they had not been his assistants, were quick to profit by his example and teaching in the amphitheater. Within a very few years, abdominal surgery, in regard to the introduction of which into the hospital so many fears had been expressed, was so fully recognized as a most important, if not the most important branch of general surgery, that the Bradley Ward and operating theater were especially constructed for abdominal and cerebral cases.

Though Dr. Homans regarded abdominal surgery as a branch of general surgery, he did much to debar from this dangerous field those whose environment was such that they could never become either skillful or experienced. He realized then, as all surgeons experienced in abdominal work cannot but realize now, that he who opens the abdomen must—by skill, education and experience—be prepared to meet the most formidable complications; and that he who without such qualifications opens it, but too often subjects his patient to unnecessary and formidable risks.

Dr. Homans continued to serve the Massachusetts General Hospital with his customary fire and devotion until he reached the age limit, in 1899. His retirement was the occasion for sincere regret on the part of staff and of trustees.

The words used by Dr. Homans to express himself during the excitement of operating hours clung to the operation of ovariectomy, and even entered into other operations. There were the *snaps*—small spring forceps which were applied to bleeding vessels of the abdominal wall, and which were prevented from slipping into the peritoneal cavity by means of thread and weight. There were the *sweeps*—sponges grasped with long-handled forceps to sweep out the blood from the depths of the pelvis. There were also *Mr. Spencer Wells* (trocar), as well as *Mr. Dawson* (clamp), *half-lengths* and *full-lengths* (hemostatic clamps). The abdominal wound was covered with gauze tightly bound down by a single wide strip of sticking plaster, after being closed by interrupted through-and-through sutures of

silk, *double-headers*, introduced from within, a separate needle for each side, the silk being threaded at each end. The abdominal dressing was tightly applied by means of a single long and broad swathe.

An early realization of the danger of leaving sponges and instruments in the abdominal cavity led to great precautions to prevent this disaster. Many methods were used. In the beginning it was the sole duty of a nurse to keep an account of all the sponges that were put in and all that were taken out — tally being kept of each act. Later, long tapes were used, with a weight attached; and, finally, the sponges were counted, both before and after the operation. Even this method was not absolutely safe; for mistakes might occur in counting, either before or after the operation. No greater disquietude could be caused than by the report of a missing sponge. Even after the abdomen had been closed, Dr. Homans would re-open at once if a sponge was unaccounted for. It was, of course, absolutely essential that the initial count be correct, and that no sponge be taken from the room. Dr. Homans found, as many of us have since under similar conditions, that the greatest danger of leaving sponges in the abdominal cavity existed when the count was correct. When a sponge was missed, and when after the most careful search it could not be found, it was pretty certain that the error was in the counting or in unnoticed abstraction from the room. In one instance the missing sponge was concealed in one of the numerous sacs of a multilocular cyst; in another it was found later in the day stuck on the bottom of an assistant's boot! Dr. Homans' insistence and extreme care against leaving sponges in the peritoneal cavity made a great impression upon me; and I have followed absolutely his methods in this respect.

Another point about which he was very insistent was the security of the ligature and precautions against its slipping. The pedicle was tightly compressed by the clamp; and in this sulcus a strong silk ligature was tightly drawn by means of the Staffordshire knot. The pedicle was then severed with the Paquelin cautery, which gave additional security against hemorrhage.

With reference to the diagnosis of ovarian tumors, or tumors simulating them, I recall many remarks of his, the truth of which I have had ample means of testing. Rapidly growing tumors are always indicative of malignancy; so, too, bloody serum. Malignancy is indicated by solid masses lying below the abdominal wall in an abdomen distended with fluid, — in which the tumor presents features the opposite of uterine ballotement, — the finger receiving the impression of descending through fluid upon a submerged solid.

The prognosis after operation was illustrated by many examples which have been to me, in after years, the source of hope under distressing anxiety — as well as a source of anxiety in apparently hopeful conditions. Of the latter, I remember Dr. Homans' grave anxieties when

vomiting was continuous and persistent, even if other signs were favorable; on the other hand, the insignificance of temperature and pulse, in his opinion, when abdominal conditions were favorable and there was no vomiting.

The results of Dr. Homans' operations constantly improved with increasing experience. Some of his early cases were extraordinary, even for those days. In two cases, both successful, the tumor weighed over a hundred pounds; in several the patients were of advanced years.

The disasters which occasionally occurred he attributed to faults of his own, when he could find them. Of 248 ovariectomies, performed up to 1887, 34 were fatal. Of these "about one-quarter, probably, are to be attributed to some error or carelessness of mine." Other fatalities were beyond his knowledge or his power of prevention. Whenever a death was owing to any preventable cause, that fact was always emphasized, both to his assistants privately and in his publications. In studying the latter, one is impressed by his unqualified self-condemnation. It is the single quality of unswerving love of the truth that has given Dr. Homans' words their impressive weight.

Another quality strongly emphasized in his conduct of abdominal cases was that of common sense. His diagnosis, treatment and prognosis were illustrative of this rare attribute. It led him to a proper estimation of the weight to be given to symptoms, to a wise selection of methods of operation and of after-care and to an accurate prognostication of coming events.

His skill in diagnosis of abdominal tumors was unrivalled in this community. Left to himself, without advice or prejudice, his early conception of a case was almost invariably accurate; and yet he was, he maintained, easily thrown off the track by the suggestions of others.

During the performance of operations he insisted that there should be no suggestions from any one. He had his operation planned beforehand, "often waking in the night and arranging in his mind its details;" and he objected to off-hand remarks which might interfere with his prearranged plans. Many of his followers, to the present day, sympathize fully with him in this respect. They learned from him how and when to hold their tongues. Not that Dr. Homans wished us to remain silent if some serious error of technique was imminent — quite the contrary. He wished, as we all do, to be warned if he was evidently mistaking an important for an unimportant structure. It was the interference with a plan well thought out by himself, — the interference made upon the spur of the moment by one who before that instant had given the matter no thought at all, — it was this kind of a suggestion that he objected to; and all operators will agree that he was right.

Dr. Homans was always pleased and encouraged by a long series of recoveries; and yet he would say when everything was going well, "A man must not be too much set up by an unbroken

series of successes. The first he knows, he will meet with one or two disasters which will make him think that he is not such an extraordinary fellow after all!"

Time does not permit me to mention, even briefly, the many reminiscences which Dr. Homans' name suggests. They are all interesting and all valuable. I find hardly a topic connected with abdominal surgery which some act or saying of his does not serve aptly to illustrate. Valuable as his later contributions have been to surgery, it is his earlier work—during the ten years following 1877—which contributed most effectively to the wonderful advancement of abdominal surgery.

A. T. CABOT, M.D., BOSTON.

My close acquaintance with Dr. Homans began soon after my return from Europe in 1877. He asked me to act as his assistant in a case of ovariectomy,¹ and I worked with him in this capacity in something like one hundred operations.

One cannot stand opposite an operator and follow, as an assistant must, his every move in as many abdominal operations as that without getting a pretty clear insight into the workings of the operator's mind. Thus I came to know Dr. John Homans, the surgeon. His most striking and characteristic quality was his courage. This he showed not only by light-heartedly undertaking difficult feats of surgery, but also much more by the persistent pluck with which he put through a seemingly hopeless task in which he had met unexpected difficulties. One was constantly reminded of his training in the army, for he approached a surgical operation as if he were going into battle. He made his dispositions carefully beforehand, and then went ahead with no idea of retreat or failure.

In those early days of abdominal surgery when the proper technique was being learned by hard experience, the unforeseen was constantly happening, and the determination "to fight it out on that line if it took all summer" was a heroic trait, most valuable to a surgeon. This Dr. Homans possessed in fullest degree.

Another quality that he had—not so generally known, perhaps—was the spirit of investigation—the desire to learn the truth. Some of you may not know that for many years Dr. Homans interested himself in pathology, he made many autopsies, and, while not specially trained as a pathologist, he sought to learn all he could by his examinations. After he devoted himself to surgery, this investigating habit did not leave him. If a patient of his died, he insisted on knowing why, and was happy if he learned any fault in technique that he could rectify. It was this fearlessness in facing unfortunate results that enabled him to constantly improve his methods. I have often heard him say after a hard operation, "Well, we have done our best," and with that consciousness he was always ready to examine that best to see if he could not make it better.

¹ Dr. Homans' first successful laparotomy.

The man who is cheerful in the midst of difficulties gets better work on that account, both out of himself and out of those who are helping him. Dr. Homans' unfailing fund of humor often came to the rescue of an unfortunate or difficult situation. Every one who worked with him will remember some of his amusing sayings: "Hullo, what's that? Let's cut it and find out." The action followed the word, and the dissection proceeded after perhaps tying the vessel that had been divided. Thus jokingly, but always earnestly and with good sense and good judgment, he put through an enormous amount of surgical work and gained that experience which made him constantly a better and better surgeon.

His interest in his patient did not cease with the operation. He attended to the after care with untiring watchfulness and energy. In his zeal for having things efficiently done, he attended with great care to the details of the nursing of his patients. One visiting the private hospital at No. 15 Louisburg Square in the morning hours would often find him in his shirt sleeves hoisting a patient on the Crosby bed while the sheets were changed, or otherwise assisting in some delicate or laborious nursing manœuvre.

He once said to me that the best way to get patients was to take good care of those you had. He certainly carried out this plan faithfully, and achieved great success.

Such are some of the impressions of Dr. Homans gleaned beside the operating table. Another place where one saw a delightful side of his character was at the dining table. Here his charming *bonhomie*, assisted by a wit and humor that were all his own, made him the best of good company. That table was never dull at which he sat. His tales of men and things were good-humored, and always amusing. I am sorry for any of you who never heard him tell his army and navy experiences. Even if you had heard the tale before, it was sure to have some new turn of humor that made it fresh. One could read between the lines of his stories, and see how the same qualities with which I became acquainted in his surgery stood by him in the army, and made him a jovial comrade, always ready for fun or work.

I have dwelt at some length upon the two qualities which seemed to me to do the most for his surgical success. Another most marked quality was his energy, which went straight to its object, and was so much a part of him that it seemed perfectly natural for him to take a poor patient with ovarian tumor out of bed and take her in his own buggy to the Carney Hospital where he could operate upon her.

His frankness and outspokenness seemed to be almost beyond his control. If he could find any reason for criticism of one of his operations, he was the first to tell it to the patient. This transparent honesty was so winning a trait that it strengthened greatly the hold he had on his people. Such is the recollection I shall always keep of John Homans: courageous, a seeker after truth, squarely facing the situation, whatever it

was, and doing his best in it; constantly examining his works and frankly criticising himself when he could see possibility of correction; thus steadily advancing, cheerily, brightening every occasion and working steadily to the end.

GEORGE B. SHATTUCK, M.D., BOSTON.

Dr. Homans had begun an autobiography, but had only carried it through the first part of his army service. It is written in a simple, straightforward, humorous style, characteristic of the man. I am permitted to make some extracts from it which I feel sure will appeal to those who knew him and serve to give others an idea of his individuality.

He mentions having performed an autopsy about the year 1860, when in the medical school, on the body of a lady who died from the growth and enormous enlargement of two ovarian tumors. She had suffered terribly from pressure and dropsy for several years, and he was then impressed with the feeling that the death might have been avoided, and certainly the suffering might have been mitigated. It was this autopsy, he says, which turned his attention to ovariectomy; but the breaking out of the war put an end to all such thoughts for four years, and later the prejudices of the profession and the reluctance of women to submit to an operation the success of which had not been demonstrated postponed any action on his part many years longer.

Whilst still a house officer in the Massachusetts Hospital, in 1861 he passed the examinations for the medical service of the U. S. Navy, choosing this branch of the service "because he had been fond of yachting." He was ordered to join the *Aroostook* in February, 1862, and served on this vessel for six months. The extracts from Dr. Homans' autobiography here submitted begin at the time when he resigned from the navy to enter the army.

I had been much impressed by the care and method of the naval service, but a confinement on a small ship for six months, with no professional interests and with absolutely no surgery, had become very irksome and almost unendurable. I went to the Douglas Hospital, which was in charge of my friend Warren Webster, U. S. A. Surgeon Webster was a relation of Daniel Webster, the great orator and statesman, and was a very able man. In the Harvard Medical School he was one of two men, as I recalled, who could enumerate all the muscles of the back, with their origins and insertions. At the Douglas Hospital I was at home again, with a ward full of patients under my care and all the surgery that I could well handle. I remember doing an excision of the shoulder, an operation I had never seen done, and the result was very good.

The thought of going back to the *Aroostook* and being shut up again became more and more abhorrent and unendurable, and I determined to try hard to get my resignation accepted in the navy and to enter the regular army. In order

to effect my purpose, I was directed by somebody to call on Mrs. Douglas, the widow of Senator Douglas of Illinois, and also on the family of Mr. Riggs, the banker. I think whoever advised me was putting up a joke on me. However, I called and spent an evening with Mr. Riggs and his daughters. I had never seen them before, had no letter of introduction and what they thought of me I do not know, but I would have gone through fire and water to get my resignation accepted, and certainly an evening spent with these agreeable young ladies was not a hardship.

I think I also called on Mrs. Douglas. She was a fine-looking, middle-aged woman of great ability and influence. I then pleaded with Assistant Secretary Fox to accept my resignation. I told him that I did not want to go home, I wanted to serve in the field with the army, where I should have some scope for my surgical abilities, and I finally said: "If it was your own son, would you not allow him to resign if he was going to enter the army at once?" My resignation was accepted, and I went at once before the Army Medical Board in Philadelphia. Surgeon Asch was president of the board, I think. I was in pretty poor shape as to health and strength. I had had chronic diarrhea for some months, and I required nearly a teaspoonful of laudanum in the morning to keep me going all day, and I had but little appetite.

The examination was very fair, except that in one instance the examiner did not know the answer to his own question. Dr. Asch asked me what the urine of serpents and birds was composed of. I told him "uric acid." He said it was urea. I told him that I had analyzed these secretions from serpents many times and that the urine was composed of uric acid, but he said I was mistaken. I replied that there could be no question about a matter of fact. I hope this was not set down against me. At this examination I formed the acquaintance of Dr. C. C. Lee, who entered the service at the same time, and our friendship lasted till his death in New York. He became one of the surgeons to the Woman's Hospital in New York.

I went home about the first of October, 1862, awaiting news in regard to the verdict of the medical board. I was taken with jaundice, and was in bed for some weeks. Dr. James Jackson attended me, and applied eighteen leeches along the border of my right costal cartilages. Whether it was the effect of the leeches or whether it was coincident with their application I know not, but the bile began to run within forty-eight hours and I was soon well, although weak. I received my appointment from Mr. Lincoln as an assistant surgeon in the U. S. Army (regular), and my orders to join the remainder of the Banks Expedition and to report for orders to Brig.-Gen. George L. Andrews at New York.

Here I was assigned to the duty of inspecting army transports and reporting upon how many troops could properly be carried on each vessel. I found that the U. S. immigrant inspection required that each immigrant should be allowed

one thousand square feet of air, consequently I measured the ships and reported the number of soldiers I thought could be taken on this plan. I found that where I recommended the transportation of about two hundred and fifty men the authorities had decided to take twelve hundred and fifty, and so it was throughout the fleet. I also suggested that if there was a fatal fire on a vessel there would not be boats enough to hold one-third of the number of soldiers, but I was told that the soldiers would have to be burned or drowned, for the government would never get the troops to the scene of action if my plans were followed. This last remark I thought very true and reasonable, and that some risk must be run if we were to transport large bodies of troops.

At length everything being ready, the expedition sailed. I went in the steamship *Illinois*, on board of which was the 49th Mass. Vol. Infantry, commanded by Col. Frank Bartlett, who had lost his leg in the trenches before Yorktown while an officer in the 20th Mass. Gen. George L. Andrews, commanding the whole of the "Remainder of the Banks Expedition," was also on board. I remember little about the voyage, except that the steamer had oscillating cylinder engines and had formerly been on the line between New York and the Isthmus, also that Bartlett used to keep our hearts in our mouths by walking up and down the deck unassisted when the ship was rolling. We had to lay off the bar at the mouth of the Mississippi because the water was low. I should say we remained several days, perhaps a week. When the water is high in the river, it is low on the bar, because the high water and swift current bring down great quantities of mud and sand, and pile it up on the bar.

The authorities had asked me in New York what would be the consequences of crowding the ships as they were doing, and I had answered: "The probable prevalence on the ships of ship-fever and dysentery;" and this proved to be the case, and many cases of these diseases were left at quarantine. On arriving at New Orleans, about the 10th of February, 1863, I reported at Major-General Banks' headquarters, and was assigned by Surgeon Richard H. Alexander, medical director, to the St. James Hospital. This was formerly the St. James Hotel, and was on Magazine Street. Surgeon William R. Brownell was in charge of the hospital, which contained about three hundred and fifty beds.

My duties at the St. James Hospital were very congenial. I had several wards under my care. The cases were mostly affections of the bowels or chills and fever, or malaria in some form, with debility, homesickness and feebleness from age, the sufferers having understated their age when enlisting. Almost all the members of a Rhode Island battery that came to the hospital were over sixty.

Sometime in the spring of 1863, Dr. Brownell was ordered to his regiment in the field and I was placed in charge of the hospital. I remember that Dr. J. V. C. Smith, formerly mayor of Boston, came to the hospital as a contract surgeon and an

agent of the Christian Commission; he was quiet and attended to his duties; he did not practice surgery, but turned those cases over to me. There was not much surgery, as there was not much fighting until the two assaults on the works at Port Hudson on the 27th of May and the 14th of June. The wounded were mostly sent to Baton Rouge. I got a short leave of absence from my hospital and went to the army at Port Hudson. I went to General Auger's headquarters and was very kindly received by his staff, among whom were Major Cutting and others. They gave me a hammock to sleep in and took me into their mess. On the 27th of May a general assault was made on the rebel works. It was intended to be simultaneous, but it was not. Some of the troops assaulted at the early hour agreed upon and other assaulted later. They were beaten in detail. The colored troops assaulted, I was told, as well as the others, but all were repulsed, one after another. I was called by Dr. Winsor, surgeon of the 49th Mass. Infantry, to see Col. Frank Bartlett. As I have already mentioned, the colonel had suffered amputation of his right leg, I think, above the knee, at Yorktown in the late spring of 1862. He was the only mounted officer, I believe, in the assault. He could not walk over the felled trees and other obstructions with his artificial leg, and so he rode and jumped his pony. He was shot in the ankle and through the left wrist. He begged me to amputate the hand, but I declined and told him that I thought he would save his hand. When he insisted, I told him he must get some one else to amputate, as I would not. I attended him for a few days in Baton Rouge and wanted to take him to New Orleans with me, but I was not allowed to. Before I left him he said, "Now I shall lose my arm near the shoulder." I told him I did not think so.

I saw him again in the winter of 1865-66 in Rome, Italy. I inquired how his wrist was. He said it was first rate — "I drove a four-in-hand with it this morning." In Frank Palfrey's life of Bartlett it is said that the general's arm would have been amputated if the surgeon had not been too drunk to operate. This must have been after I left him at Baton Rouge. I think such stories are generally untrue, and I hope this one is. I remember seeing a surgeon trying to tie the common carotid going in behind the sterno-mastoid. I watched him for some time, but he had not found it when I left. I remember a soldier wounded in the vertex of the skull. He followed me round all day, pointing down at the top of his head with his forefinger. I found on examination that he had an abscess in the brain, and that the bullet was probably in his skull. I passed a knife into the brain and opened a large abscess, but did not find the bullet. I presume that he died, but as I left for New Orleans the next day, I did not learn his subsequent fate.

At New Orleans I found that a few wounded had arrived at the St. James Hospital during my absence, among others, Captain Russell of the 38th Mass. Infantry, who had been shot through the right leg, the bullet splintering the tibia at a

point about six inches below the knee. The wound was suppurating freely and the captain wanted the leg amputated, but I persuaded him to be patient, and he subsequently recovered perfectly, with a good limb. He subsequently entered the regular service after the war, and served till about 1898 or 99, when he was retired, more than thirty years after he was wounded.

Among other incidents, I remember that among several wounded Confederate prisoners was one boy of fifteen who had lost his leg. In a few days his mother came to see me and asked if I could employ her in any capacity without any pay so that she could be near her boy. She was very gentle and sensible, and very different from most of the Confederate women I had seen. I employed her as a nurse in the ward where her boy was lying, and she was one of the best nurses I had, and did her duty to the Yankee soldiers readily and with good sense and sympathy. The men all liked her, and when the boy had wholly recovered I gave him and her a pass and advised them to go out of the hospital and not to return. They were very grateful, and I never saw them again.

I remember I also had a visit one day from a lady who had the Confederate rosette in her bonnet: a red, white and red rose. She said that I had one of her servants who was working in the hospital. I asked her the woman's name and she said it was Rose. Now Rose was a mulatto woman and waited on my table, and one day she showed me her back, which was marked with pigment lines, the result of whipping with a lash; it was the only back of any one I ever saw who had been whipped. This lady asked me if I would give her her servant, and I replied, "Certainly." So I called Rose and asked her if she would return to her former mistress, and she replied with decision that she would not. The lady asked if I was not going to send a guard of soldiers to take Rose to her house. I told her, "No," that the soldiers were not here for that purpose, but that Rose could go if she pleased. The lady said of course she would not go unless she were made to, and she flounced out of my office in great indignation.

This lady came in again some time later and asked me if I would allow her to send some blankets to the rebel officers who were prisoners and who were confined in the custom house. I was at that time detailed, in addition to my other duties, to attend sick and wounded Confederate prisoners. She sent the blankets to the prison, and a few days later I saw them in the form of a long rope, made by tearing them in strips and tying them together. The officers descended at night by means of the rope to the ground, and were received in the arms of the guards, who had learned of the projected effort at escape. When the lady next called to see me, I asked her to go to the custom house to see her blankets. She said she never would have sent the blankets if she had supposed they would tear them up. I presume that the plan of escape was arranged with her, but of course I never knew.

I also learnt, while in charge of the St. James

Hospital, the power of starvation as a taming and humbling process. Under Captain Beaumont on the *Aroostook*, the discipline of the ship was carried on by Lieutenant Spencer, the first lieutenant. His plan was to gag and trice up a refractory sailor. This was done by tying a wooden gag in his mouth, then tying his hands, which had been handcuffed behind his back, to a sufficiently long piece of rope. The end of this rope was then thrown over a boom and drawn tight until the prisoner stood on his tiptoes. The strain was great and the punishment was very severe. Another means of bringing the culprit to a proper state of mind was to shut him up in the coal bunker, or in the "brig." The latter was a closet with lattice work in the upper half of the door. The closet was just deep enough to receive the man standing up, but he could not lie down when the door was shut. Here he was imprisoned as long as was thought necessary to bring him to a proper state of mind. For my part I could not see that these punishments did any particular good, and the same men were punished over and over again. There were only a few bad fellows in the ship; many of the men were from Aroostook County, Me., who had seen the ship built and who had helped build her and had enlisted from patriotic motives.

When Captain Franklin relieved Captain Beaumont, he put a stop to these punishments and devised another. He had a part of the quarterdeck partitioned off by handspikes and canvas, and in this space the prisoner was shut up and fed on a few biscuits a day. I observed that this plan worked excellently. One Sunday evening I came home and was informed that two of the patients had been allowed to go out into the city and had returned very drunk, noisy and obstreperous. I told them to go with the sergeant-at-arms to the guard room, but they swore that they would cut my heart out and do all sorts of things. However, I got them shut up in the guard room and told the sergeant to give them three biscuits a day. The next morning I went to see them and told them to clean up the room. No, they wouldn't do it, they would see me damned first, etc. They said they wanted more food. I told them that when they had cleaned the room to my satisfaction, I would consider the question of food, but that for the present they could only have three biscuits a day.

On Wednesday they sent me word that the room was clean, but I told the sergeant that I would not go up till Saturday. On Saturday the room was as clean as a pin, you could have eaten off the floor anywhere, both the men were on their knees trying to kiss my hands, and they promised that they would behave perfectly and be civil and respectful. They were sailors, and I soon sent them to their ship.

I had watched another middle-aged man, who had been hobbling about the hospital, bent over and leaning on a stick, for about three months. He said he had the rheumatism in his back and that he could not stand up straight or do any duty. It seemed to me that the man had better

he cured and returned to duty, or discharged. There was no reason why the government should be paying for a man who was of no use. One morning I sent for the sergeant of the guard and told him to send me a strong, sensible man, who could use some judgment in a case for which I should detail him. He sent me a tall Yankee belonging to a New Hampshire regiment.

I instructed the man to take the afflicted one on to the veranda, to take away his stick and to order him to walk up and down the veranda — if he stopped to prod him with his bayonet. I explained to the patient that I was anxious for his good and wanted to see if I could not cure him. He agreed that it was a sensible plan. In about ten minutes the soldier reported that the patient was walking on the veranda, but was sweating profusely and seemed quite tired. I said, "Let him up for a few minutes and then keep him going according to your judgment till dinner time, and then take him out again an hour or so after dinner." In the afternoon the soldier and the patient reported. The sick man was walking perfectly well and the next day was returned to his regiment. I thought if the man was malingering he would soon repeat the process and get into another hospital. In the autumn of 1864, while surgeon-in-chief of the first division of the 19th Army Corps in the Shenandoah Valley in Virginia, I was hailed by a man on a mule, driving an army wagon. "God bless your honor, I hope you are well." "Very well," said I, "and who are you?" "I am the man you cured of rheumatism in New Orleans, God bless you."

Another case was a man who walked with two crutches and said he could not walk without them. I studied him for a long time and then ordered him sent to the convalescent camp and to walk all the way; it was about three miles. I sent two guards with him: one carried the crutches and I told them to give the man the crutches if they thought he could not get along without them, but to start him on the road without them, even if they had to carry him. They started, each of the men supporting one shoulder more or less. After about half a mile the man asked what the doctor had said about the crutches. "He said you were not to have them." "Very well," said the man, "then I will walk along;" and he walked perfectly well to the camp.

Another case was that of a boy who used to be seized with intense pain in his stomach quite frequently. Any doctor who saw him in one of these attacks would rush to the dispensary and get a dose of morphine and give it to him. Having had success with other cases, I thought I would try and cure this one. So I told him that the next time he had an attack it would be necessary to do an operation on him. He did not have an attack for some time. When he did, I got out my largest knives and made preparations before him for an operation, and told him that we could not give him ether or chloroform on account of the nature of the operation. He was much frightened and promised to go to his regiment and behave right for the future.

The Charity Hospital, the large public city hospital of New Orleans, was at that time presided over by Dr. Smith, who at this time tied the innominate artery for a subclavian aneurism. I saw the case. Dr. Smith ingeniously stopped a secondary hemorrhage by pouring shot into the wound. The man, a negro, recovered. Now there were certain taxes levied for the support of the hospital. One was a charge for nightly performances at the theaters and other places of amusement; another was a tax of five dollars on every bale of cotton exported. Cotton was then a dollar and ninety cents a pound, so that a bale of cotton was worth nearly a thousand dollars. I was directed by Gen. J. J. Reynolds, of the regular army, in command of the city of New Orleans, to find out where these moneys went. I started on my investigation and reported to General Reynolds that it seemed to me that some persons of high rank and prominence might be involved, and he told me that he was not likely to be supported in his action and that I had better cease my investigations. I ought to have said that what started General Reynolds in his inquiry was the fact that rations were being issued to the Charity Hospital for all the patients as if they were soldiers, and this seemed unnecessary if the taxes on the theaters and cotton had been honestly handed over to the hospital.

E. H. BRADFORD, M.D., BOSTON.

Sound traditions are of inestimable value to all communities and institutions in their gifts of dignity and stability, and it would appear that the medical profession of New England has reaped an especial benefit from the bequests of her strong medical families.

Dr. Holmes called to our notice the fact that for one hundred and fifty years there was a Dr. John Clarke, father and son, ready to administer to the medical needs of the community in its earliest days. The portrait of the original John Clarke in the hall of our library shows him a man of good sense. He was apparently skilled in the use of the formidable surgical implement at his hand. Rumor says that besides being a good physician he was a good judge and a breeder of horseflesh, probably a valuable accomplishment for the doctors of the time. From that time until now there have been a number of prominent families in our New England communities engaged in the practice of medicine, furnishing to each generation a man of mark. The names of many are almost household words among us — Warren, Jeffries, Holyoke, Jackson, Bigelow, Ware, Shattuck, Cheever, Bowditch. In equal rank among them stands the name of Homans, with, as was the case with some, the added dignity of what seems now a medical patent of nobility, a surgeon's commission in the army of the Revolution, signed by the commanding general, George Washington.

Why it is that the profession of medicine rather than of law or theology was transmitted in this way is perhaps an evidence of the stronger inter-

est of our calling among its votaries. It would have been thought that in early New England the hierarchy of the clergy would have been kept in families. It is for the student of history to explain this permanence of medical families, which have survived not merely in names to be respected, but in each generation a position of prominence has been won in our profession through an apparent inherited aptitude.

That there were three of the Homans family practicing medicine at the same time in Boston with success is a demonstration of the medical vitality of the family. To the youngest, Dr. John Homans, 2d, whose recent death cut off too soon a career of great usefulness, we owe in large measure our new medical library building. His father, Dr. Charles Homans, seemed (to one whose service as a colleague with him on the staff of the City Hospital was a great pleasure) a surgeon of unusual good sense, a practitioner of unfailing judgment and a rare gentleman. Dr. John Homans, the younger brother of Dr. Charles, was the last to die; he had inherited his father's name and added to its ancestral value, making it well known among surgeons throughout the land. It is a cause of gratification that the chain has not been broken and that in the rising generation there remains a young John Homans with a promise of professional achievement.

It is often said that it is difficult to measure exactly the worth of a man. The Napoleonic test, "What has he done?" is a practical one, but hardly just. A man's aims, his early attempts, his failures and how he bears them all are of value for the estimate of the height of his aspirations, the breadth of his scope, the depth of his convictions. A junior colleague on a surgical staff often has an opportunity to judge of his senior's worth more fairly than his patients or the general community. At the Carney Hospital at the beginning of his career of surgical prominence, Dr. John Homans showed to his juniors unusual characteristics. He was not a surgeon of the anatomical type who knew his anatomy with precision and was hampered or emboldened by the exactness of his knowledge; he was not a surgical student who was familiar with surgical literature or statistics; he lacked the judicial calmness of judgment of his brother. He was a man of a strong personality and energy, and possessed one of the traits which, as Emerson says, helps to make greatness — he reminded us of no one else; his mind was an original one and he followed his own lead. He had as a most valuable possession the splendid heart of a boy, which loves venture, is ready for an opportunity, enjoys achievement, meets defeat not only with serenity but with gayety, and is eager for another chance. He enjoyed large responsibilities; he liked surgery as the most attractive of endeavors, the most magnificent of games — the sport of splendid attempts. A true New Englander, he was a thorough self-critic, but this sharpened and never dulled his efforts.

With all the spirit of the adventurer, which was pronounced in him, he possessed a strong

vein of conservatism. He was not a seeker after new things. He was slow in the acceptance of antisepsis in surgery and was slow in giving up the idea of the necessity of carbolic spray after he had adopted it. He was, in fact, with all his lack of conventionality, imbued to a degree with the spirit of what Dr. Holmes calls the New England Brahmin, who measures men and events by the standards which have met the approval of generations of worthies with lives centered about the Hub of the Universe, the dome of the Boston State House.

It was owing to this conservatism no less than his spirit of almost reckless venture that Dr. John Homans was able to accomplish in this community what he did. Time has done honor to the bold efforts of the pioneers in abdominal surgery and their successes, but it has laid the gentle hand of oblivion on the failures of that time, the ghastly failures of many of the early and injudicious followers in the movement. If the truth were told it would not seem strange that the conservative surgeons of the pre-antiseptic days hesitated in giving their sanction of approval to the rashness which was usually death dealing.

Owing to his conservative traditions, Dr. John Homans was not cast out among the outer barbarians in surgery, who injured their calling by their recklessness, and who seemed to the calmer members of the profession surgical buccaneers without skilled training, but armed with rash audacity, licensed thugs cajoling the public and boasting of their few successes, oblivious of their many failures. It is fortunate that this feature of surgical practice is now forgotten, only a few remembering its menace to the credit of our profession. It is to the lasting credit of Dr. John Homans, that while he was foremost in the movement which advanced surgery, he avoided this rash excess of operative zeal, and learned and taught the lesson of careful preparation and thoughtful undertaking.

Surgery was at that time in transition. Dr. Homans was brought up in a school which regarded a surgical procedure as a personal feat; the surgeon like a toreador matched his courage, energy and dexterity in an event. It was largely an attempt of the amphitheater in the mind of the surgeon, even if the spectators were few.

Dr. Homans lived to see surgery developed into a science of careful painstaking, often wearisome to the spectators, rarely spectacular, as beneficial as it is laborious.

Before Dr. Homans' time there were with us no professional surgeons. In our community there were general practitioners, who attended to surgery with skill and success, but they often gained their livelihood chiefly as general practitioners. Some even prided themselves on their reputation as family practitioners who avoided the narrowness of specialism. Dr. Homans himself for many years practiced general medicine until the public and his reputation forced him to make his practice purely surgical. It is largely through his efforts and to his example that our community has been led to demand special skill

in surgery, and to now give its support to so many surgeons of admirable skill.

Sir Frederick Treves in a recent address said that he regarded a community as fortunate where there was an unusual surgeon, but that that community was even more fortunate which contained a large number of well-trained and skillful surgeons.

It may be said to be in a degree to Dr. John Homans that Boston owes its great good surgical fortune.

ROBERT T. EDES, M.D., BOSTON.

I was invited to say something about Homans in the navy, but although we were indeed both in that branch of the service at the same time, one was in the Gulf and Mississippi, the other on the Atlantic coast, so that my acquaintance with him both before and after that time was a much more intimate one, and it is of this that I am very greatly obliged to you for giving me the opportunity to speak.

As medical students Homans and I were together a good deal, in anatomical study, both human and comparative, and in chemistry, at both of which subjects he worked with the zeal that characterized him throughout life. His quaint and shrewd remarks dwell in the recollection of his old companions.

It has been remarked by one of the gentlemen who preceded me that he was not a trained pathologist. Perhaps not in the present methods of training, — no one was, — but he was eager to grasp all the training there was to be had in those days, seizing every opportunity for autopsies and working diligently with the microscope. Dr. J. B. S. Jackson, the professor (in those days there were very few professors of pathological anatomy) was not indeed a lover of the microscope, but of what could be seen without it little escaped his eye, and there was no more enthusiastic teacher. Calvin Ellis was the volunteer leader as to anything approaching modern pathology, and of him Homans was a favorite pupil. We visited Spectacle Island and got specimens of ankylosed bones and intestinal calculi, which I dare say are still in the museum. When the Civil War began, the four internes of the Massachusetts General Hospital all entered the navy, prompted by what special inclination I do not know.

One of these four, "Billy" Gibson, a particular friend of Homans, died in the service, of yellow fever. The other two, Dr. Clarke, still in the navy, and Dr. Park of Groton, survive. The next I saw of him was in New Orleans, where I was with the vessels under my charge in the river, meeting him at the St. Charles Hotel, just after his arrival, and several times later; on one occasion making the rounds with him at his hospital, where it was pleasant to see the patients brighten under his cheerful address and humorous remarks. I heard that he had left the navy, for reasons very obvious to one who knew his vigor and ambition and who was aware of the tedium of attending a hundred healthy men;

and that he had gone through the regular army examination, of which I heard several funny stories, of how he did not hesitate to express his independent opinions, although knowing that they were not likely to be officially acceptable.

One of these, but I cannot say whether he told me himself or whether it came more indirectly, was to the effect that when he was asked whether he would not, under certain conditions, shave the patient's head and paint it with nitric acid, replied, with characteristic independence and promptness, "By no means."

There seemed to me to be some connection between this story and a favorite expression of his in regard to a certain professor of very mild demeanor, "You might pour nitric acid on his head and he wouldn't say anything."

Later, to my great pleasure, I received a short visit from him, accompanied by the younger brother of a distinguished military family, on my vessel up the Red River, where he accompanied General Banks' army and did great service at Pleasant Hill. Of his army service, however, I knew nothing, except in this incidental way. Our acquaintance was renewed after the war was over, just before I left the service, by a visit at the Chelsea Hospital from him, accompanied by his nephew, then a small boy, but later the distinguished John Homans, 2d. As a consequence of this visit, we sailed for Hamburg in August, and with no very long delay reached Vienna, where we got to work as rapidly as possible.

There were there many Americans, some of whom, like ourselves, had been in the service, and who wanted either to carry on their general or special studies further, or who wished to supplement army practice by instruction in branches, such as obstetrics and gynecology, where the clinical instruction was in our colleges at that time practically *nil*.

Surgery, singularly enough, attracted neither of us much in Vienna. From the little I took occasion to observe I should suppose Homans, and perhaps many others, might have taught the Austrian surgeons at least as much as they would have learned. Such instruction as he obtained in that department of surgery in which he afterwards became so eminent, which was then in its early infancy, if not actually in embryo, he must have got later.

During these few months that we were together taking courses in various specialties, — obstetrical diagnosis clinically, with a few perfunctory lectures on gynecology under Meyerhofer; or pathology with Scheuthauer, with an occasional glance from the eye of the great Rokitan-sky; or Störek, the laryngologist, who had just risen to eminence by his treatment of a well-known singer, to whom he had restored not merely his normal voice, but a much superior first tenor; enlivened by excursions and visits on the Sundays and holidays, too numerous to suit our thirst for instruction. — Homans always displayed the same zeal for his profession, the

same determination to know all that would make him practically useful, and above all, the same independence of thought, the same utter candor and frankness, and yet all this without thinking of himself in the least as having arrived at the end or completeness of development.

Once he said to me, "I suppose by the time I get to be a pretty good doctor, I shall die." Fortunately not true, for so far as my less intimate acquaintance of later years would enable me to judge, the same absolute honesty distinguished him for long years beyond the time when he had become a "pretty good doctor," and when he was just as quick to confess the errors of judgment which may come to the wisest.

Original Articles.

THE OPERATIVE TREATMENT OF UMBILICAL HERNIA.

BY J. COLLINS WARREN, M.D., BOSTON.

UMBILICAL hernia is an affection to which a distinct class of individuals is liable. It is seen often in infancy and childhood, but the surgeon is rarely consulted for such cases, at least in private practice, for care and the use of a suitable belt usually suffices to keep the hernia within the abdominal cavity until, with the growth of

the child, the opening in the abdominal wall disappears and a cure is effected.

The typical case which comes under the surgeon's care is that of a woman in middle or advanced life, of corpulent habit and the mother of a large family. The etiology of this form of hernia appears to consist partly in changes occurring in the abdominal wall during pregnancy, after which the parietes are left in a more or less relaxed condition, and partly in the accumulation of adipose tissue external to the true abdominal wall. The force of gravity and the pressure of clothing — notably the corset — gradually produce a pendulous fold which, in extreme cases, results in an apronlike mass of integument, which covers the genitals. This is always well marked in cases of diffuse lipomatosis, and is well shown in Fig. I (Case XIII), a male, in whom we have a double fold, the second covering completely the genitalia. The umbilicus is composed of cicatricial tissue, uniting the skin of the abdominal wall to the peritoneum and the fetal remains, which have become intimately associated with it. As the adipose tissue accumulates, this cicatricial tissue is placed upon the stretch and drags a funnel-shaped fold of peritoneum through the true abdominal wall. In this way the old congenital tract is gradually re-opened and dilated, and forms the ring of the hernial tumor, which is now found in the upper part of the pendulous fold of adipose tissue. The contents of the hernia are in the early stages invariably omentum. This readily becomes adherent, and at each adherent point the lobule of omentum forms a pouch for itself, so that in large and old hernias the sac is honeycombed with pouches containing separate lobes of the omentum. When the hernia is well developed, it is liable to occasional inflammation, and the adhesions of the omentum become partly intra-abdominal. This gives rise to frequent attacks of pain radiating over the abdominal cavity and causing more or less invalidism. An escape of a knuckle of intestine may give rise to sharper attacks of colicky pain, or even to strangulation (Case XII). In a case seen by me with the late Dr. Foster of Charlestown many years ago, there was gangrene of over twelve inches of intestine, with spontaneous recovery.

Although the mother of the present Princess of Wales was said to have died of a strangulated umbilical hernia, wealthy patients as a rule get along fairly well with a suitable truss; but, inasmuch as the affection prevails chiefly among elderly and obese subjects, it is only by the aid of skilled assistance that an apparatus can be adjusted so as to guarantee a fair degree of security (Case XIV). Patients are thus able to lead a much more comfortable existence, but the danger of a strangulation is always present.

Modern experience shows that obesity and even the glycosuria which frequently accompanies it is not a contraindication to operation, and improvement of surgical technique is always bringing about better results.



FIG. 1. — Lipomatosis dolorosa and hernia.

This form of hernia has generally been considered by surgeons as more liable to relapse than inguinal or femoral hernia, and with truth; but the percentage of recurrences is constantly growing smaller. This does not seem to me to be due to the invention of new methods of closing the neck of the sac, as has been the object of many recently described operations, but rather to attention to an accurate suture of the different layers in a manner that will bring them into close contact without too much tension.

The hernial sac should be exposed by two slightly curved incisions on the median line, which should meet and blend above and below into an incision sufficiently long to expose the outer walls of the sac as far as the neck of the sac and the surrounding aponeurosis. The sac should then be opened and the contents freed from adhesions and returned into the abdominal cavity. If the omentum is much matted together it had better be excised at a point below the portion which usually occupies the sac. The sac itself should then be carefully excised, care being taken to secure such vessels as may be divided. The shape of the opening in the abdominal wall is now obvious, and is found to represent an oval with the long diameter lying at right angles to the linea alba.

The peritoneum should, if possible, be separated from the fascia and sutured with fine sutures. The edges of the hernial ring consist of the tendinous raphé formed by the blending of the aponeuroses of the abdominal muscles. The accurate coaptation of these edges is of the greatest importance. The anatomical closure of this opening would apparently be effected by bringing the right and left edges together, but this cannot be done without great tension in the center of the line of suture, making a wound with depressed and tense center and raised and relaxed ends. The vertical diameter of this opening is always the shorter of the two, and if the lower and upper margins of the ring are brought together by forceps they can easily be held in that position without exercise of any appreciable degree of force. The parts seem to fall naturally together if the opening is closed transversely. Indeed, lateral strain closes this opening in the linea alba, while vertical strain tends to open it. The material used for suturing the peritoneum is fine silk (No. 8). It is not necessary to select the finest grades, such as are used for intestinal sutures, for this purpose. A No. 12 silk is the size used for suturing the aponeurosis. Enough tissue of this layer should be taken up to hold the suture securely and prevent retraction of the edges of the ring. It does not seem to me necessary to use quilted or other complicated forms of suture, or to expose the edges of the recti muscles (except in the rare cases of wide separation of the recti muscles) in order to obtain a perfect union. In an aseptic wound attention to the points mentioned above is sufficient. The adipose layer and outer integuments should be trimmed with the knife so as to fall easily into apposition. This involves excision of the un-

bilious and a certain amount of skin on either side. The adipose layer is then caught together by several medium silk sutures, and the skin is united by silkworm gut.

A new feature in the surgical treatment of these cases is the excision of the thick layer of adipose tissue. This is thickest in the "double-ehin"-like fold already referred to, but it covers the abdominal walls from the epigastrium to the pubes, and is sometimes several inches in thick-



FIG. 11.—Abdomen before removal of layer of adipose tissue (Case IX, side view).



FIG. 111.—Case IX before operation—front view.

ness on the median line, tapering off to normal dimension on a line erected from the anterior-superior spinous process. To remove this layer the median incision should be extended through the skin and subcutaneous adipose tissue from a point about two inches below the ensiform cartilage to the transverse fold defining the upper limit of the mons Veneris. The skin with the adipose layer still attached is then dissected away from the aponeurosis of the abdominal muscles by long sweeps of the knife until the integuments have been freed as far as the loins. In doing this many vessels of considerable size

tracts considerably with time. This method of obliterating the "double-chin" fold seems more effective than the employment of a long transverse or crescentic-shaped incision, by which the fold itself might be excised. Such an incision would, however, leave a scar at a point likely to cause irritation, as it would come directly at the point of constriction of the clothing.

I have tried this operation in two cases (Cases VIII and IX) with very satisfactory results. There was no shock from the operation nor was the convalescence in any way delayed by the extensive dissection of the flaps.

The following cases are taken partly from hospital and partly from private practice, and represent fairly well the type one has to deal with surgically:

CASE I. A. R., forty-six years old; married; very obese, but an active and strong woman, doing general housework. Was operated upon for the recurrence of an umbilical hernia, which was originally the size of an adult head with numerous pouches and adhesions. The dissection had been so prolonged at the first operation that the sac was not entirely removed, and recurrence had taken place eighteen months later. The second operation was performed December, 1890, and consisted in careful dissection and removal of the sac, and suture of the peritoneum as a separate layer. The aponeurosis was sutured transversely with silk stitches. In spite of some fat necrosis in the edges of the wound, good union was obtained, and there has been no recurrence. She was examined by me in 1900, and result proved to be perfect. The patient wears an abdominal belt, and is in active work.

Writing April, 1903, patient states: "I have had no return of the rupture. I am as well and free from any pain as though I was never in that condition."

CASE II. Harry U., fourteen months old, was sent to hospital November, 1894, with a congenital umbilical hernia the size of a walnut. The sac was dissected out, the peritoneum sewed with silk, and the aponeurosis brought together transversely with silk stitches. The vertical skin incision was united with silkworm gut. Examined by me in March, 1900, and the result found to be perfect. No truss.

CASE III. Mrs. R. J. R., forty-five years old; has had eight children and is very fat. Entered hospital November, 1897, with an umbilical hernia the size of a baby's head. It was operated upon in the same manner as above stated. The external wound was brought together in A-shape. It healed by first intention. The patient reported eighteen months later a relapse, but preferred to get along with a truss instead of undergoing another operation.

CASE IV. Mrs. L. F., thirty-eight years old; five children. Entered the hospital November, 1897, with an umbilical hernia the size of a fist, produced after a fall down a bulkhead. The ring at time of operation admitted three fingers. The sac was excised and the wound sewed in separate layers—fine silk being used for the peritoneum and braided silk for the aponeurosis. The skin was united by silkworm gut. The wound healed by first intention. The patient has since worn an abdominal belt, and the result when examined in January, 1903, was found to be perfect.

CASE V. Mrs. M. C., sixty-seven years old; very fat, has five children; had been suffering for eight years with an umbilical hernia. Although she had worn a truss, the hernia was enlarging. At present the size of walnut. The operation was performed in December, 1898. A longitudinal incision opened the sac. Adherent omentum was excised, and the sac also. The material used in stitching the different layers was silk. Union by first intention. The patient was seen in March, 1900, when there had been no return of the hernia. Writing April, 1903, patient states that the operation was entirely successful, and she has had no trouble since.

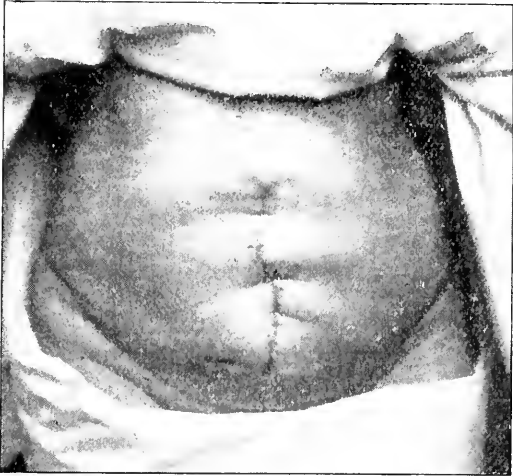


FIG. IV.—Case IX after operation for umbilical hernia and removal of abdominal fat—front view.



FIG. V.—Case IX after removal of adipose layer—side view.

are divided, but are easily secured. After both sides have been freed in this way, each half of the adipose layer can be removed from the skin with a long-bladed knife. After hemorrhage has been arrested the skin should be attached to the aponeurosis by two or three catgut sutures to prevent dead spaces, and the edges of the skin should be united in the usual way with silkworm gut. The cicatrix is at first unusually long for an abdominal scar, but, being superficial, con-

CASE VI. J. G., thirty-nine years old; a very obese Jewess, with five children, entered the Hospital October, 1900. The hernia had existed for eleven years at the time of entrance, the size of a coconut. It was reducible. After opening the sac the omentum which it contained was excised and silk sutures were used in the usual manner, the aponeurosis being brought together transversely. The wound united by first intention. In April, 1903, the patient was reported as having no recurrence of the hernia. She wears no belt.

CASE VII. Mrs. Bridget W., twenty-eight years, medium-sized woman, with five children. In this case the hernia was about the size of a small apple. The patient also had a floating kidney, but preferred to have the hernia relieved first. The usual operation was performed November, 1902, and the wound healed by first intention. No reply was received to a letter of inquiry recently sent.

CASE VIII. Mrs. C., fifty-one years of age. Operation Jan. 10, 1903. Has but one child, twenty-one years of age. Patient's weight is 209 pounds. Has an umbilical hernia about size of small orange which has existed for six years, but has never been strangulated.

Patient was particularly anxious to have the fat removed from her abdomen. The abdomen is pendulous, and the adipose tissue forms a deep fold below the umbilicus. An incision about nine inches in length was made in the median line, and the sac was carefully dissected out. An opening was then made in it, and the omentum being found adherent to several pouches in the sac could not be reduced. It was accordingly tied and excised. The peritoneum and the edges of the ring were united horizontally by separate rows of silk sutures. The skin and subcutaneous fat were now dissected off from the fascia of the rectus and the external oblique as far as the loins on either side. The hemorrhage (which was slight) was controlled by the ligature of several large vessels emerging from the aponeurosis. The adipose tissue was next dissected away from the skin on each side by large sweeps of the knife, and was removed in a large wedge-shaped mass. The skin was caught down firmly upon the aponeurosis by buried catgut sutures on either side, and the median incision was closed with silk-worm gut suture. The wound healed throughout by first intention, and the patient left the hospital on Feb. 2. In August, 1903, she writes that her "health is good, no return of rupture; the abdominal fat is about the same as before operation."

CASE IX. Mrs. S. A. J., age forty, was sent to me at the hospital by Dr. George Francis. Patient is a large and stout woman, and has had three children, nine years, four and a half years and fourteen months old. There is a large amount of fat in the abdominal wall, forming a pendulous mass below the umbilicus, where a hernia about size of an orange exists.¹ The hernia was first noticed six months ago after stepping out of a bath; three weeks ago began to be troubled with sharp pain in the umbilical region. There had been a slight swelling at this point ever since the birth of last child. The hernia can be easily reduced, and the ring admits the forefinger.

Operation Jan. 13, 1903. An incision was made on the median line about ten inches in length, with the umbilicus at its center. The sac was first carefully dissected out from the surrounding tissues without opening it. The sac was then opened and the omentum returned into the abdominal cavity and the sac excised. Silk sutures were taken in the cut edges of the peritoneum and the edges of the ring were brought together transversely by braided silk sutures. The skin and subcutaneous adipose tissue were now dissected away from the abdominal parietes, exposing the aponeurosis for about ten inches on either side. In this way the thick layer of adipose tissue which constitutes the fatty layer of the abdominal wall was separated from its attachments. After arresting bleeding from several arterial branches which emerged from the aponeurosis, the adipose tissue was carefully sliced off from the skin on either side. In this way two wedge-shaped masses of fat were removed, each measuring about three and a half inches in thickness and six inches in width. Their combined weight was about two pounds. After thoroughly arresting all hemorrhage the skin was caught down upon the aponeurosis on either side by two buried catgut sutures to prevent the existence of a dead

space. The median incision was then brought together by silk-worm gut sutures, some of them being deep enough to catch the underlying aponeurosis and hold the skin firmly in apposition with it.

The wound healed throughout by first intention, and the patient, eight months later, expressed much satisfaction with the result of the operation. There was no return of the rupture and no increase in the abdominal fat, since leaving the hospital.

CASE X. Mrs. H., sixty-five years of age, was referred to me by Dr. George Francis in December, 1900. Her weight was 325 pounds. She has had five children. Has suffered from umbilical hernia since her last confinement. The hernia is about the size of a fist. Although it has not been strangulated, it has often been the seat of severe attacks of pain. Owing to great weight of patient it was decided to operate upon the bed upon which she was to lie after the operation. An incision four inches long laid open the sac. A mass of adherent omentum was tied off in sections with silk. The ring was large enough to admit the tips of three fingers. The sac was dissected out. The peritoneum was united with fine "intestinal" silk sutures. The edges of the ring were brought together transversely with silk sutures. The subcutaneous fat was also caught together with fine silk sutures so as to leave no dead spaces. The skin was stitched with silk-worm gut.

In October, 1903, her nurse reports a perfect result (in spite of recent fall down stairs) — patient has derived much benefit from operation.

CASE XI. Mrs. C., sixty-five years of age; weighs about 250 pounds; two children; was referred to me by Dr. E. G. Cutler. The hernia is of long standing and is about the size of an orange. It has never been strangulated. Was operated upon in March, 1901. A mass of omentum which was found adherent was tied off and excised. The application of sutures was the same as in Case X. Some skin was excised in this case, including the umbilicus. Union by first intention. In October, 1903, patient reports the scar to be perfect. No recurrence of the hernia. Wears an abdominal supporter.

CASE XII. Mr. B., sixty-six years of age; weight 260 pounds; was referred to me by Dr. E. G. Cutler for an incarcerated umbilical hernia. There was pain and vomiting, and the hernia had been irreducible for twenty-four hours. It was reduced by taxis without ether, and held in place by adhesive straps. The operation for radical cure was performed a few days later, as the hernia (which for several years had been under control) now came down on getting out of bed and could not be reduced by the patient. The umbilicus was included between two slightly curved incisions, and its skin (which was excoriated and could not be thoroughly disinfected) was removed. The omentum was found adherent and covered with fresh exudation, and a portion which could not be returned easily was tied off and removed. Silk was used for the different layers as in previous cases. Owing to skin infection from abrasions the wound did not heal by first intention, and most of the buried sutures came away. The healing of the wound was, however, firm, and there was no hernia. About six months later, in March, owing to an attack of bronchitis, there was a slight recurrence of hernia, which, however, was held easily by an abdominal belt.

CASE XIII. This case is introduced to illustrate the typical condition of lipomatosis associated with this form of hernia. The patient is a male, aged fifty-nine; a janitor by occupation. I was called to see him by Dr. F. G. Hersey for an acute pain in the left loin, emanating from a large subcutaneous tumor, probably lipoma (lipomatosis dolorosa?).² Owing to the existence of a skin affection no operation was advised. The fold of abdominal skin is double in this case — a second and smaller fold lying between the usual one and the mons Veneris, and entirely concealing the genitalia. The attack of pain was of a few days' duration, and its cause purely traumatic.

CASE XIV. Mrs. F. In 1891 I reduced an umbilical hernia and fitted the patient, who was a very stout woman of fifty-eight, to an abdominal supporter. The rupture had existed twenty-two years, appearing at the time of her first confinement. By the constant attention of a

¹ Figs. II and III.

² Trans. Col. Phys., vol. xxiv, p. 17.

skilled attendant, a large share of whose time is devoted to the adjustment of the belt and care of the skin, the patient has suffered little pain or inconvenience from the hernia during the last twelve years.

Summarizing the data furnished by the above cases, we find two in which no operation has been performed. The contraindications in Case XIII were the presence of a chronic skin affection combined with lipomatosis and diabetes. In Case XIV the careful adjustment of a truss, advised many years ago (when the modern technique was not what it is now), has enabled the patient, aided by a skilled attendant, to overcome the tendency to strangulation which had previously existed. This case furnishes an example of one whose surroundings enables her to get along without an operation with a fair degree of safety.

Case XII, being a case of operation following closely upon a reduction of a strangulated hernia, furnished conditions unfavorable to strict asepsis, and recurrence in this case may therefore be ascribed to sepsis rather than the method adopted.

There remain eleven cases operated upon by the method advised in this paper. In only one of these cases has a recurrence been reported during periods varying from one to thirteen years.

In the case in which a recurrence took place the hernia was as large as a child's head.

This gives a record of about 9% of recurrence after operation—a record, which although it does not quite equal the very satisfactory results of operation for inguinal and femoral hernia, shows that this method of operating for umbilical hernia bids fair in time to rival them.

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VESICO-INTESTINAL FISTULA.

BY JOSHUA C. HUBBARD, M.D., BOSTON.

Assistant in Surgery, Harvard Medical School; Third Assistant Visiting Surgeon, Boston City Hospital; Assistant Surgeon to Out-Patients, Free Hospital for Women.

A. B., fifty-four years of age, married, cigar-maker, entered the Boston City Hospital, June 29, 1902. The previous history was unimportant except that he had never had any venereal disease. The present trouble began about three months previous to entrance, and had the following symptoms: distress and belching of gas after meals, cramps in the stomach occurring four or five times a day and lasting three or four minutes, occasional nausea and a constant sour taste in his mouth, attacks of dizziness two or three times a week. There was no edema, palpitation or shortness of breath, and no cough. Bowels constipated. Has the desire for a movement, but unable to get a satisfactory one. For the last few days troubled by the sudden stoppage in the flow of urine while micturating. Has pain before and after passing water. Nervous. Loss of strength and weight.

Physical examination.—Both pulse and temperature were slightly elevated. The examination was negative except for the urine. Urine analysis: neutral reaction, specific gravity 1.016, slight trace of albumen, no sugar. Sediment, few small caudate and small round cells, some fatty. Few large round cells. Considerable blood, normal and abnormal. Much pus, free and in clumps. Few squamous cells and at a later examination much mucus.

During his stay in the hospital it was noted that he complained of pain, most marked about and below the umbilicus and at times in the perineum. Micturition was at more frequent intervals than normal. A sample of

urine drawn by catheter was cloudy and contained small masses of thick material. The patient was then discharged at his own request.

He entered the hospital again Jan. 28, 1903. The history of his condition since he left the hospital was as follows: Last July had an attack of pain referred from the hypogastrium to the tip of the penis. Could not retain urine. Micturition caused a burning pain, and what seemed to be pus was passed. During the following December had an attack of sharp, cutting pain in the left lumbar region, shooting down toward the bladder. The attack was so severe that the patient was doubled up by the pain. Passed a stone of about the size of the end of the index finger. Since then the pain has continued unchanged. The stream of urine shuts off suddenly at times. Pain at the tip of the penis. Passes no blood, but a thick greenish-yellow urine which at times takes the form of casts. Has six or seven stools a day and the material passed looks like that which comes from the bladder.

The urine analysis was essentially the same as at the first examination. Examination with the fluoroscope was negative. Cystoscopic examination under ether was as follows: Motor power fair. No blood in washings. Bladder wall uniformly dark red in color (congestion with exudate), with pieces of mucous adherent. Rugae not distinct. Trigone fairly distinct. Both ureteral orifices normal in size and functioning. Just inside left ureter and about 1 cm. above it is a circular spot about 1 cm. in diameter which is yellowish-white in color. Edges clearly defined and but little if any below the bladder surface. Posterior bar about 1.5 cm. Prostate outline normal. No growths or foreign bodies in bladder. Bladder wall about normal thickness.

Treated with daily irrigations of the bladder, and discharged improved to the Out-Patient Department, where the bladder washing was continued. The condition of the bladder became worse, and the patient was sent back into the hospital for a suprapubic cystotomy for drainage.

He was admitted to the service of Dr. Bolles, who kindly allowed me to operate. On March 30 the bladder was opened above the pubes.

Ether.—Bladder filled with boracic acid solution. Incision made in the median line. As bladder did not dilate well the peritoneum was accidentally opened but immediately closed with a suture. More solution was then injected into the bladder, which was opened between stay sutures. Mucous membrane of the bladder sutured to the muscles of the abdominal incision. Catheter fastened in the suprapubic opening, which was closed tightly about it.

Immediately after the operation feces began to come out of the suprapubic opening. On April 5 under ether the scrotum and surrounding areas were incised, because of the extravasation of urine and feces, under the skin, around the suprapubic opening. The rectum was examined at this opportunity under ether, but no fistulous opening was seen. During the next few days attempts were made to locate the position of the fistula. Methylene blue was injected into the rectum and almost immediately found in the bladder, while methylene blue injected into the bladder did not appear in the rectum.

The patient was slowly and steadily losing ground and was suffering severe pain from the irritation of the feces in the bladder. An immediate attempt to close the fistula was decided on. Inasmuch as the intestinal opening could not be seen in the rectum, it was thought best to first do an exploratory laparotomy to determine the site of the fistula. If it was then found to be too low down to reach comfortably through the abdomen the plan was to turn the patient over on his face and reach the fistula from below by turning back a bone flap from the sacrum.

Ether.—April 13. Suprapubic opening closed temporarily by continuous silk suture. Incision made through the left rectus, the lower end of this cut being on a level with the upper end of the suprapubic incision. The omentum was found adherent to the bladder. Adhesions broken up. Omentum very much thickened and indurated along its attachment to the bladder. Sigmoid found adherent to the upper part of the bladder about two inches from where it was adherent to the abdominal wall at the suprapubic opening. Adhesions between bladder and sigmoid broken up. Small hole found in the sigmoid with everted edges. Corresponding hole in the bladder about the size of a lead pencil. Purse-string suture of catgut around the opening

in the bowel. As this was tied the mucous membrane was inverted. Peritoneum then drawn as well as possible over this by intestinal silk suture. This was found rather difficult, as the stitches tore easily out. Hole in the bladder closed in a similar way by a purse-string suture, with the peritoneum then pulled over it. Wicks were left to separate the bladder and intestine, and the abdominal incision partially closed. To prevent the foul discharge from the suprapubic opening in the bladder from reaching the abdominal wound, oiled silk was sewed to the skin to separate the two dressings. Drainage of the bladder by catheter through the penis was unsatisfactory, so the suprapubic catheter was put in place. Instead of bringing it directly up from the opening in the bladder, it was carried through one of the sinuses made at the time of the urinary extravasation, so that it came out well down in the groin, and the skin at the suprapubic opening was drawn together over the catheter by adhesive plaster to minimize the leakage.

Immediately after the operation the patient developed a post-operative delirium which could not be controlled by drugs. Four days after operation the wicks were changed and a little fecal matter was noticed on them. The delirium allowed him almost no rest at all, and gradually wore his strength out so that on April 19 he died. At this time there was a fecal fistula at the site of the abdominal incision, but the opening in the bladder had apparently remained closed.

Résumé of the case. — This, then, was a case of vesico-intestinal fistula without evidences of carcinoma or tuberculosis of the inflammatory type, with a stone of apparently secondary origin. The fistula was situated so high in the bladder that fluid would not pass readily from the bladder into the intestine, but freely the other way. The adhesions between the bladder and the intestine prevented a satisfactory dilatation of the bladder. The cystoscopic examination was misleading.

The first reference to a fistulous opening between the bladder and a portion of the intestine has been found in a report by Praxagorus. Since his time to 1900 Pascal¹ was able to collect accounts of 287 such fistulae. Nevertheless, in spite of this comparatively large total, very few have been reported since modern surgical methods have been in use.

Vesico-intestinal fistulae occur more often in men than women, 75% of the cases being found in men and 25% in women (Pascal). This is due in part to the anatomical position of the vagina between the bladder and the rectum, so that vesico-vaginal and recto-vaginal fistulae are much more common than vesico-rectal, and in part to the greater liability of man to trauma, many of the reported cases having been due to gunshot wounds and sword-thrusts. The immediate cause of the fistula may occur in either the bladder or the intestine, or outside of both. The causes of the nontraumatic cases are cancer, tuberculosis and nontubercular inflammation, the last class being due to a great variety of diseases: cystitis, pericystitis, vesicle calculus, toxic enteritis, typhoid, dysentery, appendicitis, intestinal obstruction, stricture of the intestine, syphilis, actinomycosis. The simple inflammatory lesions cause the greatest number of fistulae — 30.52% of 95 cases analyzed by Chavannaz.² Tubercular inflammation, with its primary focus in the intes-

tine or the prostate, or less commonly in the bladder or seminal vesicles, furnishes 7.36% and cancer originating usually in the rectum, 20%. Pascal found the cause of the cases analyzed primary in the bladder in 18% and in the intestine in 35%. The causes of vesico-intestinal fistulae, originating outside of either urinary or intestinal tract, are inflammation of the peritoneum or inflammation of new growth of the uterus and its adnexa. In these cases the primary focus secondarily invades both bladder and intestine, thus forming a fistulous connection between them. The infrequency of cancer of the bladder as the origin of the fistula is shown by a series of 4,774 autopsies done by Heiborn (Pascal), among which were only 37 cases of vesicle cancer and of these only 7 were primary. Of the 37, 9 had caused a vesico-intestinal fistula. As far as age is concerned the cases are fairly evenly distributed from early adult life till old age. The fistula may be formed by an agglutination of the bladder and intestinal walls with a direct connection at this point, or there may be a small canal between the two (Chavannaz, in 22.10% of the cases), or a cavity may exist independent of either intestine or bladder, and be connected with both by a fistulous tract. The fistula may be single or multiple, or single in the bladder and multiple in the intestine, or multiple in the bladder and single in the intestine. Ordinarily it is single in the bladder, in but 5 out of 95 (Chavannaz) cases were there several openings in the bladder. When there are several openings into the intestine they are usually into the same portion of it, though cases have been reported where they connected with distinctly separate areas. In 100 autopsies or operations tabulated by Pascal the orifice in the bladder was situated on the anterior face in 1 case, on the side 9 times, on the summit 13, in the base 17 and on the posterior surface 23 times, 19 of which were near the ureters. The connection with the intestine is in the great majority of cases with the rectum. Of 195 cases (Pascal) the connection was with the rectum in 113, with the colon and especially the sigmoid 42, and with the ileum 26 times. The opening of the fistula may form a valve which prevents the passage of material in one direction. The bladder itself is usually diminished in size, and eventually, with the urethra, becomes chronically inflamed, though it may withstand for a surprisingly long time the presence of the fecal matter. Infection ascending through the ureters and to the kidneys is rare. In 100 autopsies (Pascal) definite mention was made of the kidneys and ureters in 25 cases, in 7 of which they were healthy and in the remaining 18 showed the lesions of an ascending inflammation. Secondary stones may form in the bladder about a nucleus of fecal matter and be composed of either largely fecal material or phosphates. When a stone is found in the bladder the inference cannot be immediately drawn that the calculus was formed before the fistula and caused it by ulceration. These cases with stone must be carefully analyzed before the etiological value of the stone can be determined. The intestine below the fistula becomes

¹ Des Fistules Vesico-Intestinales acquises chez l'Homme. 1900.

² Ann. d. Mal. d. Org. Genito-urin., Par., 1897, xv, 1176.

inflamed and irritable from the presence of the urine, or the rectum may dilate and form a pouch in which the urine collects to be passed only at intervals.

The cardinal symptoms of vesico-intestinal fistula are the passage of gas and fecal matter through the urethra and of urine through the rectum. These symptoms, however, are not always present at the same time and one perhaps may be entirely absent. Patients often suffer intense pain constantly, or only at the time of micturition, due then to the passage of fecal matter through the urethra, which may become plugged, causing retention and urinary extravasation. There is both vesical and rectal tenesmus. The urine is that of the condition of the urinary tract, cystitis, pyelitis, etc., caused by the presence of the fecal matter plus the fecal matter itself. The cystitis or the irritation of a stone, either primary or secondary, may be severe enough to cause secondary ulcerations which may eventually perforate and form additional vesico-intestinal fistulæ.

The passage of gas with the urine is the most constant symptom and ordinarily the first to indicate the presence of the fistula. In some cases this is the only symptom, and the case may advance no farther. Pousson³ reports a case where the passage of gas was the only symptom for two years and Pascal mentions one where there were no other symptoms for nine years. The gas is usually passed at the end of micturition. Occasionally it comes in the middle of it, when the stream of urine ceases till the gas has all come out. The passage of the gas is accompanied by a noise more or less whistling in character. The gas may disappear for several days, only to reappear again, and may be in some cases dependent on the position taken during micturition.

The amount of fecal matter in the urine varies within large limits. There may be no feces in the urine at any time, or they appear only when the patient has a diarrhea. Some have thought that the readiness with which the feces passed into the bladder was dependent on their diet, the amount always increasing after the ingestion of a certain food. The region of the intestine with which the fistula connects may be told in a rough way by the character of the fecal material found in the urine. Pieces of well-formed feces indicate a connection low down, while undigested material shows that it is high up in the intestinal canal. The length of time after eating before the appearance of the fecal matter is also a guide to the situation of the fistula. A microscopic examination of the sediment in the urine may be necessary to determine its intestinal origin and its characteristics. The fecal material may form a calculus or serve as a nucleus for a phosphatic stone.

The passage of urine through the rectum is a less constant symptom, and depends on the situation of the opening in the bladder and its valvular action. Its presence causes eventually an inflammation of the mucous membrane of the intestine. Occasionally the passage of urine from the rectum

is the first symptom noticed by the patient. The urine may leak away constantly through the anus or be retained for a variable length of time and be passed only when the patient micturates or defecates. Some patients have complete control over these discharges, except when they are in an upright position or attempt to urinate.

It would seem that the diagnosis of a connection between the bladder and the intestine could be made from the presence of any one of the three characteristic symptoms, gas or fecal matter in the urine and urine in the stools. There are, however, other conditions than vesico-intestinal fistulæ which may give rise to some of the above symptoms. Gas may appear in the urine after catheterization or litholapaxy. It is developed sometimes in diabetes mellitus, when a yeast fungus reaches in some way, perhaps by the catheter, the urine in the bladder and sets up fermentation. It may occur also when purulent cavities with gaseous contents develop near the bladder and break into it. Pneumaturia occurs without any apparent reason in certain neuropathies (Guirard).

The presence of fecal matter in the urine is proof of the existence of a fistula with the intestinal tract. It may connect, however, with the urinary apparatus below the bladder. In an urethro-rectal fistula there will be anal urination only at the times when urine is passed through the urethra. A physical examination will settle the question. An examination of the rectum alone may determine the point. If the fistulous opening in the rectum is found below the prostate, the connection is probably with the urethra, while a fistula above the prostate probably connects with the bladder.

Urine in the rectum other than that due to a vesico-intestinal or a urethro-rectal fistula may occur in an uretero-intestinal fistula. The differential diagnosis can be made by the absence of fecal material in the urine and by the physical examination.

The various methods of physical examination are employed to determine not only the presence of a vesico-intestinal fistula but its site. The cases of new growths and tuberculosis which give rise to this condition must be so far advanced as to make their diagnosis easy. As the simple inflammatory fistulæ are the most favorable for treatment, an early diagnosis is important. The examination of the bladder and rectum may be by cystoscope and proctoscope. Failure to find the opening, especially in the bladder, does not necessarily mean its non-existence, for it may be so small that it is hidden by a fold of mucous membrane. The injection of a colored fluid into the rectum and its recovery later from the bladder, or *vice versa*, is sure proof of the presence of a fistula. A negative result from the injection one way does not rule out the fistula. The passage of the fluid depends on the position and the character of the opening of the fistula, and while it will pass in one way it may not in the opposite, or an existing intermediate cavity may be large enough to hold it all. In place of a colored liquid some have

³ Assoc. français de Chir., 1896, Vol. x, 536.

used a chemical, and then tested for its presence in the fluid recovered later. The bladder has been filled with a chemical, and then the rectum, which has been wiped with a second chemical, examined by the proctoscope. Where the two meet at the fistula a characteristic reaction takes place, and the site of a connection which had escaped notice discovered. It has also been suggested to inflate the rectum with hydrogen gas and burn it as it issues from the end of a catheter passed into the bladder.

The prognosis depends primarily on the cause of the fistula, and in cancer and tuberculosis on the primary disease rather than on this complication. In the simple inflammatory fistula it depends largely on its size. This determines the amount of fecal matter which runs into the bladder, and on this depends the condition of the bladder. The more inflamed the bladder, the greater is the liability of an infection ascending to the kidneys. The fistula once present, the course of the lesions due to it is steadily forward. However, Harrison Cripps⁴ reports that a spontaneous cure has occurred. Although a moderately large number of cases has been collected, so few are reported in recent times that no attempt has been made to estimate the length of time before the fatal termination, which is ordinarily inevitable sooner or later unless the fistula is closed.

The treatment is dependent primarily on the cause of the fistula, and in cancer or tuberculosis would be rather different from that devoted to a fistula of simple inflammatory origin. The treatment has varied greatly in different periods from a course of "Bristol water and asses' milk" to laparotomy. The treatment is divided naturally into palliative and radical. Specific medication should be used in a syphilitic case.

The palliative treatment is devoted to keeping bladder and rectum clean by frequent irrigations or permanent drainage, or in some cases by the position of the patient. In order to prevent the passage of feces into the bladder, an artificial anus may be formed above the intestinal end of the fistula. In order to get the full benefit from this operation, no feces must get into that portion of the intestine distal to the artificial anus, for they will in time reach the bladder. To prevent this the anus is made with a large spur or the lower opening is permanently closed. To accomplish the same object an entero-anastomosis may be made, joining the part of the intestine above the fistula directly with that below.

Vesico-intestinal fistulae from the point of view which has in mind their radical cure are divided clinically into those accessible from the rectum, or vesico-rectal, and those inaccessible from the rectum, or vesico-intestinal, even though the fistula connects anatomically with the upper part of the rectum. Various procedures have been suggested for their radical cure, the more important of which I will briefly indicate:

Rectal route. — The anus is stretched and the edges of the fistula from inside the rectum are freshened and sutured in layers. Division of the

sphincter ensures the free discharge of the feces and lessens the likelihood of the stitches tearing.

Perineal route. — Transverse incision in the perineum. The rectum is separated from the prostate and urethra in front. The peritoneum is pushed up out of the way if the fistula is high, and the fistula directly sutured. Drainage is advisable. It has been suggested that at the end of the operation the rectum be turned a little so that the repaired opening in the bladder may come against a healthy intestinal wall.

Sacral route. — Incision is made from the anus along the side of the coccyx and sacrum, and a bone flap turned back. The fistula may be reached by pulling the rectum to one side.

Vesical route. — Pousson⁵ attacked the fistula through a suprapubic incision into the bladder. The mechanical difficulties of this method are great.

Abdominal route. — Separation of the intestine from the bladder and direct repair of the opening in each. Drainage.

Pascal gives the following results:

Rectal or perineal route with or without sphincterectomy, fourteen cases. Healing of the fistula in eight, failure in six.

Laparotomy seventeen times with nine failures, seven recoveries and one improvement.

The causes of death in the fatal cases were peritonitis and shock.

Reports of Societies.

AMERICAN GYNECOLOGICAL SOCIETY.

PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL MEETING,
HELD IN WASHINGTON, D. C., MAY
12, 13 AND 14, 1903.

(Concluded from No. 14, page 381.)

DR. HIRAM N. VINEBERG of New York City contributed a paper on

THE ETIOLOGY, PATHOLOGY AND TREATMENT OF PUERPERAL SEPSIS.

Severe sepsis may be caused by a variety of pathogenic germs. The variety of germs found in the uterine discharge in a given case is no criterion of the severity of the case, and forms no safe guide as to prognosis or as to the treatment to be adopted. Bacteriological examination of the blood is of little value, either from a prognostic or therapeutic standpoint. The treatment of puerperal sepsis must be based chiefly upon the clinical history and physical signs of each individual case. Wounds or infection in the perineum, vagina or cervix are to be treated on the general surgical principles of irrigation and drainage. Curettage is indicated where there are evidences of placental decidua residue in the uterus independent of the variety of bacteria that may be found in the uterine cavity. In those rare cases in which adherent and sloughing placental tissue cannot be removed, either

⁴ Passage of Air and Feces from the Urethra.

⁵ Congrès français de Chir., 1896, Vol. x, 536.

with the sharp curette or fingers, hysterectomy is indicated, provided the patient is not already moribund. Hysterectomy is also indicated in cases of septic endometritis or infection of the placental site, so long as the infection is still limited to the uterus, and when the symptoms steadily grow worse in spite of uterine irrigation with or without curettage, and appropriate hygienic stimulating treatment.

In abscess of the uterus, the abdomen should be opened, and, when feasible, the purulent foci should be drained and the uterus preserved. If the uterus be studded with small abscesses, hysterectomy is indicated. The abdominal is to be preferred to the vaginal route for hysterectomy. If the infection has passed from the uterus into one or other tube, and has set up a violent grade of inflammation, the abdomen should be opened and the infected tube removed before a general peritonitis develops. When the infection has passed through the uterus and has set up a general peritonitis, a case might occasionally be saved by a timely abdominal section and drainage. In cases of parametric exudates the treatment should be conservative, and surgical intervention is indicated only when there are evidences of pus formation. In obscure cases in which the pathological lesion cannot be determined, and the symptoms are steadily growing worse, it may be advisable to open the abdomen to search for a hidden purulent focus or for a circumscribed slough of the uterus. The procedure proposed by Trendelenburg and executed by him and others, of ligating the pelvic veins when they have become infected and thrombosed, is worthy of further trial.

DR. WM. R. PRYOR of New York City took issue with the essayist in regard to the significance of certain pathogenic germs. In mild cases of puerperal sepsis very rarely is the streptococcus present, while in the severe ones streptococci are found. In the mild forms of the disease many other kinds of germs are found, chiefly staphylococci and saprophytic bacteria. The form of puerperal sepsis which demands careful attention is due to the streptococcus.

DR. EDWIN B. CRAGIN of New York City related his experience at the Sloane Maternity. In this institution infection occasionally occurs, because cases are taken undelivered, no matter whether they have been handled by midwives or by beginners. Women are admitted whether they are just in labor or whether they have been in labor for several days. Occasionally a patient has been lost from puerperal infection, although pathologist and bacteriologist were unable to find the streptococcus. A number of severe cases have been observed in this maternity in which a variety of bacteria were found in the uterus. In the management of puerperal sepsis he emphasized two points: First, to make sure the uterus is emptied; second, in making sure that it is emptied, do just as little damage to the inside of the organ as possible.

DR. J. WHITRIDGE WILLIAMS of Baltimore laid stress on the value of bacteriological ex-

aminations of the uterine lochia and of the blood. In many cases there is no definite indication for treatment from such examinations, yet there is no doubt in his mind that important and valuable information as to the condition of the patient can be elicited in this way, more particularly by examining the blood. He has seen but two cases of puerperal sepsis in which he feels operation was distinctly called for.

DR. MATTHEW D. MANN of Buffalo, N. Y., spoke of gonorrheal infection in connection with the puerperium. Recently he saw a patient in consultation, who had been sick for more than a week when she was first observed by him. Her temperature reached 111° before death. She had been having a temperature of from 107° to 108° for a number of days. Pulse was 120. Examination of the discharges by competent bacteriologists showed a pure culture of the gonococcus. There was no other germ present in any of the secretions. He thought the infection would localize itself and the woman would recover; but the joints and heart became affected, and the patient died.

DR. G. GILL WYLIE of New York City said there can be no question but that surgical intervention is indicated in some of the severe cases of puerperal sepsis. Of his first nine cases, which were treated at the Bellevue Hospital some twenty years ago, seven were dealt with locally and two surgically. He believes the uterus should be emptied in every case of severe streptococcus infection.

DR. EDWARD P. DAVIS of Philadelphia, in speaking of hysterectomy in cases of puerperal sepsis, stated that this operation has nothing definite to support it except in rare cases of adherent placenta. A method which yields good results where irrigation has failed, consists in opening the abdomen and inspecting the uterus, tubes and ovaries, freeing adhesions, etc., and, if there is a collection of pus in the tubes, drainage by means of iodoform gauze carried through into the vagina, separating the organs from abnormal adhesions.

DR. MALCOLM McLEAN of New York City referred to the curette as a dangerous instrument in cases of puerperal sepsis in the hands of the average general practitioner. Emptying of the uterus is an absolute necessity in some cases, especially where there is evidence of putrid absorption, with chill and sudden high temperature.

DR. HENRY D. FRY of Washington, D. C., said the practice at the Columbian Hospital, where a large number of maternity cases were observed, was first to thoroughly clean out the uterus, particularly if the patients were seen at the beginning of sepsis and it was confined to the uterine cavity. After having taken a culture, active treatment of the uterus is suspended until the result of the culture is made known. If there are retained pieces of placenta, blood clots, accompanied with a foul odor, producing infection, the indication for cleaning out the uterus is clear. On the contrary, if the cul-

ture showed streptococcus, staphylococcus, colon bacillus or gonococcus, the uterus was left alone. In cases of streptococcus infection he believes the use of the curette does a great deal of harm, in that it breaks down the protective zone of inflammatory tissue, which is thrown out by nature and which causes ultimately a general systemic infection.

DR. HERMAN J. BOLDT of New York City said experience has taught him, so far as the treatment of puerperal sepsis is concerned, that a bacteriological examination of the secretions from the vagina or from the uterus, or a bacteriological examination of the blood, furnishes no indication whatever for treatment, because there is usually a mixed infection, both streptococci and staphylococci being found in the secretions of the uterus and vagina. Such patients frequently manifest mild clinical symptoms, although operative intervention is not indicated. In all cases that come under his care, examinations of the secretions and of the blood are invariably made, and in patients who show bacteria in the blood, even a pure staphylococcus infection, the general condition of the patient does not seem to indicate the need of surgical intervention, consequently they are left alone and recover. On the other hand, many patients show absolutely no bacteria in the blood, yet they die, so that, as the result of accumulated experience, bacteriological examinations of the secretions and of the blood of such patients do not give a definite clue as to the indication for treatment.

Hysterectomy is of no avail in the severe cases of puerperal sepsis, as the patients die within a few days.

DR. SETH C. GORDON of Portland, Me., thinks surgical treatment is undertaken too early in some cases of puerperal sepsis. If there are abscesses of the Fallopian tubes, they should not be opened until one is quite sure that he can make a straight incision from the vaginal vault into the abscess cavity, without having any doubt as to whether pus is limited to the top of the vaginal wall. Every time an abrasion is made in the uterus or vagina with the curette or knife, he thinks a new avenue of infection is opened up, and causes, in many cases, a great deal of harm.

DR. H. G. WETHERILL of Denver, Col., referred to the Carosso method of treatment of puerperal sepsis, saying its value was unquestionable. This method has been advocated particularly by Dr. Edward J. Ill of Newark, N. J.

DR. CHARLES M. GREEN of Boston contributed a paper entitled

REPETITION OF CÆSAREAN SECTION ON THE SAME PATIENT; THE EXPERIENCE OF THE BOSTON LYING-IN HOSPITAL.

After a brief summary of the experience of the Boston Lying-in Hospital with repeated Cæsaean sections, the writer raises the question whether it is justifiable in performing Cæsaean section for either an absolute or an elective indication to remove normal organs, or to resort

to other procedures with a view to preventing subsequent pregnancy and the risk of a repeated section. The writer seeks to answer this question in the negative, and invited discussion of his views. Reference was made to a paper read by Dr. Coe at a meeting of the society in New York in May, 1896, entitled "Cæsaean Section; Suture of the Uterus *versus* Total Extirpation."

Of nine repeated sections, all performed on a relative indication, four were done, one each by four members of the staff, and five by the author. Two were done after labor had been in progress for nine hours each, and seven at an elected date before labor began. One patient had her first section without the hospital; six had their first and second, and one her first, second and third sections within the hospital. In one case there were no adhesions; in seven cases there were more or less adhesions. The duration of operation was from thirty-nine and one-third minutes to one hour and twenty-four minutes. In the case that died of shock the duration was forty-eight minutes. In one case the utero-abdominal adhesions were so extensive that the fetus was delivered without opening the peritoneal cavity, and the time of operation was thirty-eight minutes. The nine infants were discharged well; and of the nine mothers one died, a maternal mortality of 11%.

These results were not reported as unique or remarkable, because repeated sections have resulted favorably in other clinics, but they are reported in the hope of influencing opinion that the time has come when the society should withhold its approval of the doctrine that women should be sterilized at their first Cæsaean section, in order that they may not be subjected to the risks of a repeated section.

(To be concluded.)

Recent Literature.

Journal of Proceedings of the Sixth Annual Convention of the National Association of State Dairy and Food Departments, held at Portland, Oregon. Published under the direction of the Association.

This volume of 500 pages contains the laws of each of the states of the Union, relative to food inspection which were in force as late as 1900, together with the proceedings of the convention held at Portland, Ore., in 1902. An examination of these laws shows that nearly all of the states have enacted statutes providing heavy penalties for the awful crime of coloring margarin so as to resemble yellow butter, while more serious offences under the food laws are visited with lighter penalties. In some states the use of salicylic acid or other preservatives in milk and other dairy products is prohibited, while it is permitted in other articles of food, provided that the fact of such use is made known by a distinctly printed label.

The addition of five or six dozen photographs of state food officials does not improve the qual-

ity of the work, but may be taken as a cheap method of appealing to personal vanity.

The following statement may be found in the introduction of the work: "The increased inquiry for pure food being expected as the result of business announcements in these pages, carrying with it the guarantee of the purity of the products offered the consuming public, will serve the double purpose of increased demand for pure food goods and restrict the sale of adulterated ones." Whatever this statement may mean, there are advertisements of many food preparations in the book which would not stand the test of some of the laws laid down in the same work.

A System of Physiologic Therapeutics. — A Practical Exposition of the Methods, other than Drug-giving, Useful for the Prevention of Disease and in the Treatment of the Sick. Edited by SOLOMON SOLIS COHEN, A.M., M.D. Vol. viii. Rest, Mental Therapeutics, Suggestion. By FRANCIS X. DERCUM, M.D., Ph.D. Philadelphia: P. Blakiston's Son & Co. 1903.

The eighth volume of this series has appeared under the authorship of Dr. F. X. Dercum of Philadelphia, on the subjects of Rest, Mental Therapeutics and Suggestion. Of these three therapeutic measures, Rest, or the so-called "rest-cure," is given the place of chief importance. In working out this important branch of his subject Dr. Dercum has gone rather far afield in considering etiological and pathological as well as clinical and diagnostic matters, all of which, however, add very materially to the comprehensiveness and value of the book. The final section concerns itself with Suggestion. This subject receives a skillful and rational treatment which should be appreciated not only by those concerned in diseases of the nervous system, but also by practitioners in every branch of medicine. A brief consideration is given of the curious and always interesting vagaries of the human mind, which have resulted in such methods of treatment as metallotherapy, mind cure, faith cure and Christian Science. We commend especially Dr. Dercum's views on the subject of Rest. There can be no question that this method of treatment has been overdone, frequently to the positive detriment of the patient's condition. What we need is a sane, rational presentation of this important therapeutic measure, taken in conjunction with other means of treatment. This Dr. Dercum has apparently given us. He believes in work and exercise as well as rest in many functional nervous disorders. "Partial rest" is a favorite expression with him, and this we think is usually indicated. Naturally in a book of this sort many topics slightly foreign to the subject under discussion, for example, the symptomatology of various diseases, are taken up, though not in detail. In general we are glad to say that this is a fitting continuation of the excellent series of volumes which have preceded it.

THE BOSTON

Medical and Surgical Journal

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TYPHOID FEVER AND IMPURE ICE.

SINCE the usual source of infection in typhoid fever has been discovered, it has been natural that from time to time considerable attention should be paid to the possibility of the transmission of the disease through ice formed from contaminated water. It will no doubt be remembered by some of our readers that an investigation of the Boston ice supply, conducted under the auspices of the Board of Health, was published in this JOURNAL in 1901, with the general conclusion that ice more than three weeks old is practically as safe as a well-filtered water supply. Inasmuch as infection, if it occurs at all from ice, would naturally follow the cutting, it was held that after March the ice could not be held responsible for an outbreak of the disease, even were it known originally to have been infected. As a matter of fact, on analysis very few cases of the disease have been shown to be due to ice. This renders a careful piece of work on the subject by Dr. R. H. Hutchings and Dr. A. W. Wheeler of the St. Lawrence State Hospital at Odensburg, N. Y., published in the current number of the *American Journal of the Medical Sciences*, worthy of comment.

The tracing of an epidemic of typhoid at the St. Lawrence Hospital by these investigators certainly seems to indicate that under favoring conditions ice may be the source of the disease. Formerly the hospital was supplied with drinking water through the St. Lawrence River, but this, having been definitely shown to be the source of very considerable epidemics of typhoid, was abandoned after various measures for purification had been investigated. Thereafter water was obtained from a small Adirondack stream, which supplies the city of Odensburg. This change led to a practical disappearance of the disease for

about two years, and during this time the water was not boiled and ice was freely used. In the latter part of 1902 typhoid fever again appeared, and after a careful investigation of the water and milk supplies it was determined that the ice used in the institution was the probable source of infection. This ice had been taken from the St. Lawrence River and had been stored more than seven months. It appears that when this particular ice was forming, three or four cases of typhoid fever had occurred in the city among users of well water. Ice cut from the same place had previously been used for upwards of ten years and had never before been suspected. Bacteriological investigations of specimens of drinking water and melting ice were undertaken by Dr. George Blumer of the Bender Laboratory in Albany, whose report led to the strong suspicion that the ice was at fault. Further careful investigation brought out the fact that the ice, which contained considerable extraneous matter, was contaminated with numerous organisms, many of which were motile. Cultures showed a rapid growth, and colonies of colon bacilli and typhoid bacilli were finally isolated. The tests applied in the case of the suspected typhoid organisms left no doubt in the minds of the observers that they were dealing with *Bacillus typhosus*. In three of the cases the disease was clinically identified by autopsies. In further support of the contention that ice was the source of the infection is the fact that with the discontinuance of the use of this ice the epidemic gradually subsided. There were in all thirty-nine cases. At present, with the exception of a different ice supply, the conditions are the same as at the beginning of the epidemic. The water used is not boiled.

This piece of careful work should be widely read. It is apparently a justification for the opinion, long theoretically held, that under certain favoring conditions ice may be a definite and dangerous source of typhoid fever, and should lead to definite precautions against the spread of the disease from this source. Although the work of the Boston Board of Health was apparently conclusive, so far as it went, this new experience at Ogdensburg should suggest further experiment in which the natural conditions are as closely simulated as it is possible to make them under artificial experimental conditions.

INTERNATIONAL CONGRESSES ON SCHOOL HEALTH.

WE are in receipt of a circular printed in three languages designed to excite interest in the

question of the establishment of international congresses on the health of school children. Attention is called to the fact that among the various branches of hygiene, public and school health are of the first importance; that many authorities on hygiene have attempted to arouse interest in these branches; that physicians, teachers and governments have done what they could to forward the work, recognizing the extreme importance of hygiene of the school in its influence on the development of healthy adult life.

It is now proposed to bring together persons interested in the general subject in congresses, to be held at various intervals. Societies on school hygiene have already been formed, both in English-speaking and Continental countries. The establishment of the formal congress is simply another step toward unifying the work on the general subject. It is proposed that this congress assemble every three years, and it is already announced that the first is to be held in Germany in the spring of 1904, at which papers may be read in any European language, with preference for English, German or French.

Membership in this congress is open to all who take interest in the promotion of improved school hygiene. Each member, by contributing a small yearly sum, receives all the privileges of membership in the congress. Some of the subjects which will be particularly discussed are hygiene of school buildings, hygienic instructions for masters and pupils, bodily training of pupils, illness, petty ailments and medical attendance in schools, questions concerning children of weak intellect, and, finally, hygiene of the faculty.

This movement is most certainly commendable, and that the existence of such an association, drawing its membership from all civilized countries, would do very much toward establishing schools everywhere on a far better basis as regards the health of the pupils is self-evident. It needs no comment from us to demonstrate the essential importance of work, beginning in the very earliest years of school life, toward the establishment of health

AMERICAN RESEARCH.

IN an editorial comment *American Medicine* speaks of an editorial on "American Research and German Reviewers," which recently appeared in the *Journal of the American Medical Association*, as follows:

Under this title the *Journal of the American Medical Association*, in one of its recent issues, had an editorial to

the effect that American investigations did not receive full justice at the hands of German reviewers. To a certain extent there is undoubtedly some foundation for the assertion, but on the other hand it is only fair to admit that during the last few years special publications in Germany have honestly endeavored to cover their respective special fields as exhaustively as possible, which would naturally include the American contingent. Although these German reviews give the greatest prominence to those investigations which have originally been published in the German language, the American investigator, on the whole, does not fare any worse than his colleagues in any other non-German country. This is in so far a satisfactory feature, as it clearly proves that American research has successfully asserted its claim to international recognition and that the spirit of healthy, vigorous aspiration will not allow itself to be suppressed.

We are inclined to agree with this view of the situation. Although there is still apparently a certain lack of knowledge of the English language on the part of German reviewers, it is nevertheless true that this defect is growing less and that worthy American or English work is finding a more and more appreciative recognition at the hands of the Germans. Another ten years will no doubt complete the good work already begun by establishing once for all the claim of American research to universal recognition.

Following this very just statement of the situation *American Medicine* also makes the following comment:

If American investigators desire to be fully and seriously recognized by European scientists they will have to furnish unmistakable evidence that their work is solely the outcome of a desire to further the true interests of science. There should exist among American medical authors a feeling of solidarity with an ever-ready willingness to give credit where credit is due. It will not do to laud to the skies for selfish motives European productions which cannot hold a candle to home researches. In other words, we must ourselves be convinced and be in a position to convince others of our scientific maturity and zeal, before we can reasonably expect to command the recognition of foreign nations. It is all very well to talk about "international science" — the weaker is perfectly willing to profit from internationality by taking from the stronger whatever good he can find, but where is there any adequate compensation for the stronger?

Here we cannot agree with our contemporary. So far as our observation has gone, there is no conspicuous lack on the part of American authors in giving due credit for work done, whether native or foreign. Possibly a few youthful students, fresh from the laboratories of Europe, are apt to overestimate the value of their foreign training and to minimize the good things at home, but after a few years' experience we are convinced that the American investigator, as a rule, takes a perfectly fair attitude toward investigation where-

ever it may appear. Possibly our experience in this matter may be small, but we are very sure that we have already reached that "scientific maturity" which is capable of taking a broad point of view.

MEDICAL NOTES.

AN HONOR FOR PROFESSOR VON BEHRING. — It is announced that Professor Von Behring has been made a member of the Prussian Privy Council with the title of "Excellenz." Medical men have rarely received this distinction, and the few who have up to this time have been surgeons.

PROFESSORSHIP IN THE HISTORY OF MEDICINE. — It is reported that the University of Maryland has established a chair in the history of medicine and that the first incumbent is to be Dr. Eugene F. Cordell of Baltimore. We hope this may pave the way to many more such professorships.

ACCIDENTS IN THE ALPS. — News from Geneva states, according to *American Medicine*, that never before in the history of the Alps have death and disaster been so common on the mountains as during the present season. Over 300 accidents have occurred, resulting in the loss of no fewer than 150 lives. Over half of this season's accidents have happened to Germans and Austrians, who, partly from bravado and partly from pecuniary reasons, almost invariably climb without guides.

MEDICAL UNION IN THE STATE OF NEW YORK. — A special meeting of the council and fellows of the New York State Medical Association was held Oct. 1 in New York, for the purpose of discussion of the question of medical union in New York State. The following resolutions were passed:

"Whereas: The members of the New York State Medical Association desire a union of the medical profession in the State of New York, and

"Whereas: It is deemed expedient for the attainment of this purpose to make further effort to bring together the New York State Medical Association and the Medical Society of the State of New York under the name of 'The Medical Society of the State of New York':

"Resolved: That a committee of five be appointed by the chair, and said committee is hereby empowered to do whatever is necessary and expedient to bring about such a union in a just and equitable manner, and

"Resolved: That the committee so empowered may confer, coöperate and unite with a committee

of the Medical Society of the State of New York for the purpose of forming said union of the two medical organizations, and

"Resolved: That a copy of these resolutions be transmitted to the secretary of the Medical Society of the State of New York, with a request that their Conference Committee be granted similar powers."

CONFEDERATION OF RECIPROCATING, EXAMINING AND LICENSING MEDICAL BOARDS. — A meeting of the American Confederation of Reciprocating, Examining and Licensing Medical Boards will be held at St. Louis, Oct. 27. Reciprocity certificates are at this time being issued daily between several of the states, members of and in sympathy with the confederation; and the executive officers of such reciprocating boards will be present at the meeting and will severally give brief addresses upon "Reciprocity from the Standpoint of Experience in the Interchange of State Licenses." Several eminent medical men throughout the United States not directly connected with medical boards have been invited to attend the meeting and to take an informal part in the proceedings. Among others who have accepted are Dr. Frank Billings of Chicago, President of the A. M. A.; Dr. William E. Green, Little Rock, Ark., Member Committee on Medical Examining Boards, A. I. H.; Dr. Charles A. L. Reed, Cincinnati, Ex-President A. M. A.; and Dr. Frank J. Lutz, St. Louis, Secretary-General of the World's Congress of Medicine, 1904.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Oct. 7, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 49, scarlatina 28, typhoid fever 22, measles 18, smallpox 0.

BEQUEST TO MELROSE, MASS., HOSPITAL. — By the will of the late Royal F. Barry the Melrose Hospital receives one thousand dollars.

A DECISION IN FAVOR OF CHRISTIAN SCIENCE. — A decision of the Supreme Court of New Hampshire in a case brought against a so-called Christian Science healer established the legality of the practice of Christian Science healing in that state by ruling in the defendant's favor. On a charge of fraud also brought against the "healer," the court sustained the plaintiff. We question whether this combination of decisions has before occurred in a single case.

NEW YORK.

PHYSICIANS AND THE HALL OF FAME. — In the course of an address at the opening of the New York University and Bellevue Medical College on Sept. 30, Dr. MacCracken, the chancellor of the university, stated that he had received a letter from a physician, who is also editor of a medical journal, asking him for an article upon this question, How do physicians stand in relation to the electors of the Hall of Fame? He then went on to say: "The decision as to the names to be inscribed in the Hall of Fame belongs to a board of one hundred electors. What place have physicians had in this whole matter? Of the one hundred judges, four were doctors of medicine. There is no support for the position that has been taken by certain writers that the absence of physicians from the Hall of Fame is explained by the small percentage of physicians in the Electoral Board." At the time the official vote for names for the Hall of Fame was given out the number of votes cast for the names of Dr. Rush and other eminent medical men was announced, but in no instance was this number sufficiently large to secure a place among the immortals.

A PROPOSED PUBLIC PARK. — At a meeting of the Board of Estimate and Apportionment held Sept. 30, Mr. De Forest, the tenement house commissioner, and others spoke in regard to a proposed public park at Monroe Market, Hamilton and Catherine streets, on the East Side. Mr. De Forest urged that a park should be established in this locality, but suggested that, instead of the block proposed, the board should take the adjoining block to the south, which is known in the district and in the Health Department records as the "lung block," because of the prevalence of consumption there. "Many of the houses in the block," he said, "are permanently infected with the germs of tubercular disease. Certain of these houses have had in the past five years as many as twenty-two cases of pulmonary tuberculosis in each house, as far as the records of the Board of Health go. It is probable that the actual number of cases of tuberculosis in each house is double this amount, as it is well known that only one-half the cases are reported to the Board of Health." Definite action in the matter will be taken next month.

POLLUTION OF PASSAIC RIVER. — On Oct. 2, Judge Mahlon Pitney, of the Supreme Court of New Jersey, set aside a verdict by which a local jury, in the face of the court's instructions, at-

tempted to aid Paterson in the fight which surrounding communities are making upon the city for its part in the pollution of the Passaic River. The suit in which this occurred was one brought by Catharine Simmons of Dundee Lake to recover \$25,000 damages for the alleged destruction of her ice business by the sewage of Paterson. The court practically directed a verdict for the plaintiff at the close of the trial, but the jury, declining to follow the court's instructions, found that the plaintiff had no cause of action. The verdict is set down to an overzealous loyalty of the Paterson jurors to the interests of the city in a struggle in which it has been engaged for years with all the surrounding country. One of the purposes of the ten-million-dollar trunk-sewer which is about to be built on the Passaic River is to intercept the sewage which Paterson dumps into its waters. The owners of mills and other property along the river banks have long been in arms against the pollution of the stream, and the cities of Newark and Jersey City, which formerly drew their drinking water from it, were eventually obliged to abandon it and look elsewhere for their supplies.

Obituary.

GEORGE HAVEN, M. D.

DR. GEORGE HAVEN, whose death occurred on Sept. 27 last, was born in Portsmouth, N. H., July 13, 1861. He graduated from the Harvard Medical School in 1882. He served a year as house physician of the Children's Hospital in Boston. The next two years were spent abroad, where in the hospitals of Munich and Vienna he devoted himself to the study of obstetrics and gynecology. In 1887 he began practice in Boston. He was connected with the Boston Dispensary from 1887 until his death, at first as district physician, later as physician for diseases of women. He was assistant visiting physician in the Lying-In Hospital for ten years, resigning in 1900. Here he initiated a series of Caesarian sections, the success of which had much influence in the community in establishing the value and safety of this operation. He was appointed to the Department of Diseases of Women at the Boston City Hospital in 1889, and at the time of his death was junior visiting physician.

He served for several years as assistant in Obstetrics at the Harvard Medical School and still held the position of instructor in gynecology.

Dr. Haven was a man of exceptional value in the community. Refined, well-balanced, straightforward, strong in mind and in body, he safe-

guarded at the same time the best interests of his patient and of the profession. He has added significance and dignity to the specialty of obstetrics and gynecology, during a period when the recognition of the necessity of such a specialty was doubted by a large number of the profession.

As a physician, wise in counsel, tireless in devotion, tactful and confident, with a strong personality and reassuring presence, he brought hope and comfort to the sick-room. His patients were his friends, whose trust and love he possessed in a remarkable degree, to whom his services were freely offered without thought of self. His sense of duty was well illustrated by his response to his last professional call. In the acute stage of the illness which three weeks later caused his death, he rose from bed to attend a patient during a grave attack of eclampsia. His own condition was forgotten, while he worked with the assistance of a younger colleague until compelled by exhaustion to stop, only to return again and again to the task of a difficult delivery, as momentary strength was regained. The patient's life was saved.

As an operator he showed unusual judgment and untiring patience. He was skillful, careful, resourceful and successful. Conservative, yet bold, he was willing to assume the largest measure of responsibility, but the interests of his patients were never forgotten.

As a consultant his practice constantly increased as his diagnostic ability and operative skill became more widely known. Inflexibly recognizing the welfare of the patient as his first duty, his tact and high sense of responsibility peculiarly qualified him for the exacting requirements of this relation. His professional success was already definite and assured. A longer life could have but enlarged its measure.

Miscellany.

THE SYSTEMATIZATION OF EFFORTS TO REDUCE INFANTILE MORTALITY.

THE failure of sanitary efforts to reduce infantile mortality is the most unfavorable fact in the history of Great Britain in the last twenty years. It was not altogether unreasonable to expect that public health administration would have a very great influence in reducing infantile mortality to what may, under present conditions, be regarded as a normal standard; namely, one death under one year of age out of every ten born. But although the removal of privies and cesspools and of other nuisances, the improved conditions of housing, the more cleanly habits of the people, must have had some influence in the right direction, various social factors have been at work which have at least counterbalanced the good effect of sanitary improvements. These are, in particular, the greatly increased urbanization of the population, the more

frequent non-domestic employment of married women, and the increasing tendency of mothers to neglect their primary duty of nourishing their infants. The last is the most serious evil of all, town-living by itself not necessarily implying a greatly-enhanced risk of death during the first year of life. Whether due to unwillingness of mothers to perform this duty or to the practical difficulties involved in the industrial employment of women, the fact remains that artificial feeding of infants is a main cause of infantile mortality.

In another column we publish a brief analysis of communications made to the International Congress of Hygiene at Brussels, describing the organized efforts made in France and Belgium to reduce infantile mortality. With regard to France, there is little to add to the full account of the system which was given in the series of articles on the milk supply of large towns published in our columns last spring, and it will be seen that in Belgium similar methods are followed. In both countries the importance of medical supervision is more fully recognized than in this country. Sterilized milk for infants is now supplied by several municipalities in Great Britain, but hitherto there has been, in connection with these efforts, so far as we are aware, no attempt to combine the provision of milk with a weekly medical consultation, involving a weekly physical examination and weighing of the infant and an adaptation of its food to the special requirements of each case. This would be difficult to manage in England without the consent of the family practitioner. But is it not of the essence of the experiment and is it not indispensable for its success, that such weekly observations should be made and that the use made of the sterilized milk should be checked at frequent intervals? We are of opinion that efforts should be made to overcome the difficulties in the way of weekly medical examination in connection with the supply of sterilized milk.

Stress also may be laid on the possibility of a supply of sterilized milk encouraging mothers not to suckle their infants. The particulars as to the means by which this danger is avoided in connection with the French maternity charities are particularly interesting. It is open to doubt whether similar inducements could be held out in England among any except the very lowest class without exercising a pauperizing influence. But in connection with the infants born in workhouses and those born in connection with maternity charities, some further efforts ought to be made and the methods adopted in France, although they should not be slavishly copied, are worthy of consideration and may at the least suggest methods of procedure which will be consistent with the retention of self-respect on the part of the mother, while giving her infant an improved prospect of surviving the first year of its life.

The subject is one deserving of further study, of careful experimental work, and the co-ordination of measures, already in operation or about to be adopted, should be borne in mind in any attempts at extended work. — *British Medical Journal*.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, SEPT. 26, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . | 3,785,156 | 1,174 | 430 | 20.53 | 9.54 | 2.55 | 4.17 | .17 | |
| Chicago . . . | 1,885,000 | 498 | 152 | 29.92 | 6.42 | 3.61 | 12.24 | 3.00 | |
| Philadelphia . | 1,378,527 | 410 | 109 | 25.85 | 4.39 | 2.93 | 6.34 | 1.95 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 171 | — | 31.00 | 7.01 | 1.16 | 7.01 | 2.28 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | — | — | — | — | — | — | — | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 64 | 28 | 34.36 | 3.12 | — | 20.30 | — | |
| Boston . . . | 603,163 | 197 | 77 | 33.50 | 4.57 | 1.01 | 13.70 | 2.03 | |
| Worcester . . | 132,044 | 29 | 16 | 24.13 | 3.45 | — | 10.34 | 3.45 | |
| Fall River . . | 115,549 | 31 | 17 | 48.39 | 16.13 | — | 35.48 | 3.22 | |
| Lowell . . . | 101,959 | 24 | 11 | 25.00 | 8.33 | — | 16.67 | — | |
| Cambridge . . | 98,639 | 37 | 15 | 40.53 | 8.10 | 8.10 | 16.20 | — | |
| Lynn | 72,497 | 15 | 4 | 13.33 | 6.67 | 6.67 | — | — | |
| Lawrence . . | 69,766 | 22 | 12 | 50.00 | 4.54 | 4.54 | 18.18 | — | |
| Springfield . | 69,389 | 9 | 3 | 22.22 | — | — | 22.22 | — | |
| Somerville . . | 68,110 | 13 | 5 | 46.20 | 7.70 | — | 21.21 | — | |
| New Bedford . | 67,198 | 24 | 15 | 29.16 | 12.50 | — | 25.00 | — | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brockton . . . | 44,873 | 13 | 3 | 15.40 | — | — | — | — | |
| Haverhill . . | 42,104 | 5 | 1 | 20.00 | — | — | 20.00 | — | |
| Newton . . . | 37,794 | 10 | 3 | — | — | — | — | — | |
| Salem | 36,876 | 16 | 10 | — | — | — | — | — | |
| Malden . . . | 36,286 | 9 | 3 | 44.44 | — | 11.11 | — | 11.11 | |
| Chelsea . . . | 35,876 | 9 | 4 | 11.11 | 22.22 | — | — | — | |
| Fitchburg . . | 35,069 | 5 | 3 | 40.00 | — | — | — | — | |
| Taunton . . . | 33,656 | 12 | 4 | 16.67 | 16.67 | — | 16.67 | — | |
| Everett . . . | 28,620 | 5 | 2 | 40.00 | — | — | — | — | |
| North Adams . | 27,862 | 6 | 4 | 33.33 | — | 16.67 | — | — | |
| Gloucester . . | 26,121 | — | — | — | — | — | 12.50 | — | |
| Quincy . . . | 26,042 | 8 | 3 | 25.00 | — | — | — | — | |
| Waltham . . . | 25,198 | 6 | 1 | 33.33 | — | — | — | 16.67 | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 2 | — | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 3 | 1 | — | — | — | — | — | |
| Medford . . . | 20,962 | 3 | 1 | 33.33 | 33.33 | — | 33.33 | — | |
| Northampton . | 19,883 | 4 | 2 | — | 25.00 | — | — | — | |
| Beverly . . . | 15,302 | 4 | — | 25.00 | — | — | 25.00 | — | |
| Clinton . . . | 15,161 | 4 | 3 | 75.00 | — | — | 75.00 | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | — | — | — | — | — | — | — | |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — | |
| Hyde Park . . | 14,175 | 6 | 5 | 50.00 | 16.67 | — | 50.00 | — | |
| Adams | 13,745 | 6 | — | 50.00 | — | — | 50.00 | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | — | — | — | — | — | — | — | |
| Melrose . . . | 13,600 | 1 | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 3 | 1 | — | 33.33 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 6 | 3 | 33.33 | — | — | 16.67 | — | |
| Framingham . | 12,534 | 5 | 1 | 20.00 | 20.00 | — | 20.00 | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 4 | 4 | 75.00 | 25.00 | — | 50.00 | — | |
| Weymouth . . | 11,344 | 1 | 1 | 100.00 | — | — | 100.00 | — | |
| Southbridge . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 4 | 3 | 25.00 | — | — | 25.00 | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,014; under five years of age, 1,017; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 814, acute lung diseases 218, consumption 343, scarlet fever 11, whooping cough 27, cerebrospinal meningitis 15, smallpox 16, erysipelas 8, puerperal fever 4, measles 9, typhoid fever 43, diarrheal diseases 258, diphtheria and croup 80.


From whooping cough, New York 3, Chicago 5, Philadelphia 10, Baltimore 3, Pittsburg 3, Lawrence, Fitchburg and Quincy 1 each. From erysipelas, New York 2, Chicago 3, Philadelphia 1, Boston 2. From smallpox, Philadelphia 1, Pittsburg 15. From scarlet fever, New York 4, Chicago 2, Philadelphia 1, Baltimore 1, Pittsburg 1, New Bedford 1, North Adams 1.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Sept. 12 the death-rate was 15.8. Deaths reported, 4,575; acute diseases of the respiratory organs (London) 122, whooping cough 66, diphtheria 35, measles 28, smallpox 1, scarlet fever 36.

The death-rate ranged from 5.0 in Bournemouth to 27.7 in Wigan; London 15.2, West Ham 19.6, Brighton 14.6, Portsmouth 15.5, Southampton 17.0, Plymouth 19.1, Bristol 12.5, Birmingham 18.5, Leicester 13.7, Nottingham 16.3, Bolton 18.0, Manchester 17.6, Salford 16.1, Bradford 14.5, Leeds 11.8, Hull 20.9, Newcastle-on-Tyne 19.2, Cardiff 12.7, Rhondda 17.9, Liverpool 18.8, King's Norton 10.6, Middlesbrough 22.5.

METEOROLOGICAL RECORD.

For the week ending Sept. 26, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. | | |
|---|-------------|--------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|----|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | | |
| S. 20 | 30.38 | 56 | 60 | 51 | 73 | 80 | 76 | N E | N E | 9 | 9 | O. | C. | 0 |
| M. 21 | 30.15 | 56 | 62 | 51 | 84 | 66 | 75 | N | N | 12 | 6 | O. | C. | 0 |
| T. 22 | 30.13 | 66 | 78 | 55 | 68 | 42 | 55 | N W | N W | 10 | 4 | C. | C. | 0 |
| W. 23 | 30.02 | 67 | 79 | 55 | 59 | 66 | 62 | W | W | 2 | 9 | C. | C. | 0 |
| T. 24 | 29.76 | 58 | 67 | 49 | 84 | 44 | 64 | W | S | 8 | 14 | O. | C. | .01 |
| F. 25 | 30.04 | 55 | 65 | 45 | 58 | 59 | 58 | N W | W | 9 | 8 | C. | C. | 0 |
| S. 26 | 30.18 | 62 | 74 | 49 | 60 | 79 | 70 | N W | S W | 3 | 12 | C. | C. | 0 |
|  30.09 | | 69 | 51 | | | 66 | | | | | | | | .01 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING OCT. 3, 1903.

S. W. DOUGLAS, pharmacist. Detached from Naval Proving Ground, Indian Head, Md., and ordered to Navy Yard, Portsmouth, N. H.

W. S. PUGH, Jr., assistant surgeon. Appointed an assistant surgeon, with the rank of lieutenant, junior grade, from Sept. 23, 1903.

M. V. STONE, assistant surgeon. When discharged from treatment at the Naval Hospital, New York, ordered home and granted sick leave until Dec. 31.

S. H. GRIFFITH, surgeon. Detached from the Marine Barracks, Washington, D. C., and ordered to the "Minneapolis" and to duty as fleet surgeon of the Atlantic Training Squadron.

R. B. WILLIAMS, assistant surgeon. Detached from the First Torpedo Flotilla, and ordered to the Naval Hospital, Norfolk, Va.

F. M. BOGAN, assistant surgeon. Detached from Navy Yard, Washington, D. C., and ordered to the "Chauncey" for duty with the First Torpedo Flotilla.

SOCIETY NOTICE.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — A regular meeting of the society will be held at Hotel Nottingham, Boston, Mass., on Thursday, Oct. 15, 1903, at 7.30 P.M. The meeting will be in charge of the Section on Dermatology, Dr. Edith R. Meek, chairman. Exhibition of patients treated with the x-ray. Papers: Dr. Edith R. Meek, "X-Ray Work from the Chemical Standpoint;" Dr. Mabel Austin, "Histological Changes Occurring in Tissues Subjected to the X-Ray," illustrated by microscopical sections; Dr. Antoinette Konikow, "Brief Résumé of Current X-Ray Literature." Discussion by Drs. Smith, Culbertson, Alexander and others.

DR. AGNES C. VIETOR, Secretary.

TRINITY COURT, BOSTON.

BOOKS AND PAMPHLETS RECEIVED.

A Narrative of Medicine in America. By James Gregory Mumford, M.D. Philadelphia and London: J. B. Lippincott Company. 1903.

Nurses' Guide to Surgical Bandaging and Dressings. By Wm. Johnson Smith, F.R.C.S. Illustrated. Philadelphia: J. B. Lippincott Company.

Intracranial Tumors among the Insane. A Study of Twenty-nine Intracranial Tumors found in Sixteen Hundred and Forty-two Autopsies in Cases of Mental Disease. By I. W. Blackburn, M.D. Illustrated. Washington: Government Printing Office. 1903.

The Boy's Venereal Peril. By F. C. V. Reprint. 1903.

Aids to Cystoscopic Practice. By Fred C. Valentine, M.D., of New York. Reprint. 1903.

A Contribution to the Study of Mouth Bacteria. By Samuel A. Hopkins, M.D., D.D.S., of Boston, Mass. Reprint. 1903.

Hypnotism: Its History, Practice and Theory. By Z. Milne Bramwell, M.B., C.M. London: Grant Richards. 1903.

Text-Book of Histology, including the Microscopic Technic. By Dr. Philipp Stöhr. Fifth American from the Tenth German Edition. Translated by Dr. Emma L. Bilstein. Edited, with additions by Dr. Alfred Schaper. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Scheme for the Differential Testing of Nerves and Muscles for use in Diagnosis. By J. Montgomery Mosher, A.M., M.D. Illustrated. Albany, N. Y.: Bradow Printing Company, Fort Orange Press. 1903.

The Crusade against Tuberculosis. Consumption a Curable and Preventable Disease. What a Layman should know about it. By Lawrence F. Flick, M.D. Philadelphia: David McKay. 1903.

A Manual of Operative Surgery. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., F.R.C.S. New Edition, Revised by the author and Jonathan Hutchinson, Jr., F.R.C.S. In two volumes. Vol. I. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

The Principles and Practice of Hydrotherapy, a Guide to the Application of Water in Disease, for Students and Practitioners of Medicine. By Simon Baruch, M.D. Second Edition, revised and enlarged. Illustrated. New York: William Wood & Co. 1903.

A Laboratory Guide in Urinalysis and Toxicology. By R. A. Witthaus, A.M., M.D. Fifth Edition. New York: William Wood & Co. 1903.

American Pocket Medical Dictionary. Edited by W. A. Newman Dorland, A.M., M.D. Fourth Edition, Revised and Enlarged. Philadelphia and London: W. B. Saunders & Co. 1903.

Lippincott's New Medical Series. Edited by Francis R. Packard, M.D. The Principles and Practice of Surgery. Designed for Students and Practitioners. By George Tulley Vaughan, M.D. (Univ. of Va.). Illustrated. Philadelphia and London: J. B. Lippincott Co. 1903.

A Text-Book of Obstetrics. By Barton Cooke Hirst, M.D. Fourth Edition, revised and enlarged. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

The Practical Medicine Series of Year Books, comprising ten volumes on the year's progress in medicine and surgery. Under the general editorial charge of Gustavus P. Head, M.D. Vol. IX. Illustrated. Chicago: The Year Book Publishers. August, 1903.

Clinical Examination of the Urine and Urinary Diagnosis, a Clinical Guide for the Use of Practitioners and Students of Medicine and Surgery. By J. Bergen Ogden, M.D. Second Edition, thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Fourth Edition, thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book upon the Pathogenic Bacteria for Students of Medicine and Physicians. By Joseph McFarland, M.D. Fourth Edition, rewritten and enlarged. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book of Pathology. By Alfred Stengel, M.D. Fourth Edition, thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

An American Text-Book of Surgery for Practitioners and Students. By various writers. Edited by William W. Keen, M.D., LL.D., F.R.C.S. (Hon.), and J. William White, M.D., Ph.D. Fourth Edition, thoroughly revised and enlarged. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book of Comparative Surgery, covering the Surgical Anatomy and Operative Technic involved in the Operations of General Surgery. Written for Students and Practitioners. By Warren Stone Bickham, Phar. M., M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D. Third Edition, revised and enlarged. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book of Clinical Anatomy for Students and Practitioners. By Daniel N. Eisendrath, A.B., M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D. Sixth Edition, thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Text-Book of Obstetrics. By J. Clarence Webster, M.D. (Edin.), F.R.C.P.E., F.R.S.E. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Dictionary of Medical Science. By Robley Dunglison, M.D., LL.D. Twenty-third Edition. Revised by Thomas L. Stedman, A.M., M.D. Philadelphia and New York: Lea Brothers & Co. 1903.

Original Articles.

PARASYPHILITIC AFFECTIONS, OR REMOTE EFFECTS OF SYPHILIS.¹

BY ABNER POST, M.D., BOSTON.

IN the opinion of Professor Fournier, syphilis is responsible not only for a multitude of manifestations undeniably syphilitic both in origin and nature, but also for a number of other manifestations which are not at all syphilitic in nature but are nevertheless syphilitic in origin; that is, they are produced by syphilis or under its influence. For these manifestations Professor Fournier has proposed the name *parasyphilitic*, which may be understood to mean proceeding from syphilis without being syphilitic. The term remote effects of syphilis is explanatory but not exactly synonymous.

These manifestations demand attention for two special reasons: First, they are very numerous, and second, they in great measure defy treatment.

Under the name of parasyphilitic affections we must include: The pigmentary syphilide; acute hystero-neurasthenia of the secondary period; divers neurasthenic manifestations of a more advanced stage; hystero-epilepsy; tabes; general paralysis; a special form of epilepsy; and a special form of muscular atrophy, and, for hereditary syphilis: Numerous general or partial atrophies; organic malformations, notably dental malformations; arrest or retardation of development, physical or mental; infantilism, perhaps dwarfism; congenital inaptitude for life; rickets; hydrocephalus; certain cases of meningitis; perhaps certain cases of true epilepsy; certainly juvenile tabes. These manifestations are not cured either by mercury or the iodides.

Two principal characteristics seem to establish a well-marked line of demarcation between the affections properly called syphilitic and the parasyphilitic affections. Firstly, the parasyphilitic affections are not referred necessarily to syphilis as a cause, while the purely syphilitic affections never exist without syphilis as a cause. No mucous patch or gumma exists without a pre-existing syphilis. On the other hand, general paralysis, rickets, infantilism, although so frequently the result of an antecedent syphilis, can be produced by other causes independent of all syphilitic antecedent. Secondly, parasyphilitic affections are not influenced by mercury and iodide of potassium, as are the true syphilitic affections. That is to say, these drugs do not exercise upon them a repressive or curative action so manifest that one may use it as a criterion of syphilitic character.

To explain the different conditions of these two results of syphilis, the doctrine of toxins may be invoked, and one may say that the usual

accidents of syphilis are the product of a microbe, while other possible remote accidents of the same disease are the result of a toxine secreted by that microbe. Whether this explanation is correct or not, the future alone can determine.

There is a syphilitic lesion of the skin which is particularly adapted to illustrate the parasyphilitic affections. This is the manifestation known as the pigmentary syphilide or as syphilitic vitiligo or leucoderma. It is impossible to deny the syphilitic origin of this manifestation, and yet, except for its location, the same lesion may be produced by divers morbid or perhaps physiological causes totally unrelated to syphilis.

By this name of pigmentary syphilide is designated a syphilitic manifestation which consists of pigmented spots upon the skin which have been preceded by no other eruption and which occur in the great majority of cases upon the neck. They occur in the course of the first or second year, and with rare exceptions only upon females. They form without pain or the slightest local symptom, and reach their fullest development in the space of two or three weeks. At this period they consist of a series of pigmented marblings, disposed without order, anastomosing for the most part and enclosing islands of normal integument; forming a sort of network or lacework with large meshes upon the neck. These spots present no other abnormality than the hyperpigmentation; they show neither redness, swelling, thickening nor desquamation. As to color, they vary from the faintest yellow to a dark brown. Very often they show simply the tint common to necks which have not been recently washed. When the bearers of them first notice these spots, they believe that their necks need washing, and it is only after various trials that they become convinced that the discoloration is really in and not on the skin.

Usually the enclosed skin, although it appears from its position to be deprived of pigment, is normal. The network of pigmentation may surround the neck evenly or be more marked in spots. Usually it is more marked upon the lateral surfaces. Rarely it is seen upon the upper part of the thorax or even on the face. Its persistence is great — a year or two, or even longer. It persists usually after other symptoms have disappeared and the patient has ceased to visit the physician, but it finally disappears.

These abnormalities in pigmentation constitute lesions which, derived from syphilis, do not belong exclusively to syphilis and which are refractory to antisiphilitic remedies. They serve as a type of the curious pathological conditions which are grouped under the name of parasyphilitic affections. In the adult, these phenomena, which it is proposed to call parasyphilitic, are mostly concerned with the nervous system. In their consideration it is not the intention to intrude in the least on the ground of the neurologist, but simply to complete the catalogue of parasyphilitic affections.

The first of the series of nervous phenomena is

¹ This paper is practically a condensation of Professor Fournier's book — but a certain freedom in the use of the material and certain comments and quotations from other sources make it impossible to call it simply a condensation. It was prepared originally as a lecture to the Fourth Class in the Medical School of Harvard University.

neurasthenia. These cases differ in nothing from ordinary cases of neurasthenia, with which syphilis has nothing to do. How, then, connect them with syphilis? Simply that they occur too often to be simply a coincidence and because the condition is sufficient to provoke the result:

(1) By the debilitating, depressing, anemic action which it exercises upon the whole economy;

(2) By the profound influence which it exercises upon the nervous system;

(3) And also by its action upon the mind in the terror and despair which it brings to some individuals.

It must be remembered that syphilis shows a predilection towards the nervous system. Of the cases of late syphilis, cases which may properly be called tertiary rather than parasyphilitic, because they are due to distinctly syphilitic lesions and are amenable to treatment, fully one-third are lesions of the nervous system. It is unnecessary to enumerate all the forms which neurasthenia may take — one of the most important to recognize is that which simulates tabes and may be designated as neurasthenia-pseudo-tabes. In it the patellar reflex, the pupillary reflex and the functions of the bladder are unchanged.

Syphilophobia. — The chronic forms of syphilitic neurasthenia are sometimes complicated by a special symptom. This is a hypochondriacal preoccupation known under the name of syphilophobia or syphilomania. There is a class of syphilophobiacs who have never had syphilis but only the fear of it. Of course the latter class is not included in this account.

There are certain syphilistics whose whole mind is concentrated upon one single object, namely, syphilis. They exaggerate its dangers and its possible consequences. For them syphilis becomes a disease which is never cured whatever one does, a disease which ends necessarily in the most lamentable catastrophes, such as caries of the bones, the destruction of the nose or paralysis. It is a monster which combines all the sufferings which may affect the human race. In this condition they see syphilis everywhere. Everything which happens to them is syphilis. Some go so far that even anatomical peculiarities hitherto unnoticed arouse their suspicion. The papillæ of the tongue become syphilitic growths. The lacunæ of the tonsils are syphilitic ulcerations. It is fortunate if to syphilophobia is not added mercuriophobia. In that case the unfortunate finds himself between two foes, if he escapes the one he will be the victim of the other. But this combination is rare; usually the syphilophobiac believes in mercury. Such manifestations are temperamental in some measure, occurring in excitable and apprehensive individuals. Sometimes, however, they prove to be the initial symptoms of graver forms of disease.

Parasyphilitic hysteria is simply a hysteria which manifests itself under the influence of syphilis as an exciting cause, but which is simply a hysteria like other hysterias. Syphilis plays the same rôle as in other hysterias does a traumatism, or an infectious disease. Such a connection between syphilis and hysteria has been

observed by others than Fournier. Taylor writes:

"In some exceptional cases in women, a mild and temporary aberration of mind is observed in the form of hysteria, emotional disturbances, hallucinations, delusions and morbid impulses. In men there may be present mild or severe stupor, delirium and even mania."

The really important — the most important members of the parasyphilitic group as sequels of acquired syphilis — are locomotor ataxia, general paralysis and epilepsy.

The question in regard to tabes is no longer whether syphilis may cause it, but whether other infections or intoxications can also produce it.

In the article on General Paralysis in the *Nouveau Dictionnaire*, published in 1885, the word syphilis is not even mentioned in the chapter on Etiology. Since then there has been described a pseudo-general paralysis due to syphilis. Without discussing the question whether this division is right or not, the present reference is to true general paralysis, characterized by a prodromic stage, marked by certain changes of character — afterwards by a stage in which two orders of symptoms occur:

First. Symptoms called somatic: muscular trembling of the tongue, face, hands; modification of the handwriting; slurring speech; alteration of pupils, reflexes and gait; apoplectiform and epileptiform attacks.

Second. Psychic troubles; progressive enfeeblement of the intellect; diminution of the memory; either melancholy, depression, hypochondria or exaggeration of the personality, personal satisfaction, delirium of grandeur.

Finally, a terminal period of dementia, physical and moral decline, and death.

Whether syphilis has or has not any causal relation with general paralysis is the first question. Considering the frequency of syphilis in the antecedents of general paralysis, very widely different statistics, varying from 4 to 5 in 100 to 80 or 85 in 100, have been produced. The proper way to consider such widely varying figures is not to take the mean, but to consider the reliability and value of the different sets. Statistics which give only 4 or 5 cases of syphilis in 100 persons can hardly be of value, as the proportion of syphilis in the general population is larger than that. In Professor Fournier's opinion, at least 15 cases of syphilis will be found in any 100 males taken at random.

Professor Fournier draws attention to the frequent association between tabes and general paralysis; to the multiplicity of symptoms common to the two maladies; to the frequent combination of the two morbid types; to their similarity in evolution, in termination, in resistance to therapeutic agents. Such reasons seem to indicate that tabes and general paralysis are two topographical manifestations of one and the same malady. When it locates itself exclusively or predominantly upon the cord, it constitutes tabes; when it locates itself upon the brain, it constitutes general paralysis; when it affects both cord and brain, it constitutes a hybrid type, to which the

name cerebro-spinal tabes would be applicable. If these two diseases are so closely related that they are sometimes confounded, that they bid fair to be at some time united as simply different manifestations of the same pathological entity, they must have the same relations to syphilis as a cause.

Epilepsy follows syphilis frequently, or at least epileptiform attacks are symptoms in the evolution of a cerebral syphilis — as such they are the direct results of syphilis and to be classed with other tertiary lesions, but occasionally there occurs an epilepsy not conjoined with other syphilitic lesions, which Fournier believes should, in our ignorance of its true nature, be classed with parasymphilitic affections.

A curious form of progressive muscular atrophy described in 1893 by Raymond² deserves a place in this category. Clinically it is a progressive muscular atrophy of spinal origin tending to become general and differing from the classical cases in two principal symptoms, accentuated pains and localized paresis serving as prelude to the involvement of each muscular group. In four cases described by Vulpian and Raymond an antecedent syphilis existed in each.

Antisyphilitic agents exercise no influence upon the disease. In the only autopsy there was nothing specific; nothing which might not be found in cases perfectly free from syphilitic taint.

One case mentioned may be briefly summarized as follows: A young man of twenty-five contracted syphilis in 1874. He apparently recovered, but in 1883 was attacked by an ulcerating syphilide. In 1885 his nervous affection began under the form of lancinating pains in the right shoulder, which were taken for rheumatism. Soon afterwards appeared cramps and intermittent contractions in the fingers and hand of the right side. The action of writing became painful, difficult, almost impossible. In 1889 a new symptom, diplopia, appeared suddenly and persisted for two months. From that time the nervous affection was marked by two sets of symptoms: painful phenomena, consisting of lancinating pains in the posterior cervical region, the right arm and the shoulders; and paresis, almost paralysis, affecting divers localities; successive paralysis of all the fingers of the right hand, which began to grow thin; paralysis of the right vocal chord and a muscular atrophy gradually involving additional parts up to generalization. For a certain time the atrophy remained localized in the right upper limb and the posterior-superior region of the trunk. Afterwards it invaded the trunk, the left arm, the legs, the diaphragm, the muscles of the glottis. Little by little the patient was changed to a living skeleton. Dyspnea, dysphagia, aphonia, difficulty of mastication, followed, while the intelligence was preserved. He finally died of asphyxia, in April, 1890.

The autopsy revealed: Thickened medulla, atrophy of the anterior roots, profound alteration of the anterior cornua, with signs of a diffuse and intense vascular myelitis.

There is also a series of affections which may at some time be included in the category of parasymphilitic diseases, though our knowledge of the relationship is as yet too small to make any such classification with certainty,— among which one may include the following:

(1) Diabetes, which occurs so often in relation with syphilis that it seems as though there must be something more than an accidental connection.

(2) Hemoglobinuria.

(3) "Auricular tabes," that sudden form of deafness which resists all treatment.

(4) Certain dermatoses of the tertiary period, described by Fournier under the name of Tertiary Erythema.

(5) Perhaps certain forms of buccal leucoplasia.

In the fetus, in addition to its own proper manifestations, syphilis produces troubles of another order — to which may be applied the new term parasymphilitic affections:

(1) It diminishes vital resistance.

(2) It hinders the development of the embryo.

(3) It gives place to certain failures to reach perfection.

One of the first effects of syphilis upon the products of conception is a polymortality. Of the children who thus perish, not all show actual syphilitic lesions. Many seem to die simply from inability to live; something that may be called *fetal cachexia* or an *inaptitude for life*. Hereditary syphilis often die without having any anatomical reason for dying.

Upon many of the children that live we find a curious retardation in development. They are backward in growth, in the evolution of their teeth, in learning to walk, in the signs of puberty, in the growth of the beard. Every one knows that at adult age hereditary syphilis remain, not always but often, little men and little women, reduced in all proportions so that at eighteen or twenty they seem like children. In one word, that which is called infantilism is one of the most characteristic traits of hereditary syphilis. In the same way hereditary syphilis may cause certain partial dystrophies of certain organs, as of the testicle, the breasts, the ovaries, or the bones; or of the brain, as in certain children of backward development, imbeciles and idiots.

A good example of arrest of development in a single system is found in the dental malformations of heredo-syphilis.

In the first place there is a notable retardation in their general evolution, the milk teeth beginning to appear only at the tenth, twelfth, fifteenth month, or even later;

(2) Dental malformations, usually symmetrical, are very common, especially in the permanent set, of which the teeth known as Hutchinson's present the most characteristic and best-known example;

(3) Microdentism, or dental dwarfing, and

(4) Unusual vulnerability of the dental system are often observed.

Can infantilism go further yet and produce dwarfs? In other words, is heredo-syphilis the

² Bull. et mém. de la Soc. méd., des hôp., Paris, 3 Fév., 1893.

cause of dwarfs? Fournier hastens to answer that he does not know, but without special research upon the subject two cases have come to his knowledge which seem to call for an affirmative answer.

His first case is one of a dwarf issue of parents who show nothing abnormal in figure, constitution or health. They are in easy circumstances, and all causes of depression are wanting. But the father had syphilis but a short time before he was married, and Professor Guyon believes it to be in all probability the cause of the child's deficient stature.

The second case is that of Bébé, the celebrated dwarf of King Stanislas I of Poland. When born he weighed about 15 oz., and his first cradle was an old shoe half filled with cotton. At fifteen he had attained his growth, and weighed nine pounds and a half. He died of senility at twenty-five. His intelligence was poorly developed. He could never be taught to read.

His skull, preserved in the Medical Museum in Paris, shows bosses upon the two parietals, the results of gummy osteomata, which correspond in seat, perfect symmetry and exact limitation to the two parietals exactly to the lesions of hereditary syphilis described and figured by Parrot.

These two cases would seem to show that the dystrophic influence of heredo-syphilis may be carried so far as to produce dwarfs — but certainly two cases are not sufficient to establish that proposition, and it may very well be true that if syphilis is a cause, it is but one of the causes which may produce dwarfs.

Fournier believes that syphilis constitutes one of the remote and occasional causes of certain congenital malformations — spina bifida, hare-lip, cleft palate, microcephalism.

Rickets is said to show itself with frequency in the subjects of congenital syphilis. Certainly rickets cannot be regarded as a late stage of hereditary syphilis as was claimed by Parrot. It occurs in animals and in children in whom there is no suspicion of syphilis. But syphilis may very properly be regarded as one of the predisposing causes of rickets.

So far only the arrest of physical development has been mentioned, but a possible consequence of hereditary syphilis consists in a similar arrest of intellectual development; certainly hereditary syphilis sometimes gives rise to veritable idiots.

Hydrocephalus is another pathological condition which sometimes owes its origin to hereditary syphilis. This assertion rests —

(1) Upon the frequency with which hydrocephalus shows itself in the issue of syphilitic parents. Fournier has himself observed more than thirty such cases in his private practice.

(2) In the family conditions under which hydrocephalus presents itself.

The following two cases are from Boerensprung:³

First case:

First pregnancy, infant born dead at eight months.

Second pregnancy, infant born dead.

Third pregnancy, infant born dead.

Fourth pregnancy, hydrocephalus, dead at five months.

Fifth pregnancy, stillborn.

Sixth pregnancy, syphilitic infant.

Seventh pregnancy, syphilitic infant.

Second case (14 pregnancies):

First, child born dead at seven months.

Second, child syphilitic, died at one year and a half.

Third, hydrocephalus, died at one year and a half.

Other pregnancies produced children either dead, syphilitic or apparently healthy.

The following is from Jonathan Hutchinson:

First infant syphilitic and hydrocephalic.

Second infant died at ten months.

Third infant born dead and macerated.

Fourth infant syphilitic and hydrocephalic.

Fournier has seen three hydrocephalic children in one syphilitic family.

Dr. F. Astors of Marseilles believes that there are two classes of hydrocephalic cases resulting from hereditary syphilis:

(1) Hydrocephalus of syphilitic nature, resulting from syphilitic lesions.

(2) Hydrocephalus of syphilitic origin, resulting from a disturbance of nutrition and coinciding with certain arrests of development in the brain.

It is this second class only that can be classed with parasymphilitic affections.

Meningitis is a frequent cause of death in syphilitic infants. Some of them are certainly syphilitic. They are in a measure amenable to antisymphilitic treatment, and, as shown by autopsy, they are due to syphilitic lesions.

In others no syphilitic lesions are found, and Fournier believes that they belong in the same category with the parasymphilitic affections.

The history of certain families is instructive in this connection, of which only two, the most striking, are given:

First family: Father and mother both syphilitic; first child hydrocephalic — dead; second child meningitis — dead.

Second family: Father syphilitic; mother healthy; twelve pregnancies. Third infant hydrocephalic; fifth infant stillborn; sixth — living — syphilitic, Hutchinsonian teeth, infantilism. — epilepsy at the age of fifteen, dementia parylitica; seventh and eighth abortions; eleventh deaf mute, epileptic and hydrocephalic; twelfth died of meningitis.

Little's disease (spastic paralysis, cerebral infantile paralysis) is also included in the category of parasymphilitic affections.

It is needless to describe this disease, but it is necessary to inquire as to the evidence that refers it to a syphilitic origin. Fournier gives two cases. In one the child was affected with spastic paralysis of all four members. He also bore evidence of hereditary syphilis, and his father also gave a history of syphilitic accidents.

In the second case the antecedent history of syphilis in the father was known. The second child was seen with typical Little's disease. The

³ Die hereditäre Syphilis, Berlin, 1864.

first child, already dead, was said by the parents to have been exactly like the second, and their statement was confirmed by the physician who had charge of it.

Furthermore, Little's disease is the result of a lack of development in certain portions of the nervous system, and lack of development in other portions of the economy are absolutely common in hereditary syphilis.

It is interesting to see what has been said on this subject by the writers previous to the time when views embodying parasyphilis were brought forward.

Bradford and Lovett have devoted considerable space to Little's disease. Concerning its etiology, they consider together three groups of cases — hemiplegia, spastic paralysis, incoordination, or idiocy — under the one head of cerebral paralysis of children.

As a cause they reject difficult labor and injury from forceps.

They report from Little that a large number of these cases are born prematurely, and say that premature labor has not received due attention as a causative factor. Infectious diseases have presented several cases, and syphilis is mentioned as undoubtedly a cause.

By way of parenthesis, it may be added that syphilis is a frequent cause of premature labor.

To quote a paragraph from their section on pathology: "The pathology of the condition is, in short, a lesion of the motor tract of the brain with consequent atrophy and retarded development of the affected portion and descending degeneration of the pyramidal tracts and lateral columns of the cord; from the extensive atrophy found in young children at autopsy, it seems that unquestionably sometimes the disease originates in defective development of the nervous centers, especially the pyramidal tracts, rather than in an acute cerebral hemorrhage or embolism."

These authors lay particular stress upon two etiological factors — premature labor and defective cerebral development, both of which factors are very commonly to be referred to a common source, namely, syphilis.

A question of great interest is raised as to the possibility of hereditary syphilis causing the group of nervous symptoms already mentioned in the category of parasyphilitic affections due to acquired syphilis, or, in other words, does there exist a neurasthenia, an hysteria, an epilepsy due to hereditary syphilis as an exciting cause?

Our knowledge allows only an imperfect answer. In the first place, the study of late congenital syphilis is of very recent date, and the study of the relation of syphilis to the so-called parasyphilitic phenomena is but just begun.

Professor Kowalewsky of Charchow believes in a neurasthenia of hereditary syphilitic origin.

There are many cases of hysteria in the children of syphilitic parents, but the relation of cause and effect is not so sure. And, also, of epilepsy it may be said of certain cases in heredo-syphilitics that while many of them are due to syphilitic lesions,

there are many others in which the convulsive seizures are the only symptoms, and in which it is impossible to say whether there are syphilitic lesions, whether syphilis is a provoking cause, or whether syphilis bears no relationship.

One can feel more certain as regards tabes and general paralysis. There are some very interesting cases illustrating the possible hereditary origin of tabes.

One case concerns a woman of thirty already profoundly ataxic. The tabes began about the age of twenty. She was free from all personal contamination of syphilis, but she furnished a series of particulars which left little doubt as to the existence of an hereditary syphilitic infection. Her father was said to have died from the effects of syphilis contracted as a young man. Her mother had had numerous premature births that various physicians had attributed to the disease of the husband. The patient was herself affected with a grave and chronic disease of the eyes at the age of three or four, which lasted fifteen to eighteen months, and from which an opacity of the cornea still persists.

Another case is from Remak, and relates to a case of tabes occurring in a child, certainly an hereditary syphilitic, of which the following is a summary:

Marie D., aged twelve, born of a syphilitic father and a mother who is now suffering from a frontal periostitis.

There have been eleven pregnancies, of which four were abortions, three children who died during the first year, three children survived, of whom Marie is the eldest. At nine there was an invasion of tabetic symptoms — incontinence of urine and later of feces, occasional loss of consciousness, occipital cephalalgia, ptosis, diplopia; at present, atrophy of the optic nerves, girdle pains, lightning pains, diminution of sensation to touch and to pain in the lower extremities, paresthesia, sensation of cold, abolition of the patella reflex, gastric crises.

It is only within the last years that we have concerned ourselves as to hereditary syphilis, *apropos* of the etiology of tabes. It will be necessary hereafter to ask information as to a possible inherited syphilis, as one nowadays asks for personal antecedents.

In regard to general paralysis, M. Regis has collected fourteen cases of general paralysis in youth (from thirteen to nineteen years). Of this number, six were derived certainly, and one, perhaps two, probably from hereditary syphilis.

The following case is taken from Clouston: *

Girl of fifteen years. Father syphilitic. Paternal uncle dead of general paralysis. Mother's paternal cousin insane, afterwards demented. Twelve pregnancies, three stillborn, three children dead, one of hydrocephalus and one of meningitis. Six children living, of whom one is a deaf-mute, epileptic and hydrocephalic. Personal antecedents: Habitual good health; intelligence good; indolent; typical Hutchinsonian teeth; breasts rudimentary; never menstruated; aspect infantile. From

* *Edinburgh Med. Journ.*, 1891.

six to nine years, three or four epileptoid attacks annually. At about fourteen to fifteen, sudden loss of consciousness, followed by prostration for two days. Two other similar attacks just before the beginning of the disease. All at once diminution of activity, indolence, indifference, mental enfeeblement, afterwards hesitating speech, difficulty in walking and muscular weakness. Admitted to the Edinburg Asylum at the age of nineteen, with the following symptoms: Dementia paralytica without delirium, physical signs very accentuated; nystagmus; disseminated opacities of peripheral coroiditis, which Argyle Robertson considered a manifestation of hereditary syphilis; coldness of the extremities with varying color, red to blue; spots of gangrene with erysipelas upon the feet.

This must not be considered as a final account of the subject of parasyphilitic affections. It is only a first attempt. It may be necessary in the future to add to or subtract from it. Perhaps the chapter can never be fully written until the bacteriology of the disease is known and enables us to distinguish between diseases which are syphilitic by nature and those which are parasyphilitic.

Certainly the consideration of the remote effects of syphilis increases considerably the gravity of its prognosis and gives an additional reason for the more careful study of the disease and for more careful attempt to control or suppress it.

SOME OBSERVATIONS UPON BLOOD PRESSURE IN THE INSANE.

BY WILLIAM RUSH DUNTON, JR., M.D., TOWSON, MD.,

Assistant Physician The Sheppard and Enoch Pratt Hospital, Towson, Md.

THE literature on the subject of blood pressure is increasing rapidly, and much pleasure and profit might be derived from reviewing the major part of it, but I will resist the temptation and merely call your attention to certain articles which have a direct bearing on the results which follow. For a long time it has been conceded by some that the blood pressure was increased in depressive states and decreased in excited conditions. In 1900 Maurice Craig in an article entitled "Blood Pressure in the Insane,"¹ says: "We may now, I think, take it as accepted that in states of acute mania the blood pressure is low, whereas in the majority of cases of melancholia the blood pressure is raised; in other words, that with the affective disorders of the mind there is an alteration in the tonicity of the vasomotor system." Pilez² reached the same conclusion, and in one of his cases of circular insanity the blood pressure varied from 60 mm. in the excited state to 160 in the depressed period. It has been found, however, that in agitated melancholia the blood pressure is low, and all the evidence seems to indicate that a low blood pressure in the insane accompanies motor restlessness. The article by Dr. Craig, from

which I have quoted, and another by Dr. Henry L. K. Shaw³ are two which I have found most interesting from the standpoint of the alienist. The latter contains a number of references to foreign literature, to several of which I shall direct your attention. Pilez found the blood pressure normal in the early stages of paresis, but low in the terminal stage. Heim⁴ found a high blood pressure in neurasthenics and hysterical children, and considered this a diagnostic point. The above references concern the points which will be of most interest to us in the consideration of the observations which form the subject of this paper. The other works to which Shaw refers deal with the effect of therapeutic measures upon the blood pressure, or with the history of the various methods of observing it.

Mention should be made of the investigations made at the Royal Asylum, Aberdeen, by Drs. Bruce and Alexander on cases of melancholia and of mania. Justice cannot be done to their work in a brief abstract, and I therefore append references to their published writings.⁵

Early in 1902 Dr. Harvey Cushing of the Johns Hopkins Hospital introduced to us his modification of the Riva-Rocci apparatus for determining blood pressure, and presented us with an instrument. Dr. Cushing's modifications are merely mechanical, and do not affect the principle of the apparatus. I wish to especially call your attention to the convenience of the Riva-Rocci instrument. Shortly before we began using it we were having constructed the elaborate apparatus of Mosso, which one might say requires a room to itself, and has as another disadvantage to its use that a number of patients are in no condition to be brought to this room. A number of those that might be would endanger the rather expensive apparatus. The form of the Riva-Rocci which we have used we have put together ourselves, and I am sure that three dollars will quite cover the cost of each instrument. It consists first, of a narrow rubber bag with linen covering with hook and loops, by means of which it is secured about the patient's arm. This bag communicates by rubber tubing with one arm of a glass T inserted in the cork of a wide-mouthed bottle, which latter is partly filled with mercury, and which has a straight glass tube with millimeter scale attached also passing through the cork, and from this the degree of pressure is read. The other arm of the above-mentioned T is connected by rubber tubing with a pressure bulb, such as is used on a Paquelin cautery. There is also a branch from the first tubing closed by a pinch cock, by means of which the air is allowed to escape from the instrument after the observation has been made. To operate the apparatus, the arm band is fastened about the patient's arm above the elbow, the radial pulse is palpated, and air is forced into the apparatus by means of the pressure bulb. The height

³ The Tonometer and its Value in Determining Arterial Tension. Med. News, vol. lxxviii, p. 372.

⁴ Deutsche med. Wehnschr., No. 15, 1900, quoted by Shaw.

⁵ Journ. of Ment. Sci., October, 1900. Lancet. No. 4069, Aug., 24, 1901. Lancet, No. 4114, July 5, 1902.

¹ Brit. Med. Journ. Sept. 22, 1900, No. 2073, p. 184.

² Wien. klin. Wehnschr., No. 12, 1900, quoted by Shaw.

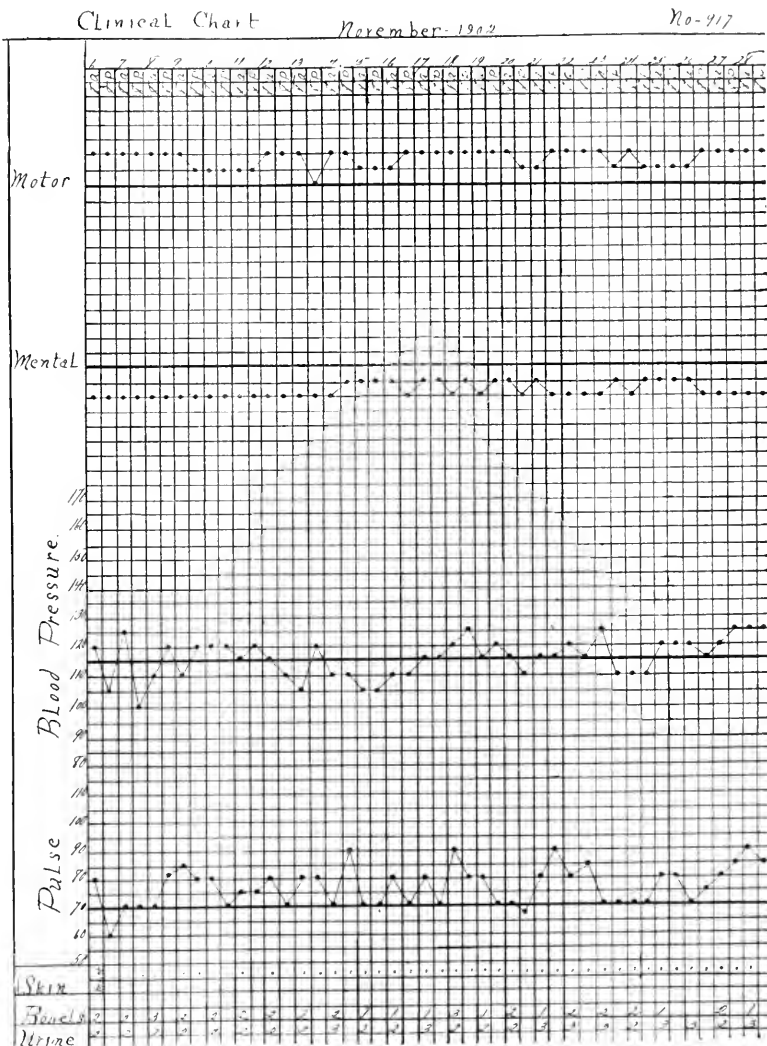
of the column of mercury at which the pulse disappears is noted, the pressure carried slightly beyond, the air slowly allowed to escape, and the height of the column of mercury at which the pulse returns is noted, and the mean of these two observations gives us the systolic pressure. Some observers only note the point where the pulse disappears, others only the point where it reappears. Either is correct, but taking both secures accuracy. Recently Dr. Cook⁶ has described this instrument in a less homemade form, and discusses its manipulation very fully.

Stanton⁷ has devised a very similar apparatus, which seems to have certain advantages over the Riva-Rocci, though practically differing from it only in the width of the arm piece and in using a foot pump to obtain the necessary air pressure. By means of his apparatus he is able to obtain both the systolic and diastolic pressures, and from them calculate the mean pressure. I have tried his method with the

tends uniformly over a wider range of the scale, say, over 15 or 20 units, in which cases I record the mean figure and the extremes. In denying that elevation of blood pressure depends directly upon arteriosclerosis, I have stood alone for some years against the high authority of Von Basch and many others; but I think that some recent observers now admit the validity of my contradiction, and the matter is one of cardinal importance."

Since our introduction to the Riva-Rocci instrument we have taken a great many blood-pressure observations with a view of determining the value of such observations in mental diseases both as an aid to diagnosis and to treatment. It is the object of this paper to present the results which we have hitherto obtained. At first a number of single observations were made on a number of patients, but we soon realized that by such methods accurate results could not be obtained, and it was thought if we

Riva-Rocci apparatus with an assistant at the air pump, but was not able to obtain satisfactory readings of the diastolic pressure, due, I think, to the narrow arm piece, which Stanton considers the great defect of the Riva-Rocci apparatus. Jackson⁸ has compared the Riva-Rocci with the Gaertner, and finds that they give uniform results except in cases of arteriosclerosis, where the former instrument reads too high. In regard to the presence of arteriosclerosis as a complicating factor I wish to call your attention to a very interesting article by Dr. Clifford Allbutt, on "The Rise of Blood Pressure in Later Life,"⁹ in which he says: "In sufferers from arteriosclerosis — I use the name arteriosclerosis loosely for present convenience — exorbitant pressures are often but by no means constantly found. Between disease of the arterial tree and blood pressure there is no direct relation in arterial disease, even in the extreme degree of it normal or relatively low pressures are commonly observed; but I often notice that in cases of arterial degeneration the reading ex-



Showing blood pressure, motor and mental chart reduced four times. Since the preparation of this paper, these charts have been amended so that the lines above and below the normal (motor and mental) lines signify a definite condition (quiet, restless, excitement, etc.), but so far an entirely satisfactory arrangement has not been obtained.

⁶ Journ. Amer. Med. Assoc., vol. xl, p. 1199, May 2, 1903.

⁷ Univ. of Penn. Med. Bull., February, 1903.

⁸ Bost. Med. and Surg. Journ., vol. cxlviii, p. 223.

⁹ The Lancet, No. 4149, vol. clxiv, March 7, 1903.

regularly measured the blood pressure of several cases during the whole course of their mental alienation with the changes which probably took place as recovery, or other change occurred, that we would have more instructive and more accurate data. It will be remembered that the Riva-Rocci apparatus shows the systolic pressure, and this, I think, serves our purpose sufficiently well.

As we did not wish to go to the expense of having charts for blood pressure made until we became satisfied with the form, we have used square ruled paper, which the nurses have divided as indicated. Also, for convenience, the observation has been recorded on a scale of fives, which gives approximate results. Should we consider the plan hitherto pursued sufficiently valuable to continue, we will have the blood pressure scale divided into millimeters. We have had charts made of the blood pressure, mental and motor condition, the condition of the skin, and the pulse in all the cases which have been under continuous observation, and in certain cases the temperature and respiration has also been noted on the regular chart. A sample chart is appended. For convenience of consideration the results of these observations have been tabulated in the case abstracts which follow. Cases with arteriosclerosis or with organic heart or kidney disease were not observed at first, as they would necessarily impair the results. The position of the mental and motor curves is indicated by plus or minus, the average position being normal in a few instances, and in a few others varying to such an extent that plus and minus seemed the best method of indication.

It is extremely difficult to indicate graphically the curve of mental activity in the majority of cases, and I feel that in a number of our cases a plus condition is shown incorrectly. The nurses as a rule seem to regard insane ideas as a plus condition and to lose sight of any underlying dementia which is not especially marked. This is shown in Case III, in Case VIII in part, and Cases XII and XV. Further, the mental activity may be more or less obscured by the emotional condition. The best solution seems to be to discard both motor and mental curves and substitute for them brief descriptions of the patient's mental condition and habits of living. In the notes which follow I have given the nurse's conception of the position of the curve. It must be remembered that these blood-pressure readings have been taken in an ordinary way, just as temperature, pulse and respiration observations are often made. No attempt was made to isolate the patient from sights or sounds which might affect the reading, nor was the patient made to lie down if she was up and about, as it was desired to test the value of blood pressure observations as an ordinary clinical procedure. However, nearly a third of them were made while the patient was in bed. While observers differ as to the effect of posture on the blood pressure, the consensus of opinion seems to be that we find a higher blood pressure when the patient is in a sitting position than in a re-

cumbent one. The factor of posture may be ignored in a given case when all observations are made when the patient is in one position, that is, either sitting or lying, but in comparing cases this factor should be considered. One conclusion to which we came was that the continuous taking of the blood pressure has but little value in the majority of mental cases, and the plan has been adopted of taking it for a limited period, then discontinuing it and taking it again for another period whenever we felt there was a change in the motor or mental condition of the patient. I believe that the average of a week's observations give as accurate a measure as when they are continued for a longer period. Frequently the first two or three observations are higher than the others, due possibly to an element of fear in the patient, so that I am not satisfied that one or two accurately show the blood pressure.

CASE I. No. 824. Woman aged twenty-five. Had an attack of depression September, 1897, to May, 1898. Present attack is excitement, and began about May 10, 1901. She was discharged from the hospital July 19, 1902, and completed her recovery at the seashore. Urine showed slight trace of albumen, no casts. Heart normal.

| DATE | MENT. | CURVE | MO. CURVE | AV. B. P. | NO. OBS. |
|-------------------|-------|-------|-----------|-----------|----------|
| Jan. 22-31 . . . | + | + | | 101.6 | 38 |
| Feb. 1-17 . . . | + | + | | 109.5 | 57 |
| Feb. 18-March 9 . | + | + | | 110 | 78 |
| March 10-April 8 | + | + | | 106.4 | 101 |
| May 1-16 . . . | + | + | | 117.78 | 61 |
| May 17-31 . . . | + | + | | 109.66 | 59 |
| June 1-10 . . . | + | + | | 111.12 | 40 |
| June 11-30 . . . | + | + | | 110 | 56 |
| July 1-15 . . . | + | + | | 111.5 | 60 |
| July 16-19 . . . | + | + | | 109.5 | 12 |

At 8 A.M. of the day of her discharge the blood pressure was 135, and there was a greater degree of motor restlessness.

CASE II. No. 544. Woman aged twenty. Diagnosis, dementia præcox. Had been an inmate of the hospital since Oct. 31, 1898. Her mental trouble dated from the winter of 1895-96. Heart irregular and shows hemic murmur. At one time urine showed albumen, no casts. Has sudden attacks of violence.

| DATE | MENT. | CURVE | MO. CURVE | AV. B. P. | NO. OBS. |
|-------------------|-------|-------|-----------|-----------|----------|
| March 15-29 . . . | — | — | | 124 | 15 |
| March 30-April 12 | — | — | | 131 | 14 |
| April 14-19 . . . | — | — | | 125.8 | 6 |
| May 1-31 . . . | — | — | | 120 | 31 |
| June 1-28 . . . | — | — | | 118.8 | 22 |

CASE III. No. 798. Woman aged twenty-six. Admitted to hospital March 29, 1901. Present is third attack, the first being in 1890 and lasting several months, the second lasting from October, 1892, to December, 1893. Onset of present attack was about Dec. 25, 1900. Is now in a demented condition. Heart rhythm somewhat disturbed, otherwise negative. Urine showed trace of albumen, no casts.

| DATE | MENT. | CURVE | MO. CURVE | AV. B. P. | NO. OBS. |
|-------------------|-------|-------|-----------|-----------|----------|
| Feb. 1-16 . . . | — | + | | 141.93 | 15 |
| Feb. 17-March 4 . | — | + | | 149.87 | 16 |
| March 5-19 . . . | — | + | | 146 | 15 |
| March 20-30 . . . | + | + | | 135 | 19 |
| March 30-April 8 | + | + | | 141 | 18 |
| April 9-18 . . . | + | + | | 137 | 16 |
| May 5-8 . . . | + | + | | 136 | 7 |
| May 9-18 . . . | + | + | | 133 | 19 |
| May 19-28 . . . | + | + | | 133 | 20 |
| May 29-June 7 . . | + | + | | 129 | 20 |
| June 8-17 . . . | + | + | | 130 | 20 |

CASE IV. No. 924. Woman aged forty-one. Admitted to the hospital April 24, 1902. Shows depression and mental confusion with a good deal of motor excitement. Patient had a similar attack at twenty-one years, lasting three months. Had been mentally unstable ever

since. Her present illness began eleven days before admission.

| DATE | MENT. | CURVE | Mo. CURVE | Av. B. P. | No. OBS. |
|-----------------|-------|-------|-----------|-----------|----------|
| April 30-May 12 | none | — | — | 154 | 25 |
| Oct. 9-31 | + | — | — | 116.63 | 46 |

Discharged from the hospital Jan. 19, 1903, improved. CASE V. No. 917. Woman aged twenty-nine. Mental symptoms began February, 1902. Patient was admitted to the hospital April 14, 1902. Was removed against advice June 9, 1902, and readmitted July 11, 1902. Patient was depressed, emotional and exhibited great motor restlessness. Heart negative. No arteriosclerosis. Urine negative.

| DATE | MENT. | CURVE | Mo. CURVE | Av. B. P. | No. OBS. |
|-------------------------|-------|-------|---------------|-----------|----------|
| July 16-Aug. 7 | none | + | + | 108 | 45 |
| Aug. 7-31 | none | + | + | 109.6 | 45 |
| Aug. 31-Sept. 21 | — | + | + | 112 | 45 |
| Sept. 22-Oct. 13 | — | + | + | 118.7 | 39 |
| Oct. 14-Nov. 5 | — | + | + | 118 | 46 |
| Nov. 6-28 | — | + | + | 113 | 47 |
| Nov. 29-Dec. 21 | — | + | + | 119.5 | 41 |
| Dec. 22-Jan. 13 | — | + | + | 115 | 39 |
| Jan. 14-Feb. 3, normal, | — | — | nearly normal | 128 | 40 |

Patient was discharged Feb. 3, 1903, much improved.

CASE VI. No. 977. Woman aged twenty-seven. Has appearance of being ten years younger. Patient had typhoid fever at fifteen and twenty-four. Was brought to the hospital Sept. 27, 1902, from Danville Sanitarium, where she had been since March, 1902. Is in condition of incomplete dementia, with attacks of sudden violence. Heart negative. No arteriosclerosis.

| DATE | Mo. CURVE | MENT. CURVE | Av. B. P. | No. OBS. |
|------------------|-----------|-------------|-----------|----------|
| Sept. 30-Oct. 21 | normal | + | 125.54 | 37 |
| Oct. 22-Nov. 12 | + | + | 123.42 | 38 |
| Nov. 13-Dec. 4 | — | — | 113.72 | 43 |
| Dec. 5-26 | — | — | 114.75 | 41 |
| Dec. 27-Jan. 17 | — | — | 117.2 | 27 |

CASE VII. No. 979. Woman aged twenty-six. There is an indefinite mental history dating back six years to the time of her graduation from the high school. She has been teaching in the public schools from that time until Jan. 1, 1902, when active mental symptoms were noticed. Was brought to the hospital Oct. 12, 1902. Heart negative. No arteriosclerosis.

| DATE | Mo. CURVE | MENT. CURVE | Av. B. P. | No. OBS. |
|-----------------|-----------|-------------|-----------|----------|
| Oct. 2-Nov. 7 | — | — | 120.6 | 44 |
| Nov. 8-30 | — | — | 118.47 | 46 |
| Dec. 1-23 | — | ± | 127.12 | 37 |
| Dec. 24-Jan. 15 | — | + | 126 | 39 |
| Jan. 16-28 | ± | — | 120 | 24 |

CASE VIII. No. 946. Woman aged fifty-one. Admitted to the hospital June 16, 1902, after attempting suicide. Mental symptoms had been noticed five weeks before admission. Had transitory delusions. Was depressed, restless and emotional, and at times much confused. Patient improved quite markedly up to a certain point where she had frequent emotional attacks, and begged to go home. Heart negative. No arteriosclerosis. Urine showed a trace of albumen, no casts.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|------------------|-------|--------|-----------|----------|
| July 16-Aug. 3 | + | + | 106 | 26 |
| Aug. 4-25 | + | + | 114.5 | 40 |
| Aug. 26-Sept. 16 | + | + | 124 | 41 |
| Sept. 17-Oct. 9 | + | + | 125.1 | 39 |
| Oct. 9-31 | + | + | 128.4 | 44 |
| Nov. 1-22 | + | + | 123 | 45 |
| Nov. 23-Dec. 15 | + | ± | 111.47 | 44 |
| Dec. 16-Jan. 6 | + | + | 115.7 | 37 |
| Jan. 7-29 | + | — | 115.3 | 29 |

CASE IX. No. 999. Woman aged thirty-two. Admitted to the hospital Dec. 10, 1902. Mental symptoms date back two years to the birth of her last child. Depression and self-accusation were the most marked symptoms. Had twice attempted suicide. Heart negative. No arteriosclerosis.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|---------------------|-------|--------|-----------|----------|
| Dec. 13-Jan. 4, '03 | — | — | 120.4 | 38 |
| Jan. 5-27 | — | — | 121.34 | 46 |
| Jan. 28-Feb. 19 | — | — | 118.24 | 37 |

CASE X. No. 988. Woman aged twenty-one. Admitted to the hospital Nov. 9, 1902. Became exalted

over religious matters about a year before, since which time she has become depressed and thinks she has committed the unpardonable sin. Heart negative. No arteriosclerosis. Urine negative.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|----------------|-------|--------|-----------|----------|
| Nov. 11-Dec. 3 | — | — | 109.63 | 46 |
| Dec. 4-26 | + | — | 101.74 | 46 |

CASE XI. No. 1003. Woman aged fifty. A case of well-marked neurasthenic depression. Admitted to the hospital Dec. 29, 1902, her mental symptoms dating back several months. Heart negative. No arteriosclerosis. Urine negative. Patient left hospital March 2, 1903, against advice, slightly improved.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|-----------------|-------|--------|-----------|----------|
| Jan. 6-28 | — | — | 111.3 | 46 |
| Jan. 29-Feb. 21 | — | — | 106.74 | 43 |

CASE XII. No. 1009. Woman aged twenty-seven. Mental symptoms about a year before admission, which was Jan. 15, 1903. Is well-marked case of dementia precox with incomplete dementia. Heart sounds slightly dulled. No arteriosclerosis. Urine negative.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|------------------|-------|--------|-----------|----------|
| Jan. 28-Feb. 20 | + | + | 126.13 | 44 |
| Feb. 21-27 | + | + | 122.3 | 13 |
| March 28-April 2 | + | + | 122. | 10 |

CASE XIII. No. 1008. Woman aged twenty-six, admitted Jan. 15, 1903. The patient has marked flexibilitas cerea and other physical symptoms of the katatoniform of dementia precox; mentally, however, while she has shown improvement, insane ideas are pretty well marked on careful investigation, and the case is undoubtedly one of precocious dementia. Heart negative. No arteriosclerosis. Urine negative.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|------------------|-------|--------|-----------|----------|
| Jan. 28-Feb. 19 | — | — | 108.2 | 41 |
| Feb. 20-March 14 | — | — | 108.3 | 42 |
| March 15-17 | — | — | 108.3 | 24 |

In connection with this case it is interesting to note that Anton¹⁰ in a study of three cases of brain disease with katatoniform, found low blood pressure in two of them.

CASE XIV. No. 1018. Woman aged twenty-three, admitted Feb. 25, 1903. Mental symptoms dated back about seven months, but did not become sufficiently marked to demand hospital care until about a month and a half before admission. There has been rapid retrogression, and the case is evidently one of dementia precox. Heart negative. No arteriosclerosis. Urine negative.

| DATE | MOTOR | MENTAL | Av. B. P. | No. OBS. |
|------------------|-------|--------|-----------|----------|
| Feb. 26-March 20 | + | — | 122 | 43 |
| March 21-27 | — | — | 124.6 | 13 |

The following abstracts are from cases in which the blood-pressure observations were not carried over so long a period, and have been taken usually in cases which were not so recent or were not undergoing any marked changes, or in other words, were more or less stationary.

CASE XV. No. 655. Woman aged thirty-four, has been under care since Dec. 30, 1899. Is a well-marked case of dementia precox, with considerable motor activity. Is usually elated mentally. Heart negative. No arteriosclerosis. Urine negative. Blood pressure observed March 24-30, 1903, averaged 122.7 mm., the mental, motor and pulse curves all being plus.

CASE XVI. No. 905. Woman aged twenty-two, admitted March 18, 1902. Case is one of well-marked dementia precox, with sudden impulses. Heart shows mitral stenosis, which improved while she was under care. No arteriosclerosis. The day of admission patient's blood pressure was 140 mm., and six days later was 146 mm., the patient lying quietly in bed on both occasions. Her mental condition was depression. Blood pressure

¹⁰ Anton G. Ueber Gehirnkrankungen mit Katatonie. Mittheilung des Vereins der Aerzte in Steiermark, 1902.

observed March 1-15, 1903, averaged 124.4 mm., motor and mental curves both being plus.

CASE XVII. No. 78. Woman aged fifty-six, has been in the hospital for ten years. Original diagnosis chronic mania but now in a condition of incomplete dementia. Heart negative. Arteries somewhat sclerotic. Urine shows trace of albumen and a few epithelial casts. Blood pressure taken March 8-14, 1903, averaged 139 mm., motor and pulse curves plus, mental minus.

CASE XVIII. No. 380. Woman aged forty-seven. Case of imbecility with marked auditory hallucinations causing considerable excitement. Has been in hospital six years. Heart shows systolic murmur transmitted to the axilla. No arterio-sclerosis. Urine shows trace of albumen. Blood pressure taken March 8-14, 1903, averaged 142 mm., motor, mental and pulse curves all being plus.

CASE XIX. No. 1010. Woman aged forty-six, admitted Jan. 15, 1903. Her attack began suddenly May 16, 1902, following death of her child, the patient being much run down from nursing. The first symptoms were excitement, followed by depression, which was in turn followed by a confused, agitated condition, during which she was brought to us. She at present (April 11) has improved slightly both physically and mentally. Heart negative, no arteriosclerosis. Urine negative. Blood pressure observed March 8-14, 1903, averaged 121.5 mm., motor and pulse curves being plus, the mental minus.

CASE XX. No. 947. Woman aged fifty. Admitted June 20, 1902, depression having become marked about two months before admission. Somato-psychic delusions early became prominent, and at present are the most marked symptoms. Heart shows no murmurs. Arteries are diffusely sclerotic. Urine shows a trace of albumen. At one time pulse was high tension and a course of nitrates and nitrites caused a marked change without, however, any accompanying mental change. Blood pressure was taken for the first week of March, 1903, and averaged 140 mm., motor and mental curves both being plus.

CASE XXI. No. 959. Woman aged twenty-one admitted Aug. 3, 1902. The silliness of dementia precox is most marked. At admission was in a condition of excitement, which has since subsided. Heart shows slight systolic murmur transmitted to axilla. No arteriosclerosis. Urine negative. Blood pressure observed from March 26 to April 2, averages 124.3, motor curve being plus, mental minus.

CASE XXII. No. 908. Woman aged sixty-nine, admitted to the hospital Sept. 2, 1899. Is an involution case with slight dementia. Heart and kidneys negative. No arteriosclerosis. Blood pressure observed from March 1-17, averages 127.69, motor curve is plus, mental minus.

CASE XXIII. No. 908. Woman aged forty-four; a case of epileptic insanity. Dementia is very slight. Heart shows systolic murmur transmitted to the axilla. Urine negative. No arteriosclerosis. Blood pressure observed March 1-7, averages 132.2, motor curve plus, mental minus.

CASE XXIV. No. 936. Woman aged fifty-six. Case of melancholia "agitata." Heart negative. Urine shows trace of albumen. No arteriosclerosis. Blood pressure observed March 24-30, averaged 131.6, motor curve plus, mental minus, pulse plus.

CASE XXV. No. 1031. Woman aged forty. Recurrent melancholia. Had previous attacks six and four years ago. On admission was depressed with marked motor activity. Under treatment has improved. Heart negative. Urine shows trace of albumen. Slight arteriosclerosis. Blood pressure has gradually fallen from 140 to 120, averaging 127.6 for the three weeks observed. The motor curve has gradually fallen and the mental curve has gradually increased.

While on following down the blood pressure column I am unable to find the point where there was any change sufficiently marked to be noticed, which corresponds with any mental change. and

on going over the charts I am also unable to find any constant ratio, either direct or indirect, between the motor, mental and blood pressure curves, nevertheless I feel that these observations have their value, and in the data given above we find the general ratio is usually the same as that found by other writers; namely, that the average blood pressure is low in motor restlessness, or in mental excitement, and high in depressive conditions, or in cases where there is diminished mental activity. The blood pressure depends on so many factors that it is not surprising if we find occasional cases in which it does not accord with the usual observations. Some other factor which we may have overlooked may have caused the changed ratio, or our own observations may be at fault. For example, in certain cases with mutism I have had great difficulty in deciding whether there was increased mental activity or not.

A dry and moist skin seems to have no effect, and I think that the cases observed by Kornfeld¹¹ must have been actively perspiring to have had any marked influence upon the blood pressure.

Schaeffer and a number of others have observed that blood pressure was lower in the evening than in the morning, and have considered this a physiological variation. One writer gives this daily physiological fall as the reason that patients suffering from depression usually feel better at night, and the maniacal patients are usually worse. In our own observations the daily variation has been very inconstant. The morning and evening observations have frequently been the same, and the evening pressure has been higher than the morning quite as often as the reverse.

Briefly the conclusions based upon the present study may be stated as follows:

(1) The findings of other writers that (a) the blood pressure is increased in depressive states and decreased in excited states; and (b) that the motor condition has a greater influence on the blood pressure than does the mental condition, have been confirmed.

(2) A moist skin has no especial influence upon the blood pressure, although active perspiration may.

(3) There was no constant daily variation, as has been noted by Schaeffer and others.

I feel that further conclusions are not justified by the cases presented here and others which are in a too incomplete state to justify publication. This paper will have fulfilled its mission if others are stimulated to observe blood pressure.

Too much importance should not be ascribed to this symptom. Its accurate observation has its value, and will probably have a greater value later when we have a better knowledge of how it is influenced by various bodily conditions. The general clinicians are adding to this, and we should do our part by observing how it is influenced in mental affections.

¹¹ Kornfeld, Sigmund. Zur Pathologie der Angst, Festschrift Dr. v. Kraft-Ebing, p. 411, 1902.

THE FORMATION OF LOOSE CARTILAGES IN THE KNEE JOINT.¹

BY E. A. CODMAN, M.D., BOSTON.

IF I should ask each one of you for a definition of "loose cartilages in the knee joint," I should probably receive a number of replies, each one of which would have able arguments to sustain it. In the first place, many would consider that "loose cartilages" referred to injured or displaced semilunar cartilages, but it is not to these that I wish to call your attention. It is on the formation of the "joint mice," cartilage-like bodies, varying in size from that of a small bean to that of an oyster, and being either free in the joint or held by a pedicle or light adhesions to the capsule. Such bodies are common enough and in many cases cause little or no trouble, while in others much annoyance is produced by locking of the joint and the production of a chronic synovitis. When this condition is reached, the patient usually comes to operation, a small incision in the capsule is made, and the mouse popped out. The result is generally a perfect cure. Now what is the origin of these bodies? There seems to be a prevailing impression that the process of formation is one of concretion comparable with the formation of biliary or cystic calculi. The nucleus is guessed to be a clot of fibrin, a bit of torn fringe or a fragment of semilunar cartilage. Another common explanation is that such bodies are originally osteophytic growths on the lips of the articular surfaces, and when broken off become "mice." Finally, certain cases have been considered actual bits of articular cartilage set free by trauma. It is this latter theory which seems to me to clearly account for the vast majority of cases, although here and there a case from one of the other causes may occur. Until I took the pains to look up the question, I had supposed that this explanation was original, but I find that it has been frequently offered before.

The observations which suggested this theory to me were as follows: In 1895, when assisting at an operation on such a case, I noticed on the face of the articular surface of the internal condyle, a stellate star in the cartilage which was somewhat smaller than the mouse, but was of the same rough shape and suggested the site of origin. Since then I have, at every opportunity, in the cases of other surgeons, looked for this scar and have frequently seen it, even when the operator himself had not. In 1900 I had a case of my own in which I demonstrated that the mouse nearly fitted its bed in the internal condyle. The case which I have to show tonight, however, demonstrated this even more conclusively, for one of the four mice which I removed was still attached like a little trap-door; another fitted its former bed exactly; and a third resembled an old scar, but was too big for it. These four mice are numbers 2, 3, 4, 5 in the accompanying illustration, and show very

clearly the stages of the growth. In 2 and 3 there is as yet no concretion, while in 4 and 5 the concretion has surrounded the cancellated bone. In all these, and in fact in the great majority of such bodies, you will see that one side is of cartilage and the other of modified spongy bone. The specimens on the card are dried and the cartilage is yellow and shrunken, but in the fresh or alcoholic specimen it is white and convex. I will pass about some alcoholic specimens from the museum.

It occurred to me to try experimentally on a cadaver to knock such a chip out by a sharp blow. If you will flex your knee you will see that the patella protects the external condyle almost completely, but that the internal cartilaginous surface is exposed to violence. I found, however, in the cadaver, that a blow merely dented in the articular surface in just such a manner as a fragment is depressed in a skull fracture. With a director this fragment can be easily pried out. In every case it brings with it a lamina of spongy bone. The skiagraphs of such pieces are shown in Figs. 1 and 6. How nearly these pieces resemble the essential structure of the loose cartilage is seen by comparing in order Figs. 1, 2, 3, 4, 5.

The life history of the loose cartilage, then, must comprise two injuries, one to depress it and one to free it. As a matter of fact this is often the case, though frequently the first injury is forgotten. By the first, a line of demarcation from the injured bone is made, and we must suppose that this demarcation is retained either by necrosis of the injured trabeculae, or perhaps by a limited callous formation. Also after the osteo-cartilaginous chip has become free in the joint cavity, we must account for its continued growth. The fact that sections show that the cellular elements still stain in these bodies would at least indicate that they are alive, though not that they are capable of laying down new bone. Barth explains this growth by the very rational hypothesis that adhesions are formed with the capsule. As a matter of fact, this is often true. This condition was found in the fourth mouse in the patient before you.

Torn or displaced semilunars do not show in the x-ray. Such bodies as I have been referring to do, however, for they consist in part of bone. I will pass about a skiagraph taken before the operation of the left knee of the patient before you.

The practical surgical point to be learned from all this is, that in these operations the articular surface of the internal condyle should, if possible, be inspected. This patient would not have been permanently cured had I not done so.

EXPLANATION OF SKIAGRAPH 1.

Fig. 1. Osteo-cartilaginous chip removed from a knee joint of a cadaver by striking a blow with a mallet on the articular surface of the internal condyle, and prying out the depressed portion with a director. The cartilaginous portion does not show, but the bony trabeculae which closely adhere to it give a characteristic appearance.

¹ Read at the Annual Meeting, Suffolk District Medical Society, April 25, 1903.

Figs. 2, 3, 4, 5 were removed from the patient shown at the meeting and are seen in the joint in Skiagraph 2. No. 2 was still attached like a trap-door. The base of its bed was of bare cancellated bone, and its own structure was apparently normal. It was the homologue of Fig. 1, which was removed experimentally. No. 3 was an exactly similar bit which was free in the joint, but filled its former bed. Its trabecular structure is somewhat less distinct than that of No. 2. Fig. 4 was too large for its bed, which had been partly healed in by cartilage. It was a typical joint mouse with one face of cartilage and the other of bone. The bony face had increased at the edges and had grown over on the cartilaginous face as if to bury it. This new growth is shown in Fig. 4 as an irregular concentric deposit about the original trabeculated bone.

Fig. 5. The fourth piece was found adherent to the capsule in the external cul de sac. By comparison with Fig. 4 the central trabeculated portion can be made out, but the structure has been much changed. The new concentric formation is denser than the original portion, and forms a dark ring about it.

Fig. 6 is a cross section of a bit similar to Fig. 1. The concave portion is cartilaginous and shows faintly.

Fig. 7. The x-ray of a median transverse section of a large specimen of a joint mouse from the Warren Museum. It had evidently been cracked in the middle, as had No. 4. On the under side the outline of the cartilaginous portion does not show, and on the edges one sees the bony portion tending to cover in the cartilage. Between, at the base of the cartilage, is a faint dotted line which probably represents the old trabeculae originally torn off with the cartilage.

NOTE. — In addition to these specimens a number of others were shown, illustrating a series, from a chip in which the cartilaginous and bony faces were of equal size to one in which the bony portion had entirely infolded the cartilage. The latter had a clinical history of twenty-five years' duration.

EXPLANATION OF SKIAGRAPH 2.

A skiagraph of the knee from which the bodies shown in Figs. 2, 3, 4, 5 were taken. No. 2 is probably the one seen directly between the joint surfaces. No. 5 probably lay behind the bone and does not show at all in this plan. The portion of the joint where No. 2 lies is the exposed portion in flexion.

Clinical Department.

CLINICAL MEETING OF THE STAFF OF THE MASSACHUSETTS GENERAL HOSPITAL, APRIL 10, 1903.

The President, DR. J. COLLINS WARREN, in the chair.

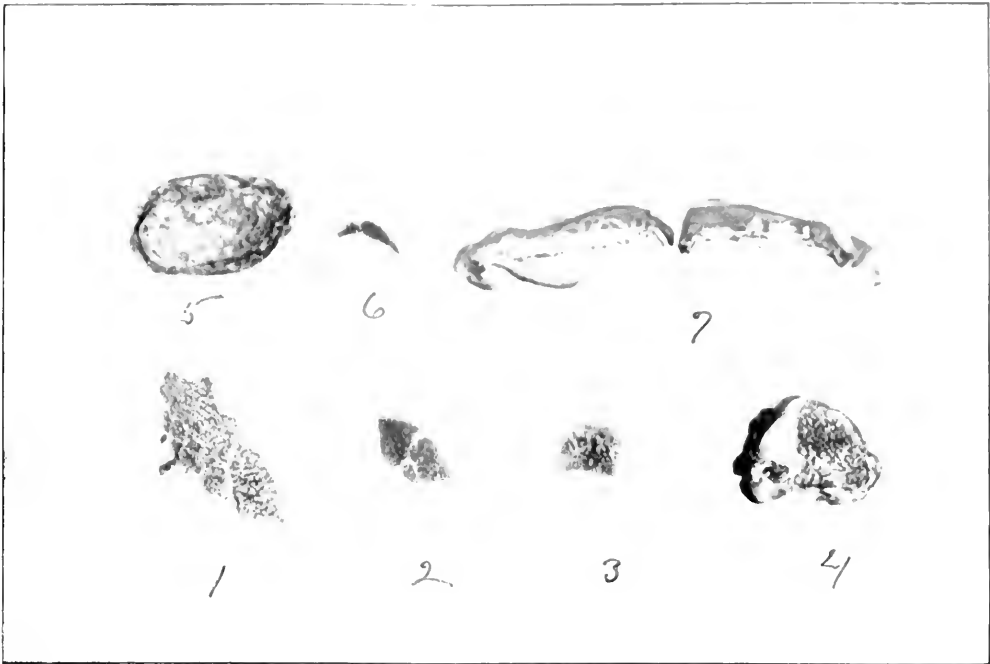
GANGRENE OF TESTICLE.

DR. ARTHUR TRACY CABOT reported and showed a specimen of a case of gangrene of the testicle due to torsion of the cord. Patient was a young man of thirty-six, who had never had any injury or difficulty of a genito-urinary nature. He was taken suddenly without apparent cause with pain in the center of the abdomen, just above the pubes. This occurred in the early forenoon, and was so severe as to oblige him to go to bed. Later in the day, however, the pain diminished, and he got up in the afternoon, and the following morning went down to business. He was soon forced to return home, at that time having very severe pain at the right inguinal ring and in the right testicle. A swelling began to appear in the right side of the scrotum, which simulated and was believed to be due to an epididymitis. After two days the inflammation in the skin covering that side of the scrotum and an indistinct sense of fluctuation led to the belief that there was fluid, probably purulent, there, and I saw the patient. The pain at that time was not very marked. Hot antiseptic fomentations were applied, and the following morning, the condition not being materially changed, operation was advised. On cutting into the scrotum the tissues outside the tunica were edematous and thickened. On opening the tunica a little bloody fluid escaped and the testicle was then seen to be black in color. This condition was found to be due to strangulation of the cord due to one complete rotation of the testicle, rotation being from within outward. The mesorchium was not long in this case, and there was no adhesion or holding the testicle in its twisted position. It was difficult, therefore, to see why the twist had occurred. The cord was tied off through the healthy part and the testicle removed.

Dr. Cabot also reported a case of almost complete anuria which existed for three weeks, due to calculous pyelitis, and which was entirely relieved by operation. The case will be reported in full later.

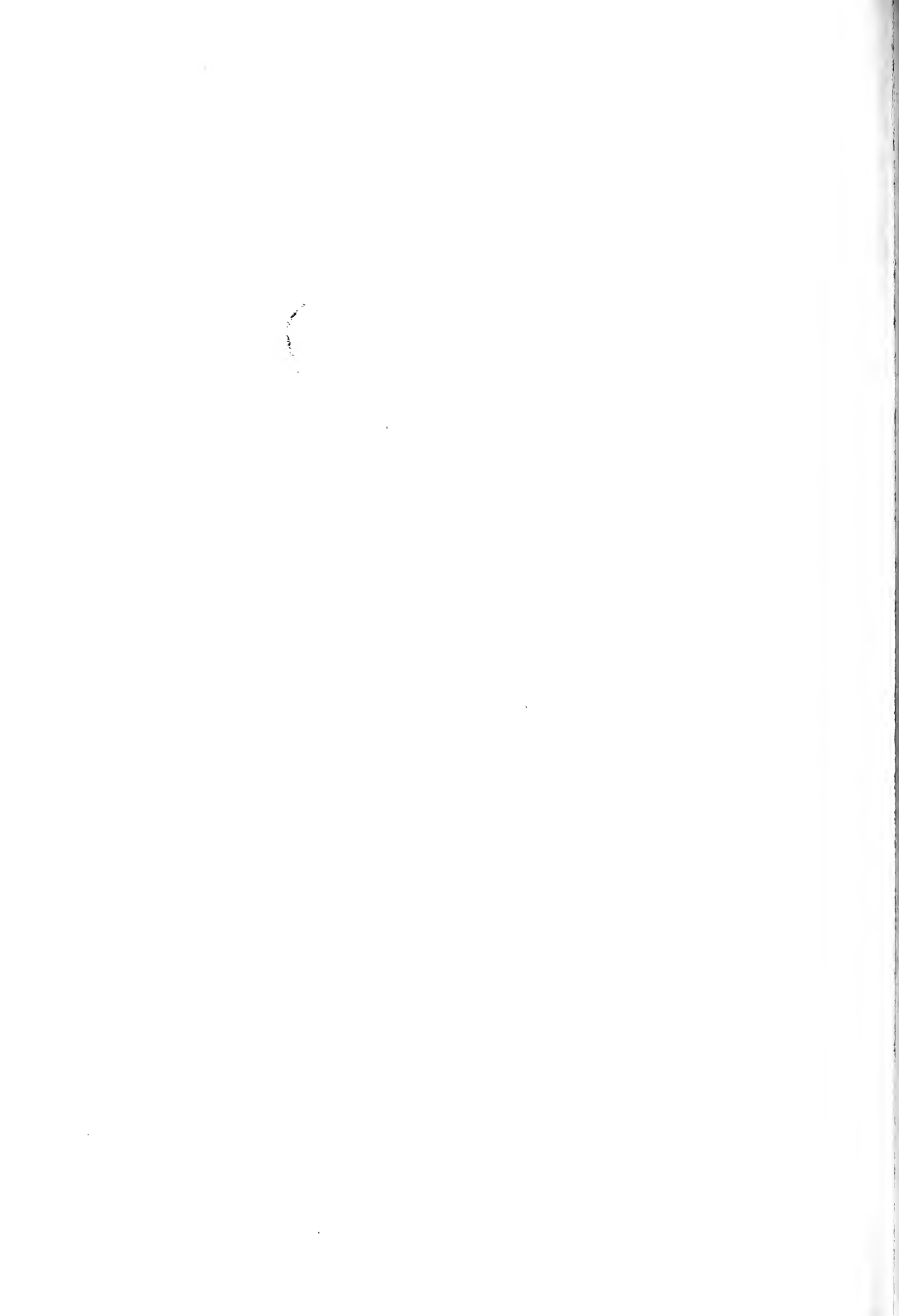
DECORTICATION OF THE KIDNEY.

DR. E. G. CUTLER had shown a year ago, through the courtesy of Dr. Cabot and Dr. Elliot, three cases of decortication of the kidney. One that Dr. Cabot operated on was a woman of middle age, who looked as though she was fifty years old. She had all the symptoms of nephritis, and it was diagnosed, from examination of the urine, as glomerulo-nephritis. The operation was done by Dr. Cabot. She improved, and left the hospital July 12, tolerably well. She came back in October with the following history: The patient was somewhat pale. Examined hemoglobin, and it was found to be insufficient. She had been doing ordinary housework every day, and felt well, but about a month before she came to the hospital she had some swelling of the abdomen. We do not know whether this was due to fluid or gas. There was found to be $\frac{1}{3}\%$ of albumin in the urine. The urea does not



SKIAGRAPH No. 1.





seem to have been estimated. There were a few waxy casts, many highly granular cells, with fat drops adherent, a few red blood corpuscles and compound granular cells. The woman said that she had been feeling perfectly well, as well as she had ever been in her life, but I doubt that. She had been an absolute invalid two years before the operation. She says that she did all her work up to the 1st of October, and since then she has been all right. When we last saw her she said she was better than she had been in a long time.

The next case of decortication which he spoke of was one which had improved until last June, operation by Dr. Elliott. Then the patient commenced to have the old symptoms, which gradually increased, and he died with the symptoms of a chronic nephritis. At the postmortem examination it was found that the capsule of the kidney had been entirely replaced. There was just as much of a capsule as there had been previous to the operation, and I understand that Dr. Wright said if the capsule had not been taken away at the operation he would say that he saw the original capsule of the kidney before him. The same condition of the kidney was seen at autopsy as was observed at the operation, so that the operation did not permanently help the patient. The disease went on, grew gradually worse and the patient died. It is obvious from this that if a patient does not continue to improve at the first operation of decortication, it is no more than fair to give him the benefit of a second operation.

The third case was that of a boy who had post-scarlatinal nephritis, of eight years' duration. Operation was done by Dr. Elliott. The boy improved, and the last time we saw him in the hospital was the 31st of October. At that time he is said to have had headache, and occasionally he had to rise three or four times in the night to make water. Examination of the urine showed a specific gravity of 10.30, with the slightest possible trace of albumin; 17.5 drachms of urea. The sediment showed one brown granular cast, a few red blood corpuscles, a few squamous cells and some leucocytes. The boy is here and seems to be perfectly well. When he first came he was thin, pale and bloated, but he does not look very ill now. Both kidneys were operated on in this case. He is going to night school and working around in the day time. We have given him instructions about diet.

CHRONIC GOUT.

Dr. CUTLER then showed a case of chronic gout. He was a butcher or butcher's helper, and he had the characteristic symptoms of gout in the hands and feet, and had some in his knees. His fingers and feet were distorted. Ulcerations about the finger joints are spoken about in some of the English works, and he did have a number of such ulcerations, from which there came out urate of sodium crystals. Please note this finger, which is so distorted; some of the tophi on others are very well marked. He has a number of

tophi in his ears. There are some x-ray pictures in the adjoining room which show the worm-eaten appearance of the bones. In the bones of the last phalanges you will see that same appearance. When he first came in there were a large number of these crystals which were coming out from the ulcerated places in all directions. He has improved very much since being here. We placed him on the proper regimen and the fingers have come out very nicely. I show him because it is the only case of the kind I have had since being in practice. I saw one case in England. All the books speak of it as if it were a not rare thing to see such fingers, but it is not so here. His feet show changes analogous to those in his hands, and show a deposit of sodium urate crystals in the cartilage and capsules of the joints, in the sheaths of the tendons, and in some of the tendons themselves. The patient's condition has continually improved since coming in here. He is under the ordinary treatment.

OBSTRUCTION OF INTESTINE.

The other case Dr. Cutler showed was the result of an operation for obstruction of the intestine. The history was as follows: Constipation, gradually increasing and finally attended by colicky pains. Then gaseous swelling of the abdomen, an enormous amount of peristalsis and finally vomiting. When he first came into the hospital it seemed obvious that he had chronic obstruction, and from indications present it seemed to be largely in the small intestine. Operation was deemed advisable. It was thought to be of sarcomatous nature. The operation was done by Dr. Elliott, and it was found that the tumor was low down in the small intestine. There was hypertrophy of the muscular tissue and infiltrated growth of the mucous membrane. Dr. Whitney found on examination that it was of a sarcomatous nature, and very kindly has given us a slide which shows the characteristic appearance. This tumor grew from the side of the intestine and looked very much like a stopper of a bottle, and it occluded almost entirely the gut.

Dr. PORTER stated that the patient was doing very well now.

In answer to Dr. Cabot's question about the diet, Dr. Cutler said that the patient was given a liquid farinaceous diet.

Dr. CUTLER. The man who writes the article on the kidneys in Allbutt's "System of Medicine," speaks of the great increase of urine which results from cutting out pieces of the kidney in animals, and after operations on the kidney in human adults. I do not see why it should not be a reasonable thing to do an operation such as decortication. Patients certainly seem better for a time, whether it be from the bleeding or ether or from other cause. I should think it might be a fairly good procedure to try when ordinary medical treatment does not seem to do any good. Surgical treatment does not do any harm. The patient will die anyway if left alone, and the surgical operation apparently

does no harm and sometimes does some good. I should think it might be useful in those cases which do not seem to improve under ordinary treatment after several months. It seems to me a reasonable thing to do.

DR. A. T. CABOT said that it was interesting to notice that the case just alluded to by Dr. Cutler had the clinical appearance of parenchymatous nephritis rather than of an interstitial nephritis. It was, therefore, not one of the cases in which it was claimed decapsulation was likely to be of service, and yet it had derived very evident benefit from the operation. Dr. Cabot said that since he last reported on this subject he had had one other case, also one of parenchymatous nephritis, in which the operation was done rather at the urgency of the family than because the case seemed proper for surgical interference. It was carefully explained to the people that the condition was not one in which improvement from the operation was to be expected as far as could be judged from clinical symptoms. They, however, wished to have the attempt made, hoping that the unexpected might be fortunately accomplished. In this case, there was no apparent result from the operation; patient bore it well; suffered no detriment from it, but afterwards went on slowly failing, and died some months later.

DR. C. A. PORTER showed the following cases:

PANCREATITIS. OPERATION. RECOVERY:

1. ACUTE PANCREATITIS.

Simon Pinaski, aged thirty-six, Russian, entered the hospital on October 30, 1902, in Dr. Warren's service, complaining of dull pain in the right hypochondrium for the past seven years, with chronic constipation. One week before entrance he was seized with a very sharp pain in the epigastrium, later localizing itself in the right iliac region. Pain was very severe. No vomiting, no jaundice, no chills. Bowels moved the last two days. Examination of the abdomen: quite tender in epigastrium and especially in region of gall bladder, where the resistance is marked. No tenderness in iliac fossa. Under rest in bed and poultices the symptoms abated, and he was seen by Dr. Shattuck on Nov. 5, who found nothing pathological. Between that time and Feb. 17, when he entered the accident room again, he had had five attacks of agonizing pain in the epigastrium. He has been seen by Dr. Pfaff when he was slightly jaundiced, who believed that he had gallstones. He was also seen by Dr. Vickery and Dr. Gannett once or twice, without a definite diagnosis being made.

On Feb. 17 he was brought into the accident room, having been seized two and a half days before with a particularly severe and sudden pain in the epigastrium, which required a larger amount of morphia to give relief. The pain radiated to the right into the hypochondrium, and to the iliac fossa. On the night before entrance the patient began to vomit, and the vomiting has been persistent. The bowels

moved on the morning of this last attack. He had no chill. Examination showed a rather poorly nourished man, temperature 100, pulse, 80, poor quality. Slight cyanosis. Heart and lungs negative. Abdomen much distended, with a large amount of free fluid, which moved on shifting position. Tenderness was most marked in the right iliac fossa, but was also present in the epigastrium, with some rigidity. Patient vomiting continuously. In view of the previous attacks, the free fluid, distention, vomiting and most marked tenderness in the right iliac fossa, with normal temperature, a diagnosis of probable intestinal obstruction from a band was made, and an immediate operation done.

A long incision was made through the right rectus muscle, showing the intestines moderately distended, and everywhere injected. A large amount of blood-stained fluid escaped from the abdomen and pelvis. No collapsed intestine could be found, no band or adhesion. Scattered everywhere through the abdomen, especially marked in the omentum, were areas of fat necrosis, varying in size from a pinhead to a large pea. The mesentery of the appendix was especially involved, the appendix was large, injected, and was therefore removed. On examining the gall bladder it seemed to be somewhat distended, and possibly to contain a small stone. Examining further, it was found that the pancreas was very large, remarkably tense, standing up from the spinal column like a plaster of Paris cast. The vessels in the small intestine were tremendously engorged, and the intestines somewhat cyanotic, as if there might be pressure on the mesenteric veins from the swollen pancreas. After thorough irrigation with salt solution, the opening was closed and another incision made along the left costal margin. The intestines were packed inward and upward with large gauze sponges, and the pancreas could then be clearly seen, of a deep purplish color, appearing through the peritoneum. About it the areas of fat necrosis were especially well marked. In order to relieve tension a longitudinal incision was made from the median line, avoiding the mesenteric vein, out to the tail of the pancreas. This incision was about four inches long and about three-quarters of an inch deep. No pus was discovered, but the peri-pancreatic tissue was infiltrated with blood, with here and there large areas of fat necrosis. The wound was packed with gauze strips, in order to wall off the pancreas from the rest of the abdominal cavity. A rubber drainage tube was placed in the center of the gauze.

Convalescence has been uninterrupted since then, except for occasional vomiting for a few days. On the 26th, nine days after the operation, a dressing was done under ether, and all of the gauze removed. The pancreas was plainly seen to have diminished about one-third in size. One or two areas of fat necrosis were still visible. Repacked with smaller wicks.

On March 12, twenty-three days after operation, on doing the dressing, two portions of necrotic tissue were removed, one about three

inches long by one-half inch in width. Examination showed nothing but necrotic fat. Since then the wound has been granulating well, and now is marked by a small sinus.

During convalescence the interesting features have been an entire absence of fever, a white count which has never been over 12,000 and has averaged about 8,000; the hemoglobin six days after operation was 80%; blood coagulation, time, six seconds. Examination of the urine, which has been followed closely, showed at first numerous hyaline and fine granular casts, with a slight amount of albumen. On the 23d a large amount of indoxyl, $1\frac{1}{2}\%$ of sugar. This was the only time in which sugar was found in the urine. On the 26, 27th, and 28th small amounts of albumose were present. Skatol and kreatinin increased. At no time have the stools been clay colored, nor have they shown any signs of abnormal intestinal digestion.

The case is reported not simply because the man has recovered, but because the diagnosis of the cause of the pancreatitis is still unmade. The pancreas at present is slightly enlarged, at times somewhat tender. Nothing was removed at the operation, and yet the man has been much better since it than before. The question arises as to whether he had swelling of the duct from infection, or whether a stone were impacted in the ampulla of Vater. This case will be later reported in greater detail.

(To be continued.)

Medical Progress.

REPORT ON PROGRESS OF SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON.

ATTEMPTS AT LEUCO-THERAPY.

LABBÉ¹ reviews the various experimental work that has been done in the line of inducing hyperleucocytosis in animals as a protection against infection. He shows that the induced hyperleucocytosis, while theoretically a powerful means of aiding the natural defenses, is in practice able to confer a preventive protection only and seems to be powerless against already established infection. At the same time, he adds, the hyperleucocytosis induced by nuclein — which is the substance that has been most generally employed — is possibly not intense enough for the desired purpose. It is not to be compared with the hyperleucocytosis induced by disease germs. When we have learned some more efficient means of inducing hyperleucocytosis in animals, it is possible that the results of this leuco-therapy may be applied to man with success.

IGNITION OF ETHER VAPOR BY AN ELECTRIC LIGHT.

Every surgeon thoroughly appreciates the danger of an open lamp anywhere near ether vapor, but it is generally supposed that an electric incan-

descent light is perfectly harmless. To be sure, accidents from this cause are extremely rare, but D. H. Murray² reports an instance in which the ether vapor about a cone, by which a patient was being anesthetized, was ignited when an electric light was turned on near by. The patient's hair was badly singed, but no serious injury resulted. As there was no exposed fire or blaze in the operating room at the time, it was concluded that the ignition resulted from the spark in the electric light, made when the contact took place in turning on the light. It is a possible danger worth remembering.

ON THE FATAL EFFECTS OF CHLOROFORM ON CHILDREN SUFFERING FROM A PECULIAR CONDITION OF FATTY LIVER.

Leonard G. Guthrie³ gives a résumé of a paper written some years ago entitled "On Some Fatal After-effects of Chloroform on Children," as an introduction to the present article. In the ten cases reported in the previous article it was not proven that death was not due to carbolic acid poisoning. In this article four cases are added which he thinks throw light on the original ten recorded in the earlier paper. He says the additional cases seem to prove the following: (1) That neither carbolic acid poisoning nor fat embolism will account for these mysterious fatalities. (2) That the severity of the operations has little if anything to do with the cause of death. (3) That the only pathological condition commonly found after death is a peculiarly intense fatty degeneration or fatty infiltration of the liver. This condition was found in five of the first series and in three of the second series of cases. It was not noted in three of the first series, and in three of the second series of cases. It was not noted in three of the first series, but in these a microscopical examination was not made. Of the remaining three one recovered and in two permission for a post-mortem examination was refused. (4) The only other circumstance common to all the cases was that chloroform had been administered some hours or days before death. We are therefore driven to seek an explanation in the morbid state of the liver, which was demonstrated in 8 out of 14 cases, and can therefore not be regarded as a pure coincidence, and also to inquire again what part (if any) was taken by chloroform in producing it.

RESEARCH WITH RADIUM RAYS.

London⁴ used for all his tests 30 mg. of radium bromid in a rubber and metal box with a mica cover. He found that radium rays are able to kill mice without direct contact. Twenty-one grown mice and six controls were placed in glass vessels, three or four in each, and the box of radium was laid on the cover of the vessels for one to three days. The controls were lively at the end of the fifth day, but the other animals were all dead by this time. The symptoms noticeable

² N. Y. Med. Journ., June 27, 1903. Med. News, July 25, 1903.

³ Lancet, July 4, 1903.

⁴ Berl. klin. Wchnschr., last indexed xl, p. 1791. Journ. Amer. Med. Ass., Aug. 8, 1903.

¹ Presse Méd., Paris. Journ. Amer. Med. Ass., Sept. 12, 1903.

about the third day indicated depression of the cerebral nervous system at first, followed by arrest of the functions of the cerebro-spinal system in four to nine hours. The most profound anatomic alterations were in the skin and cerebral cortex. He further refers to the fact that if a stick of sealing wax is rubbed with flannel, scraps of tissue paper will cling to it, but he found that if the wax were passed over the radium box after being rubbed the tissue paper was not attracted to it. On the human skin the rays induced a so-called "cold gangrene" in tests on himself and his assistant. The lesions were so peculiar and characteristic that they must be designated as dermatitis radiogenes. He also states that arterial blood became dark-colored under the influence of the rays. In his tests on blind subjects he found that they perceived a visual sensation when the radium was applied to their eyes, but this occurred only in those subjects who still retained a certain perception of light. The blind who had never experienced the sensation of light afforded negative or contradictory results. Blind subjects still able to distinguish between light and darkness were able to see in outline dark objects held against the fluorescent screen lighted by the radium rays. Two lads, blind from atrophy of the optic nerve, were thus able to learn by the silhouettes all the letters of the Russian alphabet and make out entire words. He also states that he found certain persons who were able to tell—by the visual sensation experience—when the radium was brought close to the back of their heads, but only when approached to a certain point. He suggests that this may possibly be the result of excitation of the visual center at this point by the rays. The visual impression is perceived from the radium rays even when the eyes are closed, bandaged and covered with three or four superposed hands. His concluding statement is to the effect that it is possible to examine articles through the microscope in a dark room with merely the light from a good screen under the influence of the radium rays. His research was conducted at the Institute for Experimental Medicine at Berlin.

SUTURE OF HEART.

Wolff⁵ states that 39 cases have now been recorded of suture of the heart, and the results indicate that suspicion of a stab wound of the organ imposes operative intervention, even in the absence of vital indications, as a prophylactic measure. On the other hand, wounds from firearms may be treated expectantly. In the former cases the pleura has almost invariably been opened and, therefore, it is not necessary to operate extrapleurally. The pericardium should be sutured, the tampon used only when the wound is infected. The button suture has proved most effective; the threads tied during the diastole. The left ventricle is most favorable for an operation of this kind, as the patients are not so liable to bleed to death on the spot. The case reported

by Pagenstecher confirms Bode's experimental research, demonstrating that the nourishment of the heart does not suffer materially after ligature of a coronary artery. Wolff reports three cases of suture of the heart with two recoveries, and states that this brings the total on record to 42, with 17, that is 40.4%, recoveries. Only one was a firearm wound. Fischer's statistics showed that only 10% recovered in the unoperated cases. Wolff adds that intervention may be necessary and successful even in the absence of an external wound, as witness a case described in the *Lancet* in 1897. A young man was kicked in the breast at football. Unconsciousness persisted and the heart dullness kept on increasing. The pericardium was incised and found filled with blood, but bleeding from the heart had ceased. After the blood had been drained away the young man was fully restored and was able to join in the game again.

STATISTICS OF OPERATIVE-TREATED ANEURISMS.

This communication of Jakobsthal⁶ issues from Braun's clinic at Göttingen. In the first part the history of operative treatment of idiopathic aneurism of the subclavian is reviewed, with a bibliography of 94 references and 21 new cases collected since Souchon's statistics of 81 in 1890. In the 21 new cases there were 17 men and 1 woman; the right subclavian was affected in 12 and the left in 5. In 19 cases followed for sufficient length of time 13 were permanently improved and 3 definitely cured. Treatment by distal ligature has 3 improvements out of 5 to its credit; proximal ligature, 5 out of 7; both distal and proximal, 1 out of 2 and extirpation, 3 cures out of 4 cases. The general conclusions of the work are that extirpation is the ideal method of treatment. It not only guarantees a radical cure, but also prevents the pains liable to occur after the aneurism has been obliterated by thrombi. Extirpation is not practicable if the walls are thin and pulsating unless the aneurism is very small and free from adhesions, or if large, is partially obliterated with thrombi. In case the aneurism is adherent to the clavicle and subclavian vein, the parts involved must be resected too. When extirpation is impossible, proximal ligature is next advisable. If the contents of the sac do not become solid after central ligature, a distal one should be applied. The latter alone offers little prospect of a cure. In case operative treatment is impossible, Macewen's method of introducing needles and scratching the walls certainly deserves attention, as it proved successful in one case in his experience. As a last resort, electrolysis and "filipuncture" might be tried. Each has one case of improvement to its credit. Judgment is still in suspense in regard to the efficacy of gelatin injections.

The second part of the work is devoted to aneurism of the aorta, reviewing 13 new cases in addition to the 34 previous statistics. In 10 the thoracic aorta was involved and in 3 the abdomi-

⁵ Deutsche Ztschr. f. Chir., Berlin. Journ. Amer. Med. Ass., Sept. 19, 1903.

⁶ Deutsche Ztschr. f. Chir., Berlin. Journ. Amer. Med. Ass., July 25, 1903.

nal. The results of operative treatment demonstrate that simultaneous ligation of the right carotid and subclavian in case of aneurism of the ascending aorta cannot be considered a particularly dangerous operation. In a number of cases it was followed by improvement in both the subjective and objective symptoms. The same remarks apply also to ligation of the left carotid or simultaneous ligation of the left and subclavian in case of aneurism of the arch. Reports of the ultimate outcome of the cases on record are needed before final judgment can be passed on this operative treatment.

ENTEROSTOMY FOR DRAINAGE AND NOURISHMENT.

An interesting paper on this subject, by Finney and Pancoast, appeared in *American Medicine*, Philadelphia, Aug. 22, 1903.⁷ After the loop of bowel is brought out and opened, a rectal tube is inserted first in one direction and then in the other, for several feet each way. This allows escape of gas and feces with less risk of soiling the peritoneum than by other methods. The special indications for enterostomy considered in the article are as follows: (1) Temporary drainage of a distended intestine, allowing it to regain its normal tone in cases of functional paralysis of the bowel of septic or other origin, especially in those cases following appendicitis with peritonitis. (2) To enable one to nourish a patient whose stomach and rectum are for any reason irritable and unable to retain or absorb a sufficient amount of nourishment. The operation of enterostomy, when quickly done under local anesthesia, is a comparatively slight one, and causes little disturbance to the patient. The relief afforded thereby often enables him to withstand, later, more radical measures. The amount of fluid that can be given in twenty-four hours by this means and retained is surprisingly large. Finney calls attention not only to the advantages of relieving the distended intestine, but insists that the intestinal fistula once established should be looked on more as a mouth than as an anus. It should be used for irrigation of the intestinal canal, for the nourishment of the patient and for the introduction of cathartics. He has often noticed that food introduced into the intestinal canal through the fistula had of itself a stimulating effect on peristalsis. He reports seven cases in detail, some followed by postmortem examination, as the enterostomy was undertaken as a last resort. It always caused great relief and postponed the inevitable fatal termination, and saved several otherwise doomed patients. The fistula usually closes spontaneously.

(To be continued.)

THE VALUE OF THE FINGER-JOINT. — Five hundred dollars is the value placed on a man's finger-joint by a jury at Newark, N. J. Henry Klein, a hatter, in Newark, was the plaintiff. While at work on Sept. 21, 1902, Klein's left hand was caught in a forming machine, and one finger was so badly crushed that it was necessary to amputate it at the first joint.

⁷ Journ. Amer. Med. Ass., Sept. 5, 1903.

Reports of Societies.

AMERICAN GYNECOLOGICAL SOCIETY.

PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL MEETING,
HELD IN WASHINGTON, D. C., MAY
12, 13 AND 14, 1903.

(Concluded from No. 15, page 409.)

PRESIDENT'S ADDRESS.

This was delivered by the President, Dr. JOSEPH E. JANVRIN of New York City.

After paying fitting tributes to Dr. John Byrne, Dr. T. Gaillard Thomas and Dr. Edward W. Jenks, he discussed the subject-proper of his address, namely,

SURGICAL TREATMENT OF EARLY DIAGNOSED CANCER OF THE UTERUS, MORE ESPECIALLY BY HYSTERECTOMY.

He pointed out the conditions in which vaginal and abdominal hysterectomy held out good hopes for a radical cure; also the conditions in which the operation held out some prospects of a radical cure, and certainly a prolongation of life with a more comfortable existence than could possibly be hoped for if hysterectomy was not resorted to.

He took up the development of cancer in and from the cervix. His own observations as to the extension of epithelioma beginning in the cervix are as follows: (1) Up and into the cervical canal; (2) up and into the uterine body; (3) to the tissues surrounding the cervix, the parametrium especially; (4) downward upon the vaginal mucosa, and after a certain time through the mucosa into the wall itself.

The author, after quoting freely the statistics of other writers, both European and American, regarding cancer of the uterus, stated that his own statistics up to Jan. 1, 1899, were as follows: Abdominal and vagino-abdominal hysterectomy: 12 cases, 2 cured, more than eight years having elapsed since operation; 6 recurrences; 4 deaths from operation, 2 from shock, one from septicemia, and 1 from uremia; percentage of cures, 16.6. Vaginal hysterectomies: 38 cases, 10 permanently cured; 15 recurrences; 4 deaths from operation; 10 lost sight of after a few months; percentage of cures, 26.3. Total number of cases, 50; 12 cured; general percentage of cures, 24.

He believes that vaginal hysterectomy, with removal of as much parametrium as is possible by this method, and also the removal of the upper half inch or more of the vagina, will accomplish just as much as any other method, and at the same time carries with it the least danger as an operation *per se*, for it is extremely rare that a patient succumbs to this operation. It was by following out this rule that the statistics of his own cases up to January, 1899, have been so favorable. During the past four years he has extended the field of operation for the purpose of removing a highly offensive local condition, and in that way making a longer lease of life

more comfortable to the patient and less offensive to herself and to her friends.

DR. THADDEUS A. REAMY of Cincinnati, Ohio, read a paper on

CARCINOMA OF THE CERVIX UTERI.

Among other things, he stated that spontaneous recovery from carcinoma does not occur. Unequivocal recovery lasting from ten to twenty-five years of two cases following removal of the diseased and adjacent tissues proves the curability of carcinoma of the cervix and also its local origin. The author reports six cases of carcinoma of the cervix uteri. No. 1 was operated upon eighteen years ago, and is in good health to-day; No. 2 has gone nine years without recurrence of the disease, and No. 3, fifteen years without recurrence; twelve years have elapsed without recurrence in Case No. 4; in No. 5 eighteen years have elapsed since removal without recurrence; and No. 6 has gone twelve years without recurrence.

DR. REUBEN PETERSON of Ann Arbor, Mich., followed with a paper on

PRIMARY CARCINOMA OF THE VULVA.

He reported four cases of primary carcinoma of the vulva. He presented a résumé of the literature of the subject, and the conclusions drawn therefrom. The cases were narrated in detail. He spoke of the frequency as compared with other carcinomatous conditions of the genital tract, and discussed at length the diagnosis and symptomatology. In considering the operative treatment, he spoke of the advisability of removing the inguinal glands. If carcinoma of the vulva is seen and treated early enough, good results can be obtained. Veit quoted Schwartz as having ten permanent recoveries out of twenty-three cases. While this may be overstating the fact, it is unquestionably true that there is much more hope of cure in cases of carcinoma of the vulva after the radical operation than after the most radical operations for carcinoma of the uterus.

DR. GEORGE M. EDEBOHLS of New York City read a paper on

RENAL DECAPSULATION FOR PUERPERAL ECLAMPSIA.

This operation for puerperal eclampsia of renal origin is the logical outcome of the encouraging results following the author's operation in cases of chronic Bright's disease. The author said he has successfully performed bilateral renal decapsulation for puerperal eclampsia upon a primipara two days after a forced delivery. The convulsions began before labor, and continued until the time of operation, the patient having a convulsion while under chloroform on the operating table. This operation, performed on Feb. 17, 1903, is believed to represent the first instance of renal decapsulation, or, for that matter, of any operation upon the kidney or kidneys ever undertaken for the cure

of puerperal convulsions. The favorable results, both immediate and remote, in this case, full details of which are given in the paper, at once assign a place to renal decapsulation as one of the resources at the command of the profession in the treatment of puerperal eclampsia. He said a woman who is suffering from uremic convulsions is entitled to the positive benefits of decapsulation whether pregnant, in labor or in puerperium.

The following topic was discussed in a series of papers:

SHOULD THE UTERUS BE REMOVED WHEN THE OVARIES AND TUBES ARE REMOVED IN CASES OF DOUBLE PYOSALPINX, WHEN OPERATING EITHER THROUGH THE ABDOMEN OR THE VAGINA?

DR. ANDREW F. CURRIER of New York City, in his paper, stated that if this is proposed as a matter of routine, he would reply emphatically, no. If it is proposed as an expedient, when the uterus itself is diseased extensively, he would say Yes. It may also be removed if it has been greatly injured in the extrication of the appendages, or if it should seem to be required as a means of controlling troublesome hemorrhage. To remove the uterus in a young woman may possibly produce an unfavorable mental effect as a consequence, near or remote. To remove the uterus of a woman near, at or past the menopause, might add an element of risk to the operation. To remove the uterus might weaken the pelvic floor and introduce an element of danger from enterocele. To remove the organ unnecessarily is bad morally, for it tends to establish the impression of the unimportance of the organ, and that it may be unhesitatingly extirpated by any one who has the requisite skill. To remove the uterus on the ground that it may possibly be the seat of malignant disease in the future is assuming more than the clinical history teaches in the great majority of cases, and is, moreover, a reproach to surgery, making it destructive instead of conservative.

DR. PHILANDER A. HARRIS of Paterson, N. J., stated that when suppuration has become well established in both tubes their exsection is the only operation which can be relied on to effect a cure. By exsection is meant the removal of the lumen of the tube to the uterine mucosa. Less radical operations, as hemisection and disinfection of the ampulla and larger portions of the tube, probing and washing of the tube and amputation of distal portions of pus tubes, are incomplete operations, and are proportionately unsuccessful in that they leave behind a diseased sinus, which not only continues to exist, but is productive of discomfort and other ill consequences to a greater or less extent. In bilateral exsection of double pyosalpinx, sufficient ovarian stroma may be left to influence and continue menstruation in at least 95% of any large class of cases operated upon. The ovaries frequently participate in suppuration, which they derive from pus tubes. But in them suppuration is more easily terminated,

and exsection is not advised excepting for extensive abscess of the ovary at the time the tubes are exsected, or a belief or knowledge that the suppuration in the ovary is tubercular in character. Simple excision of double pyosalpinx affords the maximum degree of relief, with a minimum of mutilation and interference with the functions of the pelvic organs. The complaints arising from the existence of endometritis often cease after simple exsection of double pyosalpinx. If the symptoms of endometritis continue and greatly harass the patient, the uterus may be removed by vaginal section. The price of removal of the uterus in every case of double pyosalpinx may be partly estimated by the following results: (1) Loss of menstruation in every instance. (2) Partial or complete extinction of the sexual quality in a large proportion of the cases, together with incomplete physical capacity for sexual participation. (3) Injury to the nervous system of the patient, arising from her knowledge and appreciation that she has been prematurely and possibly unnecessarily deprived of these and other qualities which render her physically and, to a certain extent, morally inferior to other women.

DR. I. S. STONE of Washington, D. C., stated that no organ should be removed unless it is absolutely necessary. In a large majority of cases the pus found in diseased adnexa is sterile. It follows that the chief element of danger from sepsis is eliminated, and the uterus is not the seat of dangerous microbial infection. The exception to the above rule may be found in puerperal infections. When purulent adnexa are removed, the uterine cornua should be excised, and the uterus permanently sealed, and thus made a barrier against further infection and also to permit effective treatment addressed to the uterine cavity, if necessary. Hysterectomy requires additional time, causes further traumatism and necessitates changes in the anatomical relations of the vagina, bladder, etc. If necessary to drain the pelvis by way of the vagina, the usual route through the cul de sac posterior to the uterus answered every purpose; finally a number of women object to pan-hysterectomy, and besides the question of its effect upon the mental status of the patient is *sub judice*.

DR. MATTHEW D. MANN of Buffalo, N. Y., said that the almost sole cause of pus tubes is gonorrhea, though there may be a mixed infection. The uterus is usually infected and may make trouble afterwards and be the cause of spreading the infection. The uterus is no longer of any use. Menstruation does not always stop after the removal of the tubes and ovaries, and if it remains, it might become excessive and cause trouble. The uterus might become the seat of cancerous disease. In acute infection the removal of the uterus affords the best means of securing drainage. The results by the vaginal route, where the uterus is always removed, warrant its removal by the abdominal route. The woman's sexual life is unaffected by the removal of the uterus. The additional time taken for

its removal is more than counterbalanced by the securing of good drainage.

DR. CHARLES P. NOBLE of Philadelphia, Pa., said that of hysterectomy for circumscribed pus limited to the uterine appendages, that is, pyosalpinx or abscess of the ovary, he has had fifty-eight cases, one death, a mortality of 1.7%. Of hysterectomy for intraperitoneal abscess, in addition to pus in the uterine appendages, he has had six cases, four deaths, a mortality of 66 $\frac{2}{3}$ %. Of appendages removed for circumscribed pus contained in the tube or ovary, that is, pyosalpinx or abscess of the ovary, seventy-six cases, seven deaths, a mortality of 9.2%. Of appendages removed for circumscribed pus contained in a tube or ovary since Jan. 1, 1895, thirty-six cases, two deaths, a mortality of 5.5%. Of appendages removed for intraperitoneal abscess in addition to pus in ovary and tube, twenty-two cases, five deaths, a mortality of 22.7%. Incision and drainage for pelvic suppuration, fifty-eight cases, one death, a mortality of 1.7%.

DR. J. WESLEY BOVEE of Washington, D. C., read a paper on

URETERO-CYSTOTOMY.

He narrated the history of this operation, pointed out the indications, discussed the diagnosis, routes and methods of operation, complications, technique, after-treatment, detailed histories of cases and gave the results.

DR. WALTER P. MANTON of Detroit read a paper on

OCCURRENCE OF GALLSTONES IN INSANE WOMEN.

He stated that cholelithiasis is of frequent occurrence among the insane women, but that symptoms are usually wanting, so that statistics must be obtained solely from autopsy findings. From his experience at the Eastern Michigan Asylum he finds that gallstones are present in rather more than 26% of the patients dying at that institution, in whom the abdominal contents was examined. The paper was intended only as a small contribution to the knowledge of the subject, and as preliminary to more extensive study of gallstones in insane women at some future time.

EXCISION OF THE PROXIMAL ENDS OF THE FALLOPIAN TUBES AT THEIR ORIGIN IN THE UTERUS THE OPERATION OF CHOICE FOR THE EXTREMELY RARE CASES WHEREIN STERILITY IS DESIRABLE.

DR. PHILANDER A. HARRIS of Paterson, N. J., read a paper with this title. The object of this operation is to take the place of the Porro operation, the bilateral removal of the ovaries, or to take the place of bilateral excision of healthy tubes. Menstruation would not be sacrificed. Every advantage arising from retention of the ovaries would be preserved to the individual, excepting the single item of impregnation. Tubes thus disconnected from the uterus would probably remain immune from future gonorrheal infection of the endo-

metrium. A patient thus sterilized can doubtless be cured of her sterility by implantation of the tubes through the uterine cornua to the uterine cavity. While there are doubtless cases which are characterized by certain conditions of the body, mind or nervous system, calling for the voluntary production of sterility, there must necessarily be a very limited field for the employment of this operation. If a case is to be surgically sterilized, it should be effected in such manner that the patient and her friends may feel that she can be restored to fertility, should the pathological factors of her case so abate or disappear as to render impregnation and pregnancy permissible. No attempt was made by the author to present the indications for an operation which would produce sterility for temporary purposes, although such instances are believed to be within the range of possibility, and if so, emphasized the advantage of doing the primary operation in the manner proposed.

PERSONAL EXPERIENCE IN OPERATIONS UPON DIABETIC PATIENTS.

In a paper on this subject, DR. CHARLES P. NOBLE of Philadelphia stated that of the seven patients operated upon by him six made good recoveries and one died of diabetic coma. In the six remaining cases the healing of the wounds and the general progress of the patients toward recovery were not different from that in patients not the subject of glycosuria.

In looking up the literature of the subject, he has been able to add to his own list sixty-two cases of operations upon diabetics, upon those organs of the body which are the special field of the gynecologist and abdominal surgeon, making a total of sixty-nine cases.

The contraindication to operation was strongest in those patients suffering markedly from the constitutional symptoms of diabetes — poor nutrition, wasting, intense thirst and morbid appetite.

OFFICERS FOR THE ENSUING YEAR.

The following officers were elected: President, DR. EDWARD REYNOLDS of Boston, Mass.; First Vice-President, DR. J. WHITRIDGE WILLIAMS of Baltimore, Md.; Second Vice-President, DR. EDWARD P. DAVIS of Philadelphia, Pa.; Secretary, DR. J. RIDDLE GOFFE of New York City, re-elected; Treasurer, DR. J. MONTGOMERY BALDY of Philadelphia, Pa., re-elected. Place of meeting, Boston, Mass., fourth Tuesday in May, 1904.

THE AMERICAN ASSOCIATION OF GENITO- URINARY SURGEONS.

SEVENTEENTH ANNUAL MEETING, HELD MAY 12, 1903,
WASHINGTON, D. C.,

PAUL THORNDIKE, M. D., of Boston in the chair.

THE PERMEABILITY OF THE URETHRA FOR CERTAIN SILVER SALTS.

DR. EDWIN C. BURNETT of Boston read this paper. He said that during the past four months he had undertaken a series of experiments to determine, if possible, the permeability of the urethral mucous membrane for certain silver salts, and although he had not concluded them, the results thus far had been so uniformly alike that he felt justified in presenting them to the society as a preliminary report. Argyrol was the salt he had experimented with. As this salt was very soluble and readily washed from animal tissues, it was necessary to find some means of precipitating it in an insoluble form in the tissues and, at the same time, to have the precipitate distinguished from tissue elements by its color; a solution of hydrogen sulphide slightly acidulated with hydrochloric acid was found well adapted for this purpose. This produced an insoluble black stain of dead tissues that had first been immersed in solutions of argyrol. In the first series of these experiments the urethrae of dogs were injected with solutions of the salt, the strength of which varied from 1% to 5%. This was repeated for six days, and on the last day, after washing the urethrae thoroughly from the argyrol so that no postmortem staining could take place, the urethrae were removed. The tissues were then immersed in a solution of hydrogen sulphide to fix the silver taken up by the cell, and was then prepared for the microscope. In the next series of cases silver nitrate was used. In the third series rabbits were used instead of dogs. In all the experiments the results were the same. It was found that the silver solutions did not penetrate, only the upper surface of the top layer of cells showing a trace of silver in the form of a thin black line of silver sulphide, the result of the reduction of the residue of the two silver salts by the hydrogen sulphide left after washing.

INFECTION OF THE PROSTATE.

DR. JOHN VAN DER POEL of New York said that the element of infection of the prostate should be more often considered because, in a large number of cases, the posterior urethra becomes infected and more quickly than is generally supposed. The statistics regarding this varied from 10 to 90%. Frank of Berlin gave 33%. In 190 cases which Dr. Van der Poel reported a year ago last June, he reported evidences of posterior urethritis in 39%. This condition should not be lightly overlooked and, although in all cases symptoms were not given, such a condition might exist and then extend to the prostate. Cloudy second urine and frequent micturition came on, however, in a large number of cases at the end of the first week, but he thought it a mistake to always trust to this test, as it sometimes may not be present. The prostate itself, he said, became infected in those instances when the posterior urethra was infected in almost 100%. This could not be always proven by the

obtaining of the gonococci from the prostate itself, although it could be in many instances. He said the method of simply irrigating the anterior and posterior urethra before massage and then obtaining the prostatic fluid from the meatus for examination for gonococci was open to question. The more correct way would be to obtain the fluid direct from the prostatic duct through the endoscope after thorough irrigation, though this was impracticable for obvious reasons in many cases. When once the gonococci reach the prostatic gland he said it was almost impossible to say how soon we were going to get rid of them. Massage would accomplish a great deal, but we were unable to get at the entire gland in this way, although we could empty the lateral lobes to a greater or less extent in those cases where the prostatitis was simply catarrhal or follicular in form. He believed we should differentiate between the different forms of prostatitis. That the gonococci might enter the parenchyma of the gland in a short time had been proven by many observers, and after having once obtained a foothold it was a very difficult question to say how soon we were going to get rid of them. If they were confined to the ducts of the gland (a simple catarrhal prostatitis) or to the follicles, we might be able to get rid of them by massage. He said, therefore, that we should not forget that in about one-third of the cases there will be shown a posterior involvement, and that it might be taken for granted that the gonococci would extend directly into the prostate in many cases; that, when once in the prostate, they often get into the parenchyma of the organ, and this fact explained why a great many cases did not permanently respond to any of the silver salts, and why reinfection, or more properly auto-infection, of the urethra was so frequent.

A CASE OF STRANGULATION OF THE TESTIS DUE TO TORSION OF THE CORD.

DR. ARTHUR TRACY CABOT of Boston read this paper. He said that such cases were extremely rare, Dr. Scudder being able to find only thirty-two cases in literature. The patient was twenty-six years old. One morning, without previous injury or disturbing case, he was suddenly seized with a severe paroxysmal pain in the center of the lower abdomen, close above the pubes. He was pallid, nauseated and covered with sweat. In the afternoon he was so much better that he got up from bed. For two days following, the pain was more or less severe and there was an increase in the size of the testicle. Antiseptic fomentations not giving relief, operation was decided upon. The tissues were thick and edematous. A little blood-stained fluid escaped from the tunica vaginalis when opened. The testicle was black, mottled with plum color. The cord was slightly twisted, the rotation being from within outwards. One complete twist of the cord untwisted it. The mesorchium was not long, and the cord was tightly wrapped about it. The testicle was in a gangrenous condition,

and had to be removed. Convalescence was uninterrupted.

DR. RAMON GUITERAS of New York reported an interesting experience he had while operating upon a case of varicocele; he found a complete twist of the cord and yet the patient had never felt any pain.

DR. VAN DER POEL of New York said that he thought there were a great many instances in which the cord might become untwisted or be untwisted by the patients themselves, without their being aware of it. In the *New York Medical Record*, June 15, 1895, he reported a case occurring in a medical student who had had an undescended testicle at birth, though at two years it came down to the upper part of the scrotum. Suddenly, when he was twenty-one years old, he experienced a sharp pain along the cord, with more or less abdominal tenderness, which ran down into the testicle. He did not know the nature of his trouble, and continued to work until obliged by the pain to remain quiet. After some manipulation of the parts for two or three hours the pain was relieved. He had similar attacks at intervals of from once in six months to twice in twenty-four hours, which seemed to come on without any known reason both during the day and night, but they were more frequent when he was up and about. Soon the true nature of the attack became evident. He found that he had a true twist or torsion of the cord, and that he could untwist it himself. When he now has these attacks he simply untwisted the testicle from within outwards, and so is relieved. The torsion was upon the right side. Upon examination he found the testicle hugging the upper part of the scrotum, and that it was not well developed, and that it could be twisted about one and a half complete turns without pain, and that when turned for another quarter it would remain in that condition, then become painful, and swelling of the cord at once began.

(To be continued.)

Recent Literature.

The Prevention of Disease. Translated from the German with Introduction by H. TIMBRELL BULSTRODE, M.A., M.D., D.P.H., Med. Dept., H. M. Local Government Board. 2 v. New York: Funk & Wagnalls Co. 1903.

Vol. I has thirteen chapters, to which nine German writers contribute. Vol. II has eight chapters, to which nine writers contribute. The first chapter is devoted to a history of the prevention of disease. Then follow articles on general prophylaxis, and prophylaxis as applied especially to separate organs, systems or tissues. The term "preventive medicine" is associated in the minds of most people with the work of legislatures and boards of health. This book seeks to extend the term more precisely to personal prophylaxis and to other pathological conditions than those due to contagion or infection. It is intended for the use of the medical profession.

THE BOSTON

Medical and Surgical Journal

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OVERCROWDING OF THE PROFESSION.

In a recent number of the *New York Medical Journal* a signed editorial from the pen of Andrew F. Currier has appeared, on the subject of "Medical Practice as a Means of Livelihood." That this is a matter of vital importance to many practicing and prospective physicians is self-evident, and it is also apparent that more or less artificial means of regulating the situation are not likely to meet with the least success. Dr. Currier makes the following statement: . . . "I believe that every man who has intelligence enough to get a medical degree at the present time ought to be able to reckon with confidence that he will gain a comfortable living from it. Since there are so many who do not, ought we to encourage any but the exceptionally gifted or the exceptionally situated as to opportunity and means, to enter it? I think not."

He suggests two remedies. First, that other avenues of work than strictly medical practice should be cultivated, such, for example, as positions on health boards, and also that hospital positions, which indirectly lead to practice, should be so regulated that they could not be held indefinitely. A second remedy is suggested of limiting by legislation the yearly number of medical graduates, to the end of allowing the chosen few a broader and hence more lucrative field for their professional work.

We are not inclined to agree with this point of view. In the first place the world owes nobody a living, and there is certainly no good reason why every man who receives a medical degree should reckon with confidence upon a comfortable income simply because he has passed with success through the four years of a medical

course. Nothing to our way of thinking could be more detrimental to the cause of medical progress than the assurance on the part of young graduates that four years of study, however arduous and successfully performed, are a guarantee of future success. The standard of admission to our medical schools, and the requirements after admission, may with justice be raised to any reasonable degree, but here the responsibility of the school stops.

There can, however, be no objection to the cultivation of lines of work not strictly medical by men primarily trained for practice. In fact, it is one of the hopeful signs of the times that physicians of good preliminary training are more and more taking up collateral branches, to the good, no doubt, of all concerned, thereby spreading the gospel of sound medical doctrine into various fields of work. Insurance companies, corporations burdened with numerous damage suits for personal injuries, manufacturing chemists, quarantine stations, hospital superintendencies, as well as health boards, are all affording physicians of good standing an opportunity beyond the scope of ordinary practice for the gaining of a livelihood. The more widely such work is undertaken by properly equipped medical men, the more surely will the dignity of the profession be elevated and its influence widened. That the medical school of the future will become a place of training for men who have no idea of practicing their profession in the ordinary sense of the term is becoming every day more evident. When we bewail the overcrowding of the profession, this fact should always be taken into account that there is an increasing number of positions to be filled, and that there is continually a demand for competent men for such positions. It is evident that we cannot all do as our forefathers have done, but, on the other hand, we, as physicians, may do many things which were not even thought of by them, and until we have done all these things well, it is hardly worth while to bewail the number of our competitors.

The suggested remedy of limiting the number of doctors by legislation is of a piece with limiting a man by law in the exercise of his freedom of action. We question whether so autocratic a proceeding is countenanced in any civilized country, and it certainly can never be with us. As already suggested, medical schools may and should continually raise their standards, but this is quite different from an attempt to legislate a man out of a profession for which he believes

himself fitted. Remedies for legitimate competition are not easy to find, nor are they to be in the least encouraged. The saving grace of medical practice, as of every other intellectual pursuit, is the freedom of its competition, and the fact that one can neither buy nor legislate himself into a position of authority. It is quite inevitable that many should go to the wall in medicine, as in other callings, which may be unfortunate for the individual, but is none the less essential to the future development of medicine as a profession calling for keen intellect and constant endeavor. Well worn as the adage, "room at the top" may be, it continues to have a very large element of truth. What happens to the great majority at the bottom in medicine, as in everything else, is certainly not a subject for legislation.

THE INOCULATION OF A CHIMPANZEE WITH SYPHILIS.

At the meeting July 28 last, of the French Academy of Medicine, Messrs. Roux and Metchnikoff presented a communication concerning some experimental researches upon anthropoid apes.¹ The most important of these investigations relates to the inoculation of a young female chimpanzee with syphilitic virus. Twenty-five days later this was followed by the development at the point of inoculation of an indurated sore. The development of this sore was followed in a few days by a bubo. Monsieur Fournier, who was asked to examine these manifestations, stated his opinion that they responded in all respects to the characteristics of the chancre and the bubo as observed in man, and in this opinion he was supported by other well-known syphilographers. His lucid exposition was summed up with the phrase, *Rien ne manque au tableau* — nothing is wanting to the picture. Before affirming that the important question of the possible inoculation of animals with syphilis had been definitely and affirmatively settled, he preferred at that moment, with scientific caution, to await the subsequent appearance of secondary or constitutional manifestations. This caution some of his colleagues seemed to regard as excessive, and were disposed to regard the question as already answered.

However this may be, we are now informed by a most competent witness that when he was in Paris about a month later, Metchnikoff sent one of his assistants to show him the chimpan-

zee. At that time the primary sore was healing, but skin lesions were pointed out to our informant as beginning to appear. In conclusion, the daily press published about ten days ago a cable from Paris announcing the death of this chimpanzee, and stating that she "succumbed to the malady" induced by the inoculation. Of this last statement we await confirmation. It is also stated that five other chimpanzees are being subjected to investigations having the same object in view.

The chimpanzee is one of the most anthropoidal, if not the most anthropoidal, of the monkeys. It is a somewhat rare and costly animal, and Messrs. Roux and Metchnikoff have been enabled to pursue these experiments by means of funds supplied through the agency of the Institute of France and the Fourteenth International Medical Congress. Similar inoculations have been attempted many times by others upon the lower orders of monkeys and upon other animals, but hitherto without definite results. The nearer relation of this particular monkey to man seems to be the qualifying difference, for the inoculations were not surrounded by any especial or exceptional precautions. One is led to conclude that the blood of the chimpanzee, from the point of view of the precipitation and agglutination of its serum, has close affinities to the blood of man.

M. Fournier sees in the success of these experiments, and in the possible inoculation of animals with syphilis, new and splendid horizons opening themselves before the syphilographer — the study and probable solution of many different problems, and among such those of therapeutics, of immunization, of vaccination. It is possible, he thinks, that we view the dawn of one of those discoveries, of which several have in the past come from the laboratory of Pasteur, which constitute at once a distinguished honor to science and a vast benefit to the human race. For the realization of such a prospect must we deplore the sacrifice of these apes!

NEW OUT-PATIENT DEPARTMENT, MASSACHUSETTS GENERAL HOSPITAL.

It is fitting that the formal opening of the new Out-Patient Department at the Massachusetts General Hospital, together with the inspection of various other recent additions to the hospital, should be held on "Ether Day," October 16, a day so closely associated with the history of the institution. Invitations have been

¹ Bull. de l'Acad. de Méd., No. 30, 1903.

sent by the trustees of the hospital to the friends of the institution to inspect on that day the new building for out-patients, which has recently been completed and put in service.

To those who have not recently paid a visit to the hospital this will afford an opportunity to see the very great changes and improvements which have taken place within the last few years. It is difficult for a hospital to keep pace with the demands made upon it for medical and surgical treatment, but there can be little doubt that this really elaborate out-patient building will for many years completely fulfill its function. For a number of years the old building in which ambulant patients were seen had proved wholly inadequate. The importance of work connected with patients not sufficiently ill to be treated in the hospital wards is growing yearly more apparent, and the Massachusetts Hospital has shown a most decidedly progressive spirit in establishing a department which certainly will prove a model for similar departments which are sure to follow in various other large institutions.

We extend our heartiest congratulations to the hospital for the completion of this much-needed building, and we have no doubt that the work done in it will redound still more to the credit of an institution already rich in achievement.

MEDICAL NOTES.

HONORARY DEGREES CONFERRED BY UNIVERSITY OF TORONTO. — At a special convocation, held Oct. 2, 1903, for the purpose of conferring honorary degrees in connection with the opening ceremonies of the new physiological and medical laboratories, the University of Toronto gave the degree of LL.D. to the following men: Dr. Henry Pickering Bowditch, who was unable to be present at the ceremony, Dr. William Williams Keen, Dr. William Henry Welch, Dr. William Osler, Dr. Russell Henry Chittenden and Dr. Charles S. Sherrington.

A PROFESSORSHIP OF ORTHOPEDIC SURGERY. — It is again reported that Mr. J. Ogden Amour intends to found a professorship in orthopedic surgery, to be endowed in the sum of one hundred thousand dollars.

AN OLD STORY IN A NEW DRESS. — The following appears in a recent French journal. It might be added, when the anti-vaccinator changes his opinions, then will "the Ethiopian change his skin and the leopard his spots":

Le Dr. Emmanuel Pfeiffer de Boston, un des plus fervents ennemis de la vaccination, ayant le courage de ses convictions, s'est rendu aux îles Galloupes pour s'exposer à la contagion de la variole; le résultat a été celui auquel on devait s'attendre; le docteur a contracté une variole très grave qui, pendant quelque temps, a mis sa vie en danger. L'expérience faite par cet anti-vaccinateur a eu pour résultat d'activer les lancettes vaccinatrices à Boston. Quant à l'expérimentateur, cela, dit-il, n'a changé en rien ses idées sur la contagion de la variole.

En effet, la difficulté de convaincre un anti-vaccinateur est de trouver un esprit qui puisse s'ouvrir à la conviction. — *Rev. d'Hygiène, August, 1903.*

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Oct. 14, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 46, scarlatina 30, typhoid fever 16, measles 19, smallpox 0.

A WARNING AGAINST SWINDLERS. — An organized attempt at swindling has recently been unearthed in Boston. On the plea of soliciting funds for the Boston Floating Hospital, certain men have approached individuals and succeeded in certain instances in securing money. Such solicitations are not authorized by the authorities of the Floating Hospital, and the public should be warned against giving money except to persons with proper credentials.

NEW YORK.

HOSPITAL BEQUESTS. — By the will of Mrs. Mary Lewis, widow of Col. Edwin P. C. Lewis, and daughter of the late Edwin A. Stevens of Hoboken, N. J., are left, among other charitable bequests, \$3,000 to Christ Hospital and \$2,000 to St. Katharine's Home, both in Jersey City.

ROCKEFELLER APPLES FOR HOSPITALS. — The apples from the many orchards on the estate of John D. Rockefeller, near Tarrytown on the Hudson, which this year produced an enormous yield, are being sent to hospitals and institutions in New York.

REPORTS OF HEALTH DEPARTMENT. — The statistical reports of the Health Department for the month of September show the lowest death-rate of any month during 1902 or 1903, and possibly of any on record. In two of the weeks of the month the rate fell below 16, and the corrected rate below 15. The mortality recorded

represents an annual death-rate of 15.75, as against 17.28 for the month of August and 16.81 for September, 1902. The corrected death-rate, excluding non-residents and infants under one week old, was 15.18. Among the diseases which showed a decline in mortality were the following: The weekly average of deaths from scarlet fever decreased from 6.25 in August to 4.5 in September; the weekly average from measles, from 5.25 to 3.25; from whooping-cough, from 9 to 6.5; from pulmonary tuberculosis, from 145.75 to 133.75; from diarrheal diseases, from 257.75 to 151.5; from diarrheals under two years of age, from 225 to 133.25; from cancer, from 52.75 to 43.25; and from organic heart diseases, from 72.5 to 71. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from diphtheria and croup increased from 24.75 to 28.75; from typhoid fever, from 14.75 to 16.25; from pneumonia, from 51.5 to 61.5; from broncho-pneumonia, from 32 to 36.5; from acute bronchitis, from 16.5 to 27; and from Bright's disease and nephritis, from 84.25 to 91.5.

A CENTENARIAN. — W. H. Seymour of New York City, whose father and uncle were soldiers in the Revolutionary War, died at his country home at Brockport, N. Y., on Oct. 6, at the age of 101 years 2 months and 21 days, having been born on July 15, 1802. The records of the family appear to have been accurately kept, and it is stated that his age with that of his four predecessors in the line amounted to 428 years.

ATTENDANCE AT PUBLIC VACATION SCHOOLS. — It is officially announced that the attendance in the public vacation schools during the past summer was 567,891, as against 405,169 in 1902, while the attendance at the playgrounds provided by the city was 3,346,291, as against 2,194,666 in the summer of 1902.

TENEMENT HOUSES. — In presenting his estimate, on Oct. 8, for the expenses of his department for the ensuing year, Tenement House Commissioner DeForest made the statement that his staff of inspectors have examined 43,580 buildings. During 1902 they supervised the erection of 643 new houses, the estimated cost of which was over \$20,000,000, and the alteration of 1,468 old ones; and during the first six months of the present year, the erection of 699 new houses, at an estimated cost of \$20,837,270, and the alteration of 1,266 old ones. While much has been accomplished in the way of reform, much yet remains to be done. There are still in

Greater New York over 350,000 of the dark rooms, against which the law is expressly aimed, and an unknown number of cellar rooms occupied in tenement houses, which are forbidden as living rooms, as well as of bakeries, which the law proscribes in tenements.

NOTE FROM THE PHILIPPINES.

WORK OF BOARD OF HEALTH. — Summarizing the general sanitary work of the Board of Health during the month of May, the total number of inspections and reinspections of houses amounted to 204,277; and of cascos and other water craft to 2,480. There were 19,854 houses cleaned as a result of sanitary orders, and 431 painted or whitewashed; 649 houses and 22 water craft were disinfected. A total of 15,410 yards were cleaned, repaved or repaired, and the contents of 1,470 cesspools and vaults were removed. During the month 672 sanitary orders were issued, of which 350 were complied with, and proceedings in 17 instances were pending in the courts. A total of 7,598 animals were inspected on arrival at the port; 8,212 were inspected at the abattoir, of which number 21 were condemned. The crematories disposed of 15,543 dead animals and birds, which number included 9,413 rats, and, in addition, 2,121 loads of refuse. The excessive number of animals requiring disposal was due to the loss of animal life in the Santa Cruz fire. There were 17,432 persons vaccinated in the city of Manila, and 125,725 units of vaccine virus issued for use throughout the islands.

Obituary.

WILLIAM JOHNSON DALE, M.D.

DR. WILLIAM J. DALE died at Andover, October 7, in his eighty-ninth year. He had been in poor health for some years and had recently suffered from a cerebral hemorrhage.

He was born in Gloucester in 1815. His father was a surgeon in the War of 1812, his paternal grandfather, Ebenezer Dale, fought at the battle of Bunker Hill, and his maternal grandfather, William Johnson, at the battle of Lexington. He graduated at Harvard College in 1837, and at the Harvard Medical College in 1840. He practiced his profession with success in Boston. In June, 1861, soon after the outbreak of the War of the Rebellion, he was appointed by Governor Andrew surgeon-general of Massachusetts and commissioned with the rank of colonel. Late in that year he was appointed an acting assistant surgeon of the United States Army. In October, 1863, he was promoted by

Governor Andrew to the rank of brigadier-general. All through the Civil War the responsibility for providing proper medical officers for the Massachusetts regiments, the general supervision of all matters relating to the medical staff, the care of the invalided sick and wounded fell upon General Dale. For many years after the war he had charge of the distribution of state aid and of invalided soldiers.

He was an admirable organizer and a first-rate executive, and his duties were discharged with great credit to himself and great advantage to the state, and at the same time with a sympathetic regard for those dependent upon his decisions. An increasing deafness prevented private practice, and gradually interfered with the discharge of his public duties. He resigned his office in 1876, and presently withdrew to the family estate, a farm of about one hundred acres, in North Andover, which had descended in the Johnson family from the original Indian grant in 1636.

Dr. Dale was a handsome man, of large stature and fine presence,—such an one as would anywhere attract attention. He outlived all his family. His only surviving son, W. J. Dale, Jr., who was at one time assistant postmaster of Boston and subsequently a member of the State Board of Railroad Commissioners, died in 1896.

Correspondence.

A LAWYER'S VIEW OF "PRIVILEGED MEDICAL COMMUNICATIONS."

BOSTON, Oct. 2, 1903.

MR. EDITOR: I have read with considerable interest the papers on "Privileged Medical Communications," published in the JOURNAL Sept. 3, 1903. Mr. Stimson makes out a pretty strong case for the law as it stands at present. I do not think, however, the policy of having such communications privileged ought to be condemned because the New York law has worked poorly. I believe that communications between physician and patient ought to be privileged just as much as those between attorney and client. At present the physician and his patient are at the mercy of attorneys who may be unscrupulous and may put in evidence which is immaterial to the issues in a case, solely for the effect to be produced upon a jury. In the excitement of a trial the temptation to do this sort of thing may be pretty great. On the other hand, if such communications are privileged the physician will be the judge whether certain communications made to him by his patient, which may not be material to the case, shall or shall not be disclosed. And the physician being a witness, impartial, and not under the same excitement as an attorney, I think can be counted on to decide the propriety of giving such testimony more fairly than an attorney.

Where confidential communications are by law made inadmissible in evidence, or "privileged," the purpose is to shield the person whose interests are at stake—not to excuse the other party to the communication from divulging it. So in the case of conversations between attorney and client—the privilege of excluding them is that of the client and not of the attorney. The attorney is excused from testifying, not for his own sake, but because his testimony may injure his client. And this is the way in which the New York law operates in the case of physicians. It is the patient who has the power to decide what shall be told and what withheld, and not the

physician. The faults of the New York law are obvious, and outweigh its advantages. It increases the difficulty of defending actions for personal injuries, and this tends to encourage the bringing of such suits for blackmailing purposes. I think few lawyers of standing would favor it.

But a law making medical communications privileged in the interest of the medical profession would stand on a different footing, and would be approved by many members of the legal profession. Such a law roughly should allow the physician to refuse to testify as to matters that in his opinion have no bearing upon the issues raised in the case at bar. Of course, this leaves the physician to pass upon the materiality of the evidence, but the question is one which he is probably better fitted, by reason of his professional knowledge, to decide than the court. He has, supposedly, no interest in the outcome of the case. If he believes justice requires the disclosure he can make it; but if he thinks a question is intended to prejudice a party by dragging in irrelevant matter, he can plead the privilege of his profession, and refuse to answer.

Moreover, there should be exceptions in certain cases, as Dr. Cheever suggests. And yet, his exception, including cases where the patient is unwilling to have the testimony go in, I think, is too far-reaching, because it practically would put the law on the same basis as that in New York. His third exception "to expose crime" is rather too narrow. It would be better to make no change in the existing law so far as it affects criminal cases.

Two reasons suggest themselves for confining the proposed change to civil matters. The first is that in criminal cases the most searching and thorough examination of all evidence should be encouraged; and second, that such legislation being experimental, it is just as well to confine it at the outset within rather narrow limits.

Truly yours,

JOHN NOBLE, JR.

AN OVERWORKED THEORY.

PHILADELPHIA, Oct. 10, 1903.

MR. EDITOR: In reference to your courteous editorial criticism of my article in your columns upon the "Ill Health of Parkman" will you permit me in view of the anomalous condition (criticism by one's own host before the other guests) a few words of reply? The first word of my protest must refer to your commendation of my method as "scientific" and at the same time taking away the essential qualities that make an opinion scientific. If my theory is "carried to an extreme"; if few "follow me"; if my theory is "somewhat overworked"; if my "attitude is extremely radical"; if you carefully abstain from assenting that there is any truth whatever in the "theory"—then of course the theory and its author are not scientific. The essence of science is accuracy in gathering and stating facts and in logical induction from them. To be scientific is certainly to avoid theorizing, extremism, hobby-riding, etc. I have sought to be scientific; I believe I have been; I value at the very highest my own consciousness that I have been, and next to that the opinion of my professional colleagues that I have succeeded. You charge me with what all scientists recognize as the greatest scientific sin. I think this was both unnecessary and unwarranted.

In the same mail that brought me your editorial comment was the following letter. I could furnish you with the details of almost any number of such cases:

"916 PINE STREET, PHILADELPHIA.

"MY DEAR DR. GOULD: After all the cases you have reviewed one case more or less can count for little, but I would like to give you mine at least as an illustration. I was an omnivorous reader from early childhood, and early had irritable headaches. They were laid to various causes, and when I was twelve to fourteen my eyes began to 'trouble me.' I was in an Asiatic town, where my father (Rev. W. F. Williams, D.D.) was a missionary, and

I remember he could not understand why eyes which saw so well and were without inflammation or a touch of the all-prevalent ophthalmia should give trouble. With cessation of reading the 'trouble' disappeared. At sixteen I came to this country and was a year on a farm at work and had no trouble and no headache. My study began again at seventeen (Andover and Amherst), entering journalism after graduation. From seventeen until thirty-one, when I was fortunate enough to fall into the hands of a physician who put me into glasses, I had at intervals what I called 'bilious attacks'—frightful headaches and really indescribable sufferings. These attacks came and went apparently without reason and the headaches were disabling. I see now that they were worst when I had office newspaper work and lightened when reporting. The first requires steady eye work and the latter very little, in active open-air work. With glasses my headaches and other peculiar sufferings disappeared, never to return. I may add that as my accommodation disappeared with age my nerves have seemed to be steadier. The last three or four years I am conscious of the lessening of a certain amount of irritability.

"For myself it is as clear as any fact in my personal experience that my health as a writer has turned on being 'glassesd.' I am cordially,

"TALCOTT WILLIAMS."

This gentleman is not a patient of mine; his letter was spontaneously written; he is a man upon whom one of our great universities conferred the degree of LL.D. because of his high intellectual, literary and scientific character.

"One swallow does not make a summer"? Would you care any more for hundreds? For fifteen years I and many others have published clinical reports of such cases, and the ignorers of "an overworked theory" have not heard. In the city of Boston there are to-day thousands of sufferers from "sick," "bilious" or "nervous" headache—such as most of the twelve patients (Mrs. Carlyle, Wagner, Carlyle, Huxley, Nietzsche, Margaret Fuller, etc.) were afflicted with. I have—you compel me to say it—cured thousands of just such cases with spectacles alone. If I fail to do so I tell my patients frankly my work has not been well done. If I go over it with greater care I am sure to find my error. You may say that others do not report the matter so. I answer that there is a perfect reason for that, and it is suggested in the enclosed pamphlet, entitled *Sixty-Eight Reasons*, etc. A second answer would be that many other physicians do not fail.

If you will pardon me the frank word, I would like to add that my evidence and accuracy in reporting, together with my experience with some ten thousand cases, should not be called in doubt so lightly. Has the writer of your editorial a greater special experience? He should at least have specified in detail wherein I have "carried to an extreme" and "overworked my theory" and been "extremely radical." I distinctly deny the charges and re-emphasize the entire contention of my writings upon the subject—namely, that the attitude of twenty-eight years on the part of many members of the profession which cries *Exaggeration, Theorizing, etc.*, the attitude of calmly and scornfully ignoring the theory of eye-strain reflexes, is not scientific and has become the most striking illustration I know of "overworking a theory" and of "carrying to an extreme." It is a crime against millions of sufferers who in this time have failed to get relief at the hands of their physicians. At the risk of ruining my little reputation as a scientific man I for one will no longer adhere to this old "overworked theory." The truth for which I contend is understated and is far more important and frequently exemplified than I have represented. If it were not, how could I dare to say so and practice medicine? If oculists advocating this theory did not generally and daily cure these diseases, how could they for a month succeed in practice? The implication need not be more definitely stated that there is some fault in the method of those who do not succeed in giving relief. "Overworked theories" come home to haunt the overworker.

Respectfully yours,

GEO. M. GOULD, M.D.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, OCT. 3, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,114 | 367 | 29.08 | 11.22 | 2.87 | 9.96 | 1.35 | |
| Chicago . . . | 1,885,000 | 467 | 129 | 28.90 | 6.21 | 1.71 | 10.92 | 3.42 | |
| Philadelphia . . | 1,378,527 | 400 | 99 | 25.75 | 6.50 | 2.00 | 5.00 | 1.75 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 171 | 52 | 27.48 | 11.11 | 4.69 | — | 2.92 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | 5.26 | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 133 | 49 | 35.34 | 12.78 | 7.50 | 3.76 | 4.50 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 69 | 19 | 31.88 | 5.80 | 1.45 | 15.93 | 1.45 | |
| Boston . . . | 603,163 | 173 | 61 | 28.32 | 9.82 | 1.73 | 13.29 | 2.89 | |
| Worcester . . . | 132,044 | 43 | 14 | 32.55 | 4.65 | 4.65 | 13.95 | 2.32 | |
| Fall River . . . | 115,549 | 37 | 17 | 35.12 | 8.10 | — | 24.30 | 2.70 | |
| Lowell . . . | 101,959 | 32 | 15 | 15.62 | 3.12 | — | 9.37 | 3.12 | |
| Cambridge . . . | 98,639 | 28 | 10 | 28.57 | — | — | 14.28 | — | |
| Lynn . . . | 72,497 | 18 | 3 | 5.55 | — | — | 5.55 | — | |
| Lawrence . . . | 69,766 | 19 | 6 | 47.37 | 5.26 | 5.26 | 15.78 | 10.52 | |
| Springfield . . | 69,389 | 16 | 7 | 50.00 | — | 6.25 | 18.75 | — | |
| Somerville . . . | 68,110 | 10 | 3 | 20.00 | 20.00 | — | — | — | |
| New Bedford . . | 67,198 | 20 | 7 | 45.00 | — | 5.00 | 25.00 | 5.00 | |
| Holyoke . . . | 49,286 | 18 | 12 | 27.77 | — | — | 27.77 | — | |
| Brookton . . . | 44,873 | 8 | 3 | 50.20 | — | — | — | — | |
| Haverhill . . . | 42,104 | 6 | — | — | 16.67 | — | — | — | |
| Newton . . . | 37,794 | 8 | 2 | 12.50 | — | — | 12.50 | — | |
| Salem . . . | 36,876 | 19 | 7 | 15.79 | 10.52 | — | — | 5.26 | |
| Malden . . . | 36,286 | 4 | 3 | 25.00 | — | — | — | — | |
| Chelsea . . . | 35,876 | 9 | 2 | — | 11.11 | — | — | — | |
| Fitchburg . . . | 35,069 | 7 | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | 7 | 3 | 57.20 | — | — | 42.90 | — | |
| Everett . . . | 28,620 | 7 | 2 | — | — | — | — | — | |
| North Adams . . | 28,562 | 8 | 3 | 75.00 | — | 37.50 | 25.00 | — | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 4 | 1 | — | — | — | — | — | |
| Waltham . . . | 25,198 | 3 | 2 | — | — | — | — | — | |
| Brookline . . . | 22,608 | 4 | — | 25.00 | — | — | — | 25.00 | |
| Pittsfield . . . | 22,589 | 5 | 1 | 40.00 | — | — | — | 5.00 | |
| Chicopee . . . | 21,031 | 5 | 3 | — | — | — | — | — | |
| Medford . . . | 20,962 | 3 | — | 33.33 | — | — | — | — | |
| Northampton . . | 19,883 | — | — | — | — | — | — | — | |
| Beverly . . . | 15,302 | 6 | 2 | 16.67 | — | — | 16.67 | — | |
| Clinton . . . | 15,161 | 6 | 4 | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 1 | 0 | 100.00 | — | 100.00 | — | — | |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | 3 | 1 | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 4 | 2 | 50.00 | — | — | 25.00 | — | |
| Melrose . . . | 13,600 | 4 | 1 | — | — | — | — | — | |
| Westfield . . . | 13,418 | 3 | 2 | — | 33.33 | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 2 | 1 | — | — | — | — | — | |
| Framingham . . . | 12,534 | 4 | 1 | 25.00 | — | — | 25.00 | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . . | 11,844 | 5 | 0 | — | — | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 2 | — | 50.00 | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 2,908; under five years of age, 916; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 830, acute lung diseases 251, consumption 345, scarlet fever 13, whooping cough 15, cerebro-spinal meningitis 7, smallpox 16, erysipelas 1, puerperal fever 8, measles 8, typhoid fever 64, diarrheal diseases 278, diphtheria and croup 75.

From whooping cough, New York 5, Chicago 1, Philadelphia 3, Baltimore 1, Pittsburg 3, Boston 1, Malden 1. From erysipelas, Chicago 1. From smallpox, Philadelphia 5, Pittsburg 11. From scarlet fever, New York 2, Baltimore 3, Pittsburg 4, and Worcester, Lowell, Lawrence and North Adams 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Sept. 19 the death-rate was 16.5. Deaths reported, 4,775; acute diseases of the respiratory organs (London) 128, whooping cough 79, diphtheria 40, measles 35, smallpox 5, scarlet fever 39.

The death-rate ranged from 4.5 in Handsworth to 30.2 in Middlesbrough; London 15.8, West Ham 17.9, Brighton 15.0, Portsmouth 12.6, Southampton 15.6, Plymouth 12.1, Bristol 12.8, Birmingham 18.5, Leicester 14.9, Nottingham 16.5, Bolton 17.7, Manchester 18.7, Salford 15.0, Bradford 13.4, Leeds 17.2, Hull 20.3, Newcastle-on-Tyne 23.5, Cardiff 10.9, Rhondda 11.8, Liverpool 21.0, Bournemouth 8.3, Wigan 18.5.

METEOROLOGICAL RECORD.

For the week ending Oct. 3, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|-------|-------------|----|--------------|----------|--------------------|----|--------------------|-----|-------------------|----|-----------|-------|---------------------|
| | Daily mean. | | Daily mean. | Maximum. | Minimum. | | | | | | | | |
| S. 27 | 29.95 | 65 | 73 | 57 | 89 | 86 | 88 | S | S W | 9 | 12 | F. O. | T. |
| M. 28 | 30.03 | 56 | 63 | 49 | 73 | 62 | 68 | S | N W | 14 | 9 | C. C. | .98 |
| T. 29 | 30.26 | 48 | 53 | 43 | 63 | 52 | 58 | N W | W | 8 | 6 | O. C. | 0 |
| W. 30 | 30.33 | 55 | 68 | 42 | 70 | 52 | 61 | S W | S W | 11 | 17 | C. C. | 0 |
| T. 1 | 30.12 | 65 | 76 | 54 | 78 | 71 | 74 | S W | S W | 10 | 10 | O. C. | 0 |
| F. 2 | 30.16 | 64 | 72 | 55 | 87 | 79 | 83 | W | N E | 9 | 10 | O. C. | .13 |
| S. 3 | 30.37 | 56 | 60 | 51 | 82 | 76 | 79 | N | E | 5 | 5 | O. C. | 0 |
| 30 | 30.17 | | 66 | 50 | | 73 | | | | | | | 1.11 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. 30 Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING OCT. 10, 1903.

T. W. RICHARDS, surgeon. Commissioned surgeon, with rank of lieutenant-commander from March 3, 1903.

B. L. WRIGHT, assistant surgeon. Ordered to the Naval Hospital, Pensacola, Fla.

F. A. RICHARDSON, acting assistant surgeon. Appointed acting assistant surgeon, with rank of lieutenant (junior grade) from Sept. 29, 1903.

W. N. McDONNELL, acting assistant surgeon. Ordered to the Naval Academy.

D. N. CARPENTER, surgeon. Commissioned surgeon with rank of lieutenant-commander, from March 3, 1903.

E. J. GROW, surgeon. Detached from the Naval Hospital, Mare Island, Cal., and ordered to the "Mohican."

C. N. FISKE, assistant surgeon. Detached from the "Mohican" and ordered home and to await orders.

L. H. SCHWERIN, acting assistant surgeon. Detached from the "Southern" and ordered to the "Yankton."

J. T. MILLER, acting assistant surgeon. Detached from the Navy Yard, Mare Island, Cal., and ordered to the Naval Hospital, Mare Island, Cal.

J. COWAN, pharmacist. Detached from the Naval Magazine, Iona Island, N. Y., and ordered to Washington, D. C., for examination for retirement, and then home and to wait orders.

E. H. MARSTELLER, surgeon. Detached from the "Panther," and ordered home and to wait orders.

J. C. THOMPSON, passed assistant surgeon. Ordered to additional duty at the Navy Yard, Puget Sound, Washington.

W. H. BELL, passed assistant surgeon. Detached from the "Yankton" and ordered to the Navy Yard, Portsmouth, N. H., for additional duty on "Southern."

RECENT DEATHS.

WILLIAM JOHNSON DALE, M.D., M.M.S.S., died in North Andover, Oct. 7, 1903, aged eighty-eight years.

CORNELIUS SHEPHERD, M.D., of Trenton, N. J., died on Oct. 7. He was born in Bucks County, Pa., and was a graduate of the Medical Department of the University of Pennsylvania. Dr. Shepherd took much interest in public affairs, and was active in establishing the present school system of New Jersey.

DAVID FRANKLIN, M.D., one of the most prominent physicians in the Harlem District of New York, died from appendicitis, after an operation, on Oct. 7. He was forty-eight years of age, and was graduated from the Medical Department of the University of the City of New York. Dr. Franklin served on the House Staff of Bellevue Hospital, and later practiced for a number of years in California. He was president of the Harlem Medical Association.

OSIAN W. GOSS, M.D., of Lakeport, N. H., died Oct. 8. He received his medical education at the Harvard Medical School, and was graduated in 1882. He was a leading physician of the town in which he lived and in which he had spent the greater part of his life.

ALBERT NOTT, M.D., M.M.S.S., died in West Newton, Oct. 10, 1903, aged fifty-six years.

BOOKS AND PAMPHLETS RECEIVED.

Manual of Practical Anatomy. By D. J. Cunningham, M.D. (Edin. et Dubl.) D.Sc., LL.D., D.C.L. (Oxon.), F.R.S. 2 volumes. Third edition. Illustrated. J. B. Lippincott Company: Philadelphia, 1903.

The Treatment of Chronic Catarrhal Deafness (Otitis Media Catarrhalis Chronica). By George W. Hopkins, M.D., of Cleveland, Ohio. Reprint. 1903.

The Diagnostic Value of Abdominal Rigidity. By Joseph A. Blake, M.D., of New York. Reprint. 1903.

A Case of Progressively Developing Hemiplegia, Later Becoming Triplegia, Resulting from Primary Degeneration of the Pyramidal Tracts. By Charles K. Mills, M.D., and William G. Spiller, M.D., of Philadelphia. Reprint. 1903.

Exhibition of a Specimen of Abdominal Pregnancy Removed at the end of Twenty-one Months by Coeliotomy. By Charles P. Noble, M.D., of Philadelphia. Reprint. 1903.

A Study of the Degenerations and Complications of Fibroid Tumors of the Uterus from the Standpoint of the Treatment of these Growths. By Charles P. Noble, M.D., of Philadelphia. Reprint. 1903.

The Treatment of the Peritonem in Diffuse Peritonitis. By Joseph A. Blake, M.D., of New York. Reprint. 1903.

Colchicum in the Treatment of Gout. By Charles C. Ransom, M.D., of New York. Reprint. 1903.

The Role of the Cystoscope in the Diagnosis and Treatment of Some Diseases of the Urinary Tract. By Charles P. Noble, M.D., of Philadelphia. Reprint. 1903.

The Significance of the Temperature in the Diagnosis of Extra-Uterine Pregnancy during the Period of Collapse from Hemorrhage. By Charles P. Noble, M.D., of Philadelphia. Reprint. 1903.

Preliminary Report of an Operation for Abdominal Pregnancy of Twenty-one Months' Duration. By Charles P. Noble, M.D., of Philadelphia. Reprint. 1903.

Adeno-Myome des Uterus. Von Thomas S. Cullen. Illustrated. Verlag von August Hirschwald, Berlin. 1903.

Transactions of the American Pediatric Society. Fourteenth Session. Held at Boston, May 26, 27 and 28, 1902. With Addenda from the Thirteenth Session and an Index, Vols. i-xiv, inclusive. Edited by Walter Lester Carr, M.D. Reprinted from The Archives of Pediatrics. 1902.

Nose and Throat Work for the General Practitioner. By George L. Richards, M.D. Illustrated. International Journal of Surgery Company, New York. 1903.

Surgery, Its Theory and Practice. By William Johnson Walsham, F.R.C.S. (Eng.), M.B. and C.M. (Aberd.). Eighth Edition. Illustrated. By Walter George Spencer, M.S., M.B. (Lond.), F.R.C.S. (Eng.). P. Blakiston's Son & Co., Philadelphia. 1903.

Functional Diagnosis of Kidney Disease with Especial Reference to Renal Surgery. Clinical Experimental Investigations. By Dr. Leopold Casper and Dr. Paul Friedreich Richter. Translated by Dr. Robert C. Bryan and Dr. Henry L. Sanford. P. Blakiston's Son & Co., Philadelphia. 1903.

Physical Diagnosis of Diseases of the Chest. By Richard C. Cabot, M.D. Second Revised Edition. Illustrated. New York: William Wood & Co. 1903.

Right-Sided Cardiac Hydrothorax. By Alfred Stengel, M.D., of Philadelphia. Reprint. 1901.

History of the Evolution of the Brain. By Charles H. Hughes, M.D., of St. Louis, Mo. 1903.

On a Method by Which the Eggs of a Sea-Urchin (Strongylocentrotus Purpuratus) can be Fertilized with the Sperm of a Starfish (Asterias Ochracea). By Jacques Loeb. University of California Publications, Vol. I, No. 1. 1903.

The Medical Epitome Series. Physics and Inorganic Chemistry. A Manual for Students and Practitioners. By Alexius McGlannan, M.D. Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Lea Brothers & Co., Philadelphia and New York. 1903.

The Ill Health of Richard Wagner. By George M. Gould, M.D., Philadelphia. Reprint.

The University of Chicago. The Decennial Publications. The Structure of the Glands of Brunner. By Robert Russell Bensley. Illustrated.

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Original Articles.

FURTHER OBSERVATIONS ON CERVICAL DISLOCATION AND ITS REDUCTION.

BY G. L. WALTON, M.D., BOSTON.

CERVICAL dislocation is not a mere medical curiosity, but a pathological condition likely to appear in the practice of any physician or surgeon. Its pitiable results are generally, perhaps always, capable of speedy, safe and complete amelioration. It occurs with sufficient frequency to justify every practitioner in familiarizing himself with the diagnostic features and the method of reduction. The limit of time after which operation is contraindicated has yet to be determined; it certainly exceeds six months.

The frequency of this accident is shown by the fact that, in addition to the eight cases whose details I have previously published,¹ at least as many other cases have come under my observation not presenting peculiarities worthy of separate description. All but three of these cases appeared at the Massachusetts General Hospital.

My attention was first directed to the importance of finding an efficient method of reduction by the case in Dr. Warren's service, in which the most vigorous traction with manipulation failed, but spontaneous reduction was effected later by involuntary movement on the part of the patient following the application of cold water to the spine. This case illustrates the futility of traction and at the same time shows the ease with which reduction can be effected if the proper movements are made. Such movements are not likely to be made voluntarily by the patient on account of the instinctive fear of injury, though in the case of Blasius, a child on the way home from an unsuccessful operation is said to have reduced its own dislocation by pressure upon the neck, the head and shoulders being fixed.

Among the methods practiced prior to 1893 none seemed quite to meet the requirements. Traction with or without abduction and rotation was the keynote. The method proposed by Hueter² and favored by Stimson³ seemed most reasonable; this method consisted of abduction and rotation without traction. Abduction, however, may fail to free the displaced articular process, which is held by the ligaments firmly locked against the anterior surface of the articular process of the vertebra below.

The observation of Dr. Warren's remarkable case induced me to make a careful study of the vertebra. This study resulted in the conclusion that dorso-lateral flexion, combined if necessary with slight rotation (to enable the upper articular process to pass the brim of the lower articular process), would fulfil the requirements, the vertebra being afterward rotated into place as by the old methods. This plan was first suggested to Dr. Richardson, who demonstrated its

efficiency upon the cadaver, then to Dr. Beach, in whose service the next case appeared at the Massachusetts General Hospital. The details of Dr. Beach's case, with photographs before and after operation, successfully performed by this method, were reported in this JOURNAL.

This method has since received further authoritative surgical endorsement.⁴

Dr. Mixer has recently reduced by this method a case of six months' standing resulting from a railway accident. The final outcome of this case it is too soon to report, as the head is still in plaster, but in the normal position.

I have seen two other cases which have slipped back during the etherization preparatory to operation. One of these was a unilateral case in Dr. Warren's service. The other case was that of a young man whose head was bent into the typical position of left unilateral dislocation during a football scrimmage. I saw him in consultation with Dr. Sherman of West Newton, who was immediately summoned. It was decided to etherize the following morning, and Dr. Perkins, the regular attendant, into whose hands the case passed, and who coincided in this opinion, reports that during etherization a sudden movement on the part of the patient restored the head to its normal position.

The following case is of interest on account of its etiology, as well as illustrating the case with which spontaneous reduction may take place while the patient is relaxed in sleep:

CASE. C. V., twenty-eight, an architect, a tall man of slender build and long neck, active in movement, but not especially athletic, consulted Dr. Paul (at whose request I also saw him) Dec. 3, 1901, for a displacement of the neck which he had produced three hours before by a violent movement made during the act of brushing the hair with military brushes. The patient presented the characteristic attitude of right unilateral dislocation; the head was tilted as well as rotated to the left, showing that the articular process had not fallen into the intervertebral notch. Operation was advised and accepted, and the patient entered the Massachusetts General Hospital in Dr. Warren's service. On awaking the following morning the patient found his head restored to its proper position, the spontaneous reduction having occurred during sleep. No further treatment was needed.

Dr. Beach has kindly furnished me the following reports of two other cases coming under his observation:

CASE. Patient, a child between six and seven years old, living in Edgartown; was brought to me one week after a fall from a hammock. It was not known how she struck the earth, but her neck was stiffened by the tenderness and rigidity of the muscles on each side, and permitted very little motion of the head. When examined there was a distinct and considerable projection

¹ Boston Med. & Surg. Journ., March 21, 1889; *Idem*, May 8, 1890; *Idem*, Dec. 7, 1893. Journ. Nervous and Mental Diseases, 1889. International Clinics, 1892, 2d series, p. 207.

² Langenbeck's Archiv. Bd. IX, s. 946.

³ Fractures and Dislocations. New York, 1888.

⁴ Keen in Dennis' System of Surgery, 1895. International Text Book of Surgery, Warren, Gould, 1900. Scudder: The Treatment of Fractures, fourth edition.

of the bodies of two vertebrae into the pharynx as seen from the mouth. There was also a distinct concavity on the dorsum of the neck at a point corresponding with the second and third cervical spinous processes. No attempt was made at reduction on account of the change in the rigidity of the muscles following the accident. I sent word to her attending physician, Dr. Thomas J. Walker of Edgartown, that I hoped he would preserve the anatomical appearances by a plaster cast. Before that could be obtained spontaneous reduction took place, as will be seen by the following quotation from Dr. Walker's letter of July 1:

DEAR DOCTOR: I am very sorry to report to you that the time when I could have made a valuable east of the injury of our little patient had gone by before I got time to attend to it. She did not get any sleep from 4 A.M. Saturday until that night, when she slept very soundly, during which sleep no doubt the system became thoroughly relaxed. On my visit in the morning (Sunday) I found the cervical vertebra in perfect position and free motion of the head in every direction.

(Signed)

T. J. WALKER, M.D.

CASE. C. McL. entered the Massachusetts General Hospital May 8, 1890. Seventeen days ago, while running around a corner, turned her head sharply, upon which it was caught, and it has remained in that position since. Has had considerable pain in neck and head. Patient, an apparently healthy child, walks about with ease. Head in position of decided wry-neck, turned sharply to the right, sterno-mastoids flaccid, slight amount of antero-posterior motion to head, lateral motion very slight, head cannot be brought to median line, spine of third vertebrae felt out of position one-half inch from median line to the left. Right side higher than left. Right side of back of neck concave, left side convex.

May 18. Poultice to neck after consultation with the staff. She was given ether, breathed quietly for a few seconds, then struggled suddenly and the dislocation was reduced. Motion of the head possible in all directions.

May 19. Head fairly moveable, but with some pain.

May 20. Head in good position, supported by tin internal angular splint.

May 21. Splint not satisfactory. Head resumes the former position.

May 22. Patient in bed, poultice applied.

May 23. Moves head quite freely and without pain.

June 1. Poultice omitted.

June 2. Neck much stiffer, poultice applied.

June 6. Mobility returning. The motion varies much on different days. It has been noticed that when patient is asleep the head is freely movable.

June 10. Patient measured for wry-neck apparatus.

June 12. To return in two weeks for apparatus.

Nov. 10. Returns wearing apparatus. Can move head freely, no deformity. Dispense with apparatus.

Nov. 20. Perfect result. Moves head freely in all directions. No pain or tenderness, no deformity or displacement.

In the seven cases, then, coming to my knowledge since proposing this method of reduction, two have been replaced in sleep, three during etherization and two by the operation itself.

The success of the method in the cases which came to operation, together with the general lack of familiarity with the subject, will perhaps justify a recapitulation of the salient features of this dislocation and its relief.

Mechanism of the dislocation. — In the lumbar and dorsal regions the articular processes are so upright that dislocation can hardly occur without fracture. But the articular processes in the cervical region are so nearly horizontal that a process of one vertebra can readily slip forward over that of the vertebra below and fall into the intervertebral notch. More rarely both of the articular processes of a vertebra may be displaced, probably successively rather than simultaneously.

With regard to the position assumed by the head in these cases, let us suppose an articular process on the left has slipped over; the head will be rotated with the face to the right. If the articular process has slipped down into the notch the head will be tilted to the left, the face being still rotated to the right. If the articular process has become caught on the crest of the process below, the head will be tilted to the right as well as rotated to the right. *The side on which dislocation has occurred can always be determined, therefore, by the direction of rotation; the question whether the articular process has slipped into the notch* (a matter of secondary importance, inasmuch as the movement of reduction is the same in both cases) *may be determined by the tilting of the head.* In case bilateral dislocation has occurred, the head will be carried forward and tilted directly backward.

Diagnosis. — The only conditions with which dislocation is likely to be confused are torticollis and vertebral disease (tubercular caries). In case of torticollis, assuming the head to be rotated to the right and the head tilted to the left, this movement will have been produced by the sterno-mastoid muscle on the left, which will therefore be contracted. If this position is assumed in unilateral dislocation, on the other hand, the left sterno-mastoid will be lax, but the right will be put more or less upon the stretch. In cervical caries the history is the important diagnostic factor.

In the majority of cases of unilateral dislocation no paralysis occurs, sufficient of the lumen being left for the safe passage of the spinal cord, the nerve roots also escaping pressure. In the unilateral cases coming under the writer's observation, paralysis (obviously from root pressure) occurred in two only. In the case of bilateral dislocation spastic paralysis of the lower extremities indicated pressure upon the spinal cord itself.

Operation. — The method of reduction will be made clear by the following diagram (Fig. 1):

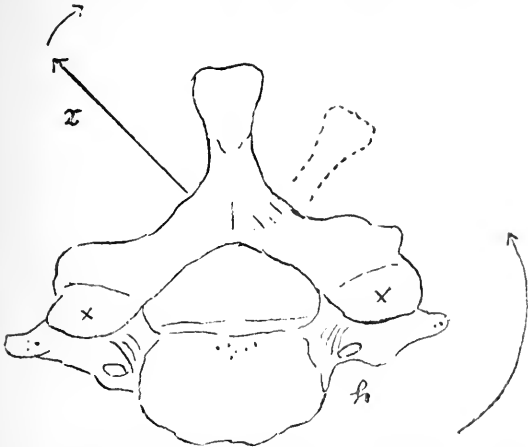


FIG. 1. Diagram of upper surface of lower vertebra, arrows indicating movements for reduction.

This diagram shows the upper surface of the lower of the two vertebrae concerned, that is, the one in normal position. The articular processes of this vertebra are marked XX. The left articular process of the vertebra above having slipped into the intervertebral notch (Y), the situation of the spinous process of the dislocated vertebra will be indicated by the dotted lines. The direction in which the head must be tilted for reduction is indicated by the line Z (in other words, if the patient is facing north the head must be tilted southeast). Slight rotation in the direction of the short curved arrow on the right of the diagram may be necessary to free the process. After the articular process is freed, rotation into place in the direction of the long curved arrow on the left of the diagram will complete reduction. In case the right articular process is displaced by the dislocation, these movements must be reversed.

The patient should be in the sitting position for the operation, and the head should be rocked without traction, for traction only lessens the effectiveness of the fulcrum necessary to reduction.

LESIONS THAT AUGMENT THE DEVELOPMENT OF TETANUS AND OTHER INFECTIONS IN GUNSHOT WOUNDS.

BY LOUIS A. LAGARDE, M.D., WASHINGTON, D.C.

The object of this paper is not so much to discuss the lesions that predispose to infection in gunshot wounds as it is to point out the histological anatomy of such wounds as revealed by microscopic sections.

Gunshot wounds are often referred to as punctured, penetrating or perforating wounds, such as are apt to be inflicted by any blunt instrument wielded with sufficient force. This idea is correct only within limits. A punctured wound from a blunt instrument exhibits lacerations and contusions in and immediately around the area of injury, while a punctured wound by a bullet propelled by a certain degree of velocity will

exhibit loss of tissue and lacerations, not only in the immediate vicinity of the channel made by the projectile, but lesions will appear in the parts beyond to an extent dependent upon:

- (1) The sectional area of the bullet.
- (2) Its velocity.
- (3) The resistance encountered on impact.

The greater the velocity or sectional area of the bullet, the greater will be the lesion in the surrounding tissues; and in those instances when the velocity is great, and the resistance on impact is unyielding, as in the case of a ball colliding with the shaft of a long bone like the tibia or femur, the destructive effects are enormous. These effects are so extensive that the wounds produced in this way are referred to as explosive wounds, or wounds showing explosive effects. It is not necessary to resort to the latter class of wounds to study the lesions that are thus created; in fact, microscopic sections of gunshot wounds in soft parts reveal all the characters of gunshot wounds sufficiently for the purpose of study.

Aside from the microscopic studies of the contused area, we know that the tissues are injured beyond the track of the bullet by certain appearances, which reveal themselves in the history of such cases. Thus slough often occurs in the skin beyond the margins of entrance and exit. Later, when healing is well along, a cord marking the track of the bullet running in the soft parts between the two external wounds is easily discernible to the sense of touch.

In recent studies upon the character of the various tissue lesions Strick has shown that hematomata especially predispose to the development of infections. He was able to show that hematomata in wounds increase the susceptibility to infection from tetanus a thousand times more than exists in a clean incised wound. More recently we have demonstrated that burn, as in toy-pistol wounds, adds to the susceptibility, and that animals infected in a cut made by a red-hot knife, with a certain spore mass of tetanus, died in every case, while animals similarly infected in incised wounds made with a cold knife lived in every instance.

Dr. Lardy, in the Greco-Turkish war, in commenting upon the conditions found in 95 infected gunshot wounds out of a total of 469 cases, gives the following:

| | |
|--|----|
| Pieces of cloth in wound carried by the ball | 13 |
| Hematomata | 3 |
| Fragments of bone acting as secondary missiles | 29 |
| Lodged balls | 22 |
| Cause of suppuration undetermined | 28 |
| Total | 95 |

In this estimate we must conclude that the percentage of cases showing hematomata is small in view of the twenty-nine cases which presented fragments of bone lodged as secondary missiles. Each one of these fragments was displaced by the force of impact, which of necessity possessed energy enough to rupture the tissue about it, and there was doubtless a corresponding degree of hematomata.

That suppuration should have been so seldom attributed to the lodgment of either the ball or the pieces of clothing seems to accord with the observations of Strick, who experimented with a known spore mass of tetanus with which he contaminated his bullets before firing into rabbits. The animals died of tetanus in every instance. In order to estimate the influence of implantation of foreign bodies in wounds devoid of the lesions which come with the mechanical effects of a missile while traversing tissues, he experimented with four different kinds of foreign bodies; namely, bullets, splinters, cloth and paper. Out of seven rabbits in which the ball was infected with a tetanus culture and implanted in a simple incision in the muscles of the thigh five recovered and two died. Six rabbits inoculated with splinters similarly treated and planted in clean cuts all got well. When placed on cloth and buried in clean incised wounds, the tetanus killed two rabbits out of six; and but one rabbit out of six died when the culture was placed on filter paper which was buried in a clean wound. These results, compared to those of Strick, in which every animal died when shot with infected balls, show that the lodgment of foreign bodies *per se* adds but little to the susceptibility to infection, and that the special lesions from a ball animated by a certain degree of velocity as it passes through tissues are necessary to augment the susceptibility to infection. As already stated, these lesions partake of the nature of hematoma.

The influence of velocity in creating hematoma in soft tissues was the subject of certain experiments that prove of value. We fastened a rusty nail of thirty-two calibers to the end of a board, and, using the board as we would the handle of a hammer, a perforated wound was inflicted in the thigh of a cat by delivering a sharp blow. In the other thigh we fired a thirty-two caliber bullet at a distance of one foot. After death a block from each wounded area showed no gross appearances of hematoma about the perforation caused by the nail, while hematoma extended in the interstices of the muscle fibers for a distance of 5 mm. about the bullet wound in the opposite thigh. The influence of velocity was again shown by firing into cats with the Krag-Jorgensen service rifle. We give below the measured distance of the hematoma as observed away from the channel made by the bullet:

Krag-Jorgensen bullet, cal. 30, v. 835 f. s., hematoma, 8 mm.
Krag-Jorgensen bullet, cal. 30, v. 1138 f. s., hematoma, 12 mm.
Krag-Jorgensen bullet, cal. 30, v. 2200 f. s., hematoma, 23 mm.

The areas, as influenced by this bullet in the order given, would, therefore, be as follows:

| | |
|-----------------------------|-------------|
| Velocity 835 f. s. | 201 sq. mm. |
| Velocity 1138 f. s. | 453 " |
| Velocity 2200 f. s. | 1664 " |

See Fig. 1 and 2. The extent of hematoma is marked by the darker areas.

It is thus seen that the extent of the hematoma increases with the velocity of the projectile to

a marked degree. The fact that destructive effects in the hard bones increased with velocity from the dispersion of the energy of the projectile was always appreciated, and the same factor doubtless accounts for the extent of the lesion in the soft parts.

Again, we know, as far as bone tissue is concerned, that the destructive effects increase with the sectional area of the bullet. That the same is true of the soft parts is shown below. The experiments were conducted by firing into the



FIG. 1. — Krag-Jorgensen bullet, cal. 30, vel. 835 f. s.

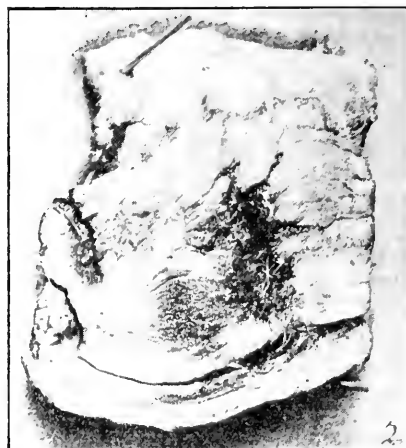


FIG. 2. — Krag-Jorgensen bullet, cal. 30, vel. 2,200 f. s.

gluteal region of cats with the Springfield and Krag-Jorgensen rifles, the velocity of the bullets remaining approximately the same. The measured distance of the hematoma from the channel of the bullet is:

Springfield rifle ball, cal. 45, v. 1301 f. s., hematoma, 30 mm.
Krag-Jorgensen rifle ball, cal. 30, v. 1138 f. s., hematoma, 12 mm

The thoroughness with which tissues are often infected by the energy of an unclean bullet has a great bearing upon the susceptibility to infection. This is well shown by firing bullets of varying velocities and calibers into animals in which the skin has been well rubbed with finely-powdered charcoal. The numbers in millimeters

represent the distance the charcoal particles were found in the tissues away from the channel caused by the bullet:

Pistol ball cal. 32, v. 300 f. s., 3 mm.
Krag-Jorgensen bullet. cal. 30, v. 2200 f. s., 10 mm.

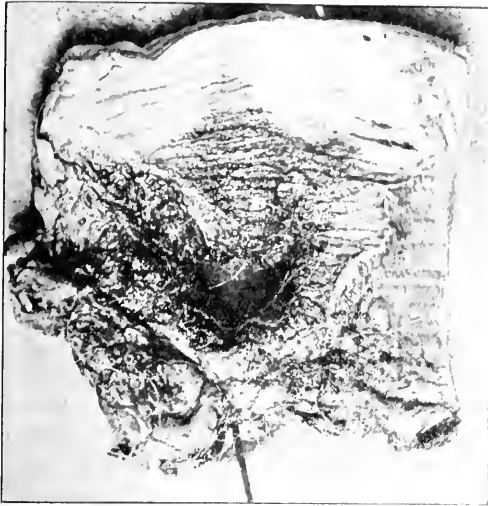


FIG. 3. — Springfield rifle bullet, cal. 45, vel. 1,301 f. s.



FIG. 4. — Krag-Jorgensen bullet, cal. 30, vel. 1,138 f. s.

If we compare the distribution of carbon particles as influenced by the sectional area of bullets, the velocity being about the same, we find the following:

Krag-Jorgensen bullet. cal. 30, v. 1138, 6 mm.
Springfield bullet cal. 45, v. 1301, 17 mm.

This result corresponds closely with that obtained by Koller and Karlinski, who found that foreign bodies (such as carbon or particles of cloth) were driven at a distance of $\frac{1}{2}$ to 2 cm. from the channel track while experimenting with the Swiss model reduced caliber rifle.

Among the lesions of gunshot wounds which predispose to infection another important factor (aside from the hematoma) is the fissuring, ex-

tending laterally from the channel track, and the disturbance of the muscle or tissue fibers, which is apt ultimately to lead to necrosis of the same. Microscopic sections show the muscle fibers torn, twisted, and otherwise distorted at a distance of 3 mm. to 10 mm. from the channel, varying with the velocity and sectional area of the projectile (see Fig. 5).

The foregoing has a very important bearing upon the rational treatment of gunshot wounds. In view of the extent to which extraneous matter

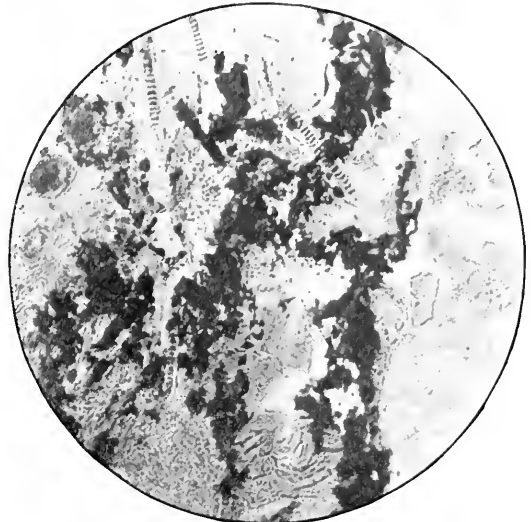


FIG. 5.

containing bacteria may be driven into tissues, it is hopeless to attempt to disinfect the channel made by a bullet. Extended experiments were conducted by Muller and Koller, in which they essayed various methods of treatment of the channel track in gunshot wounds caused by projectiles that were primarily infected, namely:

- (1) Controls, for which nothing was done.
- (2) Those treated with a glass drain.
- (3) Those treated with an iodoform gauze drain.
- (4) Those irrigated with a 5% solution of carbolic acid.
- (5) Those treated by rubbing with a cotton mop soaked in tincture of iodine.
- (6) Those treated by cauterizing the wound.

However treated, all the wounds were dressed with a clean sterile dressing.

The results showed that the animals treated by a simple dressing did best of all, and that all those treated by radical measures, such as swabbing with iodine and the application of the thermocautery, gave evidence of suppuration in every instance.

THE PLAGUE OF ATHENS.

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

IF one consults mythology the origin of the first great epidemics, so called, will there be found, but leaving aside the myths, it may be said that it is more than probable that the pathology of the

human species is quite as old as its physiology; in other words, that as soon as man existed on this earth disease made its appearance likewise. From this I would not be understood as inferring that the number of diseases originally attacking man was as large as at the present time, but there is no doubt that many of them appeared at about the same time that the human race developed.

Leaving aside the ordinary infectious diseases, such as pneumonia or rheumatism, which certainly must have afflicted the earlier human races, I would say that among the contagious epidemic affections, such as syphilis, the eruptive fevers, typhoid fever, typhus fever, cholera, yellow fever, etc., all these maladies entered upon the pathological scene at different epochs.

Under the very general term of "plague" (*λοιμός*) the ancients included a number of diseases, whether contagious or not, which had as a common character to extend in the form of epidemics. It is not always an easy matter to determine exactly the nature of the various maladies included in this denomination, because the facts which have been handed down to us by the ancient writers regarding many of them are so insufficient that one could hardly guess the true nature of these diseases; but for all that there are a certain number of others of which we have more precise details, and thus it is quite possible to make a distinction between them and to a certain extent suspect their nosological signification.

The most remote mention that has been handed down to us regarding the plague is that of Moses, who says: "Fiat pulvis super omnem terram Egypti; et erunt super homines et quadrupede, ulcera, vesicæ effervescentes. . . . Et facta sunt ulcera, vesicæ effervescentes. . . . Et in hominibus et in quadrupedis facta sunt ulcera in veneficis (magiciens) et in omni terra Egypti." The ulcers and tumors which develop on both men and animals form the entire disease, and it is quite difficult with these two signs alone to pass an opinion on the exact nature of the form of plague described by this wise man, even although one may take into consideration everything that he has written.

The extraordinary phenomena which were said to precede the appearance of the disease throw no light on the question, but many have been the conjectures made regarding it. Certain writers have considered the affection as an epidemic of smallpox, while others are of the opinion that it was nothing more or less than the true bubonic plague, whose antiquity is thus made to extend back to the year 2443 of the Christian era. Dar-emberg thinks that the pathologic character as given by Moses, consisting in the presence of small pustules, preceded by blisters, is in some respects similar to the disease described by Thucydides. The loimographs also refer to a plague which shortly after the one referred to by Moses arose in Egypt and ravaged Greece. The same origin is also attributed to another epidemic plague which also ravaged Greece, but all the data regarding these are so vague that no positive conclusion can be drawn.

We are not any better acquainted with the nature of the plague which attacked Troy during the reign of Priam in the year 1285 B.C., and which caused so much ravage in the Greek army. The description given by Homer is far too incomplete to enable one to say whether the disease was the true bubonic plague or typhus fever. Ovid also speaks in the seventh book of his "Metamorphoses" of a fearful epidemic which took place in the city of Egina in the year 2500 under the reign of Eacus. The poet even gives numerous details relating to the causes which prepared for the appearance of the scourge, and he gives some of the principal symptoms of the affection; but it should not be lost sight of that Ovid was a contemporary of Augustus and still more he was a poet, which should greatly decrease the value of his descriptions.

Herodotus, who lived in the fifth century before our era, has given more exact details regarding the epidemics, and while Sophocles and many other authors have considered all epidemics as due to the wrath of the Gods, as did Homer, Herodotus occasionally searches a solution in the natural causes.

After the battle of Salamimus, when Xerxes left Mardonius in Thessaly and directed his troops toward the Hellespont, the army who followed him gathered the wheat on its route, and when this was wanting ate the herbs, leaves and bark of trees, so great was the necessity for food. The plague (*λοιμός*) and dysentery (*δυσεντερία*) was the result of this extreme misery, and killed large numbers of men. The Greek historian also says in another passage of his works that the inhabitants of Chios, having sent a choir of one hundred young boys to Delphes, where the plague was probably reigning, ninety-eight of them were killed off by the disease.

Dionysii Halicarnassensis in the first volume of his "Opera omnia" speaks of an epidemic which occurred during the third year of the LXIX Olympiade, and which, after having devastated the country surrounding Rome, invaded the city itself with great violence. It is said by this author that the mortality reached such proportions that in order to get rid of the corpses of the slaves they were thrown in masses into the Tiber. It is unfortunate, however, that this historian has given us no account of the symptoms of the disease, so that its nature is quite lost to us. Such, briefly, are the great epidemics which were observed before the plague of Athens appeared, and although they are of not much interest, on account of the few facts we have regarding them, they have nevertheless been mentioned here as a sort of introduction to what is about to follow, and it may be said that the plague of Athens is the commencement of the medical history of the great epidemics.

The plague which appeared in Athens in the LXXXVIII Olympiade, or, in other words, 429 years B.C., is the first great epidemic mentioned by Fodéré, but there is no doubt that other epidemics had been observed before this time, because a well-known writer, by name Papon, mentions in the first volume of his work entitled "De

la Peste," which was published about a century ago, twenty-two epidemics of the plague, which had preceded that which attacked Athens. But nevertheless it may be said that the first epidemic of which we really have any precise documents is that which appeared in the capital of Greece.

In his memorable history of the Peloponnesian war, Thucydides has transmitted to us a very complete description of the scourge which attacked Athens, and although one might say that the subject is only spoken of incidentally, it is nevertheless true that this historian relates the epidemic as a great occurrence coinciding with the epoch of the war whose history he relates. Although Thucydides was not a physician, he has not omitted a single detail in the account of the symptoms presented by this great epidemic, and he is all the more authorized to describe the disease because he was himself afflicted by it.

A circumstance which is hard to explain is the absolute silence regarding this disease on the part of the physicians living at the time, and Hippocrates, who was living at the time of the epidemic, has written nothing regarding it, or rather what is more probable, is that that part of his works where he treats of this plague has not been handed down to us. It would seem inadmissible that the father of medicine who wrote on every subject relating to the healing art should have remained dumb regarding this great pathologic tragedy. The silence of Hippocrates regarding this epidemic might also be explained from the fact that he was not an eyewitness of it, and it seems fairly well established at the present time that the great physician of Cos was not at Athens at the time the scourge made its appearance.

Thucydides tells us that the disease broke out during the second year of the Peloponnesian war, at the time when the inhabitants invaded Attica for the second time, and it confined its ravages principally to Athens, although other cities were not completely free from its attack. The disease continued for three years with alternatives of remission and reeruption, killing off the army and the civil population. When this plague fell upon Athens it was said that it had already broken out in several other districts in the direction of Lemnos and in other places. The death-rate, which in the beginning was terrific, caused the greatest consternation among the inhabitants, and nothing so terrible could be recalled in the memory of man. The disconcerted physicians, on account of the novelty of the disease with which they had to deal, were utterly incapable of combating it, and many of them died victims of their duty.

The origin of this disease is quite obscure and nothing very precise is known regarding it, and I here give the literal translation of a passage from Thucydides which shows that he was badly informed regarding this point: "*It is said that the scourge commenced in Ethiopia above Egypt and that it then descended into Egypt as well as into Libya and into a large portion of the possessions of the king of Persia.*" It nevertheless remains a fact that in the city of Athens the dis-

ease appeared suddenly. The inhabitants of Piræus were the first attacked, and they affirmed that the Peloponnesians had thrown poison into their wells. Here is textually the description of the symptoms as handed down to us by Thucydides according to the French translation by Charles Zévort of Bordeaux: "Generally speaking one was suddenly seized amidst the most flourishing health, without any apparent cause. In the beginning a violent heat in the head was experienced; the eyes were red and inflamed. The inside of the mouth and tongue were not long in becoming injected by blood; the respiration was irregular, the breath fetid. Then sneezing and hoarseness occurred; in a short time the disease extended to the chest, giving rise to violent spells of coughing; when it became situated in the stomach it caused, in the midst of painful efforts, the evacuation of bile, to which physicians have given different names. The greater number of patients were attacked by hiccough without vomiting, accompanied by violent spasms, which sometimes stopped with the hiccough, at others being prolonged much after.

"Externally the body did not appear very warm to the touch, nor livid; it was reddish, covered with spots and small pustules and ulcers. The interior was so burning that the patients could not endure either the slightest bit of clothing or the very finest linen covers; their only desire was to be naked, and above all wished to throw themselves into cold water. One could see many of those who were abandoned to themselves jump into the wells, tormented as they were by an inextinguishable thirst. It made little difference whether they drank little or much, the result was the same. The patient was the prey of a continual agitation and insomnia.

"As long as the disease was at its height the body did not become thin, and this was a most astonishing fact that it could resist the suffering to such a point; but the greater number of patients who still preserved some strength did not die until the seventh or the ninth day, devoured as they were by the internal fire. If they escaped at this term, the disease descended into the abdomen and there produced a violent ulceration, accompanied by a continuous diarrhea, from the result of which many died from exhaustion later on; because the disease, after having commenced in the upper part of the body and establishing its seat in the head, from here extended to the entire body. If any one was to escape from the more serious accidents it was indicated by the fact that the disease attacked the limbs. It then made eruption on the natural parts, on the ends of the hands and feet, and several patients only escaped from death by the loss of these members. Some also lost their eyes; others during the early part of their convalescence were found to have forgotten everything, and neither recognized themselves nor their friends.

"There is no expression which can give an idea of this disease; its violence, in every instance, was far above all that human nature could stand; but what distinguishes it especially from other dis-

eases which occur to mankind is that the birds and quadrupeds who live upon the flesh of corpses did not come near the dead, although there were a great many; without graves, and if they did partake they died as soon as they had eaten. What proves it is that the birds of this kind completely disappeared, and none were seen around the corpses or elsewhere. The dogs, who on account of their familiarity with man, rendered this phenomenon still more marked.

"Such was, in general, and without speaking of a large number of accidents and symptoms peculiar to different patients, the character of the disease. None of the usual diseases were present at this time; if one did occur it terminated in the reigning disease. Some died neglected, while others died after tender care. There was, so to speak, no efficacious remedy, because what did well in one case did badly in another. There was no human being whose vigor or weakness placed him out of reach of the scourge; it carried everything before it, no matter what care or diet the patients followed. The most frightful thing of all was the discouragement of those who were afflicted by it, and believing at once that there was no hope they gave themselves up, and did not resist the disease; what was no less sad was to see, as among the herds, the contagion and death extend by the help that the afflicted gave each other, and this was the cause of the great mortality.

"No one felt more deeply for the dying and the sick than those who had recovered from the scourge; they knew the sufferings and personally were forever without fear, because the disease never proved fatal if contracted the second time.

"What contributed above all to increase the ills of the time was the arrival of people from the country into the city. The latter had much to suffer because they were without homes and without shelter; exposed to an extreme heat, and massed together in badly ventilated huts they died by the score. As there was no order reigning in the city the cadavers remained piled in heaps. These unfortunate patients could be seen rolling in the streets, huddled around the fountains, half dead and devoured by thirst. Even the temples were full of cadavers of those who had sought shelter and died. The excess of the disease was such that not knowing what to do the unfortunates lost all respect for divine and human things. The laws followed up to that time regarding funerals were forgotten, and each one buried his dead as well as he could.

"In other respects this disease inaugurated other troubles in Athens. The vices that were formerly only sought for secretly were indulged in now without concealment. . . . They desired to enjoy as much as possible without delay, and only thought of momentary pleasures . . . ; neither the fear of the Gods nor any human law could stop them; because as every one was dying they considered righteousness and unrighteousness indifferently; for that matter the afflicted did not expect to live long enough to reach the day of judgment and punishment. . . ."

Such is the striking description that the illustrious Athenian general has left, and which quite properly follows in his work the beautiful words that he attributes to Pericles, pronounced on the tomb of the soldiers who died during the first year of the Peloponnesian war. This picture given us of the epidemic leaves nothing to be desired, and all symptoms of the affliction are carefully given as well as all the data regarding the duration, prognosis and hygienic condition of the population, so that it can be said without any exaggeration that this writing is one of the most beautiful pages of antique medicine.

The plague did not limit itself to Athens, and, in truth, the disease starting in the Orient undertook a long voyage, during which the capital of Attica was only a stopping-place.

Thucydides also tells us that the plague occurred at the same time among the Athenians who were besieging Potidæa, and he says: "The same summer Agnon, son of Nicias, and Cleopompos, son of Clinias, colleagues of Pericles, took the army that he had commanded and immediately marched against the Chalcidians of Thrace and against Potidæa, the siege of which continued. . . . But the plague having declared itself made such terrible ravages among the Athenians that it ruined their army; even the troops which had arrived before them, and who had not been attacked, took the contagious disease by contact with Agnon's soldiers. . . . Agnon re-embarked and brought his troops back to Athens; out of four thousand men he lost one thousand and fifty within the space of forty days."

As has already been said, this epidemic remained at Athens for three years, and various writers have endeavored to ascertain approximately the number of victims that it made. Thucydides only gives the number of deaths occurring in the army, which amounted to four thousand seven hundred souls. Now, according to Littré, the military population of Athens would hardly amount to twenty thousand men, while the total population of the city, including the slaves, is placed at about four hundred thousand, so that if the plague attacked the civil population with the same severity that it did the soldiers, more than eighty thousand deaths must have occurred. It is quite probable that the poorer classes, as always happens under such circumstances, were more cruelly attacked than the aristocracy, although the rich paid their tribute as well. The great Pericles was a victim of this epidemic, and Plutarch tells us how this great man died after seeing his relations and friends swept away around him. The disease with him took on a chronic form, and he finally died exhausted. In Plutarch's "*Vitæ parallele*," Vol. I, will be found the following passage, which would lead one to suppose that the disease had acted on the mental condition of this great man: "*Per id tempus videtur corripuisse pestis Periclem non perindeut cæteros, acris et acuta, sed quae lento morbo diuturnoque, et sæpius alternante corpus ejus sensim conficeret et vim obtunderet mentis.*"

In "*Æliani*," *Varia hist.*, lib. XIII, cap. XXVII,

it is stated that the celebrated contemporary of the plague, Socrates, remained in Athens during all this sad time, but on account of his severe manner of living remained free from the affliction.

From all that has been said, it is evident that the plague of Athens was a contagious epidemic disease, and the question now arises as to its real nature and its causes. Thucydides gives no opinion regarding the latter point, and only gives us the facts as he saw them pass under his eyes. This silence as to the cause of the plague of Athens on his part certainly goes to show the great mind that he possessed. The opinion of Democritus, who was a contemporary of the great Grecian historian and of Hippocrates as well, and who was considered the greatest of Greek minds before the advent of Aristotle, found expressed in a work which he composed, according to the authority of Cœlius Aurelianus, on plagues and pestilential diseases, — which unfortunately has never come down to us, — attributes the great epidemics to the destruction of the celestial bodies and the fall of the atoms composing them, the latter being the enemies of human nature. If this singular theory of the philosopher of Abdera is mentioned here, it is simply to show how extensive were the researches of the philosophers of antiquity, although it has no other merit than its great originality. These men not only studied the organization of bodies, but also the origin of diseases, and it may be said that it is from their schools as well as from the colleges of the physician priests who attended to the temples of Esculapius, and were designated by the name of the Aselepiades, that all the medical doctrines originated which Hippocrates collected and handed down to us. According to Diodotus of Sicily extremely abundant rains occurred in Greece in the winter which preceded the advent of the plague and so impregnated the soil that large pools of stagnant water resulted. The excessive heat which followed in the summer caused a putrid fermentation to arise in these marshes, which infected the atmosphere and produced the plague. On the other hand, Plutarch thought that the scourge was brought about by the great number of people collected together in close quarters, for it must not be forgotten that the population of the country surrounding Athens came into the city for protection.

Such are the various opinions of the ancients regarding the cause of this great disaster. The people naturally attributed the disease to the anger of the Gods, and this was still more confirmed in their minds from the fact that no remedy could be found which had any action on the disease. For this reason they resorted to supplications and prayers in honor of Apollo. The opinion of Lucretius regarding the Athenian pest is worth while mentioning, and runs somewhat as follows: "Are not the germs of our diseases transmitted to us from far-off places? Suckled in the bowels of the earth, in the ærian fields, the multitude of contagious ills rise, travel both the heavens and the earth and formed in an instant, these tempests grumble, strike and suddenly disperse." In this

passage the poet only develops the ideas of Epicurus on the causes of epidemics, for this philosopher attributed all of them to the presence of miasma in the atmosphere, and thus he explained the propagation of the disease to a large number of human beings.

In modern times many have been the opinions regarding the nature of the pest of Athens. Dalmás, in the *Dictionnaire de Médecine* in thirty volumes, says in his article on typhus that the plague of Athens was nothing else than this disease, while Mertens, who wrote the history of the plague of Moscow in 1770, believed that there was a difference between the two epidemics. Rosenbaum attributed the mortification of the genital organs to syphilis, while Krause, basing himself entirely on the generalized eruption of pustules which occurred to those afflicted with the plague at Athens, believed that it was nothing more or less than smallpox. Why Webster and Smith should have emitted the idea that the pest of Athens was yellow fever is hard to understand. Schoenke and Osann make no distinction between the true bubonic plague and that which occurred at Athens, while Hoesser considers that the latter was nothing but the plague which had not arrived at its complete development, although later on the professor of Breslau changed his opinion on this point. Hecker found, after careful research, that the plague at Athens could not be compared with any affection known at the present day, and believes that it was a disease which is now extinct. This was also the opinion of Brandeis.

In a very interesting article which appeared in the *Revue des Deux-Mondes* in 1836 from the pen of Littré, entitled "Des Grandes Epidémies," the learned author expresses himself as follows: "Quand on examine attentivement les détails et l'ensemble de cette peste il est impossible de retrouver aucune des maladies qui nous affligent maintenant. La peste d'Athènes est une des affections aujourd'hui éteintes."

Daremborg, who was so great an authority in researches pertaining to the history of medicine, considered the plague of Athens as a particular disease which has no analogy to any one reigning at the present day.

As will be seen, there exists a considerable divergence of opinion regarding the nature of the plague of Athens. This cannot be due to any want of description, because the illustrious Grecian historian is far from being obscure and has certainly well described the symptomatology of the affection. In order to come to any definite conclusion, each one of the opinions emitted should be separately considered, and it may be said at once that among the diseases observed at the present time those to which the plague of Athens has been compared are typhus, bubonic plague and smallpox. The question of scarlet fever, syphilis, yellow fever or measles should not be discussed, because the scourge of the capital of Greece had nothing in its nature which could in the least be compared with any of these. But the bubonic plague, typhus and perhaps more especially smallpox do present similar characters, and it is only

these three epidemic diseases that we shall take into consideration.

It is a fact that the plague of Athens presented certain characters which simulate typhus. In both diseases we find great prostration, violent congestion of both the respiratory and digestive systems, vomiting of bilious matter and partial gangrene of certain members. The special type of eruption which appeared on the integuments in the form of ulcerated pustules, gangrene of the eyes and genital organs, as well as a certain number of other symptoms, distinctly separates the plague of Athens from typhus.

Thucydides states very explicitly that the body was covered with small blisters and ulcerations. Now, the word "blisters" implies a small vesicular ampoula, which is simply composed of a quantity of serum underneath the epidermis, and which forces it up into an elevation, and the consecutive ulceration of these vesicles is easily explained. Now, in typhus, no such cutaneous lesion is to be found. In this disease the integuments are covered by pale or bright red spots which do not preminate above the cutaneous surface and in size never measure more than 3 to 4 mm. These spots are usually present in such numbers that when one looks at a patient afflicted with this disease at some little distance off, the skin simply looks a little redder than usual, but is uniformly tinted. In typhus an inflammatory process is frequently present in the region of the parotid gland, but this appears to have been completely absent in the disastrous epidemic of the Grecian capital.

These signs seem to be quite sufficient to warrant us in making a distinction between the two diseases, and an error could have only been committed by those who examined the question superficially. Typhus is a disease which develops in places where a large number of men are collected, such as in camps, hospitals, ships and prisons, where it seems only to develop spontaneously when a subject already ill with it has been brought among the others, and then it is contracted by mediate or immediate contagion. Now, all these conditions were present at Athens during the first years of the Peloponnesian war, so that it is not to be wondered at that some medical historians considered this epidemic as typhus, but if one recalls that this plague came from the upper Orient, and that before it reached Athens it had ravaged Egypt and the greater part of the Persian Empire, typhus must be excluded necessarily when it is recalled that the plague of Athens was not localized to this city alone but had raged over large countries.

It does not seem possible that the plague of Athens can be considered as bubonic plague. Evagoras, in his "*Historiæ ecclesiasticæ*," lib. IV, cap. XXVIII, *De pestilente morbo*, relates how he was eye-witness of several invasions of the bubonic plague at Antioch, and he has not failed in the description that he has left us of establishing a parallel between the plague occurring in his time and that described by Thucydides. His conclusion was extremely explicit, and is as follows:

"This disease has certain characters similar to those described by Thucydides, but it differs from it in many respects." Ranchin of Montpellier observed an epidemic of plague which ravaged his city in 1629 and 1630, and after having reproduced literally the description given by Thucydides, he goes on to say: "Voilà une description de la peste bien extravagante, et qui ne s'accorde pas avec les signes de la nostre." Fodéré is less affirmative when he says: "La peste d'Athènes décrite par Thucydide, ainsi que celle qui devasta l'Europe et l'Asie sous Marc-Aurèle ou l'on n'observe ni bubons ni charbons, mais bien la gangrene des extrémités . . . pourraient bien n'avoir pas été la véritable peste."

Pariset distinctly says in his "*Mémoire sur les causes de la peste et les moyens de la détruire*," which was published in Paris in 1837, that the plague of Athens was not the true bubonic plague, and to try to assimilate one with the other would be to fall into a great error, and Littré in his translation of the works of Hippocrates categorically declares that the disease which afflicted Athens was entirely different from the true bubonic plague. Anglada is no less explicit when he states in his "*Etude sur les maladies éteintes et les maladies nouvelles*," published in 1867, that the epidemic which afflicted Athens was not the bubonic plague, for the peremptory reason that bubos were wanting in the symptomatology. Daremberg also distinctly separates the two diseases.

Now, in point of fact, the true bubonic plague is ushered in by fearful hallucinations or by the sudden appearance of a slight fever. Procope, who was an eye-witness of the first invasion at Constantinople of the Oriental plague occurring during the reign of Justinian, says in his well-known description, which will be found in his "*Historiarum sui temporis*," lib. VIII, vol. I, cap. XXIII, that the bodies of those afflicted did not change in color and that their temperature was not that of fever. No indication of inflammation was noted.

The beginning is entirely different in the case of the plague of Athens, as has already been pointed out: hallucinations were wanting, and the eyes, tongue and pharynx were highly hyperemic. The patients sneezed, and were attacked by violent fits of coughing; their voice was hoarse, while the skin was either red or livid. Thucydides also mentions free vomiting of bile and a general eruption of small pustules followed by ulceration. In the bubonic plague, as described by Procope, there was no vomiting, but the body was covered with black spots, accompanied by bubos in the inguinal and axillary regions. In the plague of Athens gangrene of the genital organs, the limbs and eyes occurred; there was an incessant agitation and a persistent insomnia, while in the plague which afflicted Constantinople we find large plaques of gangrene of the skin, marked depression or a furious delirium. In the former disease death occurred either on the seventh or the ninth day, while in the latter it occurred very suddenly in the beginning of the disease, or during the second or third day.

From all that has been said, it would appear conclusive that the plague of Athens was not the true bubonic plague, and it simply remains for us now to examine whether or not it was the smallpox which afflicted the capital of Greece.

In both smallpox and the epidemic which afflicted Athens we find a generalized eruption followed by ulceration, hyperemia of the eyes, tongue and pharynx, while the general symptoms are more marked in the respiratory and digestive systems. It is well known that in smallpox the eruption may interest the conjunctiva and the cornea, and may thus give rise to more or less severe ophthalmia, which from the destruction resulting may cause complete ecceity. This fortunately rarely occurs in smallpox.

On the other hand, death is not the same in the two diseases which we are considering. This occurred on the seventh or the ninth day in the plague of Athens, while in confluent smallpox the patient rarely dies before the eleventh day, and, generally speaking, it may be said that from the twelfth to the fourteenth day is the usual time of the fatal ending, should it occur in this disease. Occasionally the patient is carried away during the first five or six days of smallpox, but this apparently only occurs when the disease presents an exceptional malignancy or when it assumes an abnormal type.

To still further show the differentiation between the two diseases, we would here append the following conclusions taken from the dissertation of Krauss, which was published in 1831, and had for title "*Disquisitio historico-medica de natura morbi Atheniensium a Thucydide descripti*," an analysis of which has been given by Littré in the second book of the epidemics of the French translation of Hippocrates:

"(1) True smallpox does not transform into ulcers, the pustules remain full of puriform lymph until desiccation occurs. (2) Thucydides does not intimate that the eruption had a critical character; now, in all epidemics, in the greater part of patients afflicted by smallpox, the eruption has this character. (3) Several symptoms which, according to Thucydides, occurred to some patients, for example, gangrene of the feet, the hands or the genital organs, have not been mentioned by any author who has described epidemics of smallpox. (4) In the long interval of time occurring from Thucydides to the sixteenth century of the Christian era, when smallpox is expressly named, one finds, it is true, various eruptions mentioned that some writers have called traces of smallpox; but one does not find a description of smallpox, and from this fact it may be argued that the latter disease did not exist in antiquity. Now in point of fact, since its first appearance in the sixteenth century of the Christian era, it has always preserved the character by which we know it at the present time, and it constitutes a disease of a perfectly constant type. Now, who would dare to reproach the ancient writers to have not taken into account this type which is so distinctly characteristic. (5) The cicatrices which smallpox leaves on the skin have never been mentioned

by any of the ancient writers, and this seems to be an argument of the greatest force."

From all these considerations I believe that we may conclude that the plague of Athens cannot be compared with any of the diseases known at the present time, and, consequently, it should be considered as a special epidemic disease which is now extinct. Without emitting any hypothesis as to the real nature of this scourge, which would be time lost, it is quite admissible to believe with Littré, Hecker, Daremberg and others that it should occupy a special place in the great class of exanthematic fevers.

THE CONDITION OF THE VASOMOTOR NEURONS IN "SHOCK."¹

BY W. T. PORTER, M.D., AND W. C. QUINBY, M.D.²

(From the Laboratory of Physiology in the Harvard Medical School.)

INJURIES to peripheral tissues may at times be followed by a condition termed "shock," characterized by a great fall in blood pressure, sinking of the body temperature, weak and often irregular heart beats and lessening of the normal irritability of the nervous system. Such symptoms may also be called forth by the direct mechanical injury of the nerve cells which maintain these several functions, but this should be distinguished from shock. In shock the primary injury lies outside these nerve cells.

The symptoms which characterize shock have often been ascribed to a depression of the vasoconstrictor nervous system. Each of the nerve chains which constitute the vasoconstrictor nervous system has three neurons. The cell body of the first lies in the bulb; its axis cylinder process ends in the spinal cord or in the bulb itself, in physiological contact with the second neuron. The cell body of the second neuron lies in the cord or bulb, but its axis cylinder process leaves the cord and ends in physiological contact with a sympathetic cell. The sympathetic cell is the third neuron. Its axis cylinder process ends in the wall of a blood vessel.

The bulbar cells, or first neurons, affect the blood vessels only through the second and third neurons. Consequently, if stimuli which pass through afferent nerves to the bulbar cells call forth a normal change in the caliber of the blood vessels, the condition of all three neurons must be normal.

The most conspicuous afferent path to the vasoconstrictor center is furnished by the depressor nerve. It has been shown by Porter and Beyer³ that the depressor nerve connects with all the bulbar vasoconstrictor cells alike. The fall in blood pressure occasioned by the stimulation of the central end of the depressor nerve is therefore a quantitative test of the condition of all the vasoconstrictor neurons.

¹ Presented before the Boston Society of Medical Sciences, Oct. 20, 1903.

² Dr. Quinby took part in this research at the instance of the Surgical Department of the Harvard Medical School.

³ W. T. Porter and H. G. Beyer: Amer. Journ. of Physiol., 1900, iv, pp. 283-299.

those of the first order, in the bulb, and those of the second and third order through which alone the bulbar neurons can alter the constriction of the blood vessels. If, therefore, the stimulation of the central end of the depressor nerve produces as great a fall in blood pressure during shock as before shock began, the condition of the three vasoconstrictor neurons must be normal even in shock.

Upon this conclusive reasoning rests the method pursued in this investigation. The normal fall of blood pressure produced by stimuli of uniform intensity applied to the central end of the depressor nerve was measured in the rabbit and the cat. In the same animals shock was then brought on and the measurements repeated. Following is an abbreviated but typical protocol:

EXPERIMENT XI, SEPTEMBER 24, 1903.

9 A.M. Rabbit anesthetized with ether.

9.15. Carotid blood pressure 67 mm. Hg. Rectal temperature, 38° C. On stimulation of the depressor nerve the blood pressure fell to 36 mm., a fall of 46%.

9.20 to 9.30. Applied nitric acid to exposed intestines. The blood pressure at first rose slightly and then sank slowly; the rectal temperature also sank steadily. Shock soon progressed so far that the anesthetic was no longer necessary. The gradual sinking of the blood pressure to a point almost 50% below the normal and the effect of stimulation of the depressor are shown in tabular form. At 3.25 P.M. the rectal temperature was 26° C.

| Hour. | Blood Pressure, Mm. Hg. | Fall on Stimu- lation of Depressor, Mm. Hg. | Percent of Fall. |
|-------------------|----------------------------|--|---------------------|
| 3.25 P.M. | 53 | 30 | 43 |
| 3.30 | 53 | 30 | 43 |
| 4.50 | 40 | 22 | 45 |
| 5.16 | 35 | 23 | 34 |

At 5.16 P.M., eight hours sixteen minutes after the beginning of the experiment, the rectal temperature was 25° C.

In other experiments the blood pressure, which had fallen in shock, was temporarily raised to normal by the injection of saline solution in the jugular vein, and the depressor *immediately* stimulated. In such cases the blood pressure fell as many millimeters as it had on stimulation before shock set in.

Exhaustion in the vasoconstrictor neurons cannot therefore be the essential cause of the symptoms termed "shock."

A HITHERTO UNDESCRIBED MEMBRANE OF THE EYE AND ITS SIGNIFICANCE.¹

BY FREDERICK HERMAN VERHOEFF, A.M., M.D., BOSTON,

Pathologist, Massachusetts Charitable Eye and Ear Infirmary; Assistant Ophthalmic Surgeon, Carney Hospital.

WHILE studying the external limiting membrane of the retina in a section of a normal eye, the writer was surprised to find it continue on at

the margin of the disc and pass into the layer of pigment epithelium, where it could be followed until the gradually increasing pigmentation hid it from view. Other sections of the same eye, bleached by the method of Alfieri and stained in a variety of ways, showed the still more surprising fact that this membrane was present in the pigment layer throughout the fundus. Mallory's phosphotungstic acid hematoxylin seems to be the best stain for the membrane, because in specimens fixed in formaldehyde and in bleached specimens fixed in Zenker's fluid it does not stain the cells to any extent, and the membrane is brought out in sharp contrast.

The appearance presented by this membrane in cross section is that of a delicate line running along near the inner margins of the cells, the latter projecting beyond it in the form of processes of variable length. Occurring at almost regular intervals on the line there are black dots, each of which on close examination is found to be situated at the line of junction of two cells. On careful focusing it can be seen that the line is not always on the same level, evidently passing sometimes behind and sometimes in front of the cells. Rarely it is missed entirely for a cell or two. In oblique sections the true structure of the membrane is at once apparent, the latter appearing then not in the form of a straight line, but as a series of hexagonal loops which are fused together at their sides of contact so as to form a screen into the openings of which the pigment cells project. The little dots resolve themselves into the sides of the loops, which in cross section had pointed more or less directly at the observer.

That this is a true fenestrated membrane, and is not an appearance produced by the contours of the cells, there can be no doubt whatever. In the first place, as just stated, it does not correspond in position to the margins of the cells. Secondly, in phosphotungstic acid hematoxylin followed by acid fuchsin it stains blue, whereas the cells stain pink or not at all, and show no vertical lines between them. Thirdly, in certain places where two neighboring cells have shrunk apart, it remains intact. Fourthly, it can frequently be seen projecting beyond a fragmented portion of the pigment layer.

The membrane in the pigment layer is similar to the membrana limitans externa of the retina in structure and also in staining reactions, both membranes giving the staining reactions of neuroglia. The writer has a few specimens which seem to show a similar membrane in the ependymal epithelium of the brain and spinal cord. Possibly this has already been described by others.

For years the membrana limitans externa has been described as being formed either by the apposition of the outer ends of Müller's fibers, or by lateral interlacing offshoots from them. Greeff, in his elaborate article on the retina, still holds to this view. The basis for this belief seems to rest on the fact that Müller's fibers have been seen to end in contact with the membrana limi-

¹ This paper will appear in full with illustrations in the Reports of the Royal London Ophthalmic Hospital.

tans externa. Since, however, an entirely similar membrane, and one with which it is directly continuous, exists in the pigment layer, where there are no such fibers, the writer feels that this theory must be abandoned. The little processes that have been described as arising from the membrane and passing in between the rods and cones so as to isolate them are evidently nothing but the cut ends of loops seen obliquely. The appearance of other little processes extending inwards is due to the sharp contours of the cones.

No one can doubt that the membrane in the pigment layer is a product of the cells which project through it. It seems clear, therefore, that the membrana limitans externa must have a similar origin. The latter membrane, however, makes its appearance long before the rods and cones are formed, so that it must be manufactured by cells which later become converted into these elements. The natural deduction from these conclusions is that the rods and cones and the cells of the pigment layer are essentially of the same nature, and that the former are really only modified spongioblasts (of His). Two facts already mentioned support this deduction: one is that at the margin of the optic disc the rods and cones can sometimes be seen gradually to assume the character of the pigment cells, and the other is that the membrana limitans externa gives the characteristic staining reactions of neuroglia. The writer has found, too, that the rods and cones, and frequently also their nuclei and fibrils, can be differentiated from the bipolar cells of the retina by the neuroglia stain. The theory that the rods and cones represent modified ependymal cells is not new, but it seems to the writer that the foregoing considerations make this theory practically a certainty. It is interesting that this supports Barker's contention, based on analogy, that the rods and cones are not nervous elements but sensory epithelium and that the bipolar cells of the retina correspond to the cells of spinal ganglia.

As is well known, in the rosettes of glioma retinae there is a membrane which on cross section appears to be identical with the membrana limitans externa of the retina. So far as the writer can ascertain, however, its appearance in plane section has never been described. To determine the structure of this membrane, a glioma retinae was selected in which the rosettes were both unusually large and numerous. Sections from a portion of this tumor, fixed in Zenker's fluid, show conclusively that the membrane in the rosettes is a fenestrated structure similar in every way to the membrana limitans externa and to the membrane of the pigment layer. The same stains were applied as in the case of the other two membranes and with identical results. Rosettes are frequently to be seen in parts of which the membrane is cut transversely, while in other parts it is cut in plane section and can be seen to become continuous with a series of hexagonal loops. The fenestrated structure of the membrane seems to explain the formation of the rosettes, for it is evident that if a few cells

became bound together by such a membrane, and they were otherwise unhampered in their growth, they would be compelled to form a more or less spherical body.

The similarity of the rosettes of glioma retinae to the layer of rods and cones, the neuro-epithelium of the retina, was first pointed out by Flexner and a few years later by Wintersteiner. Each observer suggested the term "neuro-epithelioma" as the proper designation for these tumors. A strong argument against the theory of Flexner and Wintersteiner in regard to the nature of rosettes is the fact that according to accepted views the membrane of rosettes could not be formed in the same way as the membrana limitans externa, since there is nothing corresponding to Müller's fibers in these bodies. Strangely enough, this fact seems to have been entirely overlooked. The observations of the writer, however, render this objection no longer valid, for it has just been shown that the membrana limitans externa is in all probability produced by the cells which go to form the rods and cones. It was pointed out, too, that the two membranes are identical in structure.

While, then, the nature of the rosettes in glioma retinae seems plain, the character of the other elements in these tumors is still undetermined. Thus far there is no trustworthy evidence that the cells are differentiated into true ganglion cells or neuroglia cells. Greeff claims that by means of the Golgi-Cajal method he has not only demonstrated several types of ganglion cells but neuroglia cells as well. If ganglion cells can be found in cheese by the Golgi method, it is not surprising that they should have been found in a tissue so prone to undergo degeneration as is glioma retinae. Then, too, the ganglion cells and neuroglia cells belonging to a portion of retina incorporated in the tumor might easily be mistaken for elements of the tumor itself. By Mallory's method the writer has been unable to find neuroglia fibers in these tumors which were not connected with the retina. Brown Pusey has recently described a case that he evidently regarded as glioma retinae, and has arrived at the conclusion that glioma retinae consists essentially of neuroglia elements. He also concluded that the limiting membrane of rosettes corresponded to the internal, not to the external limiting membrane of the retina. Judging from the description of the case, however, the writer is very sure that it was really one of phthisis bulbi posterior following metastatic ophthalmitis, one of the conditions known clinically as pseudo-glioma. The "rosettes" were evidently nothing more than retinal folds.

In view of the fact that there is no reason to believe that these tumors contain neuroglia, it is obvious that the term "glioma retinae" is an inappropriate one. It is all the more so because there are tumors of the brain termed "gliomata," which are believed to be made up of neuroglia, and it seems possible that such tumors may yet be encountered in the retina. The term "neuro-epithelioma," however, is no less inappropriate

than the other. If it indicated no more than that the tumor took its origin from the epiblast of the neural canal of the embryo, it would unquestionably be a most suitable term. Unfortunately, the term "neuro-epithelium" has been applied to the layer of rods and cones in the fully differentiated retina, and hence "neuro-epithelioma" indicates a tumor whose essential elements correspond to the rods and cones. But as a matter of fact it is rare for rosettes to form more than an insignificant part of the tumor, and in most of these tumors they are entirely absent. It is possible, if not probable, that they do not represent the only form of differentiation and that the essential elements of the tumor may undergo differentiation in other directions as well. The possibility remains that many of the elements represent neuroblasts. It is evident, therefore, that "neuro-epithelioma retinae" is a no more suitable designation than "glioma retinae" for the tumors to which they have been applied, and that at present there is no reason why the latter should be supplanted by a term over which it has long priority.

CONCLUSIONS.

In the pigment layer of the retina there is a fenestrated membrane, identical in structure and staining reactions with the membrana limitans externa.

The rods and cones are not nervous elements, but modified ependymal cells, and are analogous to sensory epithelium.

The limiting membrane of the rosettes of glioma retinae is a fenestrated membrane similar in every way to the membrana limitans externa, and the rosettes correspond to the neuro-epithelium of the normal retina.

The structure of the limiting membrane of rosettes explains why they assume their characteristic spherical and spiral-like forms.

"Neuro-epithelioma retinae" is no more suitable than "glioma retinae" for the class of tumors to which these terms have been applied.

Clinical Department.

CLINICAL MEETING OF THE STAFF OF THE MASSACHUSETTS GENERAL HOSPITAL, APRIL 10, 1903.

(Concluded from No. 16, page 431.)

RÉSUMÉ OF DR. F. B. HARRINGTON'S SERVICE.

DR. E. A. CODMAN said: I want to present this leaflet as I did last year, not as a table of statistics, but to give you some idea of all the cases, good and bad alike, which come into one-ninth of the surgical service, with special reference to their results. Please bear in mind that most of the cases we have been able to trace are the least satisfactory ones, and that those that do not report are presumably better.

In using our judgment on a surgical question, we are mainly guided by our individual experience and by what we read of the work of others.

Next to our individual experience in value comes the experience of our colleagues, the character of whose work we know. In the records of results found in surgical literature we are often ignorant of the degree of ability and standard of veracity of the author, so that the nearer home we get our facts, the more faithful prognosis can we give our patient.

The weakness of our hospital régime is in the failure to record ultimate results. This résumé which I have passed about is only of real value to one who has seen the individual cases, but if each of the nine staff surgeons presented annually such a report as this, the aggregate result would be worth reading.

A RÉSUMÉ OF THE RESULTS OF DR. HARRINGTON'S SERVICE, FROM JUNE 1 TO OCTOBER 1, 1901, AS SEEN IN THE FOLLOWING JUNE OR LATER.

| DISEASES. | Total number treated. | Number traced. | Perfect result. | Good result. | No improvement. | Bad result. | Died. | Died after leaving hospital. |
|--|-----------------------|----------------|-----------------|--------------|-----------------|-------------|-------|------------------------------|
| APPENDICITIS: | | | | | | | | |
| General peritonitis from appendicitis | 8 | 7 | 1 | | | | 6 | |
| Appendicitis; wound drained | 19 | 17 | 6 | 9 | | | 1 | 1 |
| Appendicitis; wound closed | 16 | 9 | 3 | 6 | | | | |
| HERNIA: | | | | | | | | |
| Strangulated | 2 | 2 | | | | | 2 | |
| Inguinal | 14 | 7 | 6 | 1 | | | | |
| Ventral | 4 | 1 | | | | | 1 | |
| Other forms | 2 | 1 | 1 | | | | | |
| MISCELLANEOUS LAPAROTOMIES: | | | | | | | | |
| Fibroid of uterus | 4 | 1 | 1 | | | | | |
| Pelvic abscess | 4 | 2 | | | | | 1 | 1 |
| Ovarian cyst | 2 | 1 | 1 | | | | | |
| Ovarian fibroma | 1 | 1 | 1 | | | | | |
| Ovarian papilloma | 2 | 1 | | | | | | 1 |
| Closure of fecal fistula | 2 | 2 | 1 | 1 | | | | |
| Operation on gall bladder | 6 | 6 | 3 | | | | 2 | 1 |
| Cancer of cervix uteri (hysterectomy) | 3 | 1 | 1 | | | | | |
| Intestinal tuberculosis | 2 | 2 | 1 | | | | 1 | |
| Mesenteric thrombosis | 1 | 1 | | | | | 1 | |
| Sarcoma of intestine | 1 | 1 | | | | | 1 | |
| Cancer of sigmoid (resection) | 1 | 1 | | | | | 1 | |
| Partial intestinal obstruction (adhesions) | 1 | 1 | | | | | 1 | |
| Other cases | 6 | 6 | 1 | 1 | | | 1 | 3 |
| GYNECOLOGICAL CASES: | | | | | | | | |
| Extra-uterine pregnancy (vag. op.) | 1 | | 1 | | | | | |
| Pelvic abscess (salpingitis) (vag. op.) | 4 | 4 | 4 | | | | | |
| Salpingitis (no operation) | 3 | 1 | 1 | | | | | |
| Cancer of cervix | 4 | 2 | 1 | | | | | 1 |
| Ventral fixation (usually appendectomy, also) | 7 | 5 | 4 | 1 | | | | |
| Repair of cervix or perineum or both | 5 | 1 | | 1 | | | | |
| Dilating and curetting | 3 | 1 | | 1 | | | | |
| Complete repair, cervix and perineum and V. F. | 7 | 6 | 2 | 4 | | | | |
| GENITO-URINARY CASES: | | | | | | | | |
| Prostatic hypertrophy (Alexander's op.) | 5 | 5 | 1 | 2 | 1 | | 1 | |
| Strictures | 13 | 5 | 2 | 3 | | | | 1 |
| Miscellaneous G. U. cases | 12 | 4 | 1 | | | | | |
| HEAD INJURIES: | | | | | | | | |
| Compound fracture of skull | 6 | 5 | 1 | 1 | | | 3 | |
| Fracture of the base | 3 | 2 | 1 | | | | 1 | |
| Concussion | 6 | 1 | 1 | | | | | |
| Bone and joint disease | 29 | 13 | 2 | 8 | 2 | | 1 | |
| Fistula in ano | 2 | 1 | 1 | | | | | |
| Empyema | 3 | 2 | 2 | | | | | |
| Cancer of breast | 12 | 6 | 2 | 2 | | | | 2 |
| Hemorrhoids | 5 | 2 | 1 | | | | 1 | |
| Miscellaneous malignant cases | 25 | 12 | 3 | 3 | | | 2 | 4 |
| Accident cases | 24 | 12 | 3 | 4 | | | 5 | |
| Amputations | 8 | 7 | | | | | 2 | 1 |
| Miscellaneous cases | 28 | 22 | 9 | 8 | 2 | | 2 | 1 |
| Fractures of various kinds | 49 | 20 | 3 | 14 | | | 1 | 2 |
| | 365 | 210 | 47 | 92 | 9 | | 3 | 16 |

Explanation. — Most of the results were seen personally by Dr. Harrington or by Dr. Codman. A few who replied by letter are included. The results of cases as seen at the time of discharge and not heard from later are not given, because such figures can easily be obtained from the annual report.

Perfect results are not discussed in the remarks at the end, because they are perfect and speak for themselves.

Good results include those cases which, while they showed some benefit from the operation, were, nevertheless, not completely relieved. In what respects these lacked perfection is explained in the remarks.

REMARKS ON THE CASES IN WHICH THE RESULTS WERE NOT PERFECT.

General peritonitis from appendicitis. — One of these which was not operated on died. Another drowned suddenly a week after the operation from the perforation of a subphrenic abscess into a bronchus. The one considered "good" had later an abscess in the abdominal wall, and is now well. Two or more successful cases which might justly be considered general peritonitis are included under the next heading.

Appendicitis; wound drained. — The fatal case died of post-operative intestinal obstruction; three other cases had successful operations for this condition shortly after their first operation, and though they are now well are classed as good results instead of perfect. Of the six other good results, three are well, except for hernia in the scars. The other three complain of occasional pain or constipation; one died after leaving the hospital (cause unknown).

Appendicitis; wound closed. — The six good results have more or less complaint of constipation, distress from wind and indefinite pain. In one case it is hard to see what good the operation has done except to eliminate the appendix.

Hernia. — Two deaths were in cases of gangrenous strangulated hernia, in which resection was done. One was due to exhaustion following an operation for repair of a large ventral hernia, consequent to an acute appendicitis the year before. One patient with double inguinal hernia has had recurrence on one side. A patient with femoral hernia writes that she still has pain in her wound.

Miscellaneous laparotomies. — One case of fibroid in which hysterectomy was done still flows regularly for only one day at a time. One case of pelvic abscess of unknown origin died under chloroform when in a moribund condition; the other died a year later of cancer of the stomach. An ovarian cyst (the size of a full term uterus) with a twisted pedicle and a large fibroma of the ovary were reported well, but were not seen. One fecal fistula still has a small sinus. In this case a large round worm was removed incidentally by enterostomy at the operation. The other case of fecal fistula had had four previous operations for salpingitis, broad ligament cyst and abdominal sinuses. At the last operation two fecal fistulae were closed. She is now well. Two cholecystotomies have hernias in the scars, but are otherwise well. One has not been "quite strong" since the operation. One was well for six months, had recurrence, then the morphine habit and died last summer from persistent vomiting following cholecystectomy. One case of gangrene of gall bladder died of general peritonitis. One died of shock. A case where hysterectomy was done for advanced cancer of the cervix uteri was free from signs of recurrence for eighteen months. It has now recurred (March, 1903). A case of resection of several feet of intestine for tubercular stenosis died of pneumonia (tubercular)? while convalescent. Of the six other cases, five were exploratory laparotomies. In one, gastro-enterostomy for cancer of stomach gave considerable relief, and the patient died nearly a year later. In a case of probable chronic pancreatitis, and in one of peritoneal cancer, nothing was accomplished. In a case of cirrhosis of the liver, very little was accomplished. A case of gunshot wound of the kidney, liver and lung died. A case with symptoms of acute appendicitis, but in which the appendix did not account for the peritonitis, has been well since.

Gynecological cases. — The case of extra-uterine preg-

nancy operated on by vagina has not felt well since. Her symptoms point to adhesions. *Pelvic abscess.* — All four cases of pelvic abscess operated on by vagina were temporarily good results, but all still have symptoms of more or less severity referable to an inflammatory condition in the pelvis. The same may be said of a single case which was not operated on. Of the two cases of cancer of cervix (curetted) traced, one lived in comparative comfort for nearly a year, when she re-entered and again was curetted; the other "suffered untold agony," and died seven months later. *Ventral fixation.* — In five of the seven cases of ventral fixation appendectomy was also performed; two cases were symptomatically well, but were not examined; two others had anatomically perfect results, but their symptomatic improvement was questionable. One extremely neurasthenic patient wrote that she was no better for the operation. *Repair of cervix and perineum.* — The one case which replied is an invalid from severe osteoarthritis of the spine. Probably she should not have been operated on. *Dilating and curetting.* — This operation was of course usually done also in conjunction with the other gynecological operations. In the one case of "no improvement" it was done for sterility. *Complete repair.* — Of the four good results, in one, retroversion has returned; one has had considerable distress during pregnancy; one says she is well but "not quite comfortable"; one has had a great deal of distress from a neglected wick in the uterus, but is now well.

Genito-urinary cases. Prostatic hypertrophy, in which Alexander's operation was done. — One result considered good has a very small perineal fistula, but is otherwise well. One case has a little cystitis and has to wear a urinal because he has not complete control. The case which has not improved was previously operated on, and has since been successfully operated on by Dr. Elliot. One case died from shock. *Strictures.* — Of the two "perfect" results, one was from perineal section, the other from divulsion; of the three "good," one was perineal section and two divulsions; of the *miscellaneous genito-urinary cases*, only one is of interest: a case of orchidectomy for tubercular epididymitis, died three months later from tubercular meningitis.

Head Cases. Compound fracture of skull. — The one "good" began to have epileptic fits in about six months. He has since been in Dr. Warren's service for a fracture of the base sustained during a convulsion. *Fracture of the base.* — One still has a slight facial paralysis and left-sided headache. *Concussion.* — One case of concussion has certain areas of paresthesia and diplopia.

Bone and joint disease. — Perfect results: a typhoid periostitis and a deformity following mal-union of femur. Good results: the case of osteochondroma reported at the last clinical meeting; adhesions of knee joint; plastic on necrosis of tibia; tuberculosis of wrist tendons; fringes in knee joint; tuberculosis of shoulder (excision); necrosis of jaw. The eighth case was one of contracted ankylosed knee joint following gonorrhea. An attempt to break adhesions broke the tibia, and was equivalent to osteotomy in straightening the leg. No improvement except alleviation of pain occurred in a case of osteomyelitis of the tibia and in an osteoarthritis of the hip joint. A case of double hip disease is worse than at discharge (operated on in a later service).

Empyema. — A thoraco-plasty for old empyema was partially successful. The patient still comes to the O. P. D. with a large cavity. The other case later had an abscess of the lung, which was operated on successfully.

Cancer of the breast. — Two had been operated on in the summer of 1900 and returned for recurrent nodules. In one case these proved to contain no cancer, and the patient is still free from signs of recurrence (February, 1903). In the other case the patient has lately had recurrence. In two cases there was a large amount of growth in both breasts, and it was known at the operation that all disease was not removed. One of these died some months later, and Dr. Wright found that the disease was probably metastatic from the ovary. The two results considered "good" had small nodules of recurrence.

Hemorrhoids. — One case has a serious cicatricial contraction. The case was a very bad one with ulceration. It could not be properly reduced after operation, and the patient was very ill with alarming abdominal symptoms.

Miscellaneous malignant cases.—The three perfect results were: an epithelioma of the lip; a case supposed to be metastasis of lung (which proved to be phthisis) following an amputation of arm for sarcoma the year before; a case supposed to be a recurrence from a partial resection of the jaw the year before. (This proved to be an inflammatory gland.) The good results were in a large nevus of the face, a parotid sarcoma, and a myxosarcoma of the dorsum of the foot. All three showed small areas of recurrence. The case of parotid sarcoma was first operated on eighteen years before. Of the twelve cases which did not report, radical operation was not attempted in six.

Accident cases.—Two cases only were of much interest. A heavy man slid down a sand bank with his legs apart and struck on an upright crow-bar. The bar entered the ischio-rectal fossa beside the anus and passed through the sacrum, appearing on the back near the posterior-inferior spine of the ilium. The wound was douched and drained by a wick passing through it. A year later he was well except for a small sinus. A stout woman with irreducible dislocation of the shoulder was sent in for resection of the head of the bone. It was thought unwise to do this. A year later she returned with a very serviceable arm. The deformity was scarcely noticeable and the motions were good, except in putting the hand to the back of the neck or the back of the waist.

Amputations.—All seven complain of slight pain in stump.

Fractures.—Twenty-six of the forty-nine were of the lower leg. Three results were perfect, one of the thigh, one of the tibia and one of the jaw. The latter was not examined, but reported by letter. He was treated with Dr. Moriarty's splint after leaving the hospital. Each of the good results had some slight complaint; for example, flat foot, pain on long standing, swelling of leg, stiffness of ankle joint, etc. The bad result was the fracture of the neck of the femur in a huge woman. She is still helpless. Three good results were in cases of fracture of the patella, which were sutured with chronic catgut. All had slight limitation in extreme flexion.

The following cases died during or after the service:

Cases which died unoperated: general peritonitis, two cases of compound fracture of skull, carcinoma of rectum, multiple burns, gunshot wound of chest, delirium tremens, ruptured spleen, multiple injuries, fracture of pelvis, multiple fractures.

Cases in which death was probably hastened by operation: appendix abscess, ventral hernia, gallstones, intestinal tuberculosis, cancer of sigmoid, partial obstruction from adhesions, prostatic hypertrophy, sarcoma of thigh.

Cases in which death was probably not hastened, or not more than a few days, by operation: five cases of general peritonitis, two of strangulated hernia, pelvic abscess, general peritonitis from gangrene of gall bladder, mesenteric thrombosis, sarcoma of intestine, gunshot wound of liver, etc., two skull fractures, abscess of cheek, osteomyelitis of humerus (septicemia).

Cases which died after leaving the hospital: appendix abscess (cause unknown), pelvic abscess (cancer of stomach), papilloma of ovary, gallstones (cholecystectomy), cirrhosis of liver, cancer stomach, cancer of peritoneum, cancer of cervix, tubercular epididymitis (meningitis), two of cancer of breast, cancer of larynx, cancer of penis, sarcoma of nose, epithelioma of cheek, tuberculosis of kidney.

Dr. Codman also showed three cases illustrating points in the surgery of the knee joint.

CASE I. I show this patient to demonstrate a point for which I am indebted to Dr. Tenney of the City Hospital.

The point is this, that in some, probably in many, dislocations of the semilunar cartilage, the posterior portion is folded over the anterior so that the whole cartilage lies in front of the bearing of the joint. Thus when the joint is extended locking occurs.

This patient entered the accident room on the 8th of last September, with the cartilage dislocated, and with a history of many previous dislocations during the preceding seven months. I therefore did not reduce it, but the next day opened the joint under ether, and found the cartilage dislocated exactly as shown in this model. I excised the whole cartilage, and the patient left the hospital well in three weeks. The joint is apparently perfect, and gives him no trouble. Usually in these cases the operation is done when the cartilage is back in place, and nothing is seen but a cracked or damaged portion in the middle where the bend occurs. In such cases it is important to fish out the whole posterior half. Perhaps this can be more easily done by first dislocating the cartilage.

CASE II. This patient illustrates a wholly different form of lesion, which is often confused with the type found in the other patient. This is a case of "loose cartilage," or "joint mouse."

In this patient *certainly* the "mice" were chips of articular cartilage, and his case proves to me a point which I have long suspected. I think that most men would say that these mice arose from several different sources, and that few would speak of their being actual pieces of articular cartilage with a little of the underlying bone. The sources commonly mentioned are: Concretions of fibrin, bits of semilunar cartilage, fragments of fringes or fat which have become free in the joint and calcified, or marginal osteophytes which have been broken off.

In 1895, when assisting at an operation for this condition, I noticed a stellate scar on the articular surface of the internal condyle. This scar was a little smaller than the "mouse" removed. Since then I have seen the same thing in the cases of other surgeons a number of times. In 1900 I operated on a case in which the mouse nearly fitted the scar.

In this patient before you I found two mice in the right knee and four in the left. One was still hung to the articular surface by a hinge of cartilage. Another had evidently just come out, and could be accurately fitted into its former bed, the base of which was bare bone. A third had been free some time, was crusted, and was considerably too big for its former place.

These bodies are on the card which I hand about. There are also a few other specimens which other surgeons have removed, which show the same structure and therefore probably had the same origin. The first two pieces on the card were taken from the joint of a cadaver after striking a blow with a mallet; on opening the joint these pieces were found still *in situ*, and resembled the depressed fragments of a skull fracture. I picked them out with a director. They resembled very closely the pieces found in this patient.

The point of all this is that when a joint is opened to remove a mouse, it is best to put your finger in and feel of the articular surface of the internal condyle to see if there are other mice in the process of formation. In this case the

patient would not have been cured had I not done so, and as it was, the fourth mouse was removed at a second operation.

I believe that the origin of these bodies is, as a rule, primarily traumatic, and due to a fall on the flexed knee. The articular cartilage on the internal condyle is not protected in flexion. A depressed fracture occurs, followed later by loosening of the chip (perhaps by granulations growing up in the cracks). When the chip is free, it still continues to grow, either by actual growth or by accumulation of fibrin.

Dr. Whitney has kindly made some sections for me of similar bodies removed by Dr. Cabot. On one side you may see articular cartilage, on the other cancellated bone.

I may say that in looking up the question of origin of these bodies, I find a voluminous literature, and that the manner of growth after the body becomes free in the joint is of especial interest. The fact that the growth seems to be chiefly in the cancellated portion, and that in some cases the cellular elements are still capable of staining, seems to point to actual activity of the osteoblasts. *A priori*, however, one would think that growth by concretion and the slow deposit of lime salts would be more likely.

CASE III. My third case I take a good deal of pride in, because I freely disobeyed surgical rules in not operating.

This boy entered with a punctured wound of the knee joint discharging pus containing streptococci and staphylococci. I contented myself with enlarging the wound to about half an inch and washing the joint out with salt solution. Believing that the natural discharge of serum would constantly tend to drive out the bacteria, I did not damage the joint by the introduction of tubing or gauze drains, and merely kept the lips of the wound apart with protective. In spite of a picket fence temperature, of a great deal of pain and tenderness and septicemic symptoms, I maintained the same policy without even irrigating the joint again. The resulting practically free joint justifies my conservatism in this one case.

DR. WHITNEY: The question of the growth and development of these foreign bodies in the knee joint is certainly very interesting. These cells stain very well, but whether they are still capable of producing bone is a question. It will be only by very careful examination of future cases that we shall find out.

Medical Progress.

REPORT ON PROGRESS OF SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D., BOSTON

(Concluded from No. 16, page 433.)

THE VALUE OF ENTEROSTOMY IN SELECTED CASES OF PERITONITIS.

F. B. LUND⁸ gives the following summary as to the indications for this operation: Enteros-

tomy is indicated for obstruction or paralytic distention of the intestine from whatever cause, after the ordinary means for relief of such distention have failed. It is especially applicable for distention after operations for acute appendicitis or general peritonitis. Under such circumstances it may restore to life cases in which death seems inevitable. Secondary ileostomy is the operation of choice. Local anesthesia is to be preferred. The subsequent operation for closure of the fecal fistula is usually safe and successful.

THE EPIDEMIC NATURE OF APPENDICITIS.

A very complete monograph on appendicitis by Rostovtzeff forms an important contribution to the subject. He does not recognize the epidemic nature of the disease, contrary to N. Golouboff,⁹ who in 1897 put forth the view, as based on clinical data, that inflammation of the vermiform appendix was an epidemic infectious disease. In this opinion he is supported by no less an authority than the famous French surgeon Lucas-Champagniere, who considers appendicitis as a new disease of an undoubtedly epidemic character and especially prevalent in England and in the United States. Professor Charrin of Paris considered the subject important enough to conduct a series of laboratory experiments, the results of which he embodied in a "Report on Experimental Epidemic Appendicitis." There is no doubt that many of the most prominent surgeons seem to be inclined to consider appendicitis as an epidemic infectious disease, and the more the disease is being studied, the stronger becomes this view. Dieulafoy goes so far as to call appendicitis *maladie toxi-infectieuse*. The author finds that in appendicitis, as in other infectious diseases, there occur icterus, acute nephritis, multiple arthritic inflammations, etc.; he even observed in two cases enlarged spleens. In concluding, the author draws the following: (1) Appendicitis is an infectious disease; (2) in many of the cases appendicitis appears as a primary independent affection of the appendix, in the way that tonsillitis represents an inflammation of the tonsillary glands; (3) during the last eight to ten years the number of appendicitis cases has increased progressively, taking the character of an epidemic, or even endemic prevalence; (4) this prevalence is of a distinct, undoubted nature, as observed by Sonnenburg in 1899, in certain localities in Berlin and Frankfurt.

NOTES ON EXPERIMENTAL SURGERY: A MODIFICATION OF THE MCGRAW ELASTIC LIGATURE.

Maury, J. W. Draper,¹⁰ gives a report of experimental work which he did by the authorization of the Department of Surgery of Columbia University. In April last he began a series of laboratory experiments which aimed at finding a method so to place the elastic ligature that it would "punch out." He states that from his too small and confessedly incomplete series of experiments the following conclusions suggest themselves:

⁹ Prakt. Vrach., No. 29, 1903. Med. News, Sept. 12, 1903.

¹⁰ Med. News, Sept. 12, 1903.

⁸ Journ. Amer. Med. Ass., July 11, 1903.

(1) The McGraw elastic ligature can be so inserted as to "punch out" as large an area of the juxtaposing walls as may be desired, with at least as much certainty and with greater safety than the Murphy button.

(2) That the margins of such openings are smooth and not unduly cicatrized.

(3) That the elastic ligature may remain *in situ* after punching the openings, although this is less likely to happen if tied with iodized catgut.

(4) That such retention in the mucosa of so soft a material is not apt to be harmful or permanent.

(5) That the time required is not sufficiently increased to render the use of this technic impractical.

(6) That perhaps enough has been suggested to stimulate further research by others, so that the actual facts in these most interesting problems may shortly be brought to light.

TREATMENT OF FISSURE AND PROLAPSE OF RECTUM.

Czerny¹¹ describes a case of prolapse treated by operative intervention through a parasacral incision exposing the rectum and taking a lengthwise tuck in it with a row of button sutures. The stitches did not pass into the mucosa, and the tuck projected toward the lumen of the intestine. The rectal wall was sutured at the same time with several catgut stitches to the severed fibers of the ligaments. By these procedures the wall of the rectum was made smaller and stiffer and it was suspended, thus completely counteracting the tendency to prolapse. He treats fissure by excision in profound anesthesia, uniting afterward the tip of the wound in the mucosa with the opposite point of the wound in the skin, drawing it out for the purpose by a suture passed through the mucosa at the tip of the incision. The rest of the wound is united with two to four stitches. The fissure is thus radically extirpated and the defect left is lined with sound mucosa. He has found the operation a success in his six cases treated in this way.

COLITIS.

C. L. Gibson¹² redescibes his method suggested in 1902. It consists particularly in reproducing the technic of Kader's gastrostomy, making a valvular opening into the intestine and introducing a drainage tube through which treatment can be carried on. When it is removed the valvular arrangement completely closes it and to obtain permanent closure of the fistula when required it is only necessary to discontinue the treatment by omitting to pass the catheter into the gut. The Weir modification of this, with the use of the appendix, has the apparent advantage of making the simple operation still simpler, but the valvular formation is wanting and the after-treatment is less agreeable. Gibson says that the results of this operation have been such as to justify the hope of marked amelioration or cure of the symptoms, while it offers the advantage that it is devoid of every disagreeable feature of an artificial anus.

It calls for only a short confinement to bed. If a prolonged course of treatment is required, it may be carried out if necessary by the patient himself. A change of climate, so often beneficial, is made possible. Its performance is perfectly simple and safe. The intermuscular incision greatly reduces the risk of a subsequent hernia, and the prompt closure of the fistula is certain and spontaneous.

GALLSTONE DISEASE.

Mayo¹³ remarks on the success of gall-bladder surgery. In 582 operations, he has had but 17, or 3%, that required a secondary operation. It is possible, however, that others may have operated on some of his cases, so this figure is not absolute. Experience has taught him how to get over the defects of his earlier work and avoid the causes which lead to subsequent troubles. He remarks in this connection that a few patients who have had cholecystotomy performed will have a colic or two and transient jaundice within the first month or two after the operation, but usually these do not recur. They are probably due to the non-emptying of the crippled gall bladder with sufficient promptness. Unless there is more than a single spell of pain after closure of the fistula a secondary operation may not be required. The common cause of secondary symptoms is incomplete removal of stones. This, however, is avoidable with sufficient care. Stones in the cystic duct may escape attention, hence the importance of great care in its exploration. In such cases if the stone completely obstructs the duct he clamps it below the obstruction and cuts it off and then performs cholecystectomy from below upward. It may be done almost without cutting by simple traction. It is important to explore the ducts with the fingers before opening the gall bladder in every case, as stones are sometimes overlooked in the common duct, where they may lie quiescent for years. One cause of failure from cholecystotomy is from secondary obstruction of the cystic duct, possibly eventuating in a mucous fistula or repeated attacks of colic; hence the advisability of generally excising the gall bladder whenever the cystic duct is involved. In this way he has in his later practice eliminated this most common cause of secondary trouble. In septic cases long-continued drainage is necessary; severe symptoms may follow too early closing of the fistula. Cancer may be said to be secondary to stone formation and may occur after operation or, if present, be mistaken for inflammatory conditions. All thick-walled gall bladders should be looked on with suspicion. As they are functionally useless, cholecystectomy is better than cholecystotomy. Chronic pancreatitis may exist at the time of operation and require long-continued drainage. The condition of the pancreas should be observed at the same time as that of the ducts. If disease is present there is the choice of cholecystenterostomy with the Murphy button in addition to removing the stone, or of draining for a long time. In the one uncomplicated case in his experience

¹¹ Beitr. zur klin. Chir. (v. Brun's), Tübingen. Journ. Amer. Med. Ass., Sept. 26, 1903.

¹² Med. Rec., N. Y., Sept. 12, 1903. Journ. Amer. Med. Ass., Sept. 26, 1903.

¹³ St. Paul's Med. Journ., August. Journ. Amer. Med. Ass., Sept. 19, 1903.

which required a secondary operation, the gall bladder was very large and the fistula did not close. On dissecting out the gall bladder it was found that by low attachment to the abdominal incision it had formed a channel in which, in certain positions of the body, bile would gravitate outward. After cholecystotomy the gall bladder should be attached as high up in the incision as convenient. Persistent biliary fistula usually means obstruction of the common duct. He holds that every one understands the importance of not attaching the gall bladder to the skin. In earlier days persistent biliary fistula was usually due to the mucocutaneous suture, the evils of which he does not need to point out. The turning in of the margins of the incision in the gall bladder and the tying of a purse-string suture closely about the drainage tube, as in Kader's gastrostomy, hastens the healing of the fistula. Two possible or rather common causes of failure to effect a perfect cure that cannot always be avoided are post-operative adhesions — those to the stomach and duodenum are the most common and may require secondary separation with the use of Cargile's membrane — and hernia, which is not usually troublesome. It may follow a long incision in obese people. While the adhesions usually relieve themselves by stretching, he does not allow the gauze drains to come in contact with the stomach and duodenum on account of their possible development, but interposes a piece of rubber tissue and leaves it from six to eight days, until the adherent films surrounding the drains become organized. To avoid hernia, he makes a secondary opening outside the working incision in cases where it is at all likely to occur, close to the ribs, and through this the drainage matter may be brought out. This enables us to carefully close the full length of the original incision. The necessity of this is increased if the opening has been extended downward to remove the appendix.

SHOULDER DISLOCATION.

Beck¹⁴ reports a case where, on account of a recurrent humeroacromial dislocation of the shoulder, he operated by exposing the acromial surface of the capsule, which was found to be so much relaxed that a fold could be taken up and contracted by making a purse-string suture in it. At the same time a hole was drilled into the head of the humerus and into the acromion, and a medium silver wire carried through it to ensure retention of the head by adhesion formation. There was no evidence of rupture of the supraspinatus muscles, or infraspinatus, causing rupture of the capsule or any abnormality of the joint. The operation was followed by no reaction and when the wire was removed five weeks later the result was good. Six months after operation it appears perfect.

DANGERS OF THE TRENDLENBURG POSITION.

Professor Kraske (Freiburg)¹⁵ said that al-

though the Trendelenburg position was attended by manifold advantages under numerous conditions, it might nevertheless occasionally lead to serious accidents. Instances of paresis of the peritoneal muscles and emphysema of the abdominal walls had already been recorded. These were only temporary lesions and their after-effects were of little, if any, consequence, but the interference with the circulation which attended the production of anesthesia in the Trendelenburg position was of much greater importance. In two cases of myocarditis the administration of ether as an anesthetic led to a fatal issue, which, in Professor Kraske's opinion, was due to acute dilatation of the heart, the result of increased blood pressure caused by the Trendelenburg position. In a third case the patient suffered from ileus for four days but recovered on the fifth day. In a fourth case in which the symptoms of ileus became very alarming, he reopened the abdominal wound and found that the omentum was doubled up and lying above the liver, the effect being to cause obstruction of the transverse colon. He freed the omentum, but the patient died. Similar observations had been made by Professor Schauta of Vienna, who found that after the intestine had undergone displacement, in consequence of the employment of the Trendelenburg position, it did not spontaneously return to its normal place when the patient lay horizontally; he therefore recommended that the surgeon before closing the abdominal wound should correct any displacement of the intestines there might be. Professor Kraske was of opinion that the hematemesis observed after laparotomy was due to distention of the gastric veins.

Professor Trendelenburg said that he doubted whether the cardiac embarrassment in the case of myocarditis mentioned by Professor Kraske was really caused by the elevation of the patient's pelvis and lower extremities. Such patients were not good subjects for the inhalation of an anesthetic, in whatever position they might be. With very corpulent patients he did not employ elevation of the pelvis for more than five or ten minutes at a time.

LYMPHATICS OF ESOPHAGUS REGION.

K. Sakata¹⁶ writes as follows: Injection of the cadavers of children by Gerota's method showed that the lymphatics of this region originate in two separate sets, with no direct communication between them. The first set is arranged lengthwise in the lower layer of the mucosa, while the second is not so large nor so regular and forms a network on the surface of the perimysium. The lymphatics communicate directly with those of the pharynx above and those of the stomach below, although the intervening vessels may run a long way in the submucous tissue or against the wall before reaching them. The close clustering of glands around the recurrent nerve explains the paralysis of this nerve frequently observed in cases of carcinoma of the esophagus. He noted

¹⁴ N. Y. Med. Journ., July 11, 1903. Journ. Amer. Med. Ass., July 25, 1903.

¹⁵ Lancet, July 11, 1903.

¹⁶ Mitteil. a. d. Grenzgeb., Jena. Journ. Amer. Med. Ass., Sept. 26, 1903.

it in 18 out of 236 cases, and in 13 it was unilateral. The glands may, therefore, be grouped as the near and the distant. The latter are represented by the deep, lower cervical glands, found in the angle formed by the subclavian and internal jugular veins.

Reports of Societies.

THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

SEVENTEENTH ANNUAL MEETING, HELD MAY 12, 1903,
WASHINGTON, D. C.

(Continued from No. 16, p. 437.)

REPORT OF A CASE OF COMPLETE AVULSION OF THE SCROTUM, THE SKIN OF THE PENIS AND THE LEFT TESTIS.

DR. ALFRED C. WOOD of Philadelphia related the instance of a man thirty-three years old who was engaged in making an adjustment of a ball upon a revolving shaft. His clothing caught, and he was taken around a few times and dropped upon the floor. He was taken to the hospital, and the doctor saw him within half an hour after the accident. The scrotum was found to be entirely absent, and the skin of the penis was dissected off as clean as could be, well up to the muco-cutaneous junction. The left testicle was absent and the right testicle was left exposed in the wound. Hemorrhage from the torn cord was readily controlled. It became a problem to know how to cover the testis. Flaps were finally taken from either thigh and utilized. The patient remained in the hospital about one month, when the testis was well covered. The Reverdin method of skin grafting was employed to cover the penis, small fragments of skin being taken from time to time from the thigh, with the result being all that could be expected. His sexual relations appeared to be perfectly normal.

DR. RAMON GUITERAS of New York cited the instance of an Italian who had gangrene of the scrotum. The scrotum had entirely sloughed away, leaving both testes exposed. An artificial scrotum was made by taking flaps, two from above the pubes and two from below on the inner side of the thigh, all four flaps being egg-shaped and brought together somewhat like the cover of a baseball.

A NEW METHOD OF PERFORMING PERINEAL SECTION WITHOUT A GUIDE.

DR. CHARLES L. GIBSON of New York presented this communication. A description of his method has already appeared in the report of the Section on Genito-Urinary Surgery, New York Academy of Medicine.

THE CONSERVATIVE TREATMENT OF CASES OF TUBERCULOSIS OF THE GENITO-URINARY TRACT.

DR. GEORGE CHISMORE of San Francisco read this paper. He said that improved methods of diagnosis and a clearer recognition of clinical symptoms had brought us to the conclusion that

tuberculosis of the genito-urinary tract was far more commonly encountered than was formerly believed, and that such cases were always prolonged in duration, rebellious to treatment and very grave in character. He gave the histories of several cases that had been under his observation for some time, intending to show that it was possible for a person afflicted with undoubted tuberculosis of the genito-urinary tract to live for years a useful life, without surgical attempts to remove the infected organs. In three of these cases the exciting causes were traumatic, falls and muscular strains. Heredity was not at all marked. In one case there was no tubercular history. One of his children married a man who had tubercular epididymitis, for which he had been curetted a year before with apparent recovery. He died in a year of tubercular perforation of the intestine, verified at autopsy, and his widow soon began to void urine frequently; tubercle bacilli were found in her urine, proven by culture, for several months, although she suffered only from frequent micturition. She married again after two years, and soon returned to perfect health. In three of the cases, frequency in micturition was the marked early feature. In all the kidney or bladder, or both, were involved. In other cases the disease seemed to be limited to the scrotal contents, but never when the urethra were not invaded by instruments or irritants. Such an observation had led him to abstain from all local measures that were not imperatively demanded in cases of suspected tuberculosis of the genito-urinary tract. This explained to him why so many of these cases had the prostate gland affected.

DR. HUGH H. YOUNG of Baltimore did not think we should or could expect so much in the way of conservative treatment as Dr. Chismore, because of climatic differences.

DR. ARTHUR T. CABOT of Boston believed that the hygienic treatment of certain cases was better, especially when the tuberculosis was disseminated through a complicated series of channels or organs. Now and then the disease would locate itself in the epididymis, for instance, and then operation would be called for. He believed that if we operated at all we should be forced to do so, and not select such a course as the best for the patient. Where tuberculosis started in one kidney, and he found such a condition before the bladder became involved, he believed in the thorough removal of that kidney, and had seen brilliant results follow such a procedure.

DR. W. K. OTIS of New York said that no cases appeared alike in genito-urinary tuberculosis, and, therefore, we were unable to tell what was going to happen when any one method of treatment was employed. He had never been able to find any satisfactory agent for local treatment of a tubercular cystitis. He much favored the let-alone treatment in all cases of genito-urinary tuberculosis. However, when surgical treatment was deemed advisable, it should be done most thoroughly.

DR. JOHN VAN DER POEL of New York reported a case of tuberculosis of the left testis with secondary involvement of the prostate as he then thought. An abscess which had occurred in the epididymis of the left side had taken care of itself, but an absolute diagnosis could not be made by that alone. Massage of the prostate showed tubercle bacilli, and an operation was advised. The testis itself did not seem to be involved, but the epididymis was removed, thinking it alone was infected. Upon a microscopical examination it was shown that the incision was made directly through diseased tissues, though the testis itself seemed normal. Subsequently operation was necessary to remove the testis as well as that of the opposite side. This case he said demonstrated how careful one should be in advising a partial operation. The case was drained through in the groin of the left side, and the ultimate result was good.

DR. PAUL THORNDIKE of Boston said that in cases of more or less advanced tuberculosis, where it seemed advisable to make a palliative operation for the patient's comfort, one would necessarily be deterred from so operating because of the possibility of not removing all the diseased tissue. He said that you may not expect to get all the diseased tissue, but that in nineteen-twentieths of the cases you would place the patients in better conditions. He would even go further than Dr. Cabot and take out a badly tuberculosed kidney even when the other kidney was involved, providing he was sure of doing the patient some good by this procedure. He emphasized the point that we should not be deterred from operating because of fear that we could not remove all the diseased tissue.

A CASE OF CALCULUS ANURIA RELIEVED BY OPERATION.

DR. ARTHUR TRACY CABOT of Boston read this paper, and said that these cases were so rare and fraught with such serious consequences that it was of the utmost importance to accurately study and report those that came under observation. The patient was a strong, vigorous man of fifty-seven years of age who, for fifteen years, had suffered from severe pain in the right lumbar region, the pain shooting down into the right groin and into the penis. These attacks occurred about once a year, and were accompanied by nausea, vomiting and a bloody urine. Frequently they were followed by the passage of stones from the bladder, some being one-third of an inch in diameter. Two years ago he had an attack occurring upon the left side. During the past year he had had these attacks upon the right side about once a week. For the past three weeks he had persistent, almost constant, pain in the right side with nausea and vomiting each day, but no stones were passed. Only 2 or 3 oz. of urine was voided in twenty-four hours. Burning pain occurred in the glans penis. There was great tenderness and rigidity in the right lumbar region, and a sense of great and deep resistance over the right

kidney. No prostatic enlargement existed. A skiagraph showed no calculi in the bladder or kidney. He saw the patient twenty-four hours after his admission to the hospital, during which time no urine could be withdrawn by the catheter, and it seemed probable that the right kidney was stopped by a calculus, and that the left kidney was practically useless. The severe attacks in the right kidney were supposed to account for its inactivity. The right kidney was cut down upon, and was so large that it was with difficulty lifted out of the wound. It was dark purple in color and dotted with little yellow spots, strongly suggesting miliary tubercles. One of these little abscesses contained a few indeterminate crystals. The pelvis of the kidney was opened and explored, but nothing was found. The ureter was followed down into the bladder, but nothing could be felt. A drainage tube was introduced into the renal pelvis, the capsule was split along its convexity, and the wound was closed so far as drainage would allow. Within the next twenty-four hours the patient passed 900 cc. of urine; in the next, 1,500 cc., and as much more was supposed to have escaped into the dressings. On the fourth day the urine suddenly ceased coming through the bladder, and a proportionate amount escaped through into the dressings. Some hours later urination by the bladder was resumed and drainage through the tube then diminished. On the eighth day the tube was removed, and leakage through the wound quickly stopped. On the fourteenth day the bladder was washed out, and two stones of about the size of a grain of wheat were obtained and a larger stone was felt to click against the Bigelow evacuator. This stone measured 1 cm. in diameter. This was crushed and pumped out on the twenty-fourth day. From this time recovery was practically uneventful. After convalescence the bladder was examined by the cystoscope. The right ureter was three times the normal size, and the urine could be seen coming from it in nets. The left ureter was occupied and filled by a string of thick pus, which was not moved or stirred by any urine escaping alongside of it. Cystoscopic examination on the following day showed the left ureteral orifice occupied by this plug of pus. With this orifice kept in view, an assistant made pressure over the left kidney, and at once a gush of thick pus was seen to come from the ureter. As a result of this observation, and from the fact that the right kidney ceased to send its urine into the bladder, it seemed to be proved beyond question that the left kidney was practically destroyed. This case, taken in connection with the case of calculus reported by the speaker in 1893 showed the importance of thoroughly stripping the ureter in these cases where the stone cannot be felt.

DR. RAMON GUITERAS of New York reported the case of a Canadian who suffered from hematuria. From his past history he thought of stone in the ureter. A local x-ray worker denied the existence of stone, but Dr. Leonard of Philadelphia said one was present just where the

ureter passed over the pelvic brim. Operation was performed, and just at the point named by Dr. Leonard there was a bulging of the ureter of fusiform character. Palpation of it revealed no stone. It was incised, but no stone was found, but a large mass of thick yellow pus of the consistence of Camembert cheese was noted. The ureter was stripped down into the pelvis. The patient's hematuria ceased. Although no stone was seen, he thought the probabilities were that there had been one which had passed down into the bladder and escaped through a large perineal opening which the patient had.

(To be continued.)

Recent Literature.

How to Keep Well. An Explanation of Modern Methods of Preventing Disease. By FLOYD M. CRANDALL, M.D. New York: Doubleday, Page & Co. 1903.

This is a small octavo of 500 pages, and is designed more especially for the use of readers without a medical education. It is divided into nineteen chapters, preceded by an introduction. The author admits that much light is nowadays offered upon medical subjects, but, in his opinion, the quack usually holds the candle. Moreover, he thinks that the medical profession is to a certain extent to be blamed for this state of affairs, in that it has frowned upon the public discussion of medical subjects by its own members. It is to remedy this situation that the author has written this book.

The American Illustrated Medical Dictionary, including much collateral information of an encyclopedic character. By W. A. NEWMAN DORLAND, A.M., M.D. Third edition, revised and enlarged. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Dorland's excellent medical dictionary we have previously reviewed at length. It appears now in its third edition, with such revisions as the short time intervening between the second edition and this have necessitated. The binding of flexible leather remains the same, and is to be commended.

A Thesaurus of Medical Words and Phrases. By WILFRED M. BARTON, M.D., and WALTER A. WELLS, M.D. pp. 534. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A somewhat new departure in the way of medical books of reference appears in Barton and Wells' "Thesaurus of Medical Words and Phrases." The idea embodied in this unique book is to reverse the process of an ordinary dictionary and to attempt to supply a fitting term or phrase to express an idea when merely the meaning or idea is in the mind. We can easily see the value of such a plan, and can certainly commend the book to our readers. It also is bound in flexible red leather covers, and is most attractive in appearance.

THE BOSTON

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EYESTRAIN: AN OVERWORKED THEORY.

IN our issue of Oct. 1 we printed a brief editorial comment on the theory of eyestrain as a cause of various nervous affections, apropos of a paper which we had recently published from the pen of Dr. George M. Gould relative to the "Ill Health of Francis Parkman." Dr. Gould takes exception to our position, as may be seen by reference to his letter in our issue for Oct. 15. This we regret; we certainly had no intention of criticising our "guest" in any but the friendliest spirit, nor can we see in our well-meaning effort an "anomalous condition." We modestly reserve the right of comment on our contributors' productions, nor does the fact of allowing space in our columns commit us to agreement in any views which may be expressed.

We must, therefore, reiterate our opinion that Dr. Gould is an extremist in his advocacy of a theory which unquestionably stands on a basis of scientific fact. That eyestrain is causative of many distressing symptoms we gladly admit; that it is causative of so vast an array of affections as Dr. Gould maintains we as firmly deny. We regard Dr. Gould's method as scientific in that he has drawn renewed attention to and collected many facts bearing upon one important element in the production of certain nervous disorders; this service should be recognized and appreciated, and we are entirely ready to acknowledge that there is much practical utility in the theory. There are those who find truth in the uric acid theory, to which many of the ills of human life have been attributed. As a theory it has claim to scientific consideration, but its application in the hands of its advocates has at times gone quite beyond the bounds of scientific common sense. And so

of many another excellent medical theory. Dr. Gould must recognize that the worth of a theory and the manner of its advocacy are quite distinct. Darwinism, heredity, degeneracy, to mention but three, have all suffered grievously at the hands of their too ardent advocates, and we are forced to say that the eyestrain theory has similarly suffered from extreme claims.

Dr. Gould asks why we regard him as an extremist. We quote a few of his own statements in explanation. In his paper on "The Ill Health of Richard Wagner," he says:

Wagner's clearest symptom was "sick headache;" migraine, megrim, hemicrania, nervous headache or bilious headache are other names for this terrible affection. It causes a large number of other symptoms, and is itself of an infinitely varied type, according to the kind of near-work required and the kind of organism of the patient. I have had thousands of patients with this disease, and ninety-nine out of one hundred were cured by spectacles alone.

No one who has had experience with migraine will deny that this is, at least, a radical statement, and one which, in the present state of our knowledge, could be made only by an extremist. And again:

In Wagner's passport he is described as "wearing glasses." Outside of that simple statement no one ever seems to have seen him doing so, or spoken of the fact. Mr. Ellis has proof that seems to him pretty good that he did not wear them. It is of no consequence. Any spectacles he could get would not have neutralized his eyestrain. Were he living to-day he would in all probability not find any oculist or physician in Germany that would help him or care to help him in the one possible and effective way.

Such an arraignment of German physicians as a class does not savor of scientific fairness. The following remark also lacks the judicial quality:

There is no greater cruelty, no greater crime against humanity, than this of non-recognition and scorn of eyestrain.

Writing of Jane Welsh Carlyle, he scores his professional brethren in the following words:

The old physicians of forty years ago were excusable, perhaps, although we marvel to-day at their stupidity. At best they could say their parrotlike, everlasting "Take a trip to Italy or to Switzerland;" the silliest whispered "gingerbread," or twiddled their fingers. They had not yet learned the pompous pseudoscience that cries, "She is a neurotic, afflicted with climacteric melancholia, the victim of heredity, mental dyspepsia and masked insanity." The favorite word of this pseudoscience is *stigmata*. If it could only progress so little as to make the addition of a single letter to its lore! If it could only learn one-hundredth as much of *astigmatism*

as it affects to know of *stigmatism*, less *stigma* would there be, and infinitely less suffering in the world! In the last twenty years any physician who does not know the true nature of such a case as that of Mrs. Carlyle and cure it instantly should be deprived of his medical degree.

This, also, we hold, transcends the limits of unprejudiced statement. We leave it to our readers to determine whether or not these excerpts from many which might be made are the language of an extremist.

As a matter of fact we have long been deeply interested in the theory of eyestrain as a causative factor in many nervous disorders. As Boston is smaller than Philadelphia, so our experience is, no doubt, smaller than Dr. Gould's, but such as it is, we confess again that it prohibits us from following him to the end of his theory. We are willing to go with him part way on his journey, but if we part from him before he has reached its end may we not, weighing all the facts, claim some justification for our timidity?

THE LEGAL STATUS OF FAITH HEALING.

A CONSIDERABLE amount of light has been thrown upon the mooted question of the relation of faith healing to the law by a recent decision of the New York State Court of Appeals. Within a few days a decision has been handed down in a case which has long been before the public, of the People *vs.* a man named Pierson, by profession a faith healer.

The original difficulty arose from the fact that in 1901 this Pierson treated by prayer an infant of sixteen months who was suffering from pneumonia. The child died; the incident became generally known; the legal authorities took the matter up; and Pierson was finally arrested and charged with a misdemeanor under a statute of the penal code which provides that a person is guilty of a misdemeanor who wilfully omits, among other things, to provide medical attendance for a minor.

At the trial of the case the prisoner admitted the facts, but contended that, inasmuch as he believed in healing by faith rather than by the art of medicine, he had not been guilty of wilful neglect. He, in the language of such people, failed to cure because "something was lacking in him." By such arguments it was attempted to exonerate the offender. He was, however, found guilty and sentenced to pay a fine. On legal technicalities the case was carried to a second court, which held that no criminal offence

under the statute had been proved. The prosecution then carried the case to the highest court in the state, whose decision we have already alluded to.

Without going into details regarding the final argument of Justice Haight of the Court of Appeals, which may be found elsewhere in this issue, it suffices to say that he held that liberty of religious profession and worship, which it is claimed had been infringed, could not be used as an argument for the defence, inasmuch as "acts which are not worship" fall within the jurisdiction of the penal code. By the construction of this final court it was held that the meaning of the statute was that minors could not legally be refused what is ordinarily understood as medical treatment on any ground whatsoever.

It was further stated that this decision does not apply to adults, who, if they desire, may refuse medical or any other aid in sickness or may call upon whomsoever they wish in the hope of relief. Naturally this decision makes no attack upon any special form of faith healing, whether it be known as Christian Science, Dowieism or any other of the subdivisions of this type of thought. It simply, in a common-sense way, deals with the law as originally enacted, and insists that the law must be maintained in individual cases.

It is said that this is the first decision of the sort which has been made in the United States by so high a Court, and it is generally conceded that the interpretation of the law is eminently just. What the outcome of this and other decisions, which are sure to follow, may be, we have no means of knowing, but we are strongly of the conviction that the final reasonableness and common sense of the people, as expressed in their courts of law, will ultimately lead to a proper appreciation of the limits of these irregular types of healing, and that the agitation which now periodically appears will gradually subside as the courts, and particularly the higher courts, are called upon more and more for a final expression of legal opinion.

THE BOSTON DISPENSARY.

THE annual meeting of the managers of the Boston Dispensary has recently been held, and the reports indicate a year in the work of the institution of unusual efficiency. There were treated during the year at the dispensary in the

various departments upwards of 29,000 new patients, and in the districts under the general jurisdiction of the dispensary upwards of 11,000 new patients. It was furthermore stated that since the establishment of the institution in 1796 more than one and a half million persons have been treated, certainly an excellent record of work accomplished.

We have from time to time commented on the part played by this dispensary in the medical work of the city. Situated as it is in a crowded region, it forms the center of a large amount of medical work, and, furthermore, as is generally known, extends the scope of its usefulness by an admirable system of medical districts under the charge of young physicians and experienced nurses. This system, which has been elaborated to a very considerable degree, is not only eminently useful to the persons treated, but is also of the greatest value as a perfectly legitimate training school for many of our best younger medical men. There are at present thirteen of these district physicians, whose fields extend now over large portions of the city. Many of the physicians associated with the dispensary are also teachers in one or another of our medical schools, and the value of the institution as a place for teaching has certainly grown year by year. Unfortunately, like all successful enterprises, the work of the institution has expanded beyond the capacities of the buildings up to this time provided.

It will be remembered that not many years ago an extensive addition was made, but now again it is felt that the work is being seriously hampered by lack of adequate space and equipment. The expense of conducting a modern hospital is usually not properly appreciated by the general public. While it is perfectly evident that in certain cases unnecessary expenditure is made for internal fittings, it is nevertheless true that with our increasing knowledge and increasingly diversified methods of treatment, new apparatus and new arrangements of rooms are constantly required to fulfill the completest modern demand. The Boston Dispensary apparently finds itself in this position, and needs at least \$65,000 for the enlargement of its facilities. Experience in Boston would lead one to the assurance that this amount of money will be forthcoming for so worthy an object. The dispensary, with its excellent record of more than one hundred years, will certainly not be allowed to lapse or in any way curtail its usefulness.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Oct. 21, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 67, scarlatina 24, typhoid fever 27, measles 56, smallpox 0.

BEQUESTS TO HOSPITALS.—By the will of the late Dr. George Haven of Boston, the Harvard Medical School receives \$25,000 and a share in a residue to become available on the death of certain relatives. The Lying-In Hospital of Boston receives all books and instruments, together with a bequest of \$20,000, and ultimately shares equally with the Harvard Medical School in the residue.

ADDITIONS TO PERKINS INSTITUTION FOR THE BLIND.—After a considerable delay work on necessary additions to this well-known institution were begun last spring, and the new building is now practically completed. The new section is four stories high and commodious. It will add very much to the efficiency of an institution which has long held an enviable place in its work for the blind.

DIPHTHERIA.—A somewhat exaggerated report has apparently been spread abroad of the dangerous prevalence of diphtheria in certain regions of the city. The facts show that the total number of cases in the entire city is but very little above what it was during the same period last year, and does not equal what it has been in several previous years. Every precaution has been taken to insure the health of school children, so that nothing approaching an epidemic is to be apprehended.

THE OPENING OF A WARD FOR SKIN DISEASES AT THE MASSACHUSETTS GENERAL HOSPITAL.—Proper special hospital facilities for the treatment of patients suffering from cutaneous affections that confine them to their beds, or prevent them from following their usual occupations, have not hitherto existed in Boston or New England. By the gift of Dr. Charles G. Weld a very complete ward has been added to the Massachusetts General Hospital, especially built and equipped for the care of cutaneous cases, to be under the charge of the dermatologists on the staff of the hospital. The ward contains twenty beds in separate rooms, the male and female patients being quartered at either end, a wide open space occupying the

center. Special arrangements for baths and other features necessary for the treatment of skin diseases have been added. Of the twenty beds in the ward, four have been reserved for the use of the departments of the nervous system and of the throat and nose, thus giving to all of the special out-patient departments a certain representation in the wards.

NEW YORK.

UNLAWFUL PRACTICE OF MEDICINE.—At a meeting of the Society of Medical Jurisprudence held Oct. 12, Justice Julius M. Mayer read a paper on "Criminal Procedure against the Unlawful Practice of Medicine." He reviewed the subject from the standpoint of a justice of the Court of Special Sessions, where cases of alleged unlawful practice are tried, and among his conclusions were: That a statute should be enacted defining more clearly what is the "practice of medicine," that there should be no minimum punishment provided in the law; and that some method should be devised to prevent the newspapers from publishing the advertisements of palmists and clairvoyants, whose real occupation is the practice of medicine illegally. In speaking on the latter point he said: "The worst agency in New York to-day that helps the man who sells either real or pretended abortion medicine is the newspapers, for they make it possible to ensnare the unwary, the superstitious and the fearful. I suggest that in the new school of journalism at Columbia there be a chair of advertising, and let it be taught to the young men of the newspaper profession that the first duty of a great newspaper is to censor its medical advertising. Many persons who advertise as palmists and clairvoyants advertise simply to cover the giving of medicines of the kind I have mentioned."

A LEGAL DECISION ON FAITH HEALING.—It is a gratifying fact that just on the eve of the descent upon wicked New York of "Elijah" Dowie and the cohorts of Zion, the Court of Appeals handed down its decision in the case of *People v. Pierson*, declaring dependence upon faith healing to be criminal negligence. J. Luther Pierson, a follower of Dowie, living at White Plains, Westchester County, early in 1901 was sentenced to \$500 fine or 500 days' imprisonment for criminal neglect in failing to provide medical attendance for his adopted daughter, an infant of sixteen months, who died from pneumonia. The conviction was secured under the penal code, which states that "a person who omits without lawful excuse to perform a duty

by law imposed upon him, to furnish food, clothing, shelter or medical attendance to a minor, is guilty," etc. The conviction was reversed by the Appellate Division of the Supreme Court, Justice Goodrich of Brooklyn dissenting. Justice Bartlett, in the prevailing opinion, held that the "medical attendance referred to in the statute does not mean exclusively the attendance of a medical practitioner in the generally accepted sense of that term. The case was then carried to the Court of Appeals, and in rendering the decision of this highest court Judge Haight says: "It would seem that the legislative intent is reasonably clear, although possibly more precise language could have been employed. The section of the code under which the indictment was found contemplates that there are persons upon whom the law casts a duty of caring for minors. . . . Sitting as a court of law for the purpose of construing and determining the meaning of statutes, we have nothing to do with variances in religious belief, and have no power to determine which is correct. We place no limitations upon the power of the mind over the body, the power of faith to dispel disease, or the power of the Supreme Being to heal the sick. We merely declare the law as given us by the legislature. We find no error on the part of the trial court that called for a reversal." District Attorney J. Addison Brown of Westchester County, in commenting on this decision, stated that as far as he knew — and he had carefully investigated the matter — this is the first time in the history of New York or any other state where the law has been made certain by the decision of the higher courts. The higher courts of England have upheld convictions in similar cases, the prisoners there being found guilty of manslaughter. "The decision," he said, "is of the highest importance, and means absolutely that these faith curists and others of the same sort must obey the law compelling them to call in regular physicians in the event of dangerous illness of minors in their families. The fact that they have called in 'readers' of their churches, layers-on-of-hands and others will not shield them from the law." Referring to the case of John Carroll Lathrop, the reader of one of the Eddyite churches in New York, the attendant of the Quimby child at White Plains who died of diphtheria, Mr. Brown said: "It would seem in the light of the decision that his trial would be brought up very soon before County Judge Platt. Counsel demurred in this case eight months ago, and it is possible that the judge

delayed the trial until he could hear the decision of the Court of Appeals." Lathrop was indicted by the Grand Jury at White Plains on a charge of manslaughter.

Miscellany.

THE PROTECTIVE EFFECT OF ANTITYPHOID INOCULATION.

DR. A. E. WRIGHT, late professor of pathology at the Netley Army Medical School, contributes further statistical records, supplementary to those previously offered by him, in regard to the protective effect of antityphoid inoculation.

One statement (Table I) refers to the incidence of typhoid fever and the death-rate from the disease in the inoculated and uninoculated soldiers in India during the year 1901:

TABLE I.

| | Average Strength Dur- ing Year | Cases of Typhoid Fever | Deaths from Typhoid Fever | Incidence Rate Per cent | Death- Rate Per cent |
|--------------|--------------------------------------|------------------------------|------------------------------------|----------------------------------|-------------------------------|
| Uninoculated | 55,955 | 744 | 199 | 1.33 | 0.36 |
| Inoculated | 4,883 | 32 | 3 | 0.66 | 0.06 |

The incidence rate was reduced one-half and the death rate five-sixths by antityphoid inoculation, according to these returns made to the war office.

The second statement (Table II) gives the incidence rate among a column of troops during a limited period of three months (December, 1899–March, 1900) of the South African War:

TABLE II.

| | Number Cases of Typhoid Fever | Incidence Rate |
|--------------|----------------------------------|-------------------|
| Uninoculated | 10,981 | 2.3% |
| Inoculated | 2,535 | 1.0% |

The incidence rate was reduced more than one-half.

The first table, as interpreted by Dr. Wright, who is personally familiar with the inoculation work in India, suggests that the protective effect of inoculation continues for a minimum of three years.

IS REGISTRATION AND DISINFECTION A SUCCESSFUL METHOD OF COMBATING PULMONARY CONSUMPTION?

In a paper read before the York meeting of the Pennsylvania State Medical Society, Sept. 23, 1903, and published in the *New York Medical Journal*, Sept. 26, 1903, on the death-rate of acute pneumonia, Dr. Thomas J. Mays of Philadelphia expresses surprise to find that instead of decreasing, consumption has increased in most of our large cities during the last five years. This has led to an inquiry whether registration and disinfection of consumption in vogue in many of our cities are as efficient in "wiping out" this disease as we have been led to believe. In order to throw light upon this question he collected data showing the death-rate of consumption and pneumonia in twenty large cities and two prominent states, namely, Philadelphia, New York, Chicago, Boston,

St. Louis, Buffalo, Washington, D. C., New Orleans, Richmond, Baltimore, Louisville, Reading, Milwaukee, Hartford, New Haven, Cleveland, Haverhill, Worcester, Cincinnati, Indianapolis, and New Jersey and Rhode Island, representing a total of nearly thirteen million inhabitants, or about one-sixth of the entire population of the United States. These statistics are arranged in twenty-five charts, and in many instances cover a period of thirty years.

One of the striking characteristics of these charts is that the consumption tracing pursues a general descending course, while that of pneumonia rises in most instances. Another one is that during the last five years consumption increased in Philadelphia, Boston, St. Louis, Buffalo, Washington, Rhode Island, New Jersey, New Orleans, Richmond, Baltimore, Louisville, Reading, Milwaukee, New Haven, Cincinnati and Indianapolis; and decreased during the same time in New York, Chicago, Hartford, Cleveland, Haverhill and Worcester, the total increase being 184.71% and the total decrease 38.86%, leaving a net increase of 145.87% in these localities.

On examination of the charts it will be found that with perhaps one or two exceptions they may be divided into two classes; namely (1) those in which the phthisis and pneumonia tracings touch or cross each other during the last ten years, as is the case with Philadelphia, New York, Chicago, Boston, Buffalo, Baltimore, Hartford, New Haven, Cleveland, Worcester and New Jersey, and (2) those in which the same tracings remain apart a good distance, the latter below the former, as is true of St. Louis, District of Columbia, New Orleans, Richmond, Reading, Milwaukee, Haverhill, Indianapolis and Rhode Island.

Now on investigation, it turns out that in all the localities of the first class, registration and disinfection of consumption are enforced, or these subjects are or have been largely agitated; while in the localities of the second class these measures receive no consideration whatever. If we compare the death-rate of phthisis and pneumonia for the whole period between the first class, or prevention localities, and the second class, or non-prevention localities, it will be seen that the decrease of phthisis is about 1,000% greater in the prevention than it is in the non-prevention localities; while on the contrary pneumonia increased over 600% in the former over the latter localities.

Now what is the interpretation of these figures? How can the difference in the death-rate of pneumonia be accounted for between these localities which practice prevention and those which do not? Is this mere chance, or is it coincidence, or a connection between cause and effect? Without inquiring into the specific nature of this relationship, if any exists, it is enough to know that the pronounced decrease of phthisis in the prevention localities is largely supplemented by the excessive rise in the pneumonia rate in the same. Indeed it seems as if from the early nineties until

the end the phthisis and pneumonia lines had become confounded in many of the prevention localities, and as if a certain large proportion of deaths had been deducted from the former and bodily transferred to the latter.

It might be asserted that the greater decrease of phthisis in the prevention over the non-prevention localities during the last ten years is direct proof of the efficacy of disinfection measures. Standing by itself it might be regarded as such, but when taken in connection in the first place with the simultaneous enormous rise of the pneumonia column in the same localities and in the second place with the fact that no rise but even a decline occurred in the pneumonia rate of the non-prevention localities, it will be seen that its force as such is greatly impaired. It is perfectly clear that the decrease of phthisis is intimately interlinked with the increase of pneumonia, and it is very probable that both of these phenomena are dependent on the influence of registration and disinfection, because in localities like New York and Boston, in which these measures have been carried out most effectually and for the longest periods, the death-rate of pneumonia attains by far the highest average during the last ten years.

Now when we reflect that all the prevention localities, with possibly one exception, may be recognized by a high pneumonia death-rate; that the decrease of phthisis in the same localities is largely supplemented by a marked rise in the pneumonia rate; and that in eight out of the thirteen prevention localities, there has been a total increase of 88% of phthisis during the last five years, it is sufficient proof to show that registration and disinfection have not thus far shown themselves a success in the "wiping out" process of consumption.

Correspondence.

ETHER.

Boston, Oct. 16, 1903.

MR. EDITOR: In connection with the opening of the new Out-Patient Department of the Massachusetts General Hospital which occurred to-day and has been called "Ether Day," I am reminded of the account of the first exhibition of ether as an anesthetic for surgical purposes in Great Britain. The first use of ether in Boston, and the announcement of its wonderful effect in relieving pain which was thus made to the world, was followed by a speedy trial of its properties, there. The account of the first operation performed by Mr. Liston was written by Mr. William Cadge (F.R.C.S.), England, and appeared in the *British Medical Journal* of Oct. 17, 1896, almost exactly fifty years after the first demonstration of anesthesia in Boston, Oct. 16, 1846.

Mr. Cadge died recently, and in an extended obituary notice an allusion is made to the fact that he was probably the last survivor among those persons who witnessed the introduction of painless surgery into British practice. Under the caption, "The First Operation under an Anesthetic in this Country," an abstract of the former paper is included (*British Medical Journal*, July 4, 1903, p. 54). In both articles the credit of the first information concerning the anesthetic properties of ether is unrestrictedly given to "Dr. Bigelow of Boston," who had sent "definite and authentic information" to Dr. Boott of Gower Street in December, 1846. * * *

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 10, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,136 | 370 | 27.99 | 11.18 | 3.26 | 8.80 | 1.67 | |
| Chicago . . . | 1,885,000 | 427 | 131 | 28.57 | 8.66 | 3.75 | 10.73 | 1.17 | |
| Philadelphia . . | 1,378,527 | 395 | 96 | 22.52 | 7.34 | 2.78 | 11.64 | 2.28 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 183 | 47 | 24.04 | 8.20 | — | 4.37 | 2.73 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 120 | 43 | 28.32 | 15.00 | 2.50 | 8.33 | 3.33 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 69 | 24 | 23.18 | 11.59 | 1.44 | 8.69 | — | |
| Boston . . . | 603,163 | 188 | 67 | 28.19 | 10.10 | 3.72 | 9.57 | 1.06 | |
| Worcester . . . | 132,044 | 33 | 9 | 9.09 | 9.09 | — | 9.09 | — | |
| Fall River . . . | 115,549 | 40 | 10 | 50.00 | 7.50 | — | 20.00 | 5.00 | |
| Lowell . . . | 101,959 | 33 | 11 | 21.21 | 15.15 | — | 15.15 | — | |
| Cambridge . . . | 98,639 | 34 | 13 | 29.41 | 5.88 | — | 11.76 | — | |
| Lynn . . . | 72,497 | 22 | 11 | 18.18 | — | 4.54 | — | — | |
| Lawrence . . . | 69,766 | 23 | 10 | 21.74 | 21.74 | 4.35 | 8.70 | — | |
| Springfield . . . | 69,389 | 11 | 1 | 27.27 | — | 9.09 | — | — | |
| Somerville . . . | 68,110 | 20 | 6 | 25.00 | — | — | — | 5.00 | |
| New Bedford . . | 67,198 | 29 | 12 | 48.27 | 10.34 | 3.45 | 24.14 | 6.90 | |
| Holyoke . . . | 49,286 | 11 | 4 | 18.18 | 9.09 | — | 9.09 | — | |
| Brockton . . . | 44,873 | 6 | 3 | — | — | — | — | — | |
| Haverhill . . . | 42,104 | 2 | 1 | — | 50.00 | — | — | — | |
| Newton . . . | 37,794 | 7 | 1 | — | — | — | — | — | |
| Salem . . . | 36,876 | 17 | 9 | 29.41 | — | — | 23.53 | — | |
| Malden . . . | 36,286 | 12 | 2 | 16.67 | — | — | — | — | |
| Chelsea . . . | 35,876 | 11 | 5 | 36.36 | — | — | 18.18 | — | |
| Fitchburg . . . | 35,069 | 3 | 1 | — | — | — | — | — | |
| Taunton . . . | 33,656 | 15 | 5 | 46.66 | 13.33 | — | 20.00 | — | |
| Everett . . . | 28,620 | 5 | 4 | 20.00 | — | 20.00 | — | — | |
| North Adams . . | 27,862 | 6 | — | 16.67 | — | — | — | 16.67 | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 10 | 3 | 30.00 | — | — | 10.00 | — | |
| Waltham . . . | 26,198 | 4 | 1 | 75.00 | — | — | — | — | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . . | 22,589 | 4 | 1 | 50.00 | — | — | — | — | |
| Chicopee . . . | 21,031 | 4 | 3 | 25.00 | — | — | — | — | |
| Medford . . . | 20,962 | 4 | 1 | 25.00 | 25.00 | — | — | — | |
| Northampton . . | 19,883 | 5 | 2 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 4 | 1 | — | — | — | — | — | |
| Clinton . . . | 15,161 | 6 | 2 | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . . | 14,478 | 6 | 3 | 33.33 | — | — | 16.67 | — | |
| Woburn . . . | 14,300 | 10 | — | 40.00 | — | — | 20.00 | — | |
| Hyde Park . . . | 14,175 | 6 | 2 | 33.33 | — | — | — | — | |
| Adams . . . | 13,745 | 1 | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 6 | 2 | 16.67 | — | — | 16.67 | — | |
| Melrose . . . | 13,600 | 2 | 2 | — | 50.00 | — | — | — | |
| Westfield . . . | 13,418 | 5 | 3 | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 2 | 1 | — | — | — | — | — | |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 1 | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 7 | 2 | — | — | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 4 | 1 | 50.00 | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 2,949; under five years of age, 926; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 890, acute lung diseases 281, consumption 336, scarlet fever 21, whooping cough 14, cerebro-spinal meningitis 10, smallpox 11, erysipelas 3, puerperal fever 7, measles 6, typhoid fever 50, diarrheal diseases 252, diphtheria and croup 80.

From whooping cough, New York 5, Baltimore 1, Pittsburg 1, Cambridge 2, Boston, Fall River, New Bedford, Chicopee and Hyde Park 1 each. From erysipelas, Chicago 1, Philadelphia 1, Providence 1. From smallpox, Philadelphia 3, Baltimore 1, Pittsburg 7. From measles, New York 4, Philadelphia 2. From scarlet fever, New York 6, Chicago 5, Philadelphia 2, Baltimore 3, Pittsburg 1, Boston 1, New Bedford 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Sept. 26 the death-rate was 16.3. Deaths reported, 4,707; acute diseases of the respiratory organs (London) 134, whooping cough 57, diphtheria 54, measles 23, smallpox 3, scarlet fever 40.

The death-rate ranged from 5.3 in Hornsey to 24.7 in Merthyr Tydfil; London 15.4, West Ham 14.6, Brighton 14.1, Portsmouth 19.3, Southampton 15.2, Plymouth 15.4, Bristol 14.6, Birmingham 18.2, Leicester 14.2, Nottingham 14.6, Bolton 17.1, Manchester 19.4, Salford 20.3, Bradford 13.6, Leeds 16.1, Hull 23.2, Newcastle-on-Tyne 21.4, Cardiff 14.8, Rhondda 13.5, Liverpool 20.9, Handsworth 8.2, Middlesbrough 22.5.

METEOROLOGICAL RECORD.

For the week ending Oct. 10, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. |
|-----------|-------------|----------------|--------------|----------------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily maximum. | Daily mean. | Daily minimum. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . . 4 | 30.30 | 58 | 70 | 46 | 80 | 81 | 80 | S | 5 | 12 | C. | F. | 0 |
| M. . . 5 | 30.12 | 68 | 74 | 61 | 84 | 91 | 88 | S | 0 | 7 | O. | O. | .20 |
| T. . . 6 | 30.24 | 62 | 66 | 58 | 78 | 88 | 83 | N | 12 | 7 | O. | C. | 0 |
| W. . . 7 | 30.27 | 58 | 60 | 56 | 83 | 96 | 90 | E | 8 | 12 | O. | R. | T. |
| T. . . 8 | 29.99 | 60 | 65 | 56 | 97 | 89 | 93 | E | 10 | 16 | R. | O. | .23 |
| F. . . 9 | 29.92 | 56 | 58 | 55 | 88 | 85 | 86 | E | 12 | 21 | O. | O. | .10 |
| S. . . 10 | 30.08 | 52 | 54 | 50 | 84 | 87 | 86 | N | 27 | 25 | R. | O. | .37 |
| Mean | 30.13 | 64 | 55 | — | — | 77 | — | — | — | — | — | — | .90 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. — Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING OCT. 17, 1903.

C. H. DELANCY, assistant surgeon. Detached from the "Hancock" and ordered to the "Petrel."

R. K. MCCLANAHAN, assistant surgeon. Detached from treatment at the Naval Hospital, Mare Island, Cal., ordered home and three months' sick leave.

S. W. DOUGLASS, pharmacist. Detached from the Navy Yard, Portsmouth, N. H., and ordered to the Naval Magazine, Iona Island, N. Y.

W. F. ARNOLD, surgeon. Detached from treatment at Naval Hospital, Mare Island, ordered home with three months' sick leave.

W. R. DUBOSE, medical inspector. Commissioned medical inspector with the rank of commander from June 20, 1903.

D. H. MORGAN, passed assistant surgeon. When discharged from Naval Hospital Mare Island, granted sick leave for three months.

C. H. DELANCY, passed assistant surgeon. Commissioned a passed assistant surgeon, with rank of Lieutenant, from June 7, 1903.

SOCIETY NOTICES.

FIRST MASSACHUSETTS STATE CONFERENCE OF CHARITIES. — Meetings of this Conference will be held in Boston, in Huntington Hall, Massachusetts Institute of Technology, Nov. 4, 5 and 6, 1903.

NATIONAL ASSOCIATION FOR STUDY OF EPILEPSY. — The National Association for the Study of Epilepsy will hold its third annual meeting in the Hall of the College of Physicians in Philadelphia on the afternoon and evening of Nov. 5. The program includes papers by Drs. Wharton Sinkler, Everett Flood, Wm. N. Bullard, H. M. Weeks, Charles K. Mills, A. H. Halberstadt, J. Chalmers DaCosta, John C. Munro, L. Pierce Clark and W. P. Sprattling. The Association extends a cordial invitation to all persons interested in charity, and especially in the care and treatment of epileptics, to attend its annual meetings.

RECENT DEATH.

JEAN F. CHAUVEAU, M.D., one of the best-known French physicians in New York City, died on Oct. 17. He belonged to a French-Swiss family and was graduated at Geneva in 1833. He had practiced in New York for many years, and until compelled by poor health to retire was a visiting physician to a French Hospital there. His son the Dr. Jean F. Chauveau, Jr., a graduate of the College of Physicians and Surgeons, New York, in 1891, was associated with him in practice.

BOOKS AND PAMPHLETS RECEIVED.

The Practical Medicine Series of Year Books, comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued monthly, under the general Editorial Charge of Gustavus P. Head, M. D. Vol. X. Chicago: The Year Book Publishers. September, 1903.

Introduction to the Study of Malarial Diseases. By Dr. Reinhold Ruge. Translated by P. Edgar. M.B., C.M. (Edin.) and M. Eden Paul, M.D. (Brux.), M. R. C. S., L. R. C. P. Illustrated London and New York: Reiman Company. 1903.

Address.

THE RELATION OF LABORATORY RESEARCH TO THE GENERAL PRACTITIONER OF MEDICINE.¹

HORACE D. ARNOLD M.D., BOSTON,

Professor of Clinical Medicine, Tufts College Medical School; Assistant Visiting Physician, Boston City Hospital.

THE recent passing of the century mark has given medical addresses of the past few years a retrospective aspect. It has been an appropriate and opportune time to review the progress of Medicine. As viewed in the large perspective of a century, that progress has been truly wonderful. The advance in one hundred years, or even in fifty years, was greater than that of the whole previous history of Medicine. Toward the end of the century the rate of progress increased until it was well-nigh impossible for a single mind to keep in touch with even the important advances being made along the whole line of medical investigation.

The improvements in the microscope in this period made possible a study of the minute structure of the tissues of the body. About the middle of the century originated the conception of the cell as the unit in the structure of each organ, and hence the unit of organic life itself.

Anatomy advanced by the development of microscopical anatomy, or histology. Pathology advanced by bounds with the study of the changes in the individual cells and groups of cells in disease. The discovery of bacteria and their relation to disease became possible. We not only developed a new branch of medical science,—bacteriology,—but the application of the knowledge thus obtained made possible the remarkable advances in modern surgery, and threw new light on and profoundly modified our conceptions of infectious diseases.

The study of the functions of the individual cells has added much to physiology. Even more is due to animal experimentation. But the problems of physiology and of disease have also shown the need of study of the chemical changes occurring in the body. Many important advances have already been made along this line, and much more important developments are to be looked for in the near future, based on the researches of the chemical laboratory.

I have briefly rehearsed some of these well-known facts, that we may clearly appreciate that the advance in Medicine of which we are all so justly proud is chiefly due to laboratory research—using the term in a broad sense. The debt which the medical profession and which humanity owes to these skilled and tireless workers in the laboratory can never be fully repaid. They are the leaders in the advance which is being made in our warfare against disease, and as such we should give them due meed of honor.

What I wish to particularly consider to-day,

however, is not the extent of the advances thus made in Medicine, but the question of how far the general practitioner is applying these improvements in his battle with disease. Medical advance is to be measured not alone by the attainments of the generals of the medical army, but by the efficiency of the rank and file. As we found in our recent war, the "man behind the gun" is a very important factor.

Is our medical private—the general practitioner—equipped with the best form of rifle? Is he using the modern smokeless powder? Or does he obscure his view of the enemy with an opaque cloud from his obsolete ammunition? Has he had sufficient drill in the use of his arms and ammunition to make his aim reliable and accurate? Better give us a sharp-shooter armed with a muzzle loader and black powder, than a man who has an up-to-date equipment but has no skill in its use!

My answer is that the medical army is a motley assemblage; that it is lacking in organization and consequently lacking in the most effective coöperation of the different branches of the service; that the equipment of the individual (both in arms and ammunition) varies from the most modern to the very obsolete; and that the training of the individual in the use of his equipment varies widely and generally needs improvement.

The personnel of this medical army is, however, excellent. The individual soldier is courageous, animated by high motives, self-sacrificing and earnest in his work. Often, by the intelligent and resourceful application of available means to the problem in hand, he does much to make up for the deficiencies in his equipment and training. The results obtained by the profession are on the whole good. The essential point I wish to make is that the results might be better.

We may improve by a wider application in general practice of the knowledge furnished by the laboratory worker; by adopting his more scientific methods of investigation in the clinical study of disease; and by a more cordial coöperation between the laboratory worker and the practicing physician in the study and cure of disease.

Some, perhaps much, progress has already been made in this direction. It is because this progress must depend on the effort of the individual physician that this question is worthy of our consideration on such an occasion as this, when by common consent a body of general practitioners pause at the end of a year's work as a society to cast a broad look over the whole field of medical progress.

That the advances made by the laboratory workers have not been fully utilized is not entirely the fault of the medical practitioners. The fault lies partly with the laboratory workers themselves. Having frankly acknowledged our deep indebtedness to these investigators, it is our right to criticize them and to point out how their discoveries may, by better coöperation with us, be made more available for the benefit of humanity. For after all, the benefit of humanity

¹ Annual Oration before the Norfolk District Society of the Massachusetts Medical Society, delivered May 12, 1903.

is the ultimate goal at which the medical profession aims, and it is right to measure the work of any member of the profession by the degree to which he attains this goal, directly or indirectly.

It is always well to look facts squarely in the face, and not to ignore their existence because their contemplation is not entirely pleasant. In this connection it is an unpleasant fact that there is too often a lack of sympathy and frequently, even, a feeling of hostility between the laboratory worker and the general practitioner. The latter criticizes the laboratory worker as being "too scientific," as carried away by the pure spirit of investigation and not caring for the practical result of his work. He considers the laboratory worker impractical because so much of his investigation has no immediate application in the treatment of disease.

The laboratory worker replies that his work cannot be judged by any such standard; that science should be pursued for itself, being a search after truth, and must not be judged by its utility. He further points properly to the fact that many important advances in medicine have been based on scientific facts thus discovered which at first seemed to have absolutely no bearing on the practical problems of Medicine. The great need of Medicine has been and still is, a scientific foundation. To the taunt that he is unpractical he retorts that the medical practitioner is unscientific; that his observations are carelessly made; and that the practice of medicine based on such observations is empirical and unreliable.

Both sides in this controversy are partly right and partly wrong. We must admit that the condemnation by the laboratory investigator applies justly to many of us who are practicing medicine. Perhaps it is as well for our self-esteem and for the reputation of the profession that we should not try to learn too accurately to how many it does apply. But, admitting this, it is equally true that many of the laboratory workers are so lost in the scientific side of their investigation that they apparently forget any question of its practical value. Some even glory in the fact that it has no apparent practical value. These are impatient of any questions as to the utility of these very interesting observations, and are annoyed by the efforts of physicians who try to garner from these riches something which they may carry as a gift to the sick. Such extreme instances are few, but they make a bad impression.

I know that in general the laboratory worker is more willing to welcome the practitioner in his realm than the physician generally supposes, and is more patient and courteous in such reception than we have just reason to expect. It is hard for him, however, not to show a certain feeling of toleration rather than interest, when the utility of a given point is examined.

Notwithstanding appearances, the laboratory workers are at heart just as earnest in their desire to benefit humanity as any members of the profession. The more the pity, then, if they

become so engrossed in their studies that they forget the necessity of occasionally summarizing their work, and of interpreting it so that the average medical mind can grasp its significance. This they certainly neglect to do.

It is not enough to make the studies. It is not enough to publish the results in their technical form. If the general practitioner is to make use of this information, somebody must translate it into terms which he can thoroughly understand, and this process of interpretation should be begun by the laboratory workers themselves. Such action on their part will not only bring their work to better fruition, but will remove from the mind of the general practitioner the unjust feeling that the laboratory worker is indifferent to the ultimate practical application of his discoveries.

The first step, then, toward the better utilization of scientific medical facts is for the discoverers of those facts to put them in a form in which they may be digested and assimilated by the medical body as a whole, and let them remember that its digestive powers are weak and that it needs simple nutriment.

But if some of the blame for the present condition of medical practice lies with the laboratory workers, much more — and the greater part — lies at our own door. Granted that much of the output of the laboratories has no immediate application in the practice of Medicine; granted that much of it needs interpretation before we can comprehend its utility, we, medical practitioners, are not yet using our best endeavors to apply that part of the scientific discoveries which has a manifest application in the diagnosis and treatment of disease. Until we do this we fully deserve the criticism of the scientific investigators, and we, the greater sinners, have little right to criticize them.

We have criticized them as too little interested in the benefit of humanity. Are we true to this aim? Alas, many are not! How many, I dare not estimate. And the worst of it is that it is not the zealous pursuit of truth that distracts our attention, but the zealous pursuit of the dollar!

Commercialism, the pursuit of medicine as a trade, explains altogether too much of the indifference of a large number of medical practitioners to the scientific advances of medicine. So long as these traders are a little ahead of the laity and can impress upon them an acknowledgment of their superiority and thus get a good financial return, they care nothing for the advance of medical science. You cannot reach such men by appeals based on the ideals of the profession. The only practical way to reach them is to educate the public. When the public knows enough to see that they are poorly equipped, they will be driven in self-defence to increase their equipment.

To you, members of the Massachusetts Medical Society, this does not apply. You are actuated by higher motives than the pursuit of medicine as a trade. And yet even with us the question

of the financial return to be made from scientific medicine must be considered.

We cannot, then, dismiss this aspect of the application of scientific medicine with a condemnation of commercialism. Actuated, as we are, by high ideals of the profession, we are yet dependent on the practice of Medicine for our financial support. Whatever our duty to humanity, I believe we have an equal or higher duty to our own families, and perhaps to ourselves. We have a right to consider how this question affects our pocket books without being accused of having a sordid aim in so doing. I shall devote some time to the consideration of this topic, because it has a very practical bearing, and because I believe there is a general hesitancy among physicians about adopting such methods because they think they cannot afford the time or money for it.

I have heard the objection urged that the people cannot or will not pay more for this extra work, and that the doctor cannot afford the time for it without recompense. Both assertions are, I believe, wrong.

If our patients actually cannot afford to pay us for this work, it is still our duty to perform it when it will be an essential aid to the diagnosis or treatment of the disease. In treating a needy patient, our only right question should be, Is it necessary? If so, it is our duty to do it. If we are unwilling to give a charity case the essential treatment, we should withdraw from the case. There are in our neighborhood charitable institutions, if not charitable doctors, who will do it.

If the case is not one of absolute charity, but one that can make only a poor return for whatever we do, still the same rule applies. Only we are even more culpable if we take from such patients the best they can afford to give, and do not in return do our best in treating them.

But the important class of patients are those who pay their bills, who make no objection to paying the customary fees for the ordinary medical attendance, but do object to paying more for extra investigations made by their regular attendant. The doctor, knowing their feelings, is reluctant to charge for such work, fearing they may take offence and that he may lose good-paying patients. On the other hand, he objects to doing this extra work free of charge for patients who ought to pay.

If the examination is essential in these cases, it should be made. The doctor should make a reasonable charge for such work, and I believe it can be done not only without losing these patients, but with added respect for his reputation. The necessity or utility of the examination must be explained to the patient, and the fact that it takes time and requires skill. Then he will understand that it is service of value to him and will be willing to pay.

In other words, many doctors are afraid to do the work and charge for it in the present mental attitude of the public. The remedy lies in educating the public to know that such researches

are valuable. Then they will not only pay for them, but will demand them.

Some care is necessary, however, in deciding when to recommend such measures. If such investigation is really essential, we should not hesitate to urge it. It is, of course, the patient's privilege to refuse to follow our advice in this respect as in all others, but that should not affect the nature of the advice given. But if the investigation is not essential, but only desirable, then we should take the patient's pocket book into consideration. We should not cause him extra expense merely because the investigation would be of interest to us. In many such cases we would perform the tests and count the resulting satisfaction a sufficient recompense.

I am very far from urging that laboratory investigations ought to be inaugurated in all our cases. That is very well in the hospital, which is, as it were, a laboratory for the complete study of disease; and the more complete the investigation, the more reliable are the results. Such investigations as do not injure the patients are only a fair return for the benefits gratuitously received by them from the institution. Moreover, they are directly benefited by the results of these investigations.

In private practice, however, the relation of the patient to the physician is an entirely voluntary one. His wishes must be consulted. We may offer him certain opportunities, but he may decline them if he chooses. It is not fair to criticize the work of the general practitioner because it is not always done with all the thoroughness of hospital work. For he is handicapped by the fact that the public often fails to appreciate the necessity or the advisability of such measures.

Suppose a patient comes to us with an apparently slight gastric disturbance. We could perhaps prescribe with more certainty if we investigated the exact condition of his gastric juice and his power of digestion. Perchance the investigation of the stomach contents might reveal the existence of trouble of unsuspected gravity. But can you blame the patient if he prefers first to try such remedies as your skill would suggest, even if the diagnosis is not perfectly clear? Would not you, in his place, try the remedies first, instead of at once embracing the opportunity to swallow the stomach tube? If the symptoms are grave, if serious trouble is suspected, or if the remedies fail to relieve, that is another matter. But the routine use of the stomach tube is not practicable for the treatment of every case of gastric disturbance, whatever may be the scientific aspect of such cases.

This is but an illustration of the general principle that in private practice the patient has the right to determine how far he cares to avail himself of the opportunities offered by medical science. Provided the investigation we have in mind is not absolutely essential for his welfare, we should do the best we can with the limited means he puts at our disposal. It is part of the art of the practice of medicine to decide when it

is wise to urge, and when it is wise not to mention the measures that the theory of scientific medicine suggests. Except where such measures are essential, the successful physician is properly a practitioner of the art of medicine first, and secondly a scientific investigator.

Before leaving the consideration of the financial aspect of laboratory investigation, I wish to say a word about the indirect benefit that may be derived from such work, even though it may bring no immediate money return. It is not so unusual to find the ordinary practitioner contrasting his lot with that of the more successful man who has hospital or other large clinical opportunities. Not that these men are always the most successful financially in practice, but in general the experience gained by such work is a valuable asset in winning financial success. The less successful man is apt to overlook the fact that such experience is gained only by the expenditure of much time and energy in gratuitous service. Is he willing to make the same sacrifice? Does he make the best use of similar opportunities that lie at his hand? If, instead of refusing to do scientific work in his practice when it cannot be paid for, he accepts all such opportunities for the sake of the experience he may gain, — I do not say that he can equal the improvement gained at the hospital, with its greater opportunities, but at the expenditure of much less time he may add materially to his own experience and ability, and he can to an important degree acquire that asset for successful practice which he envies in the hospital physician. Thus not only consideration of our duty, but self-interest, should lead the general practitioner to a much wider application of laboratory methods than is now the case.

An indirect benefit, but one of great importance, attends the use of the laboratory methods of examination, in that it tends to make our clinical examination of the patient more careful and accurate. The mere consideration of whether such a test is desirable means a careful analysis of the symptoms of the case. We cannot do this laboratory work successfully without methods of precision and intelligent thought, and we return to the clinical side of the case with keener mental faculties as well as with facts that aid in diagnosis. Thus the thoroughness and accuracy necessary in laboratory technique lead to better methods in the ordinary clinical examination and study of cases.

What may we reasonably expect of the general practitioner in the way of laboratory work in connection with his practice? Certainly not a fully equipped laboratory, nor the ability or time for exhaustive researches. But we may expect the possession of a suitable microscope, and those simpler forms of laboratory apparatus and the reagents that are required for the practical clinical tests, and the ability to apply these tests with sufficient accuracy to be of value as an aid to diagnosis. The equipment is not prohibitive in cost, and if properly utilized will bring fully as good a financial return as many

forms of equipment that the general practitioner willingly makes. The skill required in making these examinations is within the reach of any medical man of average ability.

One reason why the general practitioners have not more generally adopted these methods is, I believe, that the teaching of these subjects in medical schools has been unnecessarily complicated from the physician's point of view. In teaching medical students we must aim not only at showing them these practical tests, but at giving them at the same time a thorough scientific training in methods of investigation. Much that is thus valuable for training is of little or no value in its practical application. Now the men in general practice may need this training in method fully as much as the students, but few of them feel that they can spare the time for a course based on such lines. It is better to put within their reach a course which will teach them just the practical points they can apply, than to offer only courses which are theoretically more complete but which they will not avail themselves of. If such courses are inconsistent with the thorough scientific spirit of the medical school, they could be given by competent men outside, especially at the hospitals. There are plenty of opportunities for such work, but generally they have not been properly utilized for our object. As a rule, such courses have either been modeled too much after the exhaustive school course or they have been clinical courses in which the laboratory work has held too subordinate a place. The untrained physician needs for laboratory work more time and patience from the instructor than is given in the ordinary clinical course. He gets an unsatisfactory amount of laboratory instruction only at the expense of a lot of time on other clinical work, which, though most excellent in itself, is not exactly what he desires at the time.

Post-graduate medical work is different from undergraduate work. The physician who takes post-graduate work has a pretty definite object in view. I think we should be more willing than we are to meet just that object in the individual case with the least possible waste of time. We should not treat him as an undergraduate, to whom we properly say that in studying a given subject he must learn at least so much and in just such a manner. If the general practitioners want such courses, they have but to ask for them. If the demand is made, some of the many competent men who have clinical facilities can easily arrange such courses and would do so. That such courses are not more common is due chiefly to the indifference of the general practitioner.

There is yet another means for the busy practitioner to acquire this skill. We are sending out from the medical schools every year many graduates who have had excellent training in these methods of investigation. They are thoroughly "up-to-date" in methods, but lacking in clinical experience. The general practitioner has the clinical experience, but is rusty or behind

the times in methods. Here are two sets of men who have much to teach each other, but the opportunity for mutual benefit is seldom made use of. In the coöperation of the man of large clinical experience with too little time for laboratory work, and the present graduate with plenty of time for such work and too little practical experience, is a most promising field for the benefit of both these practitioners as well as the patients.

Such coöperative work in private practice is an excellent substitute for the school or hospital courses I have spoken of. The time can be arranged more conveniently for the practitioner than in a clinic, which usually comes at the busiest time of his day, and thus one of the greatest obstacles to his study of such subjects is removed. Nor is the benefit all on his side. He can provide the equipment for their common use, which the young practitioner can perhaps ill afford to buy. And an intelligent discussion of the clinical, as well as the laboratory, aspects of the case cannot but be full of benefit to the young graduate.

Indeed, one of the faults of our medical education at the present time is an exaggerated view in the mind of the medical student as to the importance of laboratory work in general practice. His view is commonly as one-sided as that of the general practitioner who undervalues such methods. In these days of the triumphs of laboratory research and of our zealous pursuit of "scientific medicine," it requires some courage to say that this side of medical education is overdone in the schools; but a careful observation of students and recent graduates has convinced me that such is the case.

The student to-day shows too great a tendency not to think about a case until he has it in some way under the microscope, and then his diagnosis must fit his microscopic findings. Is our technique so perfect that this is always the crucial test? Are we to make a diagnosis of tuberculosis only after the tubercle bacilli have been found?—or of typhoid fever only after the Widal reaction is positive? And especially are we to decide that the patients cannot have these diseases because the laboratory investigation is negative? If we determine our treatment on this basis, we shall make grave mistakes. I have often seen the man whose accurate technique I have envied fail to recognize a case of tuberculosis when "phthisis" was written on the patient's aspect in indelible lines. His view of the case, as a whole, was as limited in extent as the field of his microscope.

I have seen the wise general practitioner (who, however, could not use an oil immersion lens) and the thoroughly trained recent graduate on the same case. The former said the case "looked like typhoid," and insisted on treating it as such. The latter was all at sea because the Widal reaction was delayed, and he didn't know what to do for the case. In a few days his doubts were removed by the appearance of the Widal reaction, but in the meantime the patient

had had the best treatment from the old family physician.

Indeed, the young laboratory expert has much to learn from the general practitioner about clinical medicine. He has a better foundation, to be sure, but to-day when we turn him loose with a degree of M.D. to practice, he has laboratory astigmatism and needs glasses to correct his vision. The proper material for these glasses is "common sense," and the glasses should be ground on the stone of experience. For correcting this form of astigmatism the general practitioner is an excellent oculist.

Of course there is the other side. For example, how many times does the general practitioner saturate his patient with quinine for the supposed chills of malaria, when an examination of the blood, showing the absence of plasmodia and the presence of leucocytosis, would demonstrate a septic or suppurative process hidden somewhere in the body. Knowing that it is present, though hidden, it may be sought out and properly treated. Examples might be multiplied on either side to show what may be accomplished by the coöperation of the older and the younger practitioners.

Naturally we must look to the older practitioners to take the initiative in establishing such coöperation. To some extent the services of the younger men are already utilized in this way, but it is not done enough, and it is not usually done in the right way. Generally the younger man is given a specimen and merely asked for a report. He thus gets no opportunity to know the clinical bearing of his work, while the older man holds himself aloof from the investigation and its technique, a better knowledge of which would enable him to better understand both the advantages and the limitations of such work. This complete separation of the clinical and the laboratory side of the investigation is undesirable. It is too prevalent even in our best equipped hospitals. Neither the clinician nor the pathologist gets the best results from his work unless both sides are considered together.

Let us then coöperate. Let us drop our prejudice against the young man who settles in our midst. We cannot justly look down on him as an inexperienced youth, for in many respects his experience and equipment are superior to ours. Nor yet need we view him as a dangerous rival who is likely soon to usurp the professional position we have established. Rather is he a useful aid, from whose enthusiasm, as well as knowledge, we may gather the stimulus which will preserve the vitality of our medical work. Unless by our own initiative or by such outside stimulus we keep our medical work vital and fresh and abreast of medical advance, it stagnates and then retrogrades. In these days when the strenuous struggle for existence is more and more apparent in our crowded profession, the consideration of self-interest, if no higher motive, should lead us to make a better use of the opportunity offered by contact with the recently trained.

medical graduate. The man is not unknown in our profession whose best work was done in the few years following his graduation, when he was perforce "up-to-date." We must keep up with the procession or fall by the wayside. There are plenty to fill our places, and the public, on whom we depend for our livelihood, are getting more exacting in expecting of the doctor the best skill attainable.

Let us ask once more: What may be reasonably expected to-day of the general practitioner in the way of laboratory investigation? This work is not concerned with the examination of the patient as a whole; that is clinical. It is concerned only with such parts of the patient or such products as may be safely and conveniently carried away for more careful examination than is furnished by our unaided senses. Specimens of tissue which may have undergone pathological change belong generally to the pathologist as a specialist. Few of us may hope to deal successfully with such matters.

One tissue, however, easily comes within the range of the general practitioner, and for our purposes it is a very important one, namely, the blood. The counting of the red and the white corpuscles is not difficult, and often gives most valuable information. The microscopical examination of the character of both kinds of corpuscles, both in the fresh and the stained dry specimens, is often of even greater importance. Neither this nor the examination for the plasmodia of malaria are beyond the reach of the general practitioner. The estimation of the hemoglobin by means of the Tallquist paper and scale is no more difficult than taking the temperature. By it we get most valuable information as to the degree and progress of a case of anemia, yet how few physicians make use of this simple measure!

The Widal test for typhoid fever, necessitating the use of a fresh culture of the typhoid bacilli, is hardly within our reach, but we have access in this vicinity to the aid of public laboratories, and our part in furnishing the material is easily performed but frequently neglected. The examination of the blood for bacteria is seldom necessary and involves too intricate a technique for the general practitioner.

Of the products of health or disease the physician may to advantage examine the urine, sometimes the feces, the sputum, pus, vomitus, and the gastric contents. All of these may in suitable cases give most valuable information. And yet too many of us make none of these examinations but the testing of the urine for albumen, and some even neglect that when it should be done.

Another laboratory test is the bacterial diagnosis of diphtheria. This is more advantageously done by the aid of the public laboratory. It is of the utmost importance in any suspicious case. Fortunately the utility of this aid to diagnosis has been so clear that it has been generally adopted by the profession. Yet even this test is not always resorted to as early as it

should be. If we cultivated what I may call the laboratory habit of mind we should neglect fewer cases and thereby prevent suffering and save some more lives.

In our vicinity easy access is had to the public laboratory, not only for aid in the diagnosis of diphtheria and typhoid fever, but for tuberculosis and malaria. There can be no excuse for the physician who does not have these tests made when they would benefit the patient.

I may sum up my argument as follows: What may be called the laboratory method in clinical medicine is of acknowledged value as an aid to accurate diagnosis and hence to the successful treatment of disease.

Such measures are not employed by the general practitioner as fully as they should be.

The wider application of these measures is desirable, and is our duty, first, because it will be of benefit to our patients. Secondly, the ability to perform such work is becoming more and more a necessity for the successful practice of medicine, and motives of self-interest should urge the general practitioner to catch up with the line of progress.

Of the man who has plenty of time and does not choose to thus equip himself little need be said, save that he is short-sighted and will sooner or later suffer in competition with his better-equipped fellow practitioners.

To the man who thinks he is too busy to enter upon this work, it should be said that the requisite skill may be acquired (if not already possessed) at a less expenditure of time than is usually supposed, and that, if necessary, a little sacrifice of time for this object would be one of the best investments he could make.

To the practitioner who is really too busy with routine practice to do such work himself, it should be said that nevertheless this work should be done where necessary. The services of the public laboratories and of less busy but thoroughly equipped practitioners should be utilized.

We should all remember that a wider application of these methods is our duty as enlightened physicians.

Original Articles.

PNEUMOTHORAX ASSOCIATED WITH FRACTURE OF THE RIBS. REPORT OF TWO CASES.

BY FRED T. MURPHY, M.D., BOSTON.

THE two cases which I have to report illustrate the extreme degree of that common complication of fracture of the ribs, pneumothorax. Stabs and gunshot wounds of the thorax, perforation of the lung or pleura by malignant disease or suppurative process may lead to a similar condition; also gas formation by the *Bacillus aerogenes capsulatus*¹ or *coli communis*.² Concerning the great classes of pneumothorax, namely, those secondary to the removal of the chest wall with the parietal pleura as in operations, and the

tubercular and so-called non-tubercular types, a brief mention would seem appropriate. From the varying opinions and conflicting case reports the conclusion is warranted that an opening of the parietal pleura is not the dangerous procedure it was once considered. On opening the pleural cavity the lung will collapse, but if the pneumothorax be created slowly there is, as a general rule, no extreme shock.³ Even if the dyspnea does become alarming, inflation of the lung by the Fell-O'Dwyer apparatus, or by drawing up the lung and fixing it in the pleural opening, the respiratory difficulty is at once relieved.⁴ Hence the preliminary production of adhesions or a moderate degree of pneumothorax by the injection of air, as has been advised, is not necessary before performing an exploratory operation on the lung.

The great variations which have been recorded must be explained by the personal idiosyncrasy of the patient and the suddenness of the compression. The tubercular type accounts for about 80% of all cases in any tabulation of large numbers.⁵

So far as the treatment of the actual pneumothorax with tuberculosis is concerned, it has but little interest, as the prognosis depends rather on the general condition than on the amount of air within the pleural cavity.

A sufficiently large number of cases have been recorded to prove that a non-tubercular type does exist.⁶ Here the onset is without violent trauma and often without any apparent cause.

In both of the above classes puncture of the chest wall to relieve pressure has been advised if the dyspnea becomes rapidly alarming.

That the parietal pleura should be torn and the lung lacerated in fracture of the ribs would appear to be a natural sequence. The force of the blow is from without inward, and the periosteum and pleura can offer but a feeble resistance in case the jagged end of the rib overrides at all. Doubtless the spongy, yielding character of the lung tissue protects it to some extent, yet it must be often injured. Also a blow received in full inspiration might easily rupture the pleura covering the lung without other injury to the thorax. Recognizing simple fracture of the ribs as one of the common injuries, it is difficult to explain the rarity of a serious pneumothorax.

In the Massachusetts General Hospital records for twenty years there are catalogued but these two cases, and Murphy⁷ states that only twice in twenty years of hospital work has he seen an extreme collapse from this cause.

He also mentions the common occurrence of a slight degree of pneumothorax as a sequel of fractured ribs. With the chest wall intact or nearly so, given a rupture of the lung and its pleura and an increase of the intra-tracheal pressure above that within the pleural cavity and a pneumothorax is possible.

These conditions are repeatedly present without symptoms, since the amount of air is too rapidly absorbed, or the edges of the wound agglutinate before the degree of pressure is severe

enough to cause collapse, or the formation is too slow, or the patient shows a personal tolerance.

As preventing a pneumothorax adhesions have been mentioned, but it is in the condition most prone to adhesions that the vast majority of all cases are found, and Duplant⁸ reports an autopsy with the bands drawn tense across the cavity. Plainly they play no important part. The adherence of the pleuræ is too weak to offer resistance, and it is counterbalanced by the elasticity of the lung, which equals 7 mm. of mercury. The formation then of this closed type with which we are concerned is simply a question of forcing air from one reservoir — the lung — into a second — the pleural cavity.

In quiet respiration the combination of the adherence of the pleuræ, the elasticity of the lung and the intra-pleural pressure balance so that the lung follows by expansion and contraction the vacuum formed by the changes in the size of the thoracic cavity due to the action of the respiratory muscles. Strong inspiration gives a negative pressure in the trachea of 30-74mm. mercury; strong expiration a positive pressure of 62-100mm.⁹ Forced within the pleural cavity by the strong positive pressure in strong expiration, if a return of the air is not possible the accumulation will go on until the intra-tracheal pressure is equalled. Therefore a pneumothorax of the closed type is not simply a collapse owing to the atmospheric pressure as in the open type, but the lung may be actually compressed. In reference to the return of the air from the pleural cavity, the doctrine of a valve formation, more or less complete, has been generally accepted. Autopsy findings have not substantiated this view.

Bard,¹⁰ working on animals and experimenting with the human lung suspended within an air-tight jar provided with manometers, has demonstrated that the passage of air, from the nature of the lung tissue, is from the lung to the pleural cavity and not *vice versa*. This is independent of any evident valve formation. With a resection of a portion of the lung 9 x 5 x 10 cm. he found that pressure in the trachea increased that in the jar to an equal degree, but the air could not be forced back through the open lung. This was substantiated by numerous other tests. Accepting this conclusion, in a case of rupture of the lung, not involving a bronchus, the increase of the intra-tracheal pressure is the vital factor. This we see produced by the coughing and straining with and after the injury.

To account for the shock seen in the serious cases of too rapidly formed pneumothorax of either the closed or open type many views have been advanced. The irritation of the pneumogastric filaments by the sudden contraction and the displacement of the mediastinal organs, causing obstruction to the venous return, may have some influence. Hence a right-sided pneumothorax which would have the more effect on the vena cava is the more serious. Also the decrease in the capacity of the other pleural cavity from the pushing over of the mediastinum may be a

factor. As the circulation is such an elastic apparatus it is hardly possible that the increase of blood from the contracted lung is important. The sudden change in the respiratory mechanism, cutting off a large amount of active lung substance, thus diminishing absorption, as in embolism, is the important fact regardless of the exact method of reaction. With the mediastinal partition displaced Murphy thinks that the piston action of the diaphragm is lost and to this he would attribute mainly the distress.⁷

Laennec¹¹ gave a clinical description of pneumothorax to which little or nothing has been added. Tympanitic resonance, diminished or lost fremitus, decrease or absence of respiratory sounds, metallic quality of voice and rales, displacement of the heart and immobilization of that side of the chest with possibly bulging of the intercostal spaces, combined with dyspnea, make an unmistakable picture. In the chronic cases there may be but little evidence of intrapleural pressure, and the character of the percussion note may be misleading. Hippocratic succussion may be obtained when fluid is present.

As an acute condition secondary to injury of the chest wall there is nothing else with which it might be confused.

The subcutaneous emphysema of the thoracic wall is due to the escape of the air under pressure through the wound of the parietal pleura; that in the neck from the escape along the bronchi and trachea. When the dyspnea is only moderate, treatment consists of morphia and immobilization of the chest wall to control the forced expiration. Ordinarily these measures will suffice, but if the collapse becomes alarming, puncture of the chest wall and possibly aspiration are indicated. Contraindication to either procedure is the danger of reopening a partially agglutinated wound, hence they should be delayed as long as possible. Aspiration theoretically is especially dangerous on these grounds. Complicated by hemorrhage the question of open exploration comes up and is favored by the majority of operators. For the attendant emphysema subcutaneous incisions may be necessary to relieve the tension. After the recovery from the collapse, if there is no serious organic complication, the lung returns to its normal position within a comparatively short time. Experimentally any increase in the tracheal pressure after the repair of the wound hastens the absorption of the air.

The following abstracts from reported cases give an idea of the character of the injuries. Hamilton¹² records a case of simple fracture of the ribs followed by pneumothorax and emphysema. He comments on the infrequency of the complication in a degree to cause alarm. His patient was relieved by subcutaneous incisions. Regarding treatment, he quotes Mr. Erichsen as being in favor of puncture and Professor Spence as advising simple subcutaneous incisions. Stewart¹³ presented at a clinical meeting the account of a greenstick fracture with pneumothorax. As the child died later

an autopsy was obtained and the lung was found collapsed. Here aspiration gave no permanent relief, but free opening of the chest wall did. In the discussion which followed, pneumothorax under such conditions was considered to be not a dangerous complication.

Laurens and Darcanne¹⁴ report a case with autopsy findings. There were multiple fractures of the ribs, and the lung was found with a large tear and collapsed. Nothing had been done to relieve the dyspnea.

Morris¹⁵ has given an account of a man who, after a fall of twenty feet, developed emphysema and a pneumothorax of the left side. The lung was evidently collapsed and the pressure was sufficient to change the pericardiac dullness, yet there was no extreme dyspnea, and the man recovered in five days without treatment. There developed a peculiar click over the cardiac area which the writer attributes to the rubbing of bubbles of air between the pleura and pericardium.

Le Boutillier¹⁶ has published a case of pneumothorax in a boy of fifteen who was run over by a wagon. Aspiration gave only temporary relief, and at autopsy two days later two large ruptures of the lung communicating with bronchi were found. There was no fracture of the rib.

Phalip¹⁷ mentions a case in which the pneumothorax developed after thoracentesis.

The two cases which have come under my observation were admitted to the accident room of the Massachusetts General Hospital on the service of Dr. S. J. Mixter, and to him I am indebted for the privilege of reporting them.

CASE I. J. E. G., fireman, forty years of age. Patient was brought in late in the evening with the history of having been thrown from the truck and run over by the hind wheel. Examination showed a strong man in a mild state of shock. The pulse was good at ninety to the minute and the respirations were not markedly accelerated. Heart was normal. Lungs were normal except for a few rales in the right axilla; no dullness, no diminution of respiration or fremitus. There were multiple bruises on the legs and body. The left shoulder was dislocated and the ribs on the right side from the second to the fifth or sixth fractured in the anterior axillary line.

In the right axilla there was some emphysema. Across the back in the upper lumbar region was an abrasion about the width of the tire of the wheel. The belly was negative and the urine free from blood. Color and respiration were good enough to warrant giving ether for the reduction of the dislocation. Double swathe of adhesive plaster was then applied to the chest and the patient sent to the open ward. In the ward he was given morphia grain 1-6 subcutaneously. During the night he was seen by the house officer in charge of the upper wards and the morphia repeated, as he was apparently suffering much and the color was bad.

The next morning his condition was so bad that he was transferred to a single room. When I saw the patient for the second time the picture had completely changed. The face was cyanotic, the respirations rapid and labored. Examination of the chest now showed a tympanitic resonance over the right side with loss of respiratory sounds and fremitus. The heart was slightly displaced to the left. The pulse good. One-fourth grain morphia was given subcutaneously without relief. By this time the condition had become really alarming, and the friends had been gathered at the bedside. After a confirmation of the examination and diagnosis by the medical attendant the chest was punctured below the angle of the scapula. At once with the outrush of the air the extreme dyspnea ceased and the color returned. Aspiration

seemed to afford even greater relief, so it was kept up for one half hour. Then there was some coughing and a discharge of a small amount of blood. Respiratory sounds were present well down on the right side and the cyanosis completely relieved at the end of the aspiration. The heart returned to its normal position.

From that time on the patient complained only of pain in the arm, which was due to a fracture of the clavicle which had not been noted on admission. On the next day the lung had expanded to the level of the eighth rib in the back, and the patient was resting comfortably.

Two days after the injury and one after the aspiration there was a sharp rise in the temperature, pulse and respiration, but no discomfort or cyanosis. There was an immediate cessation, however, of all symptoms, and on the ninth day he was discharged well.

Five days after aspiration the lung had returned to the normal position. The emphysema cared for itself.

CASE II. J. Q., nine years old. The child was seen in the accident room about 4 P.M. He had been thrown from a bicycle by a team, but whether he had been run over or not no one knew. Examination showed a strong boy in poor condition. Color was bad, the respiration rapid, thirty-five to the minute and labored. Pulse 135. Both sides of the neck and the left back were markedly emphysematous. The chest was resonant all over but on the left there was absence of breathing and fremitus. The belly was not remarkable, and there were no marks of injury except to chest. In fact there was no definite fracture of the rib, only a marked tenderness on the left under the emphysema.

As the condition was rapidly becoming extreme no further examination was made, but a large trochar was inserted on the left at the angle of the scapula. A rush of air followed the insertion, and the dyspnea was immediately relieved and the cyanosis disappeared.

The child announced that he no longer felt as if he was suffocating. After the first escape of air considerable blood ran out. The trochar was kept in for five minutes, during which time the lung had expanded over the upper three-quarters of the chest. The chest was immobilized and $\frac{1}{2}$ gr. of morphia given subcutaneously and the child sent to the ward. As far as symptoms and treatment went he might as well have been sent home. On the second day there was a rise in the temperature of two degrees, but not once did he complain of pain or dyspnea. All but a trace of the emphysema and pneumothorax had disappeared by the fourth day.

In the case with the more serious injury we see the symptoms developing after hours and in the other immediately. That a slight degree of pneumothorax was present on entrance to the hospital is proven by the subcutaneous emphysema, but why the dyspnea should have been so long delayed I can explain only on the assumption that in the manipulation of reducing the dislocation or the vomiting on coming out of the ether or during a fit of coughing the wound, primarily closed, was forced open. Possibly either patient might have recovered without relief by puncture, but the condition seemed to offer a very bad prognosis.

Experience has proven that interference is rarely necessary to relieve the intra-pleural pressure after fracture of the ribs. In the type of case illustrated by the above reports it certainly gives relief, and may be a life-saving measure.

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SOME OBSERVATIONS ON X-RAY THERAPEUTICS IN SKIN DISEASES.

BY FRED'K H. BURNS, M.D., BOSTON.

Assistant in Dermatology in the Massachusetts General Hospital,

THE following observations on x-ray therapy are drawn from one hundred and fifty cases of skin disease treated at the Massachusetts General Hospital during the past year in connection with the routine work of the skin department. From the outset of the work, the number of cases of epithelioma continually coming to the clinic has considerably handicapped the treatment of a greater variety of diseases. In fact, a majority of the time has been spent in the treatment of epithelioma and tuberculosis; in the beginning according to a fairly well-conceded technique established by observers in this country and Europe, and later by such modifications as subsequent experience suggested. The great influx of cases soliciting x-ray treatment may well be compared to the number of lupus patients appearing for treatment soon after the advent of tuberculin, while the variety of ills for which persons have come would be absurd to enumerate.

That an estimate of the number of cases and variety of diseases treated may be readily made, a table was made indicating the disease, site and character of the lesion exposed, the total number of exposures, the average duration of the exposures and the average distance of the lesion from the anode. The quality of the rays sought and used as constantly as possible will be hereinafter mentioned. Patients with localized lesions have all been protected by means of lead foil covered on either side with adhesive plaster, in which an aperture was cut corresponding to the size of the lesion exposed. This protection has in all cases been sufficient, no evidence of reaction over the protected area having been seen. Diffuse lesions, as psoriasis, have usually been treated with only the head protected when it was in range. The possibility of a harmful x-ray dermatitis occurring during treatment has been constantly in mind, but I have yet to see ill result from a properly guided exposure. In this series of cases no ill effect was obtained. Occasionally an hyperæmia of the exposed area occurred, accompanied by a sensation of burning, but such reaction has always been temporary, except when prolonged intentionally, and by omitting exposures invariably subsided.

Most observers concede that the Roentgen rays are not an isolated variety of radiations, but aggregations of radiations of varying penetration, intensity and absorbability. No one, I think, who has attempted x-ray therapy and used tubes of various potentialities can help acknowledging the truth of this theory. The different degrees of vacuum show plainly varying degrees of penetration and quality as demonstrated by the fluoroscope, the photographic plate and reaction on the normal and diseased skin. I am corroborated, I believe, by most observers in this work in the opinion that tubes of low vacuum are best adapted to therapeutic use.

The quality of rays that has seemed to be best for cutaneous use are those showing black bones of the hand with the fluoroscope at a distance of a foot from the tube; this degree being generated by 1.5 to 3 amperes of primary current and induced by a coil with a maximum spark distance of twelve inches, the frequency of interruptions varying between twenty and thirty thousand per minute. Desiring a more accurate gauge for routine work, I have adopted for present purposes and convenience the penetrability of aluminum as a standard of measurement.¹ In a block of aluminum one inch thick and four inches long a series of eight holes were bored, the first hole leaving a remaining thickness of an eighth of an inch, the second two-eighths of an inch, and each succeeding one-eighth inch thicker, till the eighth, which had a thickness of one inch. This block, fastened to a fluoroscope and adjusted before a radiating tube, shows a certain degree of potentiality according to the thickness of the aluminum penetrated. The degree of radiations that has been found to give the best results in the treatment of cutaneous diseases, such as epithelioma, tuberculosis, etc., is that penetrating a two-eighths inch thickness of aluminum, while the succeeding degree of three-eighths remains quite opaque.

In advocating the above-mentioned quality of rays, I do not by any means assume such rays to be the solitary factor which achieves the results, but I do think that tubes generating such rays are either most potent in themselves or best allow the activity of other contributing factors. The static discharge is certainly greatest from tubes of low vacuum, and reaction analogous to the actinic rays is most readily brought about. Until the conflicting elements are successfully eliminated from tubes as at present used for purposes of treatment, or the separate action of each of the elements is better understood, we are justified in speaking of x-ray therapeutics only in the popular sense of the term.

Of all the diseases treated epithelioma has given the most constant and encouraging results. Most of the lesions were of the rodent ulcer type and situated on the face. A few cases of deeply seated carcinoma involving the skin were treated and gave entirely different results from the superficial epithelioma. These graver cases were exposed daily and tried with both low and high tubes with completely negative results. A temporary cessation of pain in some cases was all the good attained. In three of these cases a pathological examination showed the subcutaneous involvement. In the total number of fifty-five cases of epithelioma treated, twenty-seven were discharged healed, with no visible evidence of the disease left but the scar; nine progressed favorably but failed to continue treatment, and nineteen are at present under treatment, reacting similarly to those already healed. Each patient was treated at an average

interval of twice a week, such changes being made in each case as seemed advisable, either on account of individual susceptibility of the patient or the reaction of the particular tube used at the time.

A quite constant evolution in the healing of epitheliomata seems to occur. When the lesion is ulcerative, as a majority of them are, a dryness of the ulcerated surface is noticed after two or three exposures to the rays; this dryness increases until a thin crust is formed, which gradually thickens as the exposures are continued, until it attains a thickness varying in different cases from one eighth to one half inch, the latter thickness presented a prominent and disfiguring appearance, which frequently suggests to patients that they are getting worse rather than better. While the crust thickens above the healing in beneath the surface occurs. The edges of the ulcer gradually contract, lessening the area of ulceration, until when or usually somewhat before healed, the crust falls spontaneously or is so slightly adherent that it is unavoidably removed by the patient. I have thought that healing might be accelerated by removing the crust when it became prominent and thick, but I have found that early removal has almost invariably been followed by a repetition of crust formation, and in comparison with cases whose crusts have been allowed to remain intact throughout treatment, I believe healing is not shortened by their early removal. In some cases several crusts are formed before final healing. In non-ulcerative epitheliomata the change in healing is not so constant, and the course of treatment is a good deal more protracted. After a varying number of exposures, these lesions either become ulcerative by erosion of their surfaces, and in which case they react in a similar manner to the ulcerative variety, or after long continued exposures gradually shrink until all that is left is a firm scar. A preliminary curettage or cauterization facilitates healing of this variety of epithelioma.

A class of epitheliomata of the face in which I have been particularly interested is that involving the nose, the eyelids and canthi. Such cases are usually ulcerative; those involving the eyelids and canthi are a menace to the eye, causing great disfigurement by ulceration and subsequent ectropion of the lids, while the lesions of the nose and other portions of the face are always a cause of progressive deformity. Cases of this class have all done remarkably well; they have almost uniformly responded to treatment and have healed, leaving a soft scar with no contraction of the cicatricial tissue. No ill effect to the eye from exposures of lesions in its neighborhood has been seen. Frequently when the ulcerated lid rendered it impossible to completely protect the eye, and where the conjunctiva was exposed beneath, not more than a mild and transient conjunctivitis was remarked. Scars in general following healing by the rays are soft, smooth and non-contractile, a softening effect seems even to be often exerted on previously formed scar tissue.

¹ This standard was suggested to me by Mr. Dodd of the Massachusetts General Hospital.

From the favorable effect of x-ray therapy on a large majority of cases of epithelioma treated, I cannot help concluding that it at present offers the best relief to a certain class of epitheliomatous lesions. Many cases are much better and quicker treated by excision, and it is waste of time to treat very small lesions for weeks with the rays when they can be effectively destroyed in a few minutes with curette and cautery. Epithelioma and carcinoma below the cutaneous surface and even lesions which have become deep by infiltration from the skin, should not be treated by the x-rays with the hope of curative effect. All of the deep cases which I have attempted have proved uniformly failures, though treated by rays of various potentialities; and in a large number of carcinomata of the breast that I have had opportunity to observe under treatment, any permanent benefit was equally negative. There is almost a constant temporary relief from pain and occasionally considerable improvement in the general condition of the patient. The permanency of cure of epithelioma may yet fairly be questioned, though relapse has not been seen in any case discharged by us. There are at present under observation several cases who have been healed from eight months to a year. One case shows a soft scar of the cheek of thirteen months' duration. The control of lesions is at least remarkable and sufficiently satisfactory to encourage the continued use of the rays for the treatment of epithelioma.

Twenty-one cases of tuberculosis of the skin were treated by the rays, including lupus and scrofuloderma. Of the last mentioned types of tuberculosis, lupus has proved the more resistant and difficult variety to cure. Compared with epithelioma, the treatment of lupus is much more protracted and intenser exposures are required. Nine cases of lupus were healed, and as far as can be judged at present, cured. In all these cases the desired benefit did not begin until a decided dermatitis of the exposed area occurred. The reaction was usually accompanied by considerable pain, marked redness of the skin, and after a few days beginning sloughing of the lupus tissue. After varying periods of time, from a few weeks to months, depending upon the extent of the disease and its resistance to treatment, the lupus areas were replaced by cicatrices which were of the character of most x-ray scars, — soft and smooth.

While the treatment of lupus has seemed discouragingly long in some cases both to patient and physician, the ultimate result attained fully repays the patience and time expended. In no disease treated has healing been more rapid and more remarkable in its general effect than in scrofuloderma. The healing process seems to consist in a destruction of the tuberculous tissue, followed under the stimulating effect of the rays by rapid healing. The first three or four exposures should be of moderate intensity until the ulcerations begin to slough; at this stage to one not familiar with the evolution of healing the disease would appear to have been made worse, but as

the treatment is continued by exposures of three to five minutes twice a week, the ulcerations rapidly heal and soon are replaced by cicatrices. Simultaneously with the improvement of the local lesions frequently there is betterment in the general health. I have in mind a case of a little girl of six years with extensive scrofuloderma of the right leg. During the treatment she gained ten pounds and changed from an anemic and scrofulous to a healthy appearance.

Folliculitis of the beard has responded to treatment with remarkable constancy. Eight cases were entirely healed and none attempted failed to improve. The disease, as is the case with other treatment, has a liability to relapse. I have seen two recurrences, one at the end of two and the other after six months. Cases accompanied by itching are soon relieved of that discomfort; the follicular pustules gradually dry until their resulting crusts are desquamated and all symptoms of inflammation have subsided. In several cases the treated portion of the beard fell, but in no case was the alopecia permanent, although often return did not occur for six or eight weeks.

The test of the value of the rays for psoriasis has been a rigid one. All the cases treated have been those who have come to the clinic for months or years and have been refractory to other methods of treatment. Not a lesion treated by the rays has failed to disappear under their influence. Two cases with generalized lesions have, after a great many exposures, been completely healed. One of the above-mentioned cases has been cleared nine months, and the other six months without return. In the other cases put down as healed only portions of the body have been cleared sufficient to ascertain the efficacy of the rays in each case. Considering that all the cases of psoriasis treated have been those not improved after a thorough trial by other means, the x-rays compare not only favorably with other methods of treatment, but are able to heal cases of psoriasis not otherwise influenced. Eczema, especially chronic cases with epidermic thickening, responds quickly under the rays. All the cases attempted have been healed. That the x-rays have definite therapeutic value in certain cutaneous diseases is at present quite generally accepted. They have been found to be like many therapeutic agents — of distinct value in a few diseases, palliative for the relief of pain in many affections, and of no benefit, if not distinctly harmful, in an unknown number of others. It was only after observation over a considerable period of time, on a large variety of cases, and after thorough treatment, that I became impressed by the fact that no radical curative effect is exerted by the rays subcutaneously.

TUBERCULOUS TEACHERS BARRED.—The State Board of Health of Indiana has issued orders forbidding the reemployment in the public schools of 250 teachers who are affected with tuberculosis.

RECORD OF PARASITIC INFECTIONS IN THE PHILIPPINES.

BY W. J. CALVERT, M.D., ST. LOUIS, MO.,

Department of Clinical Medicine, Missouri State University.

THE following reports represent the findings in one hundred and thirty-six autopsies performed while on duty in the Board of Health, Manila, P. I., during 1900 and 1901:

Intestinal parasites:

TABLE I.

| | | |
|---|------|--------|
| Total infection | 53 | 38.97% |
| A. L. ¹ | 29 | |
| Ank. | 10 | |
| Tri. | 13 | |
| T. S. | 1—53 | |
| Of these there were single infections | 40 | 29.41% |
| A. L. | 25 | |
| Ank. | 5 | |
| Tri. | 9 | |
| T. S. | 1—40 | |
| Double infections | 5 | 3.67% |
| A. L. and Ank. | 2 | |
| A. L. and Tri. | 1 | |
| Ank. and Tri. | 2—5 | |
| Triple infections | 1 | 0.73% |
| A. L., Ank. and Tri. | 1 | |
| Total cases | 46 | 33.82% |

As these cases came from various localities the percentages given fairly accurately represent the parasitic infection among the natives.

The following table represents the age and sex of the cases coming to autopsy:

TABLE II.

| | | |
|---------------------------|-----|--------|
| Adult males | 74 | 54.40% |
| Adult females | 31 | 22.79% |
| Male children | 20 | 14.70% |
| Female children | 11 | 8.08% |
| | 136 | 99.97% |

Ascaris lumbricoides were usually found in small numbers, varying from one or two to eight or ten; in two cases larger numbers were present, in one of these sixty-nine worms were counted. Usually the worms were found in the intestines, but in two cases a number had migrated to the stomach; in one case a large worm had entered the common bile duct, and in one case several were found in the posterior nares. In one case the worms had formed a firm ball which was lodged in the upper portion of the ileum and sufficiently large to practically obstruct the gut.

Distribution of A. L. with regard to age and sex:

TABLE III.

| | | |
|---------------------------|----|--------|
| Male adult | 13 | 44.82% |
| Female adults | 5 | 17.24% |
| Male children | 7 | 24.14% |
| Female children | 4 | 13.79% |
| | 29 | 99.99% |

If the figures in Table III are proportionately raised so as to represent a number of autopsies in each sex and age equal to the maximum number of autopsies for any sex or age, which is 74

¹ A. L.—*Ascaris lumbricoides*; Ank.—*Ankylostoma duodenale*; Tri.—*Tricocephalus dispar*; T. S.—*Tenia solium*.

for adult males, the following table may be had:

TABLE IV.

| Infectious. | | | | |
|---------------------------|------|---------|--------|-----------|
| Adult males | 74 | 13 | 16.72% | 32.01% |
| Adult females | 74 | 11.9 | 15.29% | adults. |
| Male children | 74 | 25.9 | 33.29% | 67.99% |
| Female children | 74 | 27 | 34.70% | children. |
| | 77.8 | 100.00% | | |

Consolidating the above table gives:

TABLE V.

| Cases. | | | | |
|--------------------|-----|------|-------|-----|
| Adults | 148 | 24.9 | 16.8% | 1:6 |
| Children | 148 | 52.9 | 35.8% | 1:3 |

Table IV shows that proportionately 32% of those affected are adults and 68% children (under fifteen years), or that a little more than twice as many children as adults are affected; and in Table V it is seen that about 17%, or 1:6, of total adults and 35%, or 1:3, of total children are affected.

All of the infections with *ankylostoma duodenale* were light; eighteen worms was the largest number counted. Distribution was from duodenum to ileo-cecal valve. In all ten cases were found 7.3%, distributed as follows:

TABLE VI.

| | | |
|---------------------------|---|-----|
| Male adults | 8 | 80% |
| Female adults | 1 | 10% |
| Male children | 1 | 0% |
| Female children | 0 | 00% |

If the figures in Table VI are converted as above, the following table may be had:

TABLE VII.

| Cases. | | | | |
|---------------------------|------|--------|--------|---------------|
| Adult males | 74 | 8 | 56.73% | 73.75% |
| Adult females | 74 | 2.4 | 17.02% | for adults. |
| Male children | 74 | 3.7 | 26.23% | 26.23% |
| Female children | 74 | 0.0 | 00.00% | for children. |
| | 14.1 | 99.98% | | |

Consolidating Table VII gives:

TABLE VIII.

| Cases. | | | | |
|--------------------|-----|------|-------|--|
| Adults | 148 | 10.4 | 7.02% | |
| Children | 148 | 3.7 | 2.5% | |

From Table VII it may be seen that 74% of infections occur in adults, 26% in children and 83% in males. Of total adults, 7% and of children 2%, were infected, or three adults to one child.

Thirteen infections with *Tricocephalus dispar* were noted, distributed as follows:

TABLE IX.

| | | |
|-------------------------|----|--------|
| Adult males | 6 | 46.15% |
| Adult females | 4 | 30.76% |
| Male child | 2 | 15.38% |
| Female child | 1 | 7.69% |
| Total | 13 | 99.98% |

If the figures in Table IX are converted as above, the following tables may be had:

| TABLE X. | | | | |
|----------------------|-----|--------|---------------|--|
| Cases. | | | | |
| Adult male . . . 74 | 6 | 20.27% | 52.36% | |
| Adult female . . 74 | 9.5 | 32.09% | for adults. | |
| Male children . . 74 | 7.4 | 25.00% | 47.63% | |
| Female children 74 | 6.7 | 22.63% | for children. | |
| | | 29.6% | 99.99% | |

Consolidating Table X gives:

| TABLE XI. | | | |
|--------------------|-----|------|-------|
| Cases. | | | |
| Adults | 148 | 15.5 | 10.4% |
| Children | 148 | 14.1 | 9.5% |

From Tables X and XI it is seen that males, females, adults and children are equally affected and that about 10% of the inhabitants harbor this parasite.

Considering the customs of the natives, especially as regards the opportunities for the contamination of their water supply, etc., the figures above, although high, are not so high as one would at first suppose. The relatively small number of *Tenia* is the more surprising when it is known that 4% of all hogs killed in Manila were heavily infected with *cysticercus*. *Trichiniasis* was not observed in any of the autopsies; a light infection was found in two hogs. Five cases of *filariasis* were found, all from the island of Luzon.

Clinical Department.

CLINICAL MEETING OF THE STAFF OF THE MASSACHUSETTS GENERAL HOSPITAL, APRIL 10, 1903.

(Concluded from No. 17, page 461.)

DR. C. A. PORTER spoke of two cases of
ADENO-CARCINOMA OF THE RECTUM.

The next two cases are almost identical with each other. Both of them suffered from an adeno-carcinoma of the rectum, about the size of a silver dollar, situated on the anterior wall in the prostatic region.

The first case I operated upon two and a half years ago, making an incision in the median line posteriorly through the sphincter ani, along the posterior rectal wall, for a distance of four inches. The coccyx and lower portion of the sacrum were removed to give greater room. The rectal walls were retracted, disclosing very clearly an ulcerated growth beneath. This was removed with a wide margin; the base of the bladder and prostate could be clearly seen. Two small glands were removed and upon examination were found to be non-malignant. The circular opening left after the removal of the growth was sutured horizontally, the posterior incision in the rectum longitudinally. The sphincter was carefully united with buried catgut sutures. Most of the skin

incision was closed with silkworm gut. Two gauze drains were inserted on either side of the rectum, to the point of suture. Recovery was complicated on the fourth day by a slight fecal discharge which persisted for a week. From that time, convalescence was uninterrupted. At the end of a year the patient acquired perfect fecal control, but up to the present time, if the bowels are very loose, slight moisture is noticed, requiring a T bandage. Careful examination shows no evidence of recurrence. The man has gained twenty pounds.

The second case was operated upon six months ago for a similar growth on the anterior wall. A segment of the bowel was removed, through the same posterior incision without division of the sphincter. This case had no fecal discharge through the wound and had a perfectly normal convalescence. At present the man has perfect control of fecal matter, but imperfect control of gas. There is a slight eversion of the mucous membrane at the anus. In both cases a large rectal tube was kept in position for ten days. I think such cases show well the advantage of retaining the sphincter. In neither case could anything be gained by removing it, as the lower margin of the ulcer was at least two and a half inches from the anus. I have recently had two other cases in which a similar operation was done without incising the anus or sphincter.

DR. ARTHUR T. CABOT: I do not know whether the experience of others is like that of Dr. Porter and myself, but I have often found these adeno-ma-carcinomas on the anterior wall. In three cases I have removed them by a Kraske operation in which the posterior wall of the rectum was opened. The growth on the anterior wall was pulled through this opening, and it was then possible with a shoemaker's stitch to tie off the growth and then cut it beyond the sutures. In all of these cases the posterior opening through which the growth was removed was closed tightly by sutures, and the defect in the anterior wall where the growth was removed healed perfectly without gaping or giving any trouble whatever. These adenomas and adeno-carcinomas of the rectum are interesting growths, for there is a considerable period in their early history when they seem to be purely local, and during this time a thorough removal may be expected to work a cure; whereas, if neglected, they later inevitably take on malignant characteristics and lead to death.

DR. J. C. WARREN: I remember a case of this kind. The woman has reported from time to time. She has never had any recurrence. Dr. Elliot saw the case when I operated on it and Dr. Whitney pronounced it carcinoma. I think it belonged to the type discussed here to-night. The mucous membrane containing the growth was cut out and the sphincter and part of the rectum was left. I cannot help thinking, however, that the more radical operation is the better.

DR. C. A. PORTER showed a case of
PERONEAL PROSTATECTOMY
for Dr. J. W. Elliot.

The patient aged sixty, male, tailor, Russian, entered Dr. Elliot's service on March 3, 1903. A year ago he had had acute retention, without known cause. Catheterized by physician for three months, after which he passed his urine without difficulty and with a good stream. Three months ago he had another attack of retention, after which he used the catheter himself. He now complains of severe pain at the end of the penis and in the back. He has never passed gravel. Two days ago, after catheterization, he passed a little blood, which continued until the time of admission. He has passed no water without catheter for three weeks. Rectal examination showed a small, firm prostate. No. 12 Coudé passed into the bladder without difficulty. Constant drainage. On March 13 operation was decided upon, since the patient would not allow catheter to remain in position. No blood in urine, odor foul in spite of frequent irrigation.

On the 14th operation was done by Dr. Elliot. A two-inch incision through the perineum into membranous urethra was made. The bladder entered by finger, and prostate found to consist of two lateral and one larger middle lobe. These three tumors were removed by finger dissection through the perineal wound. Bladder washed out; bleeding moderate. A stricture was found three inches from the meatus, which was divulsed. A large rubber drainage tube was inserted into the bladder through the perineal wound. On the 16th convalescence was good, drainage excellent, tube diminished in calibre. On the 17th tube removed and No. 13 gum elastic catheter passed into the bladder through the penis. On the 22d gauze was removed from perineal wound, which was granulating well. On the 28th, catheter removed and the bladder drained wholly through the perineal wound. On the 29th passed about six ounces of urine at a time per urethra. On the 31st, catheter passed to bladder, which was much cleaner after irrigation twice daily. On April 4 he was catheterized after passing six ounces of water. One and a half ounces of residual urine were found. On April 7 little pain, passes urine himself at two hourly intervals. Upon catheterization, only six drachms of urine found. Perineal wound occasionally leaks a little, but is granulating rapidly. Great improvement in general condition. Dr. Parker also showed a second case which had been operated on by Dr. Elliot. In this case Dr. Elliot had opened the bladder by a suprapubic operation and had removed two large, ovoid, smooth masses of the size of eggs. These masses were elastic and not connected with the bladder. On section of one of these ovoid masses, a small stone was found in the center, surrounded by layers of laminated fibrin.

DR. W. F. WHITNEY: As far as I know these are certainly very unique concretions. They consist apparently of a series of fibrinous lamellæ in the center of which is a stone. It has occurred to me that the formation was due to defibrinating of the blood, which formed the layers of the concretions. It is remarkable that it does not occur oftener. Why it should have occurred in this

case I have no solution to offer. Nothing I have ever seen approach these in character.

DR. BEACH: I had a case this winter where the stone was covered with a thinner fibrinous deposit than is the stone mentioned in the discussion to-night, but it was sufficiently covered so that no click was heard when the sound came in contact with the stone. The specimen is in my possession now, and when it is shaken about in the bottle, there is no click when it comes in contact with the glass.

DR. BENJAMIN TENNEY read a paper on

THE CAUSE OF CERTAIN KNEE JOINT INJURIES.

In going over a series of knee joints from the dissecting room some time ago, I found a considerable number which showed damage to the internal semilunar fibro-cartilage.

The most common form of damage found is well shown in these photographs of cartilages, the posterior half of which show the effect of crush and wear. In order to produce this form of damage the internal condyle of the femur must over-ride this part of the fibro-cartilage and settle down behind it while the knee is being flexed. As the knee is extended again the cartilage may either slip back into its normal position with something of a snap, or it may be partially torn from its attachment to the back of the capsule, remaining attached to the internal lateral ligament, as in the case which Dr. Codman has described, or it may be torn from its capsular attachment for its entire length, being held at its two extremities and turned wrong side up into the intercondylar notch. An example of this last injury, I show you this evening.

In searching for a means of producing one of these injuries, I tried 24 undissected joints, flexing them with the foot strongly rotated outwards. In one, the internal semilunar caught and snapped back during this manipulation. This joint showed a marked increase in lateral motion. After rupture of the internal lateral ligament in the other 23 joints, it was possible to catch the semilunar in the same fashion. This indicated to my mind that the slipping internal semilunar cartilage was connected with previous damage to the internal lateral ligament of the joint.

Another one of my specimens shows a partial splitting of both semilunars from the posterior part of the capsule without any evidence of crush or friction. In this joint there was a complete rupture of the anterior crucial ligament. It is possible that this injury may also allow of some over-riding of the condyles on the cartilages, but experimentally it has not been possible to produce such over-riding without injury to the internal lateral ligament as well. If my conclusions are correct, the history of a case should show some injury to the internal lateral ligament of the joint, which results in increased motility at this point. At some time after this the joint is flexed with the foot rotated outwards, and the internal condyle over-rides the semilunar and settles down behind it. If this occurs frequently and without great violence, the results will appear in the shape

of cartilages such as shown in these photographs. If the over-riding occur suddenly, and with great muscular action, the condition as found by Dr. Codman may appear. If this persists without operation, the cartilage may be entirely torn from its capsular attachment as in this specimen.

Dr. ROBERT B. GREENOUGH reported the following cases:

SKIN GRAFTING FOLLOWING A BURN.

CASE I. H. C. (hospital No. 129,663), a young woman of twenty-four, entered the hospital on Oct. 31, 1903. Three weeks before she caught her left hand between the roller of a steam laundry mangle and received a burn over the palmar surface. The wound was dressed in the Accident Room and subsequently in the Out-Patient Department.

On examination it was found that the palmar surface of the left hand was a granulating surface from the wrist line to the last joint of the fingers. A part of the skin of the outer aspect of the thumb was intact. No tendons exposed except over the articulation of the first and second phalanges of the little finger. Operation, Nov. 5, 1902; R. B. Greenough; ether. The granulating surface was cleaned with permanganate and oxalic, peroxide and corrosive. It was then thoroughly curetted and the skin edges freshened. It was then doused with salt solution and bandaged with gauze compresses. A model of the flap needed to close in the defect was then made of gauze, about one-third being allowed for shrinkage. The skin under the right breast was cleaned with solutions and a flap of the desired size and shape dissected up, having its base downward. All of the subcutaneous tissues were included in the flap, which was about 4 x 5 inches in extent. The flap was then laid back on the abdomen and protected with gauze, while the bare space from which it had been raised was closed in by a modification of the plastic operation devised by Dr. Warren for closing the incision in extensive operations for cancer of the breast. In order to bring no strain upon the base of the hand flap the incision into the axilla was carried deep and the flap from the axilla made large and dissected up freely. By this means the defect was closed in entirely. The hand flap was then sutured in position on the palm, the arm being held at rest across the body. A protective dressing was applied and a plaster bandage of the Velpeau pattern was then put on to immobilize the parts. The wound was dressed on the second day and at frequent intervals after that time. There was considerable oozing from the granulating surfaces of the fingers, but the flap became firmly adherent and was well nourished when its pedicle was cut on the eleventh day. The wound then healed rapidly and the further convalescence has been uneventful. The present condition of the flap can probably be improved at a later date by the removal of the superabundant fatty subcutaneous tissue. The little finger promises to be of little value on account of the involvement of its tendon. The case

is shown particularly on account of the ease with which the defect from which the flap was taken was closed in by a plastic operation; by this means the use of Thiersch grafts was avoided.

PERFORATING GASTRIC ULCER — RECOVERY.

CASE II. L. P., a young man of twenty-one, tailor by trade, was brought to the hospital at 10 P.M. on Dec. 31, 1902, with the following history: Well until three weeks ago, when began to have indefinite symptoms of ill health, without localization in any organ. Lost appetite but did not vomit. Ate usual dinner of meat and soup at noon on day of entrance and was at work in the afternoon, when, at 4:30 P.M., on drinking a cup of tea and eating two crackers, was suddenly seized with intense pain in epigastrium. Rolled on floor with the pain and vomited several times, quantity small and no blood noticed. Pain increased in severity until entrance; no jaundice, no chill, no cough or lung symptoms and bowels had been moving regularly.

On examination, a fairly nourished young man, with an anxious expression of face and considerable color in cheeks. Respiration 36 and labored pulse 100 and of good character, medium tension. Temperature 101. Leucocytosis of 21,000. Heart and lungs negative. Abdomen very rigid and board-like, especially in epigastrium and right hypochondrium. Some tympany. Slight area of shifting dullness in right flank. Liver dullness markedly diminished. Rectal and urinary examination negative. The probable diagnosis of perforation of a gastric ulcer was made by the evidence of perforative peritonitis, the seat of symptoms in the upper abdomen and the diminished liver dullness.

Operation, six and a half hours after onset of pain; ether; Dr. R. B. Greenough. A median incision was made from ensiform to umbilicus. On opening the peritoneal cavity, gas and turbid fluid escaped. Cultures were taken, but showed no growth of bacteria; probably owing to some fault in technique; inasmuch as the stomach contents was free in the abdominal cavity, the stomach was explored, and on its anterior wall, close to the pylorus, a round perforation was found one-eighth of an inch in diameter, from which exuded fluid and gas. Considerable fibrin surrounded this opening, and the walls were thickened and of softened consistency. A purse-string suture was used to close the opening and a row of Lembert stitches were used to cover in the purse string until leakage no longer occurred. By this method of closure the lumen of the pyloric end of the stomach was so much obstructed that it was decided to perform a gastro-enterostomy, since the patient was in sufficiently good condition to bear the operation. The stomach was raised and an opening made in the transverse mesocolon, exposing the posterior wall of the stomach. To this the jejunum was united, at a point about four inches from the duodenum, by means of the McGraw elastic ligature. This anastomosis was protected by a row of Lembert stitches, and the stomach allowed to return to its normal position.

While this part of the operation was being done, the abdomen was thoroughly flushed out with gallons of salt solution until the turbid serum was entirely washed away. Two counter incisions in the flanks were made and cigarette wicks of gauze and rubber dam were introduced in all directions, two in each flank and three in the central incision. A rubber drainage tube was also introduced, covered with gauze, to the bottom of the pelvis. A Mixer tube was then tied into the cecum, which was drawn to the umbilicus for this purpose and the wounds were partially united with silkworm gut. The patient stood the operation well, and was at no time in an alarming condition of collapse. The operation consumed less than forty minutes.

After the operation the drainage tube was emptied by a catheter and suction syringe, at intervals of every half hour in the day and every two hours at night. One to two drachms of fluid were usually obtained during the first week. On the day after operation an enema through the colostomy tube was followed by a good result. The patient was fed on nutrient enemata until the 9th day, when small doses of milk and lime water were allowed. On the sixth day all of the wicks and the rubber drainage tube had been removed, and the Mixer tube had come away, leaving a fecal fistula. On the thirteenth day the wound was drawn together with straps, and in two weeks the fistula had closed. At the present time, just over three months after the operation, the wound is solid and the patient is eating well and feels in perfect health.

INJURY OF INTESTINE; OPERATION; RECOVERY.

CASE III. P. S. (hospital No. 411-199), a hostler, fifty-eight years of age, was brought to the hospital on Aug. 28, 1902, in the afternoon, and entered the service of Dr. S. J. Mixer, by whose permission I report the case. The history was as follows: Previous history of a negative character; an hour and a half before entrance the patient was kicked in the abdomen by a horse. He apparently did not lose consciousness, but fell and was unable to rise and suffered excruciating pain.

On examination there was found a man of large frame and well nourished, face pale and with an anxious expression, moist with perspiration. Pulse of 84, of good quality and medium tension. Temperature 98.2. Respiration 22, shallow and chiefly costal. Lungs negative. Heart not enlarged, soft systolic murmur at base, not transmitted. The abdomen was markedly retracted in upper portion and of boardlike rigidity. This was most marked in the upper left portion of the left rectus muscle, which was so retracted as to form a transverse depression. There was a small area of shifting dullness in the left flank. Tenderness was present over the whole abdomen, becoming exquisite in left upper quadrant. Rectal examination was negative. Urine drawn by catheter was normal. Patient vomited undigested food after entrance; no blood. Liver dullness not diminished. Leucocytosis of 19,000. The diagnosis of probable injury to the

intestine was made by the absence of signs of hemorrhage and the extreme rigidity of the abdomen.

Operation three hours after injury by Dr. R. B. Greenough; ether. A median incision six inches long was made from ensiform to umbilicus. Turbid fluid escaped and blood stained omentum presented. A culture of this fluid showed the presence of a mixed growth of bacilli, cocci, diplococci and streptococci. On exploration of the entire intestinal tract, the following lesions were found: There was extravasated blood in the omentum. There was a tear two and a half inches long in the transverse meso-colon, perpendicular to the gut, and not involving any large vessels. The anterior surface of the transverse colon was denuded of peritoneum over an area of one and a half by three inches, leaving apparently uninjured muscle exposed. At a point about ten feet from the duodenum the jejunum presented a transverse tear through all its coats on the side opposite to the mesentery. This tear involved about one-half the circumference of the gut, and from it liquid feces were escaping into the peritoneal cavity. A punctured wound of small size, extending only through the peritoneal and muscular coat, was found at the junction of jejunum and duodenum. The peritoneum was dull and covered with fibrin flakes in several regions, most marked at the position of the tear in the jejunum. The torn jejunum was sutured with continuous catgut, which was reinforced by two rows of silk Lembert stitches. The slit in the meso-colon was closed with a continuous catgut stitch. The rent in the peritoneal coat of the colon and the punctured wound in the duodenum were closed with continuous silk stitches. The abdomen was thoroughly irrigated with gallons of hot salt solution, and wicks were placed in contact with the sutured wound of the jejunum and against the weak place in the transverse colon. The wound was then closed with silkworm gut. The patient was under ether about two hours, and was taken to the ward in good condition.

The convalescence of the case was uninterrupted and the temperature did not go above 100. The wicks were removed on the fifth day and the wound closed rapidly by granulation. The patient considers himself in perfect health at the present time, seven and a half months after the injury.

Reports of Societies.

THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

SEVENTEENTH ANNUAL MEETING, HELD MAY 12, 1903, WASHINGTON, D. C.

(Continued from No. 17, p. 466.)

CONSERVATIVE PERINEAL PROSTATECTOMY. PRESENTATIONS OF NEW INSTRUMENTS AND TECHNIQUE.

DR. HUGH H. YOUNG of Baltimore read this paper, giving a brief résumé of his work and the

problems which presented themselves to him. The principal objection to the perineal route was the necessity of the suprapubic incision to push the prostate down into the perineum where it could be enucleated. After several months of experiment he had constructed an instrument which could be used from below to draw down the prostate. It consisted of two fenestrated blades attached to shafts, one of which revolved around the other. When the two handles near the outer end, which regulated the rotation, were brought together, the blades were approximated and in position for insertion into the bladder through the opening in the membranous urethra. Once introduced above the intravesical limits of the prostatic lobes, the blades could be made to separate by rotating the external blades away from each other, when the instrument would be ready for any traction on its shaft that was necessary to drag down the prostate well into the perineal wound. The fact that many of the cases requiring prostatectomy were vigorous men in the fifties, with sexual powers well preserved, rendered it important that nothing should be done to injure their manly vigor, and care should be taken not to injure or remove the ejaculatory ducts. Evidence of injury to these ducts was that Petit reported that twelve cases in thirty suffered with epididymitis after the Albarron operation. The doctor then presented some drawings which showed the position of the ejaculatory ducts and vesicles, and stated that their position depended largely upon the character, size and disposition of the enlargements. As a result of his study of the course of the ejaculatory ducts, he summarized as follows: In the normal prostate the ejaculatory ducts lie for the most part just beneath the posterior capsule, considerably below the level of the vesical neck, and were separated from it by the pre-spermatie group of glands. In the hypertrophied prostate the same statements were true, the only difference being that the ducts enter relatively lower down, and the vesical neck was separated from them by much more tissue, especially if the pre-spermatie group of glands have taken on growth with the resulting median lobe enlargement, when the vesical orifice was lifted high up above the level of the ducts. The prostatic tissue immediately adjacent to the ducts was beneath the urethra, and played no part in the obstruction, which was caused entirely by the lateral and median enlargements, both of which were well above the ejaculatory ducts.

Technique of operation. — He considered the exaggerated dorsal lithotomy position the most satisfactory. The perineum should be elevated until it was almost parallel with the floor. He used the median perineum incision, about 6 cm. in length, the posterior limit being quite near the anus in thin patients; if the patient be large, with the prostate situated deeply, he generally used the inverted "V"-shaped incision. The apex of this incision was just over the posterior part of the bulb, and the two branches

were each 5 cm. long, the posterior limit being about midway between the anus and ischial tuberosity. After exposing the superficial muscles by blunt dissection, the central tendon was caught by a clamp near the bulb and divided. This at once freed the sphincter and the levator ani from the anterior attachment, and exposed the rectum drawn forward by the recto-urethralis muscle. In order to reach the membranous urethra and the apex of the prostate this muscle should be divided. This at once exposes the "*espace decollable retroprostatique*," so well described by Proust. When this muscle was divided the rectum dropped back and one entered the space surrounding the posterior surface of the prostate. Next the membranous urethra was opened upon a sound, and a sound of considerable size passed through the incision into the prostatic urethra and bladder. Then the prostatic retractor, already described, was inserted; so soon as the beak was free in the vesical cavity the thumb screw which fixed the blades in position was loosened, the blades rotated 180° by means of the external blades, and then was fixed by tightening the thumb screws. Each blade projected laterally so as to engage the intravesical surface of the lateral lobe. As a result of this a splendid exposure of the entire posterior surface of the prostate was obtained. Next an incision was made on either side of the median line for almost the entire length of the posterior surface of the prostate and about 1 cm. deep; the two lines should be convergent. The bridge of tissue which was contained between the two incisions contained the ejaculatory ducts, whose preservation was of the utmost importance.

Enucleation of the lobes. — He believed the separation of the capsule from the lateral lobes was best done with a blunt dissector. Capsules were of varying thickness and contained several layers of cleavage. It was important to start not too deeply, going into the prostatic substance, nor too superficially, so as to be outside most of the capsule. After the stripping up process had been started correctly it was easily continued by blunt dissectors until first the lateral and then the anterior surface of the lateral lobes had been freed from the capsule. Internal enucleation required considerable care to prevent tearing into the urethra. When the enucleation of the lateral lobe had progressed fairly well on each side, he found it advantageous to have traction made upon the prostate itself, in order to facilitate the separation of the deeper portion. He devised a pair of fenestrated instruments which could grasp the entire lobe, and which presented such broad surfaces that no tearing or cutting of the capsule could result. After shelling out the lateral lobes, attention should be directed to the median portion of the prostate. The prostatic retractor can be used now with great advantage, and should be handled as follows: Push the retractor backward until it is free in the bladder cavity; depress the handle so that the shaft can be on top of the

middle lobe; rotate the instrument 90° so that one of the blades will project downward behind it. After the median lobe has presented in the left intracapsular cavity, it can be readily and rapidly enucleated. By this technique he said that he had been able to enucleate several median hypertrophies and without tearing the mucous covering. Abundant vesical drainage should be provided for, as a small tube may easily become plugged by blood clots and cause great annoyance. He deemed it advisable to keep up continuous irrigations while the patient was being returned to his room, so as to prevent clogging of the drainage tube with blood clots during transit.

After treatment. — If the patient had a cystitis, and such patients usually do have, a continuous irrigation of the bladder was kept up, often for a week, and with great benefit to the vesical inflammation. A submammary infusion of 1,000 cc. salt solution was given either on the operating table or after return to bed. This prevented both shock and anuria, and was also a cure for the post-operative thirst. At the end of a week in bed the drainage tubes were withdrawn. After passing a catheter on the ninth day it was held there by straps. Permanent drainage was maintained for five days, the bladder being irrigated twice daily with boric solution. He had never had a stricture following this operation.

Results. — He had now operated upon twelve cases with the prostatic retractor, and generally by the technique described. All these cases were living and well. All could empty their bladders completely, and none used the catheter. Incontinence of urine had never been more than a temporary affair, and the perineal fistula had closed in all, except the recent cases. One case, sixty-nine years old, with a tremendous prostate, who had led a catheter life for ten years, was now, seven weeks after the operation, voiding urine at intervals of from three to five hours. He had determined that the power of erection was present, that ejaculation was apparently normal, and that the semen obtained by ejaculation contained actively motile spermatozoa and the lecothin bodies found in normal prostatic secretions. Their presence showed that the bridge of prostatic tissue surrounding the ejaculatory ducts was furnishing a part of the fluid ejaculated. This was possibly of great importance, as it was supposed that without the mixture of prostatic secretion, the spermatozoa were non-motile and apparently lifeless. It was possible that only a very small amount of prostatic secretion was necessary to vivify the spermatozoa. He said that although a longer period of time must elapse before the effects of the operation can be thoroughly realized, he felt convinced from the cases already studied that the sexual powers would be perfectly preserved, and that the ability of these men to procreate would remain unchanged. The instrument which he called his "prostatic retractor" had transformed the operation of prostatectomy for him. Now, with its use, the entire field was

cleared, the operation was performed in a shallow wound accurately under visual control, proper regard being now made to the urethra and the ejaculatory ducts.

DR. RAMON GUIERAS of New York showed some plates demonstrating his operation of perineal prostatectomy.

DR. EDWIN C. BURNETT of St. Louis did not believe that tearing or severing the ejaculatory ducts would always interfere with the sexual power so far as erections were concerned. At a meeting at Niagara Falls last year he reported a case of division of the ejaculatory ducts done upon a child when four years of age; this occurred during an operation for stone. When this child grew to manhood he had perfect virility with normal erections, and the only thing abnormal was the fact that he never had an ejaculation.

DR. ARTHUR T. CABOT of Boston expressed much admiration for the operation as performed by Dr. Young, which removed an objection to the perineal operation, the injury to the ejaculatory ducts, which so often happened by other methods.

DR. HUGH H. YOUNG of Baltimore said that in a case he operated upon five or six years ago, doing the Alexander operation, he removed two enormous lobes of the prostate and severed the ejaculatory ducts, yet that man afterwards was able to have an ejaculation.

SECOND DAY — MAY 13.

ACUTE VESICULITIS — ESPECIALLY TREATMENT.

DR. JAMES P. TUTTLE of New York read this paper. The chief object of his paper was a prophylactic one, to call attention to the harm often done to the rectum by unwise efforts to treat vesiculitis through that organ. He said that the onset of acute vesiculitis was usually in the course of an acute posterior urethritis. It might be due to gonorrhea, colon bacillus, tubercular or simple pus infection. It had been rare, in his experience, in those cases which had not been subjected to instrumentation or forcible irrigation of the posterior urethra. It seemed possible to him that the hydrostatic pressure exerted by the Valentine method on the deep urethra in cases of spasm of the neck of the bladder might easily distend the ducts and carry the infectious secretions up towards the vesicles. The disease may come from other causes than gonorrhea. Aside from the painful erections and emissions, frequent and straining efforts at urination and sometimes retention of urine, most of the symptoms were referred to the perineum and rectum. There usually occurred aching in the sacrum and pelvis, rectal tenesmus, pain on defecation, shooting down the legs into the testicles and to the end of the penis, just as was often found in ulcer of the rectum. Diagnosis could only be made by an examination through the rectum, and this was best made with the patient in the knee-chest position and with the bladder moderately filled with urine. The finger in the rectum could then make out

an unusual heat, tenderness, swollen irregular masses leading upward and outward from the lateral lobes of the prostate. Usually the prostate was swollen and tender.

Treatment. — After experimenting very largely he found that, in all such conditions requiring prolonged irrigations, two soft catheters of rubber were more satisfactory than the metal irrigators. In the very early stages cold water gradually lowering the temperature from 90° to 50° by putting ice in the reservoir after the flow had begun was best. The bag should not be so high as to cause a forcible injection of the fluid. Prolonged rather than intense cold was to be desired. After the acute symptoms had subsided, one should change from cold to heat, but one should be careful not to raise the heat too high; 110 to 115° F. was as hot as the water should ever be. To this he advised the adding $\frac{1}{2}$ to 2% hydrastis. When the swelling and pain persisted, irrigations over the vesicles through the rectal speculum gave great relief, and would often start up resolution when nothing else would. Temperature was best reduced by the application of guaiacol along the course of the vas deferens. Pain was best relieved by aconite or acetanilid, or phenacetin. Opium should be avoided on account of its constipating effects. Frequent rectal examinations should be avoided. Hydrastis and ergot internally had good effects in chronic conditions.

DR. EUGENE FULLER of New York emphasized the importance of rest, with elevation of the hips, the use of the bed pan, enemata, etc., in the treatment of acute vesiculitis. If such a treatment be pursued, few cases will run on to a chronic condition.

DR. GEORGE K. SWINBURNE of New York deprecated the use of forcible urethral irrigations. He used urethral irrigations a great deal, and had never had a case of acute urethritis or prostatic abscess or other bad result from its use because he never used force, and so avoided distending the urethra too much. In acute vesiculitis he had used the Chetwood tube with pleasing results.

A FURTHER REPORT ON THE AUTHOR'S METHOD OF EXPOSING AND DRAINING THE SEMINAL VESICLES.

DR. EUGENE FULLER of New York read this paper. He reviewed this former paper read before the New York County Medical Association and published in the *Journal of the American Medical Association*, May 4, 1901, entitled "A New Operative Method to Expose the Seminal Vesicles and Prostate for the Purpose of Extirpation and Drainage, — a Preliminary Report." In order to facilitate an accurate dissection through the soft, elastic and yielding perineal and pelvic structures, they should be made to assume as stable a position as possible, and that could only be accomplished by making them taut. To accomplish this the patient with his thighs sharply flexed was put belly downward on a Trendelenburg table, the buttocks protruding

somewhat over the end, while the flexed thighs straddle the table. The end of the table was then inclined upward quite sharply. The body was maintained in this position by sand bags, strappings and the attention of attendants. An antiseptic lubricated cotton tampon, with a tape attached, was pushed into the previously cleansed rectum, well up into the region of the sigmoid, in order to guard against bowel leakage. No catheter was necessary or advisable, as in the Von Dittel operation, but the bladder emptied before the administration of the anesthetic. The external incision consisted of two somewhat converging longitudinal cuts, which were connected at their dependent and proximal extremities by a transverse cut. The longitudinal cut to the operator's right began a little above the patient's coccyx and just inside his right ischium, and extended downward and slightly inward, keeping just within the border of that bone, passing the tuber ischii and ending somewhat below that tuberosity at a point laterally and about three-fourths of an inch anteriorly to the anterior margin of the anus. The longitudinal cut to the operator's left corresponded exactly to the one just described. The transverse cut connected the converging ends, dividing the perineum transversely about three-fourths of an inch anterior to the anterior margin of the anus. He incised deeply along the longitudinal cuts, through the fatty tissue of the ischio-rectal space, and divided above a few of the lower fibers of the glutens maximus muscle. The transverse cut was then deepened, the anterior layer of the deep fascia being cut through. Great care was taken to avoid wounding the sphincter muscle. The forefinger of the operator's left hand was next introduced into the rectum, the ball of the tip turned downward against the anterior rectal wall, while the corresponding thumb pressed against the loosely dissected rectum, the hand at the same time exercised upward traction. With the right hand the operator dissected more deeply, cutting through the levator ani muscle and the visceral layer of the pelvic fascia. The pathway of dissection between the urethra and the rectal wall was very narrow, and the forefinger in the rectum acted as a most important guide. The stroke of the knife was inward and toward the rectal wall. The tip of the finger was moved so that it was just behind the portion of the rectal wall where the dissection was being made. This protected against perforation of the rectal wall, and the urethra escaped damage. In case the lower portion of the lateral incisions have not been made deep enough to sever the levator ani muscle, they can now be made so. Next the operator's right forefinger was inserted along the dissection and kept just below the rectal wall until it passed through the cut in the visceral layer of the pelvic fascia, and entered the lymph space which lies between the prostate and the rectal wall. When this space was reached the left forefinger was passed in alongside the right, and the path of the wound divulsed by separat-

ing the fingers. By this process the loose rectal connections were stripped from the seminal vesicles and posterior bladder wall, leaving those parts exposed to direct surgical attack. The operation having been completed for which the incision was made, the walls of the wound were carefully adjusted by deep sutures, so as to bring the rectum back into its original position. A space for gauze packing was left in the middle portion of the transverse cut. If the sutures around the rectal portion of the wound were not deep, so as to allow the sphincter to become firmly attached to the outlying structures, some tendency to rectal prolapse might eventually develop. Temporary retention of urine was apt to develop, especially where considerable gauze packing was left, connecting the deep track of the wound with the surface. As the tissues in these parts were well nourished, first intention was the rule. This operation rendered direct surgical attack feasible in many rebellious forms of seminal vesicular disease, which were formerly left unaided, or which have responded unsatisfactorily to palliative measures. He did not recommend the operation in tubercular seminal vesiculitis. He found this method of reaching and draining deep suppurations either about the seminal vesicles or prostate most satisfactory. If the abscess was back of the prostate his operation avoided injuring that gland or the ejaculatory ducts. He always feared the operation per rectum, lest bowel leakage into the tissues might give trouble, or in case of an abscess just on the verge of spontaneously discharging itself into the bladder, a vesico-rectal fistula might persist. No surgical objections could be raised against the drainage of suppuration by his method, since the dissection employed reached the focus of trouble without injury to any of the adjacent organs. Speedy and safe convalescence ensued, and there was little or no danger of subsequent complications. The only objection to the operation was that it required more skill than a cystotomy, with incision through the trigonum or an incision through the rectum.

DR. JAMES P. TUTTLE of New York, in order to prevent any contamination of the operative field by the rectal contents, recommended that a metal ring with a groove running around it, with four holes in it, be employed in this way: An ordinary condom should first be tied around the groove in the metal ring, which is then fastened just inside the anal margin. The condom is then inverted, and this would prevent the feces coming down as well as protect the surgeon's hand from the fecal contents.

DR. HUGH H. YOUNG of Baltimore believed that too much attention was paid to the vesicles and not enough to the prostate. He said that a chronic prostatitis was more difficult to cure than a chronic vesiculitis, and that it happened very often a cure of both resulted from attention being paid alone to the chronic prostatitis.

DR. E. L. KEYES, JR., of New York always had fancied that a rectal incision was adequate to

take care of that kind of cases; he had never found the dangers of infection increased by an incision through the rectum, which was a simpler matter than going through the perineum. He related an instructive instance occurring in a man who was in catheter life. He was called to the country to open an abscess, the incision being made through the rectum. Before operating there was no pus in the urine, but after the operation it became loaded with pus. The parts were irrigated with boric acid solution for eight or ten weeks, and he was reported to be no better. He was still passing urine through his rectum. The irrigation was stopped and, six weeks later, the hole closed and remained closed.

DR. EUGENE FULLER of New York said he had never had infection from the rectum from following the method of operating advocated, but thought the suggestion of Dr. Tuttle a good one. He believed that a greater effort should be made to differentiate between diseases of the prostate and those of the vesicles. He thought the time would soon come when more would be done for such sufferers by operative procedures. One of the dangers of opening through the rectum was from the urine, and an operation which avoided such a possibility would be better than when we obtained drainage elsewhere.

DR. E. L. KEYES, JR., wished it to be understood that he referred only to cases of well-defined perivesicular abscesses when he advocated a rectal incision for drainage.

A VESICAL CALCULUS OF UNUSUAL DIMENSIONS.

DR. ABNER POST of Boston presented this unusual specimen. The patient was a man sixty-six years old. He dated the beginning of his trouble from a urethral hemorrhage which he believed occurred fourteen years ago. Since then he had had almost constant discomfort and frequent micturition. For some time he had been compelled to get up every hour of the night to pass his urine. Sometimes his urine would not come until he had raised his leg. It was evident when the doctor first saw him that he had a stone, the removal of which would relieve him of his symptoms. Suprapubic cystotomy was performed, and the immense stone was disclosed. It filled the entire vesical cavity. With much difficulty the stone was removed from its bed. To gain sufficient room it was found necessary to divide the recti muscles and to make a transverse incision on each side. The stone weighed 660 gm. It was $11\frac{3}{4}$ in its longest diameter and $10\frac{3}{8}$ inches in its shorter. The pathologist reported that it consisted chiefly of phosphate of calcium and triple phosphates, with some carbonate of lime and organized debris. The largest vesical calculus on record was said to be in the possession of the French lithotomist, Morand. It weighed 6 pounds and 3 oz. An enormous stone weighing 51 oz. was long preserved in the hospital of La Charité, Paris. It was extracted after death from the bladder of a poor curate in 1690. Coulson, "On the Bladder and Prostate," said: "The largest calculus

preserved in our collections is the one which Mr. Cline attempted to extract from the bladder of Sir William Ogilvie; it weighed 44 oz., and was 16 inches round one axis by 14 round the other. Numerous cases are recorded where the stone weighed from 5 to 15 or 20 oz., but how small a proportion they bear to the mass of cases operated on may be gathered from the fact that, of the 703 calculi in the Norwich collection, weighed by Mr. Crosse, only two exceeded 6 oz. in weight, and they were between 6 and 7 oz."

DR. HUGH H. YOUNG of Baltimore said that from a book he had in his possession he learned that Sir William Ogilvie for five years had found it necessary to stand on his hands or back up against a wall in order to urinate; in this way the urine flowed over the top of the stone. The attempt at perineal lithotomy was made in 1816 before the days of anesthesia. It was stated that Sir William bore the operation with great fortitude. With supplies from a blacksmith, a chisel and hammer, etc., 5 oz. of the stone were removed, and then Sir William could stand it no longer. The calculus was now in the Museum of the College of Physicians and Surgeons, and had the marks of the work done upon it during the operation, showing where a hole had been gouged out. Last year Dr. Young had seen two calculi which filled the bladder and prostatic urethra, and were practically as big as the one presented by Dr. Post.

(To be continued.)

Recent Literature.

A Laboratory Text-Book of Embryology. By C. S. MINOT, S.D., LL.D., D.Sc. xvii + 380 pp. 218 illustrations. Philadelphia: P. Blakiston's Son & Co. 1903.

Embryology has received such scant recognition in most American medical schools that the majority of teachers of this subject have been forced to devise means for getting the most out of the limited opportunities given them. From this standpoint an excellent body of concise information and of laboratory directions has been brought together by Professor Minot in this "Laboratory Text-book of Embryology." The volume opens with a chapter on the general conceptions of embryology, such as a comparison of the larval and the embryonic types of development, the germ layers, theories of heredity, law of recapitulation, etc. This is followed by an account of the early development of mammals, by which the student is led to a consideration of the human embryo. The chapter on the human embryo is supplemented by chapters on the development of the pig, chick and rabbit, and the volume is concluded with an account of the uterus and fetal appendages in man, and directions for laboratory manipulation.

The novel feature in the treatment of the sub-

ject, and one that will attract the attention of teachers, is the attempt to describe the anatomy of the more important stages of developing embryos on the basis of a few well-selected sections in the three planes: transverse, sagittal and frontal. Although this method acquaints the student with the structural relations in only a few planes in the embryo body, it must be confessed that Dr. Minot has been unusually successful in selecting the very best sections and in supplementing them with some remarkably clear and beautiful perspective drawings of solid reconstructions. The method here outlined gives evidence of the work of the experienced teacher, and is carried out with such rare insight as to the precise requirements of the case that its success seems assured.

The illustrations, text as well as plates, represent with remarkable fidelity the natural appearances of the objects from which they are taken. Many of them are indeed works of art, and fully equal the best embryological reproductions hitherto published. The letter-press is remarkably clear, and in Dr. Minot's well-known scholarly style. Embryologists are responsible for a fair share of verbal innovations, and Dr. Minot has kept to this tradition by introducing the verb "to microtome." The word is certainly convenient, though possibly "microtomize" might have been more in accordance with etymological usage.

To the teacher of human embryology the volume is full of suggestions, for it is evidently the outcome of long practical experience, and the school that will instil into its students even a small part of the information contained in Dr. Minot's textbook, and give them even part of the training he implies, will do much in advancing to its proper place the somewhat neglected study of human embryology.

A Text-book of Clinical Anatomy. For Students and Practitioners. By DANIEL N. EISENDRATH, A.B., M.D., Professor of Clinical Anatomy in the Medical Department of the University of Illinois (College of Physicians and Surgeons); Attending Surgeon to the Cook County Hospital, Chicago, etc. Octavo of 515 pages, illustrated with 153 illustrations, a number in colors. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

In his preface the author states that the primary object of his work is to serve as a bridge for both the practitioner and student from descriptive anatomy, as it is usually taught in the first two years of a medical course, to its daily application at the bedside, in the clinic or in the operating room. The term "clinical anatomy" seemed to the author to be the most appropriate one to use to express the larger field which the subject covers. The illustrations, which are very numerous, are for the most part very clear and serviceable, and the majority are original. The book will be found useful by the clinician, whether medical or surgical.

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REPORT OF THE SURGEON-GENERAL OF
 THE ARMY.

THE annual report of the Surgeon-General of the Army for the year ending June 30, 1903, is before us. The pamphlet, as is usual, contains a very large amount of information on matters of medical interest relating to the army. It is always of interest to the general medical profession to observe how many men appear for appointment in the medical corps of the army. At various times during the last year medical boards for the examination of candidates have been in session in several cities. From the statistics it appears that 176 candidates were examined by these various boards, that 37 were rejected as physically disqualified, that 99 withdrew during the examination or were later rejected, and that but 40 were physically and professionally qualified for appointment in the medical corps.

In spite of the fact that this appears a rather small number of successful candidates, it is shown that the percentage of approved candidates has continued to increase, and this notwithstanding that the high standard of examination has been maintained. It is less encouraging to note that there is a steady loss by resignation of certain of the best-trained young medical officers, for the obvious reason that prospects for advancement are better in civil life than in the army. Surgeon-General O'Reilly believes that, if the medical corps is to be maintained in the highest possible state of efficiency, its functions should be performed by commissioned officers. Civilian physicians under contract are useful and satisfactory so far as strictly professional work is concerned, but their position as officers is

wholly anomalous, and should not be further continued to the exclusion of fully commissioned medical officers.

This periodic discussion of the opportunities for medical men in the army, and particularly regarding the social position of contract surgeons, has before been subject of comment in these pages. We are not prepared forthwith even to suggest a remedy for the existing state of affairs, but it is evident to the unprejudiced observer that the position of medical officers, both on its professional and social side, must be made so attractive that not only will the very best men accept the positions offered, but also that they will remain during life in the service. If a certain number of the best of the younger medical men resign from the army, it is sufficient proof that the conditions there are not such as to meet the highest ambition of able professional men. This should in some way be remedied if the medical corps of the army is to maintain the high place in public esteem which it should.

Regarding contract surgeons, it is stated that there were 273 in service at the close of the fiscal year ending June 30, 1902, and that there remained in service June 30, 1903, 229. Few contracts have been made, except with men the character of whose work was known to be of proved value, and by far the larger number of these are on duty in the Philippines. The number now in service will be still further reduced in the near future.

In February, 1901, Congress approved the appointment of thirty contract dental surgeons. By June 30, 1903, the full complement permitted by law was made. The number of officers, enlisted men, nurses and prisoners of the army treated during the year from Jan. 1, 1902, to Dec. 31, 1902, was 16,161, being 20% of the mean strength of the entire army. This fact alone is sufficient to justify and to continue the improvement of this department of the medical work of the army. It has been shown that dental and oral disease among troops is very common, and it is evident that if perfect health is to be maintained, defects in the teeth as they arise should be properly attended to. Measures are being taken to instruct enlisted men as to proper methods of caring for the teeth and mouth, which should do something towards diminishing the number of cases requiring treatment.

In considering the prevalence of special diseases in the army a large amount of space is given to the always interesting subjects of ty-

phoid fever and malaria. The army offers peculiar opportunities for the study of such a disease as typhoid fever, and the report before us is interesting in this connection, since it traces out with a considerable degree of care the source of various epidemics, together with statistics which should be of general medical value. In the discussion of malaria there is also much of interest, and the whole subject is approached from a modern, scientific standpoint with adequate pathological detail. Tuberculosis naturally claims its victims, and it is interesting to note that the troops in the Philippines now show the greatest prevalence of the disease. No cases of pulmonary tuberculosis are now treated at post hospitals in the United States if it is possible to transport them to the general hospital at Fort Bayard, New Mexico. This gives not only the patient himself the best opportunity for recovery, but also frees his companions from the possible danger of contagion.

In general we find this report, as we have previous ones, worthy of serious reading and study. It offers certain statistics regarding disease, particularly in epidemic form, which are difficult to obtain from other sources. The medical problems connected with an army, or with large groups of persons collected under the same hygienic conditions, are far from being solved, and each published report of the work done by our army medical officers tends at least to simplify the problems which it remains for the future to answer completely.

A YEAR'S MEDICAL BOOK PRODUCTION.

In the current number of the *Medical Library and Historical Journal* is an interesting statistical study of the medical book production of one year, the period covered being from Oct. 1, 1902, to Oct. 1, 1903. In compiling these statistics, serial publications of all sorts, including transactions, year books, government reports, etc., together with graduating theses, have been excluded. With these exceptions the list given is practically a complete record of medical books published during that year. The results afford much food for reflection.

It appears that new books published in America number 367; in England, 250; in France, 288; in Germany, 354; with 25 scattering. In addition to these, 382 new editions were published, making a total of 1,666 new books and new editions. The average price of these books was \$1.92 a volume, the American books

being on an average the most expensive. In percentages it appears that, including new books and new editions, America leads the list with 30%, Germany following closely with 29%.

A further analysis of these statistics demonstrates the fact that America leads the world in the production of medical books, and that half the medical books published in the world are in the English language. That the cost of American and English books is somewhat greater than that of French and German publications is explained by the fact that German and French books are usually published unbound. This estimate of books published, as stated above, does not include the vastly greater number of periodicals, which in one sense rightly belong to a year's medical publications. The journal from which we quote is of the opinion that the economic waste in the production of this amount of medical literature is enormous, but suggests that there seems to be no disposition, either by publisher or writer, to check the output.

Certain it is that the production of medical books, particularly in this country, has been phenomenal within the past year, a condition which we strongly suspect is due as much to the zeal of the various excellent publishing houses as to the enthusiasm of the individual writers. Several publishers in this country have on their list of medical books a fairly complete library, and it is apparently their design to be able to offer the reading public a book on practically every important subject connected with medicine. This means that the publishers take an active interest in the production of books, even going so far at times as to solicit authors to write on certain subjects.

This tendency on the whole we regret. It certainly does not express the highest aim of medical or any other sort of literature. At the same time we are inclined to think that the evils of overproduction of medical books are not really great. Medical publications, like literature of other sorts, soon find their level, and that more are produced than are needed does not necessarily reflect upon the profession as a whole. The competition which such prolific book production entails is at any rate useful and stimulating.

DOWIE IN NEW YORK.

WHAT with the general ridicule of the secular press, and the somewhat ponderous analysis and criticism of the medical journals, Dowie and his cult seem to have accomplished a decidedly in-

creased notoriety in their invasion of New York. If that alone is what the "prophet" has been aiming at he has certainly accomplished his end, and we are inclined to suspect that he has had a certain inward satisfaction at the success of his somewhat unusual methods. No one questions his shrewdness and his knowledge of human nature; his material success sufficiently demonstrates this. Where a sincere religious enthusiast might sway the mob by eloquence or the contagion of personal faith, Dowie draws the attention of a vastly greater number of people by vituperation and general vulgarity. It is hardly necessary, as our contemporary, the *New York Medical Journal*, has done, to demonstrate the fact that he is a false prophet. This fortunately is apparent to all outside his immediate following. What is of very great interest, however, to students of such movements is the extraordinary means he apparently deliberately takes to extend his influence. His apparent failure to arouse the dormant moral sense of his hearers has been his chief success. He has in no way appealed to the mob spirit as ordinarily understood; no one apparently seriously believes in his mission of reform, and, we imagine, exceedingly few have been led to better things by his so-called preaching. The abuse with which he has treated his audiences has naturally been thrown back at him with redoubled vehemence, with the final result that the details of his visit to Boston, for example, are treated with almost the minuteness which was accorded the advent of Prince Henry. No doubt he will return to Zion well pleased with his descent on New York, and with the reception he there received. However that may be, we must put him down as a remarkable man of his kind.

MEDICAL NOTES.

THE TUBERCULOSIS WORK AT SARANAC LAKE. — By invitation of the Henry Phipps Institute for the Treatment and Prevention of Tuberculosis, Dr. E. L. Trudeau delivered an address last Saturday in Philadelphia on the "Development of the Tuberculosis Work at Saranac Lake." The address was followed by a reception.

THE MEMORIAL TO PROFESSOR VIRCHOW. — The German committee appointed to secure a memorial to the late Professor Virchow has issued a circular, under date of Oct. 13, the anniversary of Virchow's birth, in which they acknowledge previous contributions from abroad

and at home to the object which they have at heart, and express the hope that still further and larger contributions will be forthcoming that they may be justified in undertaking the erection of the life-size statue, to be placed in an open street of Berlin in the neighborhood of the site of Virchow's scientific activity, as a permanent memorial to this distinguished teacher, investigator and statesman. Contributions can be sent to the banking house of Mendelssohn & Co., Berlin.

AWARD OF A NOBEL PRIZE. — It is reported from London that Professor Finsen of Denmark has been selected as the recipient of the Nobel prize in the section of medicine.

THE ENNO SANDER PRIZE. — The subject of the competition for this prize for 1904 is "The Relation of the Medical Department to the Health of Armies." The essayist receiving the first place will be given a gold medal valued at one hundred dollars; the essayist securing second place becomes a life member in the Association of Military Surgeons. Competition is open to all persons eligible to active or associate membership in the Association of Military Surgeons of the United States. Essays will consist of not less than 10,000 nor more than 12,000 words, exclusive of tables, and must be submitted on or before Sept. 10, 1904. Further information regarding the conditions may be obtained from Dr. James Evelyn Pilcher, Carlisle, Pa.

A NEW MEDICAL JOURNAL. — It is announced that a new journal, to be known as *The Journal of Infectious Diseases*, will begin publication Jan. 1, 1904. The journal is to be published in connection with the Memorial Institute for Infectious Diseases in Chicago, and is to be under the editorship of Drs. Ludvig Hektoen and Edwin O. Jordan. The object is to publish original investigations dealing with infectious disease and to include in its pages only such contributions as bear with reasonable directness upon this general topic. Attention will be given to prompt publication, and numbers will be issued at irregular intervals as material permits. Conditions of publication are such that the permanence of the journal is assured, as well as the adequate presentation of material submitted.

ALVARENGA PRIZE FOR 1903. — The Alvarenga Prize for 1903 has been awarded to Dr. William S. Carter of Galveston, Texas, for his essay entitled "The Relation of the Parathyroids to the Thyroid Glands."

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Oct. 28, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 73, scarlatina 19, typhoid fever 29, measles 74, smallpox 1.

BEQUEST TO A HOSPITAL. — By the will of the late Mary Putnam Ropes of Salem, the Salem, Mass., Hospital receives the sum of \$5,000. This bequest, however, will not become available until the death of her sister.

GEORGE HAVEN, M.D. — The Senior Staff of the Boston City Hospital passed the following resolutions at a meeting held Oct. 19:

"The Staff of the Boston City Hospital desires to record its deep regret at the death of Dr. George Haven. Appointed to the Out-Patient Department in 1889 and later to the position of Junior Visiting Physician for Diseases of Women, he served the hospital with ability for fourteen years.

"With a strong and attractive personality he combined the qualities which compel professional success. Tactful, patient and tireless, a good diagnostician, a skillful operator and a wise counsellor, he gave unsparingly to his patients of the best which was in him."

NEW YORK.

EUTHANASIA. — At the annual banquet of the New York State Medical Association on Oct. 21, one of the speakers, the Rev. Merle St. Clair Wright of the Lenox Avenue Unitarian Church, attracted considerable attention by advocating euthanasia for hopeless sufferers from disease or injury. In the course of his remarks he said: "I appreciate the practical difficulties in the way of the practical application of the doctrine, but it seems to me that it is not beyond the bounds of possibility. Of course it would be necessary to have the advice and approval of men of the highest scientific attainment. The city might be divided into districts, and every application should be considered most carefully, not merely by physicians, but by some eminent clergymen selected for the purpose. And, of course, there should be the consent of relatives and the consent, even the request, of the patient himself. But where all these conditions are fulfilled, and where the prolongation of life is simply the prolongation of hopeless agony, it seems to me that it would be proper that such

a patient should quietly, decently, modestly, be allowed to end the sufferings. It seems to me that such a course would be a step forward in civilization and a step further away from barbarism." Other speakers were John S. Wise, Esq., and Dr. Algernon T. Bristow, President of the Medical Society of the State of New York.

RELIGIOUS SERVICE FOR PHYSICIANS. — On St. Luke's Day, Sunday, Oct. 18, a special religious service for physicians and medical students was held at Calvary Protestant Episcopal Church, and Bishop Potter officiated, assisted by several clergymen. The Scripture lesson, which was read by a medical man, Dr. D. B. St. John Roosa, was the chapter from Ecclesiasticus in the Apocrypha, which contains the well-known passage commencing: "Honor the physician for the need thou hast of him; for the Most High hath created him." On this occasion addresses were made by Bishop Potter and Prof. William H. Thomson.

A DENTIST SUES SHAH'S BROTHER. — Dr. M. Wagschal, a New York dentist, has commenced proceedings against Prince Zille Sultan, a brother of the Shah of Persia, for a claim which would apparently seem somewhat difficult to realize upon. When in Persia, some time since, he was called upon to operate upon the mouth of this august personage, and the prince was so much pleased with his services that he made a contract with him, according him the privilege of practicing his profession wherever he liked upon the condition that he should attend on the prince whenever the latter had need of him. In consideration of his thus holding himself to come whenever he was summoned, the dentist was to receive a regular salary of 200 toman a year. He states that he was obliged to leave Persia after the assassination of the shah, but has always kept the prince aware of his whereabouts, so that he might be summoned whenever his professional services were required. For a considerable time past, however, the prince has neglected to pay his salary, and now owes him 1,600 toman, or \$2,400 in American money. The contract is in Persian and bears the prince's seal, which is described as "resembling a bird's-eye view of a labyrinth, disarranged by an earthquake." This has been placed in the hands of Dr. Wagschal's attorney, who, after getting a judgment in the local courts, proposes to place the matter in charge of the American consul, and, if the latter cannot collect, to submit the claim to the Arbitration Court at the Hague.

Obituary.

IN MEMORIAM—JOSEPH P. OLIVER, M.D.

THE sudden death of Dr. Oliver in Paris, France, Sept. 11, 1903, although not wholly unexpected to those who knew him best, represents to many a loss nearly irreparable. For several years he had suffered from angina pectoris, the attacks of which had gradually increased in frequency and severity. He continued, nevertheless, to care for his patients with such constancy and equanimity that but few were aware that the physician often was more of a sufferer than the one seeking relief.

Dr. Oliver was born in Boston, March 28, 1845. Previous to engaging in the study of medicine he was employed for a few years in an important brokerage office. He soon became convinced that a mercantile career was distasteful to him, and found in the pursuit of medicine abundant opportunities for the use of the talents with which he was exceptionally gifted.

He was graduated from the Harvard Medical School in 1871. Before beginning the practice of medicine in Boston he served for a year as medical house pupil in the Massachusetts General Hospital, and continued his studies for another year in Europe.

Never of robust health, of a sensitive, delicate organization, he was enabled by a fineness of temper and strength of will to endure the stress of a remarkably busy and eventful life without signs of serious illness until nearly the close of his days.

Gentleness of disposition was one of his prominent characteristics, directly inherited from a loving mother, whose life was a constant exemplification of this charming quality. His early family ties were intimately connected with a large and happy family of growing children, to whom he was more brother and friend than uncle. The experience thus acquired was of the greatest value in enabling him to appreciate the child's point of view, and to attain that skill in the treatment of sick children which was one of the corner-stones of his success as family physician. He early became recognized as an authority in the diseases of infancy and of childhood, and was an instructor in the diseases of children at the Harvard Medical School from 1875 to 1884. During this period he served also as physician to the Boston Dispensary and to the Children's Hospital. He remained connected with the latter institution as consulting physician during the rest of his life.

His fondness for family practice, and the increasing demands of an exceptionally large and influential circle of patients, led him to resign the positions of teacher and of visiting hospital physician for the purpose of devoting himself wholly to the interests of his patients. For years it was his custom to spend his summer vacations in Europe, partly for study and partly for rest and recreation. He thus became a well-known visitor to the leading health resorts of the Continent, and acquired a personal knowl-

edge of the advantages claimed for the various spas, of the comparative merits of the local physicians and of the experiences of their patients. In consequence he was widely known as an authority in such matters, and his advice frequently was sought by his colleagues as well as by his patients.

The qualities which especially distinguished Dr. Oliver, in addition to the gentleness of nature and refinement of disposition, were a warmth of sympathy, uniformity of courtesy, and tact beyond reproach. He was more interested in the practice of medicine than in medical science, and the former became to him an art in the use of which he was pre-eminent. "We need," said one of the ablest of the teachers of the Harvard Medical School, "some such man as Dr. Oliver to teach students how to practice medicine successfully."

Through his skill, sympathy and almost feminine instinct, his opinion and advice were always a comfort and a consolation if not a more enduring relief. He was, above all else, the beloved physician, gratefully remembered by the distressed mother and by the anxious father. He was welcomed with open arms by the younger of his patients, and depended upon for counsel and relief by the busied man of affairs. Among his patients were the leaders in thought and action in the various professions and in mercantile pursuits, but among the many patients in waiting were those less fortunate who always found a friend in deed as well as a physician for their need. His charity, however, was known only to himself and those privileged to receive it.

The indebtedness of physicians to Dr. Oliver for information with regard to subjects in which he was particularly informed already has been stated. A word should be added relative to the especial obligation of a number of his younger colleagues whose ultimate success has been attained in considerable part through the aid and encouragement given them by Dr. Oliver during the early part of their career. It gave him the greatest satisfaction to follow their progress and to realize that his influence had helped in advancing it.

Beloved physician and enduring friend, unselfish in his devotion to others—may he rest in peace.

Miscellany.

WORK OF NEW YORK TENEMENT HOUSE DEPARTMENT.

A STATEMENT in regard to the work of this department recently published by the secretary of the Charity Organization Society is of interest. In it he says: "The Tenement House Department is unique in municipal administration. So far as the interiors of the houses in which the bulk of the people live are concerned, it virtually is the Health Department. Sanitary inspection, the correction of unsanitary conditions and the vacating of buildings unsuit-

able for human habitation devolve upon it. It brings about the improvements in housing conditions upon which result less sickness, a lower death-rate, greater decency and a nearer approach in many other ways to rational family and home life. When the tenement-house law was passed it was predicted that all building of tenement houses in New York would cease because of the radical changes made by the law. After the law had been in operation a short time, it was found that builders were making greater profits under it than they had made under the old law, and some of its bitterest opponents soon became its warmest supporters. . . . The new-law tenements have proved successful from the tenants' point of view because for the first time many tenants have been able to get apartments with light, air and sanitary conveniences. They have been successful from the landlord's point of view because they have been fully occupied from the time of completion at remunerative rents. The whole lower East Side is being rapidly rebuilt with new-law houses. . . . Under the steady pressure of competition, the demands of business resulting in the replacing of some of the worst of the old buildings by warehouses, factories, etc., and the operation of the new law, there will gradually come about a complete transformation in those tenement-house conditions which have so long been the despair of all who knew them. There is an immense contrast between the old-law dumb-bell tenements, with their foul 'air shafts,' and the new-law tenements, with their large, ventilated inner courts. No house that is built under the present law contains any room that is not adequately lighted and ventilated. This is in striking contrast to the old-law houses, in which ten rooms out of each fourteen were almost totally dark and without ventilation. . . . Another indication of the activity of the department is that in the first six months of 1903 fire escapes have been erected on 1,701 tenement houses and 3,312 unsafe and dangerous wooden slat floors removed from fire-escape balconies and replaced by proper iron floors." Speaking in regard to prostitution, which was formerly prevalent in tenement houses, Jacob A. Riis, in an address on "The Battle with the Slums," said: "Those conditions have been swept away through the powers given to the Tenement House Department. The owners know that there is a fine of \$1,000 if they permit such conditions, and also that there is a commissioner who will enforce the law."

THE COMMUNITY AND TUBERCULOSIS.

DR. BEVERLY ROBINSON, in an article on the above subject,¹ makes the following statement:

"Finally, the broad statement still remains true, that without a susceptible soil no tuberculosis will develop in the vast majority of cases. Witness a little experience of my own. I served thirteen years in the Out-door Department of the New York Hospital, where I had

the class either of heart and lungs or throat and nose. During that time I had three or more assistants at different times, and several students. I or my assistants passed at least two hours three times a week in the room where the patients were examined, treated and prescribed for. In no instance that I recall was any one among my assistants or students (of course including myself) known to have contracted tuberculosis, and certainly in no instance was our attention directed to the room of the New York Hospital as being the source and origin of the disease.

"So far as I know, at no time in the thirteen years referred to above was the room where I examined and worked over my cases ever thoroughly disinfected in accord with the notions that we now possess of the meaning of the term. Of course, patients coughed, expectorated and frequently tuberculous sputa reached the floor, dried up and were wafted freely later to the respiratory tract of us all."

THE FOURTH OF JULY AND TETANUS.

At the twenty-ninth annual session of the Mississippi Valley Medical Association, held at Memphis, Oct. 7-9, the following resolutions were adopted:

"In view of the fact that more than four hundred deaths from tetanus occurred following the 4th of July celebration of 1903, as shown by the statistical report elaborated by Dr. S. C. Stanton of Chicago, and published in the *Journal of the American Medical Association* of Aug. 29, 1903, the great majority of which might have been prevented had proper precautions been taken; therefore,

"*Be it Resolved*, That the conclusions which follow, as offered by Dr. Stanton in a paper presented before the association, at the above meeting, be endorsed as the sense of the association, and further

"*Be it Resolved*, That the secretary be instructed to forward a copy of these resolutions and conclusions to the Medical Press, Associated Press and the secretaries of the several state medical societies, with the request that they publish same and take suitable action thereon.

"(1) Enforcement of existing laws regarding the sale of toy pistols and other dangerous toys.

"(2) Enactment of laws by the nation, states and municipalities prohibiting the manufacture and sale of toy pistols, blank cartridges, dynamite canes and caps, cannon crackers, etc.

"(3) Open treatment of all wounds, however insignificant, in which from the nature or environment there is any risk of tetanus.

"(4) Immediate use of tetanus antitoxin in all cases of Fourth of July wounds, or wounds received in barnyards, gardens or other places where tetanus infection is likely to occur.

"(5) As a forlorn hope, the injection of tetanus antitoxin after tetanus symptoms have appeared."

¹ Am. Journ. Med. Sci., October, 1903.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 17, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,115 | 367 | 26.55 | 12.47 | 2.96 | 8.79 | 1.44 | |
| Chicago . . . | 1,885,000 | 459 | 13 | 30.07 | 2.28 | 4.36 | 11.11 | 3.48 | |
| Philadelphia . . | 1,378,527 | 387 | 103 | 22.22 | 2.27 | 2.32 | 6.46 | 2.32 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 168 | 52 | 28.57 | 9.52 | 2.98 | 4.17 | 2.98 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 135 | 52 | 30.37 | 10.37 | — | 5.92 | 1.50 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,300 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 66 | 25 | 22.73 | 9.09 | — | 6.06 | 4.55 | |
| Boston . . . | 603,163 | 180 | 59 | 23.88 | 10.56 | 3.88 | 6.67 | 1.11 | |
| Worcester . . . | 132,044 | 27 | 12 | 14.81 | 11.11 | — | 11.11 | — | |
| Fall River . . . | 115,549 | 35 | 15 | 25.71 | 11.43 | — | 17.14 | — | |
| Lowell . . . | 101,959 | 23 | 13 | 32.14 | 10.71 | 3.57 | 7.14 | 7.14 | |
| Cambridge . . . | 98,639 | 25 | 9 | 24.00 | 4.00 | 4.00 | 12.00 | — | |
| Lynn . . . | 72,497 | 13 | 2 | 15.38 | — | — | 15.38 | — | |
| Lawrence . . . | 69,766 | 21 | 9 | 42.86 | 4.76 | 4.76 | 23.81 | — | |
| Springfield . . | 69,389 | 14 | 4 | 14.44 | — | — | — | — | |
| Somerville . . . | 68,110 | — | — | — | — | — | — | — | |
| New Bedford . . | 67,198 | 16 | 6 | 25.00 | 18.75 | — | — | 6.25 | |
| Holyoke . . . | 49,286 | 14 | 7 | 35.71 | 15.71 | — | 15.71 | — | |
| Brockton . . . | 44,873 | 11 | 4 | 9.09 | — | — | — | 9.09 | |
| Haverhill . . . | 42,104 | 5 | — | 24.00 | — | — | — | — | |
| Newton . . . | 37,794 | 10 | 2 | 20.00 | — | — | 10.00 | — | |
| Salem . . . | 36,876 | 11 | 3 | 54.55 | — | 27.27 | — | 9.09 | |
| Malden . . . | 36,286 | 10 | 2 | 10.00 | — | — | — | — | |
| Chelsea . . . | 35,876 | 13 | 5 | — | — | — | — | — | |
| Fitchburg . . . | 35,069 | 7 | 3 | 14.29 | — | — | — | — | |
| Taunton . . . | 33,656 | 7 | 2 | 14.29 | — | — | — | — | |
| Everett . . . | 28,620 | 4 | 4 | — | — | — | — | — | |
| North Adams . . | 27,862 | 8 | 2 | 25.00 | — | 12.50 | — | 12.50 | |
| Gloucester . . . | 26,121 | 5 | 1 | 40.00 | — | — | — | — | |
| Quincy . . . | 26,042 | — | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 7 | 3 | 14.29 | 42.86 | — | — | — | |
| Brookline . . . | 22,608 | 2 | — | — | — | — | — | — | |
| Pittsfield . . . | 22,589 | 5 | 1 | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 4 | 3 | 50.00 | — | — | 25.00 | — | |
| Medford . . . | 20,962 | 2 | 1 | 100.0 | — | 50.00 | — | — | |
| Northampton . . | 19,883 | 7 | 14 | 29 | — | — | — | — | |
| Beverly . . . | 15,302 | 3 | — | 33.34 | — | — | — | — | |
| Clinton . . . | 15,161 | 3 | 1 | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . | 14,478 | 7 | 4 | 28.57 | 14.29 | 28.57 | — | — | |
| Woburn . . . | 14,300 | 1 | — | — | — | — | — | — | |
| Hyde Park . . . | 14,175 | — | — | — | — | — | — | — | |
| Adams . . . | 13,745 | 3 | 2 | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marietta . . . | 13,609 | 4 | 1 | 25.00 | — | — | 25.00 | — | |
| Melrose . . . | 13,600 | 2 | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | — | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | — | — | — | — | — | — | — | |
| Framingham . . . | 12,534 | — | — | — | 20.00 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 1 | — | 25.00 | — | — | — | — | |
| Weymouth . . . | 11,344 | 6 | — | — | — | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 2 | 1 | — | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 2,861; under five years of age, 923; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 744, acute lung diseases 286, consumption 303, scarlet fever 19, whooping cough 14, cerebro-spinal meningitis 7, smallpox 12, erysipelas 8, puerperal fever 9, measles 6, typhoid fever 58, diarrheal diseases 231, diphtheria and croup 94.

From whooping cough, Baltimore 4, Providence 3, Philadelphia 2, New York, Chicago, Pittsburg, Boston, and Chicopee 1 each. From erysipelas, New York 3, Boston 2, Philadelphia, Pittsburg and Newton 1 each. From smallpox, Pittsburg 8, Philadelphia 4. From measles New York and Providence 2 each, Philadelphia and Boston 1 each. From scarlet fever, New York 6, Philadelphia 5, Chicago 3, Boston 2, Baltimore, Pittsburg and New Bedford 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Oct. 3, the death-rate was 15.3. Deaths reported, 4,424; acute diseases of the respiratory organs (London) 161, whooping cough 38, diphtheria 52, measles 38, smallpox 2, scarlet fever 31.

The death-rate ranged from 6.3 in Handsworth to 25.1 in Newcastle-on-Tyne; London 14.1, West Ham 14.6, Brighton 12.1, Southampton 17.5, Plymouth 15.8, Bristol 13.8, Birmingham 17.7, Leicester 16.8, Nottingham 15.1, Liverpool 17.6, Bolton 15.6, Manchester 19.8, Salford 21.0, Bradford 15.1, Leeds 12.1, Hull 16.9, Cardiff 10.6, Rhondda 13.5, Merthyr Tydfil 22.6, Swansea 20.2.

METEOROLOGICAL RECORD.

For the week ending Oct. 17, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barom-eter. | Ther-mometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r + | | Rainfall in inches. | |
|---------|-------------|---------------|----------|--------------------|-----------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| S. . 11 | 29.97 | 52 | 53 | 50 | 93 | 94 | 94 | N | N | 17 | 18 | R. | R. | .37 |
| M. . 12 | 29.80 | 51 | 53 | 49 | 100 | 94 | 97 | N | N | 22 | 22 | R. | R. | .99 |
| T. . 13 | 29.94 | 54 | 57 | 51 | 82 | 71 | 76 | N | N | 13 | 4 | O. | O. | .10 |
| W. . 14 | 29.90 | 57 | 68 | 46 | 74 | 55 | 64 | W | W | 8 | 8 | C. | C. | .0 |
| F. . 15 | 30.08 | 50 | 56 | 44 | 66 | 66 | 66 | N | N | 7 | 9 | C. | C. | .0 |
| S. . 16 | 30.07 | 59 | 70 | 48 | 84 | 82 | 83 | S | S | 8 | 9 | O. | O. | .0 |
| S. . 17 | 29.80 | 64 | 69 | 58 | 89 | 97 | 93 | S | E | 8 | 18 | O. | R. | .92 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING OCT. 24, 1903.

B. L. WRIGHT, passed assistant surgeon. Commissioned a passed assistant surgeon from March 3, 1903.

F. M. BOGAN, J. H. PAYNE, JR., and J. J. SNYDER, assistant surgeons. Commissioned passed assistant surgeons from June 7, 1903.

DRS. J. MILLER, JR., E. C. TAYLOR, F. E. CAMPBELL, J. E. GILL and I. S. K. REEVES, appointed assistant surgeons from Oct. 12, 1903.

W. S. PUGH, assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington.

J. COWAN, pharmacist. Retired from active service, Oct. 19, 1903, under the provision of Sec. 1453, R. S.

RECENT DEATHS.

DR. MAURICE F. PILGRIM, Professor of Psychiatry in the New York Post-Graduate Medical School and a co-editor of the *Journal of Advanced Therapeutics*, died on October 18, of pneumonia, at the age of forty-six.

ROBERT ABERDEIN, M.D., of Syracuse, N. Y., who was for many years one of the most prominent physicians in Central New York, died after a long illness at the Hospital of the Good Shepherd in Syracuse on October 18. He was one of the original Fellows of the New York State Medical Association.

DAVIDSON H. SMITH, M.D. — Much sympathy is felt for Dr. Andrew H. Smith, President of the New York Academy of Medicine, whose only son, Dr. Davidson Heermance Smith, died suddenly at the Post-Graduate Hospital, New York, during a mastoid operation, on October 23. Dr. Davidson Smith, who was in his twenty-ninth year, was graduated from the medical department of Columbia University in 1902, and since then has been engaged in post-graduate work at the New York Post-Graduate Medical School and Hospital. During the past spring he accompanied his father abroad, and he was one of the delegates of the Medical Association of the Greater City of New York to the International Medical Congress at Madrid.

BOOKS AND PAMPHLETS RECEIVED.

Physician's Pocket Account Book. By J. J. Taylor, M.D. Philadelphia: The Medical Council.

Lessons on the Eye for the Use of Undergraduate Students. By Frank L. Henderson, M.D. Third Edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

An Atlas of Human Anatomy for Students and Physicians. By Carl Toldt, M.D., assisted by Alois Dalla Rosa, M.D. Translated from the Third German Edition and adapted to English and American and International Terminology, by M. Eden Paul, M.D. (Brux.). M.R.C.S., L.R.C.P. First Section. Illustrated. New York: Rebman Company. 1903.

Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1900.

Annual Report of the Supervising Surgeon-General of the Marine Hospital Service of the United States for the Fiscal Year 1901.

Original Articles.

ON GASTRIC TETANY.

BY B. G. A. MOYNIHAN, M.S. (LOND.), F.R.C.S., LEEDS, ENGLAND.

THE occurrence of tetanoid spasms in association with certain diseases of the stomach, though mentioned by Morgagni, was first prominently recorded by Kussmaul in 1869. His observations referred to cases of dilatation of the stomach in which convulsive attacks had been noticed.

It is now generally recognized that tetany is an occasional complication of several diseases implicating the gastro-intestinal tract. There are, however, widely divergent views as to the frequency and as to the seriousness of the disease, and an attempt has been made to limit the term "gastric tetany" to cases in which there are increased mechanical excitability of the muscles, increased mechanical and electrical irritability of the motor and sensory nerves; a profoundly serious constitutional disturbance and often a fatal termination. Indeed it has almost been made a criterion of the disease that it should end fatally. Frankl-Hochwart, for example, in discussing the records of 40 cases, disallows all but 11, and of these 10 terminated fatally. To restrict the term "gastric tetany" to cases of this type seems to me to preclude deliberately a large number of cases presenting similar, though less serious, manifestations, cases precisely similar in kind, though slighter in degree. The distinction between gastric tetany and tetanoid spasms associated with, and dependent upon, gastric dilatation is one which is arbitrary and irrational. It must, I think, be conceded in the future that the term "gastric tetany" shall include all cases of tetany and tetanoid spasms associated with and directly due to diseases of the stomach.

The occurrence of tetany in gastric disease is more common than is generally known. In the slighter degrees the symptoms are often inconspicuous and are in no way associated in the mind of the patient with the more urgent stomach trouble; it is then not until some leading question is put that he will refer to the "cramps" or "tingling" in the extremities.

In the early stages the patient generally complains of a peculiar numbness or prickling or tingling or a feeling of "pins and needles" in the extremities; in the hands more often than in the feet. There may be also a feeling of coldness or heaviness in the limbs; and drowsiness, or a feeling "as if the head were swelling" has been remarked. More than one patient has spoken of a feeling of fatigue, of infinite weariness in the muscles about to be affected.

The formication frequently follows closely upon the act of vomiting, or upon the washing out of a laden stomach. In not a few cases indeed, the first onset of tetany has been observed after the stomach has been emptied of its contents by the stomach tube. In the severer

forms, and in almost all the fatal cases, a history is given of severe and uncontrollable vomiting immediately preceding the attack. As the formication increases, a tetanic contraction of the muscles occurs. In the hand the fingers and the thumb are stiff and slightly flexed, the thumb is strongly adducted and the position of the "accoucheur's hand" is reproduced; the hollow of the hand is deepened, and the thenar and hypothenar eminences exaggerated. The wrists are, as a rule, strongly flexed, but may be extended, the forearm is usually flexed upon the arm; but all the muscles of the forearm and upper arm feel tense and rigid in contraction. During a tetanic seizure some alteration of the position of the limb may gradually occur, the wrist may, from a condition of rigid extension, pass into one of flexion, or from one of pronation into supination, or again, slow, writhing movements may be performed. Occasionally, when the patient feels a tonic spasm beginning in the hand, forcible voluntary movements of the fingers will cause the attack to pass away. As a rule the spasms are symmetrical, but, as Albu pointed out, the one side is almost constantly more profoundly affected than the other. The muscles of the feet and legs may be also, though more rarely, affected; the toes are drawn up into the sole, the ankles and the knees are flexed. The muscles of the face and jaws, of the neck and of the abdomen are all involved at times. The facial expression is greatly altered, a frowning, anxious or "snarling" appearance being remarked. The muscles of the eyeball are not seldom affected and the sight may be lost for a time; the patient calls out that he "cannot see," or that he is blind. In one of Trousseau's cases the sight did not return for three days. During the paroxysm the patient may mutter or shout unintelligibly, almost as if in delirium; words and phrases are run together unmeaningly. In all the well-marked attacks, the signs of Trousseau, Chvostek, Erb and Hofmann are present.

Trousseau's symptom is described as follows: "So long as the attack is not over, the paroxysms may be produced at will. This is effected by simply compressing the affected parts, either in the direction of their principal nerve trunks, or over their blood vessels, so as to impede the venous or arterial circulation."

Chvostek's symptom is shown by the very great increase in the mechanical excitability of the motor nerves of the part affected; a facial spasm, for example, being produced by tapping over the facial nerve near its exit from the stylo-mastoid foramen.

Erb's symptom is shown by the great increase in the electric irritability of the nerves and muscles, especially to anodal stimulation.

Hofmann's symptom has reference to the heightened excitability of the sensory nerves, the slightest pressure on which may cause paresthesia in the region of distribution.

In some cases of gastric tetany, but more especially in one case in an old man who had gastric dilatation, the result of duodenal ulcer, I

have noticed during the tetanic seizure a dusky lividity of the parts involved. The face and neck look leaden and suffused, and the forearms and arms, swollen and turgid, have the same appearance as would be produced by the light application of a tourniquet.

As the spasm passes off a return of the tingling in the hands and feet is often noticed, and the patient will rub the hands together, or rub the parts against the bedclothes to obtain relief.

I have almost always found that the agony of the spasm may be relieved by forcibly bending the fingers, flexing or extending the wrist or forearms, or by reproducing passively those movements which would be caused by the active contraction of the muscles involved. Though the first passive movement will often cause an excruciating pain, yet a gentle persistence in the act will cause the spasm gradually to resolve, and will afford the patient great relief.

Intermissions during an attack are often observed. A seizure in which the wrists are flexed may slowly subside, to be presently followed by one in which the wrists are extended. And so the posture of the limbs may vary from time to time. The muscles of the abdomen are affected in the severer cases, the abdominal wall feeling hard, tense and absolutely unyielding.

The general effect produced upon the patient by an attack varies greatly according to the severity and the duration of a seizure. In many cases the tingling or numbness, though frequently noticed, is nothing more than an unpleasant sensation, whose significance is never appreciated. Cramps in the extremities, noticed from time to time soon after the patient gets to bed, are not attributed to their real cause until the surgeon makes pointed inquiry as to their existence. When, however, there is a wide involvement of muscles, and especially when the attack is unduly prolonged, the physical suffering is intense, and the most profound prostration may be witnessed. The pulse at the wrist may be quite imperceptible though the tensely contracted vessel can be rolled beneath the finger. Consciousness may be lost for a time, or the patient's mental balance gravely disturbed by the intensity of his suffering. A severe and prolonged seizure of gastric tetany is, then, almost as serious an ordeal as any patient may experience and live. It is these severer cases which furnish the large mortality recorded by Frankl-Hochwart, Müller and others.

Theories as to the causation.—Three chief theories have been put forward to explain the occurrence of gastric tetany:

(1) Kussmaul, to whom we owe the first description of the disease, attributed the tetany to the general desiccation of the tissues of the body. He considered that the loss of fluid to the body was occasioned in part by the copious and frequent vomiting, and in part by the absence of adequate absorption of fluid from the alimentary canal. Though Kussmaul himself subsequently disclaimed this theory, there have been several who have accepted it, or have thought

that the deprivation of fluid might be one among several causative factors. Thus Fleiner¹ states that there is some evidence of inspissation of the blood, and that a fall of blood pressure is probable, and Jürgensen² gives support to the theory. Albu thinks, also, that the loss of fluid, if not the final or sole cause, is probably an important predisposing condition. In one case, related by Blazicek,³ investigation failed to show any loss of fluid to the blood. With few exceptions this theory has now been abandoned by all observers.

(2) Germain-Seé, Berlitzheimer and others have suggested that the tetanic spasms are due to a reflex action aroused by the stimulation of the sensory nerves of the stomach. The frequency with which the seizure is immediately preceded by an act of vomiting, or by the passage of a stomach tube, and the fact that a spasm can be elicited by flicking or percussing the stomach, have each lent some support to this reflex theory. It is indeed not to be denied that, whatever may be the ultimate cause making possible the tetanic condition, the stimulus necessary to start the seizure may be derived reflexly from the gastric mucosa. Albu quotes the partly analogous cases of tetanus, and of strychnine poisoning in the frog, in both of which toxic conditions a convulsion is instantly caused by the slightest peripheral irritation. Though this theory has been practically discarded by recent writers, it is, in my judgment, one that we cannot afford wholly to ignore.

(3) The third theory is the theory of auto-intoxication. It is one that has received the weightiest measure of support from recent authorities, and is that which is most in accordance with the facts. The poison or poisons are generated in the stagnant and putrefying contents of a dilated stomach. Bouveret and Devic separated from the stomach contents of a patient with hyperchlorhydria and gastric retention a poison soluble in alcohol, which produced convulsions in animals. In their opinion hyperacidity is a condition to which considerable importance should be attached. The frequency of its occurrence is attested by the fact that in many of the records it is especially observed that the vomited matters were intensely acid or sour. If this theory of auto-intoxication were correct, it would naturally be expected that the injection of the untreated stomach-contents into animals would produce some convulsive seizures resembling those occurring in man. All such experiments have, however, entirely failed. Carnegie Dickson, who has very fully and very ably recorded a most interesting case of gastric tetany, quotes Müller, von Jaksch, Berlitzheimer, Blazicek, Landsteiner, Gumprecht and Albu as all having failed to obtain results. In Carnegie Dickson's case no results were obtained from a series of inoculations into rabbits and guinea pigs. Subcutaneous injections were made of the following solutions:

¹ Münch. med. Woch., March 10, 1903, No. 10.

² Deut. Archiv. f. klin. Med., 1898.

³ Wien. med. Woch., 1894.

- (1) Filtrate of unaltered stomach-contents.
- (2) Filtrate of stomach-contents evaporated to dryness in vacuo or a strong sulphuric acid at a temperature of 40° C. and extracted with normal saline solution.
- (3) Filtrate of stomach contents evaporated as in No. 2, extracted with alcohol; again evaporated to dryness and then extracted with normal saline solution.

No result whatever, either of a paralytic or of a convulsive nature, followed these inoculations, though none were made by the intravenous method recommended by Bouveret and Devic. The auto-intoxication theory, therefore, though plausible and attractive, lacks any proof from the experimental side.

It is possible that in the second and third theories jointly, the true solution may be found. A poison formed in the stagnant contents of the dilated stomach may be absorbed, and both invoke the tetanoid convulsion and make more responsive to peripheral irritation the nerve centers in the brain and spinal cord. It is worthy of emphasis that in many instances an excess of free hydrochloric acid has been present in the stomach contents. To this, as already mentioned, Bouveret and Devic attach considerable importance as a factor in the etiology. Gumprecht and many others have found this condition of persisting hyperchlorhydria, but Blazicek, in one case, was unable to discover any trace of the free acid.

The relationship which may exist between gastric tetany and the condition of the kidneys is in need of further investigation. In many of the recorded cases albuminuria has been present; in some of these no naked-eye existence of kidney disease has been obtained at the autopsy, in others advanced chronic nephritis has been found. If the tetany be due to auto-intoxication, it is possible that the elimination of the toxin may have a damaging effect upon the kidney and be the cause of an inflammatory change. Hemmeter has recorded three cases of nephritis which he thought owed their origin to auto-intoxication. The single case of albuminuria in gastric tetany that I have had under my own care was in the person of an old alcoholic.

Pathology. — In almost all the recorded cases of gastric tetany, dilatation of the stomach has been a pronounced feature. Indeed, only one authority, Albu, has admitted the existence of tetany without dilatation. The dilatation is due to stenosis at or near the pylorus, and is associated with thickening and muscular hypertrophy of the stomach walls. Carnegie Dickson observed in his case that in the height of the seizure, the size of the stomach was greatly increased. As a rule the peristaltic waves can be seen passing across the stomach, and Mayo Robson has observed in one of his cases that "the exacerbations of the tetanic state were always associated with a painful contraction of the stomach, and that when the wave of contraction had reached the pylorus, the latter, which was previously incapable of being felt, formed a dis-

tinct hard tumor. The abdominal pain then became very intense, and the tetanic cramps in other muscles came on, or, if already present, became intensified." The ulcer at the pylorus may extend into the duodenum, or be associated with separate duodenal ulcers (as recorded by Loeb, Neumann and others), or duodenal ulcer may alone be found (as recorded by Bamberger, Renvers, Dujardin-Beaumetz and others). In Blazicek's case the gastric dilatation was due to the pressure of an enlarged stone — containing gall bladder upon the duodenum. Berlitzheimer assigned the dilatation in his patient to the pressure of a pancreatic cyst on the duodenum. In one case related by Muller tetany occurred in connection with an hour-glass stomach. In fewer instances the pyloric obstruction may be caused by malignant disease, as recorded by Trevelyan and others, and in fatal cases a condition of "ulcus carcinomatosum" has been found by Bouveret and Devic and Riegel. In Trevelyan's first case malignant disease of the duodenum was found. In three cases out of a total of five under my own care submitted to operation, duodenal ulcer, associated in all with gastric ulcer, was found. In one of these there was well-marked chronic pancreatitis. An examination of the recorded cases has certainly seemed to show a large proportion of instances of duodenal ulceration.

The conditions most frequently found associated with gastric tetany are pyloric stenosis, dilatation and hypertrophy of the stomach, and enduring hyperchlorhydria. The stenosis is due to the partial or complete healing of a chronic ulcer of the stomach or duodenum. Of the existence of this ulcer there is ample evidence in the history of prolonged indigestion, vomiting and other characteristic symptoms.

Treatment and prognosis. — The medical treatment of gastric tetany consists in frequent and thorough lavage, rigid dieting and the administration during the height of an attack of sedatives, bromides of potassium or ammonium, or in the severer crises of morphine hypodermically.

It has been said, and with some show of reason, that the washing out of the stomach excites the occurrence of tetany. The lavage is distinctly teasing and irritating, and if the cleansing of the stomach be inadequately done an ample quantity of putrid fluid may be left to provide a toxin for absorption — absorption which is rendered easier by the washing away of mucus from the lining of the stomach. But the lavage — and the point needs emphasis — should be very thoroughly done, and the surgeon must not desist until the fluid returns absolutely clean. In one patient of my own no less than forty quarts of fluid were used before the return water was clear, and the washing-out took sixty-five minutes. The process of gastric lavage is too often performed in a hasty and very perfunctory fashion. But carefully and patiently done it cannot be in itself the cause of gastric tetany. As Clifford Allbutt says, "Careful washing should rather cleanse and prevent evil, than be itself the cause

of tetany and convulsions." Carnegie Dickson states that in the case related by him the feeling of gastric discomfort and the tendency to vomiting were considerably allayed by the following method, which Professor Greenfield has for several years adopted with very marked benefit in many cases of gastric dilatation: After washing out the stomach with a solution of phosphate of soda, and previously, if necessary, with weak Condly's fluid or boric acid solution, a certain quantity, say ten ounces, of boiled milk containing sodium phosphate in the proportion of a drachm to the half-pint is left in the stomach diluted with hot water. Intravenous infusion of saline fluid may be adopted or copious hot water enemata may be given. The final and the appropriate treatment in all cases of gastric tetany should, however, be surgical. From what has been said as to the pathology of the condition it is clear that in almost all cases there is a grave mechanical obstacle to the onward passage of the food. It is this obstacle which causes the dilatation and the hypertrophy of the stomach. To relieve this obstruction and to do away with the stagnation of the stomach contents, surgical measures are necessary. In simple cases gastro-enterostomy will be the method of choice. In malignant cases a partial gastrectomy or gastro-enterostomy as circumstances dictate. In hour-glass stomach, gastro-gastrostomy combined with gastro-enterostomy performed in the distal pouch will, as a rule, be the suitable operation. Death occurring as the result of gastric tetany may occur in the first seizure or after a long series of attacks. Marten's case terminated fatally in the first attack, four hours after its onset. Trevelyan's patient, who had carcinoma of the duodenum, was first attacked with tetany on the morning of July 8, 1898, and died at 2 P.M. the same day. In other cases, as in Kussmaul's and in Carnegie Dickson's, there may be intervals of perfect health between severe attacks.

The records given by many writers show that gastric tetany is an extremely serious and often fatal disease. Thus in 11 cases accepted by Frankl-Hochwart as genuine, 10 died; Bouveret and Devic record 18 deaths in 23 cases; Albu, 31 deaths in 40 cases; Riegel, 16 deaths in 27. But almost without exception, such cases are of old standing. The chronic gastric ulcer, the stenosis which it causes, the dilated and hypertrophied stomach, have all been sources of troubles for months or for many years. It is only in the late stages of such cases that severe gastric tetany is seen. And such late stages are preventable. By treating all such cases surgically, and there is no other rational treatment, gastric tetany of the lethal type will soon be a forgotten disease. Even the slighter manifestations which I have mentioned, prickling, tingling or numbness of the hands, occasional and transient cramps in the muscles of the extremities, — even these are only seen in cases of long standing. The earlier adoption of surgical measures in these disabling conditions of the stomach,

conditions in which there is grave mechanical impediment to the free working of the organ, will banish altogether that class of patient which furnishes us with the last desperate forms of gastric tetany.

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A STUDY OF PATHOLOGICAL FERMENTATION IN THE STOMACH.¹

BY HENRY F. HEWES, M.D., BOSTON,

*Physician to Out-Patients at the Massachusetts General Hospital;
 Instructor in Chemistry at the Medical School of
 Harvard University.*

PATHOLOGICAL fermentation in the body produced through the agency of bacteria and other lower organisms introduced from without is to-day established as one of the most fundamental and fruitful sources of the various diseased conditions to which the flesh is heir.

The process has various manifestations and occurs in various localities in the body. It is a chief causal factor of the conditions and symptoms found in the so-called infectious diseases. It occurs in abscess formation and so-called septic infection generally. It is a prominent feature in the disturbances of the alimentary tract.

Whenever and however it occurs, its manifestation and action may be both local, causing disturbance of the part where the process is located, and general, causing systemic disturbance from the absorption of the pathological products due to its existence. We thus have to look to it as an element or associate in a great variety of diseased conditions and the study of the process, both generally and specially, is most essential and practical for the understanding of medicine.

I have been for some time investigating these processes of pathological fermentation in one principal locality of their occurrences in the body, the alimentary tract. And I wish to report to you to-night the results of a study of this subject in a very interesting case of gastro-enteric disease which I saw at this hospital. The case was one of gastrectasis due to obstruction from an ulcer of the pylorus and upper duodenum, and one of its chief manifestations in its symptoms and clinical findings was an excessive pathological fermentation in the stomach.

The history of the case was as follows:

James Dwyer, aged forty-six. Foundryman.

Up to a year ago the patient was perfectly well. At this time his wife was ill with a fatal

¹ Presented at the Massachusetts Hospital Clinical Meeting April 10, 1903.

illness and he was up all night with her, besides working all day, for three months. Towards the end of this vigil he began to note distress in his stomach and eructations of gas, the trouble occurring most frequently at ten or eleven o'clock at night, five hours or so after his evening meal. As time went on this trouble increased. Finally he came to have regular spells of severe pain in the epigastrium associated with eructation, regurgitation, waterbrash and finally vomiting, occurring each night. Vomited once or twice in the night, often a quart or more at a time. Vomitus was very acid. There was never blood. The vomiting gave relief of pain until the next night. During the day had some eructation and occasional regurgitation of very acid stuff, but no special distress. There was loss of twelve pounds' weight in six months.

The patient came to me in the morning, having eaten nothing since 6 p.m. on the previous day. He had vomited once in the night.

At this time 1800 cc. of contents were expressed from the stomach. With inflation the lower border of the stomach was four inches below the umbilicus, upper limit normal. There was a suggestion of thickening of the stomach or intestinal wall in the region of the pylorus. The stomach held 2500 cc. of water without difficulty. The blood and urine were practically normal and there were no other evidences of disease about the case.

The record of the physical and chemical examination of the contents was as follows:

Quantity 1800 cc.

Upon standing, contents separated into three layers and bubbles of gas could be seen rising from lower portion.

Odor, sour — the odor of acetic acid and butyric acid in gastric contents.

Reaction acid (litmus).

Free acid present (congo red).

Free HCl absent (Gunzburg reagent).

Combined HCl present (Ewald Sjöqvist test).

Lactic acid present (Fe_2Cl_6 test in ether extract of residue from distillation).

Butyric acid present (ethyl ester in distillate).

Acetic acid present (Ethyl ester in distillate test).

Total acidity = 0.43%.

Total free organic acids = 0.14%.

Total combined acids = 0.28%.

Pepsin present.

Rennin present.

The contents gave the reaction for alcohol (iodoform test; bichromate test).

The gas evolved by the contents was found to be principally carbon dioxide. The quantity of gas evolution was measured by placing contents in one of these gas tubes at 37° C. It was found that 100 cc. of contents formed 30-40 cc. of gas in twenty-four hours.

Specimens of contents removed on several occasions after the patient had, first; complete lavage of the stomach, then regular feeding for a day upon selected food which contained traces only of organic acids or their salts, then a twelve-

hour fast showed a similar character to that of which the analysis is given.

The patient was placed upon a suitable method of diet with lavage every second day. From the institution of the treatment vomiting and distress ceased. After a short period the patient was able to keep at his work and feel perfectly well by keeping upon this system of diet and using the stomach tube once a week at the most. Finally the use of the tube was entirely done away with. In six months the patient had gained twenty-five pounds and was as well as ever.

Eight months from the time of the first visit the patient was taken suddenly in the afternoon with dizziness followed by extreme weakness. An hour later there was a copious movement of the bowels, which was black and tarry in appearance (patient's statement). For three days following there were one or two similar movements. Patient was extremely restless and very weak. On the fourth day vomited some blood. The next day he came to my office with the above history.

At this time was very pale and walked unsteadily.

Pulse 110, temperature 99° F.

Blood showed hemoglobin 25%.

Red count, 1,400,000 per cmm.

White count, 15,000 per cmm.

Stained specimens showed marked anemia, with a few blasts present. A diagnosis of ulcer of the duodenum was made and the patient sent to the hospital. At ten o'clock that night he had a large hemorrhage indicated by copious discharge from the bowels of a tarry nature, containing blood, and by a drop in the hemoglobin to 10% and in the number of red corpuscles to 800,000. On the next day the patient, then unconscious, was operated upon by Dr. Harrington. A large bleeding ulcer of the duodenum with evidence of present or previous ulcer growth extending from the pylorus an inch and a half along the duodenal wall was found. Patient died six hours later. The autopsy confirmed the previous findings.²

The element of this case which has been the subject of this special investigation is the pathological fermentation which was associated with it.

The evidences of this fermentation, found both in the symptoms and in the results of the physical and chemical examination, were first, the excessive formation of gas demonstrated by the experimental observations described and evidenced by the symptoms of swelling of the stomach and excessive eructation.

Second, the presence in the gastric contents of certain chemical substances not found in the normal stomach, or quantities of these substances greatly in excess of those which are found in normal conditions. The most prominent and important of these substances were alcohol and these organic acids — lactic acid, butyric acid and acetic acid. The presence of these compounds

² See Mass. Gen. Hospital autopsy reports, 1902.

was evidenced by the results of the chemical analysis.

Third, the presence in the sediment of excessive numbers of bacteria, including sarcinæ, and of the yeast fungus.

The contents removed from the normal stomach give practically no gas formation in experimental tests such as those used to test this matter in the case in hand.

They show no test for alcohol upon removal from the stomach and give no test for lactic, butyric or acetic acid unless the food contain these substances or the salts of the acids, in which case the quantity present is never in excess of the food content.

The sediment contains very few bacteria or yeast fungi and almost never sarcinæ. Here is a tube of normal contents arranged to show gas formation, which has been kept at 37° C. for forty-eight hours. As you see, there is practically no evidence of gas formation as compared with the tube from the contents of our case, where a half tube full of gas has formed in twenty-four hours.

Having established the fact of fermentation and the definite products in this case, I proceeded to make a further investigation to determine, if possible, by experimental methods the genesis and controlling conditions of this pathological fermentation.

The first step in the investigation consisted of a biological study of the fresh contents to determine what active forms of organized ferments which might serve as causes of fermentation were present.

Gelatin plate cultures were taken from several specimens of the fresh contents removed at various times from the stomach after a twelve hours' fast.

In the first attempt numerous colonies of various appearances were obtained. A careful examination of all these colonies showed that they represented four (4) distinct types of bacteria, and four only.

These four types were:

(1) A coccus growing in small white colonies on the gelatin.

(2) A short bacillus growing in small white colonies and showing in instances in the growth in gelatin evidence of gas formation.

(3) A long bacillus growing in large creamy white colonies and liquefying the gelatin.

(4) An organism growing in white colonies and answering to the morphological characteristics of the sarcinæ ventriculi. The sarcinæ were obtained only once. This was in the culture made from the first specimen of contents obtained.

Several plate cultures taken from this same contents showed in all instances one or more of these four respective organisms and in no instance any other form of organism.

Here is a plate culture preserved by formalin representing a first dilution of an original gelatin culture from the contents, containing three of the above forms of bacteria,—the coccus, the

short bacillus and the long bacillus. You can see the evidences of gas formation about some colonies, those of the short bacillus.

I have here also agar culture of each of the four types of bacteria found, isolated on the agar in pure culture: (1) the coccus; (2) the short bacillus; (3) the long bacillus; (4) the sarcinæ. Here is also a pure culture of the short bacillus in gelatin, showing the abundant gas formation about the colonies.

From these culture experiments, then, we have obtained evidence of the existence of at least four forms of organized ferment in our contents.

That the number of forms of organism obtained on gelatin growths was limited to four in all cases was a surprise, for it has been proven that the mouth in normal conditions contains a large number of organisms which are swallowed with the food, many if not all of which grow on gelatin. Also the food itself contains many bacteria, and many forms of bacteria introduced from these sources and in this manner have been isolated from the normal stomach.³

Miller has isolated seventeen forms of bacteria from the mouth. Abelous⁴ has isolated sixteen forms of bacteria from the stomach in a set of observations. A few of these were found present in the stomach of a man killed at the height of digestion. None were pathogenic. All sixteen forms produced some fermentation of food in vitro. Most of them caused no appreciable effect of this kind in normal gastric contents. At first their action was very slow, taking several days to be appreciable and not to be compared with the energetic action of our pathological ferments in this case.

It is to be presumed that the failure of many of such forms as are found in the normal stomach contents to grow in this case and the reduction of the active bacterial products to four forms, was due to the inhibiting effect of the products of the fermentation upon bacterial growth. Also there were doubtless organisms present here which did not grow on gelatin. Thus the yeast fungus seen in such growth in the sediment does not grow on this medium. From its appearance in the sediment, however, it gave every evidence of being or having recently been in active growth in the contents.⁵

The capacity of yeast to cause fermentation of sugar is long established since the original observations of Cagniard-Latour.⁶ The capacity of yeast to perform this fermentation in the human stomach is proven. Kuhn isolated and grew yeast from the stomach and produced by its action alcohol and gas in carbohydrate solutions in vitro.

Having determined the presence of these possible causes of our fermentation, the next step in the investigation was to associate them definitely in the chain of cause and effect with this fermentation by experimental demonstrations. To accomplish this fact, mixtures of food substances

³ Straus: *Ztschr. f. klin. Med.*, xxvii, 1895.

⁴ Abelous: *Soc. de Biologie*, Feb. 9, 1889.

⁵ *Ztschr. f. klin. Med.*, Nos. 49 and 50, 1892.

⁶ *L'Institute*, 1835, iii, 150.

similar in character to those present in the contents of the case were made up, sterilized and inoculated with the various forms of organism isolated. This experimental work was done with the three forms of bacteria which were present on repeated culture experiments.⁷

The food mixtures used were solutions of glucose and peptone. The test solutions, having been sterilized and found by tests to be free from alcohol and organic acid, were inoculated and placed in gas test tube at 37° C. and tested at various periods up to forty-eight hours to detect the evidences of fermentation, gas formation, or alcohol or organic acids.

As a result of these experiments it was found that each of the three forms of organism isolated possessed the capacity to produce in the food mixture some decomposition products similar in nature to those abnormal products found in the fermenting contents from which the bacteria were isolated.

The action of the several forms of organisms showed considerable variety.

All three formed gas (CO₂) and alcohol at some stage of the fermentation and all formed some kind of organic acid.

The specific action of each organism may be seen from the accompanying table. As you can see from this, when the products of each organism are combined we have the whole collection of abnormal organic products which are found in our contents.

TABLE.

1. Coccus in 100 c.c. neutral carbohydrate-proteid solution for 24 hours produced — gas 50 cc.
Alcohol.
Lactic acid (a trace).
Acetic acid.
Total acidity = 44 cc. decinormal soda in 100 c.c.
Total free (organic) acid = 14 c.c. decinormal soda in 100 c.c.
2. Short bacillus in 100 c.c. solution for 24 hours produced — gas 40 cc.
Alcohol.
Butyric acid.
Acetic acid.
No lactic acid.
Total acidity = 30 cc. decinormal soda in 100 cc.
Total free acid = 10 cc. decinormal soda in 100 cc.
3. Long bacillus in 100 c.c. solution for 24 hours, produced — gas 20 cc.
Alcohol.
Lactic acid (much).
Acetic acid.
Total acidity = 40 cc. decinormal soda in 100 cc.
Total free acid = 16 cc. decinormal soda in 100 cc.

Control solutions of the food mixtures showed none of these abnormal products and no gas formation under the same conditions.

We have thus in our case determined a genesis of the pathological fermentation present by the experimental method. That is, we have, to use the traditional phraseology, isolated certain

definite organisms repeatedly from a contents, grown these in pure culture, and produced by their inoculation to sterilized food mixtures an infection similar in character and producing similar fermentation products to that found in our original case.

Also we have determined the special ferment action of each of the three organisms present.

Of course, it does not follow from this work that the organisms isolated are the whole cause of the fermentation in our case. Also, in this work the complete fermentation process has not been investigated. We simply determined the fermentation by the presence of certain abnormal decomposition products and reproduced the fermentation which will form these products.

This work is sufficient, however, to serve as an experimental demonstration of pathological fermentation in the body and to give us a fundamental understanding of the process, as it was produced in our case, serviceable for clinical instruction, and it was to obtain a simple scheme of demonstration of this subject for use in medical instruction that this work was undertaken.

Further investigation of the subject — consisting of the identification and study of the properties of the bacterial ferments isolated in this case; their action in varying strengths of free hydrochloric acid; their growth and products in various food substances, as pure carbohydrate or proteid solution; and the influence of various so-called disinfecting drugs upon their activity — will be reported in a late article.

I wish to express my thanks to Prof. Harold C. Ernst for assistance in this work, a part of which was done in his laboratory.

INTERNAL MEDICINE, TO WHAT EXTENT REQUIRED OR ELECTIVE IN THE MEDICAL COURSE? ¹

BY S. G. BONNEY, A.M., M.D., DENVER, COL.,

Dean and Professor of Medicine, Denver and Gross College of Medicine.

IN order to more clearly define the applicability of the elective system to internal medicine it is almost necessary to consider first its general relation to a medical course and to review briefly the trend of medical educative thought.

The sociologic and economic conditions of the country do not at present, as formerly, require a large number of physicians to supply from time to time the needs of the smaller communities. There is on the contrary an appeal for relief from the incubus of the insufficiently prepared practitioner, in order that more encouraging inducements may be offered to the type of the educated physician.

From a strictly business standpoint these inducements to spend years of preparatory study are now becoming not particularly attractive to those contemplating general medicine in view of the active competition incident to the overcrowding of the profession. Failure to remain

⁷ Sarcinæ were obtained but once in culture. They were present in numbers in the sediment in the first specimen of contents only. The ferment action of this form of bacteria has been studied by Coyon (Contribution to the Study of the Sarcinæ Ventricule, *Compt. rend. de la Soc. de Biol.*, Dec., 16, 1899). He found that sarcinæ in pure solutions of peptone formed acetic and formic acids and some butyric acid. In carbohydrate solution they formed acetic, formic and lactic acids.

¹ Read before the American Academy of Medicine in Washington, May 12, 1903.

in medical practice is said to attend the efforts of nearly one-third of all graduates in recent years.

Despite the recent advances in medical teaching, consisting in part of more rigid requirements for admission, the lengthening of the period of study and the enlargement of the curriculum, all tending to impose legitimate restrictions upon the number of students, and notwithstanding, also, the well-known uncertainties of success in practice, there is, nevertheless, no material diminution in the number of young men willing and anxious to undertake the laborious task of systematic medical study.

This implies a certain change in the motives and aspirations of the more liberally educated medical students of to-day, some of whom are induced to begin the study of the purely scientific aspect of medicine, with its opportunities for original research and investigation, while others are attracted early to the possible attainment of special knowledge and skill in certain departments, with the hope of subsequent contribution to the science of medicine, rather than the acquirement of a large general practice.

These natural tendencies in students have been further influenced by necessary and progressive changes in the course of medical instruction.

As a result of the greatly enlarged curriculum and the enormous increase of medical knowledge, the student is brought to a realization in the beginning of his career that he will be utterly unable to acquire even a superficial knowledge of all branches, and that he may hope to attain a degree of proficiency only in a small proportional part of his profession.

The inevitable result is an appreciation of the necessity for specialization in some form. In spite of the admitted objections to the greater development of specialism, the fact remains that it is distinctly in accord with popular and professional demand. A high degree of special attainment based upon broad fundamental knowledge has ever been the chief factor in advancing the science and art of medicine. Save in the remotely settled districts, the day of the general practitioner in his ordinary acceptance is nearly at an end, and in his place are to be found men, who, if they are less courageous, less self-reliant than the time-honored country doctor, are, nevertheless, more cognizant of their limitations.

To encourage intelligent specialism, to afford an opportunity to excel in certain departments, and at the same time to guard against superficial and disproportionate work, constitutes an important province of the modern medical school.

To this end a full interpretation of the elective system has been offered, not with a view of aiding premature specialization, but more to permit an early beginning of a thorough preliminary preparation leading to subsequent advanced work either in internal medicine or other specialties.

The elective system may be defined as that method of instruction which permits the exer-

cise, under a supposedly wise direction, of the student's choice of study according to his conception of his peculiar needs and purposes and his inherent adaptability for certain work. That a flexible curriculum is correct in principle and has been shown by experience to be a distinct advance in colleges of liberal arts and preparatory schools, no observer of pedagogic conditions will deny. This, however, in view of the greater responsibility involved in medicine, does not necessarily constitute evidence in favor of its general adoption as a system of medical education.

It may be said to possess definite advantages in certain institutions, and be capable therein of its most complete and satisfactory elaboration, according to the size, facilities and purposes of the school. Manifestly precisely similar conditions may not be in force in other colleges, and an equal observance, therefore, of the elective system rendered impractical, or if attempted to the same degree productive only of harm.

It follows that the extent of the applicability of the system to any school must vary according to the peculiar scope and working ideals of the institution. It is recognized that the purposes of some of the modern university medical schools are much more comprehensive than merely to educate doctors. The preparation and training of practical physicians, as exemplified in undergraduate instruction, forms but a single integral part of their real mission or ambition. Their energies are devoted in part to the rendering of post-graduate instruction, the pursuit of original research on the part of the professors and selected students, the investigation of new discoveries and new phases of medical learning and to the possible enlargement of the practical scope of pure science. It is in these institutions that the elective system is of the utmost advantage in offering opportunity for the attainment of the highest degree of technical learning, and is to be commended in its fullest interpretation, if practised under the restraining, governing and advisory counsel of the proper officials of the faculty. Such institutions are scarcely to be subjected, however, to the same principles of thought accorded to the medical school proper, whose sole object is to shape the early education of working doctors. Even in such institutions the elective system may be said to present certain features of advantage if applied with discrimination to the latter portion of the course, presupposing a thorough preparation in the required fundamental studies, and subject in each instance to the well-considered approval of the medical authorities. The degree to which such satisfying result may obtain must vary according to the peculiar conditions in force in each institution, thus rendering any school in this respect a law unto itself. The size of the school, the number of students, the amount of endowment and the proportionment of electives, afford no reliable measure of its real efficiency. A small school is not necessarily of low standard, provided it possesses ample laboratory and hos-

pital facilities, and embraces in its faculty men of sufficient preliminary education, of ripe experience and possessed of proper enthusiasm and high ideals. In like manner it is not simply the method or system of instruction, elective, required, didactic or clinical, that determines in full the career or usefulness of the student, as much as the manner in which the subject is interpreted and the degree of inspiration awakened by the instructor.

The practical utility of the elective system varies not only with reference to the institution where it is employed, but also according to the extent of its application to the various departments. As practiced in a few institutions it permits not only the choice of the subject, but of the instructor as well, and the manner in which instruction shall be given.

What are some of its recognized general advantages in a well-balanced and duly proportioned course of instruction?

I. The adaptability of the particular study to the peculiar requirements and mental receptivity of the student based on the known divergence in character and degree of individual capacity.

II. The consequent increased interest on the part of the student in not being compelled to devote valuable time to some irrelevant, and to him apparently unimportant branch.

III. The greater degree of technical efficiency attained by those anticipating a specialty through the additional time afforded for such preliminary preparation.

IV. The improved opportunities for observation and study afforded to those contemplating general medicine in being relieved of too rigid requirements in a few of the distinctly refined specialties.

V. The shortening of the period of time demanded in preparation for practical work, this not to imply, however, the completion of special education in a four years' course.

VI. The inspiration and incentive derived on the part of the instructor, from the fact that his students are at once earnest and enthusiastic, and that he himself is given immediate active recognition.

VII. The opportunity afforded in the larger institutions for the more intimate contact of instructor and student. This closer association and exchange of thought incident to the smaller colleges is of great utility in the imparting of knowledge.

These general advantages of the elective system, though scarcely worthy of detailed elaboration, may obtain in all instances if under the actual and not nominal supervision of a board of control.

There are objections, however, to be made and answered as to the practical employment of the system. The basis of these objections is found to exist purely through a possible laxity or carelessness on the part of the faculty in the exercise of their advisory, or, if necessary, arbitrary function.

I. The necessity exists on the part of the faculty for infinite patience and time in the deliberate consideration of each student's needs and purposes in order to ensure a proper selection of study. This is sometimes difficult of practical attainment, and demands that the work of review and counsel be apportioned to a duly constituted committee who shall be held responsible for results.

II. There is a possibility of error in the choice of method of instruction, the tendency being perhaps to neglect didactic and recitation teaching for the apparently more natural or practical instruction at the bedside. Here the text is found in the patient rather than the disease. While this constitutes the essential thought in actual practice, it is insisted that its proper judicial fulfillment could not be there attained, save by a course of preliminary instruction relative to the disease itself. The student is enabled to profit by the clinical work as illustrative of what has been previously acquired from the comprehensive and well-rounded lecture or recitation. The bedside teaching develops careful methods of examination and closeness of observation, besides emphasizing in a practical way the lessons of the didactic lecture and textbook. It should be carefully guarded, therefore, that in the student's choice of method each co-ordinate branch of instruction be given within certain fixed limits its due and justly accorded place.

III. The selection of a prospective specialty may be made at too early a period in the course of medical instruction, this involving the possibility of an unwise choice before the student has had sufficient opportunity to properly appreciate his own inclinations and special fitness.

As a matter of fact, however, the student is usually prepared to judge somewhat as to his tastes and desires relative either to scientific or practical work upon the completion of his required fundamental studies. If teaching of scientific subjects or laboratory investigation is selected as the most suitable field for future work, the decision is better made then than at the time of graduation. If a course of special practical study is avowedly instituted in the midst of his period of undergraduate instruction, it is certainly destined to result more satisfactorily if pursued under the direction of the faculty than if practiced as formerly, according to the fancies and prejudices of the student, who has always been found to entertain notions of his own concerning the line of work he is supposedly designed to follow.

IV. The likelihood is suggested that measures looking toward too early specialization may produce superficial and embryonic results. Should the training and instruction in special work preparatory for practice be permitted to end upon graduation, against which possibility there is unfortunately no distinct remedy, the objection is only too well sustained. If, however, post-graduate work is insisted upon as a *sine qua non* before entering upon special practice, it must follow that the selected grouping of studies in

undergraduate instruction has only served to render more thorough and complete the preliminary preparation for specialism.

It is evident that a properly regulated course of electives constitutes one of the most conspicuous advances in modern medical teaching. Its degree of usefulness varies according to the extent of its application and control peculiar to each department of a medical course.

How far shall this apply to internal medicine?

The relation of internal medicine to the elective system is radically different from that of all other co-ordinate branches of medical instruction, in that it occupies a position singularly unique and distinctive in its scope and requirements. Its practical working basis may be said to consist of a modified form of individual and original research supplemented by inductive clinical reasoning. It is not even an applied science in the sense of the suggested assumption of fixed definite evidence or demonstrable truth. Its sphere of action may be regarded rather as a thinking, reasoning empiricism, involving speculative deductions along the projected lines of laboratory and pathological investigation, extended to the border limits of actual experience. In the practice of internal medicine the cases are not presented in classified form, catalogued and indexed, but rather furnish in themselves the source and inspiration for needful study and detailed investigation, in order to harmonize apparent differences and properly elucidate the relations of perplexing complications.

Rational medical interpretations are directly resultant upon the closeness of the observations, the accuracy of the premises and the soundness of the logical reasoning, rather than upon the application of the known laws of pure science, or resource to a mental accumulation of authoritative data.

The field of knowledge of internal medicine may be said to comprise an enormous mass of discrete, disordered and unsettled medical information, to which are added the confusing results of original research, new discoveries and fresh observations. The correct expounder of changing medical opinion must possess, above all, the attribute of experienced clinical wisdom, not to be obtained through the possession of the highest degree of technical knowledge nor the retention of a great mass of precise facts, capable of laboratory demonstration, but rather acquired through proper methods of observation, suitable habits of thought and processes of reasoning. These are accorded in a satisfying degree only to the well-balanced and judicial mind, disciplined thoroughly through the medium of an education by no means entirely technical. The ability to select scientific facts with wisdom and discrimination, and to interpret them with accuracy, to recognize error and pretence, to form rational conceptions and to exercise intelligent conservative judgment, requires at present, no less than formerly, a degree of broad and liberal culture in its fullest sense as supplementary to a natural mental endowment.

The proposition is now advanced, Can this intensely practical and vitally important branch of medical education be justly subjected to the elastic principles of the elective system? The question may be said to apply, first, to those contemplating internal medicine, and, secondly, to those anticipating special work. For the future practitioner in internal medicine it must be apparent that the most complete and the best proportioned system of preparatory education is none too good. He has never been trained too thoroughly. It is also insisted that the teaching faculty is by far a better judge as to what should constitute a comprehensive and well-rounded course of instruction in this department. The teaching of internal medicine comprises such various subdivisions of the subject, such diversity of method and such a large staff of instructors, as to allow, under the elective system, a very wide latitude as to the relative amount of attention assigned to the several collateral branches. It is easy to conceive how a student might elect certain of these and be given credit for the required amount of time in internal medicine, and even pass brilliant examinations, yet have sadly neglected other equally important portions of the work.

To preclude this possibility the student should be compelled to devote a certain definite time to each of the various methods and means of instruction, none of which are entirely without their proportionate value. The fact that there exists a wide difference of opinion among teachers of medicine as to the best methods of imparting knowledge to senior classes affords no justification in itself for permitting students to select the manner in which to pursue the study of given subject, but rather suggests the wisdom of demanding at least a degree of familiarity with all branches of the department. A well-balanced and required system of didactic, recitatorial and bedside instruction, with original conference work according to the seminar method, offers to students the best that can be afforded in undergraduate work.

While the elective system offers opportunity to special students for original and advanced work in medicine, the necessity and practical advantage of this is hardly apparent. The prescribed course during the four years in this department of the modern medical school offers a sufficient degree of advanced study if properly taken advantage of to satisfy the actual demands of the most exacting student. If more than this be attempted along certain lines of undergraduate instruction in medicine, it must be at the expense of other work in the same branch, or else through the sacrifice of even a superficial attention to the so-called specialties. The educated physician in internal medicine should possess at least a general knowledge of the special branches. In view of these considerations there does not seem to exist good and sufficient reason to justify the application of the elective system in internal medicine to those contemplating general medicine.

To what extent shall the prospective specialist be permitted to exercise his prerogative under the elective system as applied to internal medicine before graduation?

It may, perhaps, be the opinion of some medical educators that a certain given course for such students be offered as a minimum requirement, and that by this means more time be afforded for work in their chosen field or for original research. To this, however, objection is here made on the following grounds:

I. That expert practical knowledge in any specialty presupposes and demands a good working familiarity with the theory and practice of medicine, and this is not to be learned any too thoroughly in a completed system of undergraduate work.

II. That the finished work in any specialty should never be attempted in a medical school regardless of its scope or facilities, the only field for the attainment of a sufficient degree of special knowledge to justify practice being found in post-graduate work reinforced by clinical experience.

III. That the demand for original research among undergraduates is more fancied than real, the actual purpose of the student at this time being to absorb much, rather than to attempt to contribute a little.

IV. That in view of the uniformly earlier attainment of social, professional and financial success of the specialist, and greater ease of living, the law of compensation justly requires a much longer period of earnest studious preparation.

V. That the present overcrowding of the profession morally necessitates the imposition of rigid restrictions to graduation as well as to admission and the possession of the highest possible degree of proficiency in order to compete successfully with those unhandicapped by knowledge or conscience.

For these reasons there does not appear in the interests of the would-be specialists any especial necessity for the application of the elective system to this department.

It is hoped that these mere suggestions may sustain the thought that a consistent regard for the highest ultimate welfare of all students and practitioners of medicine requires that the elective system, although of great recognized value as applied to a portion of the course of instruction, yet should bear no considerable relation to the study of internal medicine in American medical colleges.

OBSERVATIONS ON THE IODINE REACTION IN CHILDREN.

BY CHARLES HUNTER DUNN, M.D., BOSTON.

THESE observations were made chiefly with the view to adding to the data already accumulated, on which the diagnostic value of the iodine reaction is based, and also with a view to determining whether the reaction in the diseases in children corresponds with that of similar conditions in the adult. For this purpose a test

was made of the iodine reaction in the blood of every child immediately upon admission into the Children's Hospital during a period of three months, and also in all cases where any fresh disease developed during the child's stay in the hospital.

The technique employed was described by Drs. Richard C. Cabot and Edwin E. Locke in an article in the *Journal of Medical Research*, 1902, Vol. vii, No. 1, and further described by Dr. Locke in the *Boston Medical and Surgical Journal* of Sept. 11, 1902.

In addition to merely noting the presence or absence of the reaction in each case, an attempt was made to estimate the per cent of leucocytes showing the reaction. The figures give percentages of the whole number of white corpuscles noted, not of the polymorphonuclear neutrophils alone. In estimating these percentages, from one hundred to four hundred leucocytes, according to the presence and amount of leucocytosis, were counted, and of these, all leucocytes showing a distinct reaction, no matter how slight, were counted in.

The reactions were further classified according to the intensities of the reaction in each individual leucocyte. In cases in which only a brownish discoloration was present the reaction was classified as slight (Sl.). In cases in which, in addition to such discoloration, distinct but small brown granules were visible in any of the corpuscles, the reaction was classified as average (Av.). In cases in which many large brownish granules were observed in any of the cells the reaction was classified as marked (M.), and where any cells were observed in which the large granules were so numerous as to coalesce in brown masses giving a deep brown color to the protoplasm, the reaction was classified as very marked (V.M.).

In addition to the single observation made on each case admitted to the hospital, in certain diseases, notably pneumonia, typhoid fever and cerebro-spinal meningitis, further observations were made during the course of the disease, with a view to determining the frequency and intensity of the reaction in the various stages and the approximate time of its disappearance. Also, for purposes of comparison, a count of the white corpuscles was always made at the same time that the blood was taken for reaction.

LOBAR PNEUMONIA.

| Case. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cells Affected. | White Count. |
|-------|-----------|-------------------|-----------|------------|-------------------|--------------|
| 1 | 4 years | 7th day | + | V. M. | 80% | 21,400 |
| 2 | 7 years | 3d day | + | M. | 88% | 30,900 |
| 3 | 9 years | 4th day | + | M. | 84% | 13,600 |
| 4 | 8 years | 5th day | + | M. | 80% | 30,000 |
| 5 | 17 months | 6th day | + | M. | 80% | 80,100 |
| 6 | 8 months | 6th day | + | M. | 80% | 28,000 |
| 7 | 21 months | 2d day | + | M. | 74% | 60,000 |
| 8 | 5 years | 7th day | + | M. | 72% | 28,200 |
| 9 | 19 months | 2d day | + | M. | 72% | 44,800 |
| 10 | 3 years | 2d day | + | M. | 70% | 21,800 |
| 11 | 2 years | 8th day | + | M. | 70% | 10,700 |
| 12 | 6 years | 3d day | + | M. | 66% | 7,000 |
| 13 | 9 years | 2d day | + | M. | 46% | 31,000 |
| 14 | 2 weeks | 4th day | + | M. | 30% | |
| 15 | 4 years | 4th day | + | Av. | 80% | 28,600 |
| 16 | 4 weeks | 5th day | + | Av. | 76% | 19,000 |
| 17 | 10 months | 9th day | + | Av. | 70% | 10,400 |
| 18 | 2 years | 4th day | + | Av. | 60% | 20,300 |
| 19 | 6 years | 2d day | + | Av. | 54% | 22,000 |
| 20 | 7 years | 4th day | + | Av. | 56% | 18,000 |
| 21 | 2 years | 4th day | + | Av. | 36% | 29,300 |
| 22 | 7 years | 3d day | + | Av. | 48% | 19,100 |

The results in the twenty-two cases tabulated show the presence of the iodine reaction in all. As to intensity, the reaction was average in eight cases and marked in fourteen. The percent of leucocytes affected was almost uniformly high, the average being 70%. We may conclude from these results that in the active stage of lobar pneumonia in children a positive iodine reaction is the rule, such reaction being often marked, and always at least average in intensity, and that the percentage of leucocytes affected is high, being more than 50% in most of the cases.

The following table shows the results of further observations upon some of these same cases taken at various times after the crisis. In those cases where no distinct crisis occurred, the day the temperature reached and remained at the normal point was considered as equivalent to the day of the crisis.

| Case. | Time after Crisis. | Reaction. | Intensity. | % Cells Affected. | White Count. | Remarks. |
|-------|--------------------|-----------|------------|-------------------|--------------|---|
| 1 | 4 hours | + | Av. | 60% | 12,300 | |
| 1 | 4 days | 0 | | | | |
| 2 | 10 days | 0 | | | | |
| 3 | 3 days | + | Sl. | 6% | 7,400 | |
| 3 | 4 days | 0 | | | | |
| 4 | 5 days | 0 | | | | |
| 5 | 10 days | + | Av. | 54% | 18,300 | Consolidation unresolved. |
| 6 | 10 days | + | Av. | 40% | 13,400 | Slight fever. Consolidation unresolved. |
| 7 | 1 day | + | Sl. | 8% | 24,000 | |
| 7 | 3 days | + | M. | 84% | 28,700 | Rise of temperature. Empyema. |
| 8 | 9 hours | + | Av. | 30% | 12,100 | |
| 8 | 3 days | + | Sl. | 6% | | |
| 8 | 5 days | 0 | | | | |
| 9 | 5 days | 0 | | | | |
| 10 | 5 days | 0 | | | | |
| 11 | 10 days | + | M. | 42% | | Consolidation unresolved. |
| 11 | 15 days | + | M. | 88% | | Consolidation unresolved. |
| 14 | 4 days | 0 | | | | |
| 15 | 3 days | + | Sl. | 12% | 14,400 | |
| 15 | 5 days | 0 | | | | |
| 19 | 2 days | + | Sl. | 28% | | Consolidation unresolved. |
| 19 | 6 days | + | Av. | 34% | | Consolidation unresolved. Fever again for two days. |
| 19 | 8 days | + | Av. | 48% | | Consolidation unresolved. |
| 19 | 10 days | 0 | | | | Four days after resolution. |
| 20 | 1 day | + | Sl. | 22% | 11,800 | |
| 20 | 3 days | 0 | | | | |
| 21 | 12 hours | 0 | | | | |
| 22 | 2 days | 0 | | | | |

The results of these observations show that in those cases of lobar pneumonia in which quick resolution occurs the reaction becomes rapidly less marked both in intensity and in per cent of cells affected immediately after the crisis, and quickly disappears. It had disappeared in all cases by the fifth day after the crisis, and in one case (No. 21) it had disappeared in twelve hours; hence we may conclude that it may disappear at any time between the crisis and the fifth day. In cases where the consolidation remains unresolved, even with a normal temperature, as in Cases 5, 6, 11 and 19, the reaction may persist for at least ten or fifteen days. Case No. 7 is interesting as showing the behavior of the reac-

tion when empyema develops after the crisis. In this case the reaction which before the crisis was marked, 74%, white count 60,000, became one day after the crisis slight, 8%, white count 24,000. On the third day after, the temperature rose again and before the signs in the chest were sufficiently well marked to warrant a diagnosis, the reaction had become marked, 84%. The increase in the intensity of the reaction was much more marked than the increase in the leucocyte count, which only rose from 24,000 to 28,700.

BRONCHO-PNEUMONIA.

| No. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cells Affected. | White Count. | Remarks. |
|-----|-----------|-------------------|-----------|------------|-------------------|--------------|---|
| 1 | 2 years | ? | + | M. | 74% | 12,100 | |
| 2 | 2 years | ? | + | M. | 74% | 12,100 | |
| 3 | 5½ months | ? | + | Av. | 74% | 32,800 | Autopsy. tb. broncho-pneumonia with fresh pneumococcus infection. |
| 4 | 14 months | ? | + | Av. | 66% | 39,000 | |
| 5 | 1 year | 3d day | + | Av. | 58% | 23,800 | |
| 6 | 6 years | 7th day | + | Av. | 46% | 62,100 | Complicating pertussis. |
| 7 | 2 years | ? | + | Av. | 40% | 31,400 | Autopsy. |
| 8 | 2 years | 31st day | + | Sl. | 30% | 15,200 | Slight fever. |

The results of these observations are very similar to those obtained in lobar pneumonia, the reaction being present in all cases. The stage of the disease could not be absolutely determined, but all but the eighth case were in the active stage.

INFLUENZA PNEUMONIA.

| No. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cells Affected. | Remarks. |
|-----|----------|-------------------|-----------|------------|-------------------|---------------------------|
| 1 | 7 years | 3d day | + | M. | 66% | Complicating (pertussis). |
| 2 | 11 years | 3d day | + | Av. | 70% | |
| 3 | 9 years | 11th day | + | Av. | 60% | Complicating (pertussis). |
| 4 | 5 years | 7th day | + | Av. | 26% | |

The reaction was present with at least average intensity in all cases, and a high per cent of corpuscles was affected in a majority of the cases observed.

Further observations showed that in Cases 2 and 3 the reaction disappeared on the fourth and third days respectively, after the temperature reached the normal. In Case 1 the disease ran a

very prolonged course, the reaction being average, 30%, white count 12,400 on the twenty-first day. The patient was discharged on the one hundred and fourth day with some fever and several areas of consolidation in the chest. The reaction on the day of discharge was slight, 8%, white count 9,100. Case 4 also ran a long course. The reaction was average, 30%, white count 19,200 on the thirty-first day.

TYPHOID FEVER.

Of ten cases the reaction was positive in nine at some stage of the disease. In one case (No. 8) it was absent on the third day

| No. | Age. | Stage of Disease. | Re-action. | Inten-sity. | % Cells Affected. | White Count. | Remarks. |
|-----|----------|-------------------|------------|-------------|-------------------|--------------|--------------------------------|
| 1 | 9 years | 1st week | + | M. | 74% | 19,200 | Comp. with septic pharyngitis. |
| 2 | 3½ years | 5th day | + | M. | 62% | 9,500 | Comp. with Otitis media. |
| 3 | 3½ years | 12th day | + | Av. | 40% | | No complication. |
| 4 | 10 years | 4th day | + | Av. | 40% | 4,800 | " " |
| 5 | 10 years | 1st week | + | Av. | 18% | 5,200 | " " |
| 6 | 10 years | 1st week | + | Sl. | 70% | 8,400 | Widal-O. " No complication. |
| 7 | 5 years | 8th day | + | Sl. | 50% | 7,000 | No complication. |
| 8 | 5 years | 8th day | + | Sl. | 32% | 10,200 | " " |
| 9 | 6 years | 5th day | + | Sl. | 8% | 5,800 | " " |
| 10 | 7 years | 7th day | 0 | | | 9,000 | " " |

but present on the eighth day, but in all other cases it was present at the first examination, the stage of the disease varying from the fourth to the twelfth day. In one case the reaction was absent on the first examination and remained so throughout the disease. In the uncomplicated cases the intensity was slight or average, and the per cent of cells affected in all but one case (Case No. 6) was under 50%. In the two cases with complications, the intensity was marked and the per cent of cells affected high.

Further examination on some of these cases, made with a view to determine the persistence of the reaction after the temperature reached the normal, were as follows:

| No. | Temperature Normal. | Reaction. | Intensity. | % Cells Affected. | Remarks. |
|-----|---------------------|-----------|------------|-------------------|--------------------------|
| 3 | 8 days | + | Av. | 18% | Chronic discharging ear. |
| 3 | 13 days | + | M. | 14% | Chronic discharging ear. |
| 3 | 18 days | + | Sl. | 28% | Chronic discharging ear. |
| 3 | 28 days | 0 | | | |
| 4 | 8 days | 0 | | | |
| 6 | 8 days | 0 | | | |
| 7 | 11 days | 0 | | | |
| 8 | 7 days | + | Sl. | 18% | |
| 8 | 16 days | + | Sl. | 28% | |
| 9 | 10 days | 0 | | | |

In four uncomplicated cases the reaction disappeared between the eighth and the eleventh day. In one uncomplicated case (No. 8) the reaction persisted until the patient was discharged, on the sixteenth day. In one case complicated with chronic discharging ear the reaction persisted until the twenty-eighth day.

Conclusions. — In typhoid fever in children the iodine reaction is usually present, but may be absent. It is of less intensity and shows a smaller per cent of cells affected than in the pneu-

monias, but it persists, as a rule, for a much longer time, and may persist for more than two weeks after the temperature reaches the normal. CEREBRO-SPINAL MENINGITIS.

In all of the following cases the Diplococcus intracellularis was at some time found in the cerebro-spinal fluid:

| No. | Age. | Stage of Disease. | Re-action. | Inten-sity. | % Cells Affected. | White Count. | Remarks. |
|-----|------|-------------------|------------|-------------|-------------------|--------------|-------------------------|
| | | | | V. M. | 68% | 13,300 | Severe case. |
| | | | | M. | 72% | 21,700 | Autopsy. |
| | | | | Av. | 52% | 30,000 | Severe case. |
| | | | | Av. | 24% | 43,300 | Mild case. |
| | | | | Sl. | 30% | 29,600 | Chronic relapsing case. |

These observations, though limited in number, suggest that the reaction is always present during the active stage of this disease, and that the

intensity and per cent of cells affected show a correspondence with the severity of the symptoms. Case 2 was fatal. Cases 4 and 5 made a complete recovery, Cases 1 and 3 became chronic, and both at the present writing are still totally unconscious with muscular contractions, Case 3 being on the two hundred and fiftieth day and Case 1 on the one hundred and fiftieth day since the onset of the symptoms. Further observations on these cases were as follows:

| No. | Stage of Disease. | Re-action. | Inten-sity. | % Cells Affected. | White Count. | Remarks. |
|-----|-------------------|------------|-------------|-------------------|--------------|--------------------------|
| 1 | 19th day | + | Av. | 30% | 10,400 | Still fever. |
| 1 | 35th day | 0 | | | 11,200 | Temperature normal. |
| 3 | 36th day | 0 | | | 21,600 | Still moderate fever. |
| 3 | 113th day | 0 | | | 18,000 | Temperature normal. |
| 4 | 28th day | + | Sl. | 10% | 18,400 | Temperature normal. |
| 4 | 35th day | + | Av. | 20% | 37,200 | During relapse of fever. |
| 1 | 50th day | 0 | | | 18,000 | Temperature normal. |
| 5 | 120th day | + | | 86% | 44,700 | During severe relapse. |
| 5 | 150th day | 0 | | | 21,900 | Temperature normal. |

It would seem that the reaction disappears in cases where the active process, as evidenced by fever, subsides, even in the chronic cases where the child remains unconscious, but that the reaction persists in those cases where there are relapses.

ACUTE MILIARY TUBERCULOSIS.

Of the following cases, in Nos. 2, 5, 7 and 8 the diagnosis was confirmed at autopsy; they had all been diagnosed clinically as tubercular meningitis.

In Case 3 glands excised post mortem were found to be tuberculous.

In Cases 4 and 6 the cerebro-spinal fluid obtained by lumbar puncture was characteristic of tubercular meningitis, but the clinical type of the disease was pulmonary with severe dyspnea and cyanosis.

In Case 7 the disease developed on a chronic pulmonary tuberculosis, tubercle bacilli having been found in the sputum.

| No. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cell Affected. | White Count. | Remarks. |
|-----|----------|-------------------|-----------|------------|------------------|--------------|--|
| 1 | 11 years | 5th day | + | Av. | 34% | 5,600 | |
| 2 | 7 months | 5th day | + | Sl. | 52% | 18,000 | Two weeks before death. |
| 3 | 6 years | ? | + | Sl. | 50% | 25,600 | |
| 4 | 7 months | ? | + | Sl. | 22% | 27,500 | Four days before death. |
| 5 | 11 years | ? | + | Sl. | 12% | 16,000 | Exam. made twenty-four hours before death. |
| 6 | 2 years | ? | + | Sl. | 4% | 18,900 | Three days before death. |
| 7 | 4 years | 7th day | 0 | | | 16,300 | Three days before death. |
| 8 | 2½ years | ? | 0 | | | 11,300 | Twenty-four hrs. before death. |

From these observations it appears that the reaction may be either present or absent. When present the intensity is usually slight, and the per cent of cells affected comparatively low.

ANEMIA.

These cases of anemia were all of the secondary type. In Cases 2 and 3 second observations were made.

| No. | Age. | Hgb. | White Count. | Red Count. | Reaction. | Intensity. | Cells Affected. |
|-----|-----------|------|--------------|------------|-----------|------------|-----------------|
| 1 | 10 months | 30% | 27,100 | 2,000,000 | | Av. | 60% |
| 2 | 3 years | 30% | 17,800 | 2,160,000 | | Av. | 34% |
| 3 | 2 years | 20% | 12,900 | 1,516,000 | | Av. | 22% |
| 3 | 2 years | 55% | 16,000 | 2,320,000 | | Sl. | 30% |
| 3 | | 65% | 14,800 | 5,008,000 | 0 | | |
| 4 | 2 years | 35% | 6,000 | 3,440,000 | 0 | | |
| 5 | 2 years | 40% | 10,700 | 4,300,000 | 0 | | |
| 6 | 6 months | 40% | 6,300 | 3,500,000 | 0 | | |

In general from this limited number of cases it would seem that the iodine reaction is present in the more severe anemias, absent in the milder ones, and when present a low per cent of cells is affected. Case 3 is interesting, showing the disappearance of the reaction coincident with improvement in the condition of the blood.

INFLUENZA.

I have included under this heading seven cases, all of which were obviously acute infections, but in none of them was the precise nature and localization of the infection determined. They all presented clinical pictures greatly resembling the ordinary grippe attacks, and they occurred at a time of year when cases of influenza pneumonia were common. In no one of them was a satisfactory specimen of sputum obtained. In all of these cases the iodine reaction was positive and of average intensity. The percentage of cells affected varied between 30% and 66%. Leucocytosis was absent in five cases, present in two.

NEPHRITIS.

The first five cases were acute, the last two of the chronic glomerular type.

| No. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cells Affected. | White Count. | Remarks. |
|-----|----------|-------------------|-----------|------------|-------------------|--------------|--------------------------------------|
| 1 | 4 years | ? | + | M. | 68% | 27,600 | Complicated with acute folliculitis. |
| 2 | 4 years | ? | + | Av. | 68% | 16,600 | Complicated with eczema. |
| 3 | 3 years | 10th day | + | Av. | 54% | 12,700 | Severe case. |
| 4 | 6 years | 10th day | 0 | | | 14,000 | Mild case. |
| 5 | 3½ years | ? | 0 | | | 17,300 | Marked edema but no uremic symptoms. |
| 6 | 7 years | ? | 0 | | | 19,600 | Edema. No uremic symptoms. |
| 7 | 6 years | ? | 0 | | | 17,000 | Edema. No uremic symptoms. |

From this small number of cases the reaction would seem to be positive in the severe acute cases, absent in the mild or chronic cases.

PLEURISY AND EMPYEMA.

A. WITH SEROUS EFFUSION.

| No. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cells Affected. | White Count. | Remarks. |
|-----|---------|-------------------|-----------|------------|-------------------|--------------|---------------------------------|
| 1 | 5 years | | | | | 11,300 | Fifth day traumatic etiology |
| 2 | 3 years | | 0 | | | 13,000 | Duration unknown. Tb. reaction. |
| 3 | 9 years | | 0 | | | 13,000 | Tb. reaction. |

B. EMPYEMA.

| No. | Age. | Stage of Disease. | Reaction. | Intensity. | % Cells Affected. | White Count. | Remarks. |
|-----|------|-------------------|-----------|------------|-------------------|--------------|-----------------------------|
| M. | 88% | | | | | 29,600 | Pneumococcus infection. |
| M. | 76% | | | | | 31,000 | Streptococcus infection. |
| M. | 64% | | | | | 20,700 | Pneumococcus infection. |
| Av. | 26% | | | | | 16,000 | Pus. sterile, tb. reaction. |

The results in this small number of cases agree with those of Cabot and Locke, based on a larger number of cases. Case 7 is interesting as showing the probable relation between the character of the infection and the intensity of the reaction, and the per cent of cells affected.

FUNCTIONAL INDIGESTION.

Observations were made on seventeen cases of gastric and intestinal indigestion. These included twelve cases in early infancy, so-called feeding cases, and five cases in middle childhood. Of the latter, one was a severe case of gastro-duodenitis, with severe jaundice. The iodine reaction was negative in all cases, nor did any of the cases show a leucocytosis.

CHRONIC VALVULAR CARDIAC DISEASE.

Six cases were examined, in all of which compensation was disturbed, in one of which it was wholly broken. The reaction was negative in five cases, slight, 8%, in the sixth case, this being the case of badly broken compensation.

OTHER DISEASES.

The following table (see next page) includes all cases in which only one or only a few observations could be made.

The number of cases in the above table is too few to warrant the drawing of any general conclusions. So far as they go the results agree with those of Cabot and Locke in similar cases.

The two cases of abscess were especially interesting in that the clinical diagnoses were the reverse of what was found to be the case on an examination of the pus. Further observations are needed to determine if a so-called cold abscess can be distinguished from a septic abscess by means of

the iodine reaction. The three cases of pericarditis are interesting from the fact that the variation of the reaction seems to agree with

the nature of the cause, the pneumococcus infection giving a very marked reaction with a high per cent of cells affected, and the rheumatic pericarditis giving a negative reaction, the probable tubercular pericarditis being midway between.

The results of the above observations as far as they go are in general confirmatory of the

(2) The reaction is usually present but may be absent in cases of typhoid fever, and military tuberculosis.

(3) The reaction may be absent or present in anemia.

(4) The reaction is usually absent but may be present in nephritis, cardiac valvular disease and tuberculosis.

| Disease. | No. | Age. | Reaction. | Intensity. | % Cells Affected. | White Count. | Remarks. |
|------------------------------------|-----|---------|-----------|------------|-------------------|--------------|---|
| Abscess (staphylococcus) | 1 | 6 yrs. | + | Av. | 81% | 21,000 | |
| Abscess (tubercular) | 2 | | 0 | | | 20,000 | |
| Appendicitis | 1 | 5½ yrs. | + | SL. | 16% | 22,000 | Three days after first attack subsided. |
| | 1 | | + | Av. | 28% | 41,400 | Onset of second attack. |
| | 2 | | + | Av. | 20% | 27,200 | During second attack. |
| Bronchitis (acute) | 1 | 1½ yrs. | + | Av. | 30% | 26,300 | Subacute. |
| | 2 | 3 yrs. | 0 | | | 17,600 | |
| Bronchitis (chronic) | 1 | 2 yrs. | 0 | | | 15,400 | |
| | 2 | 6 yrs. | 0 | | | 10,700 | |
| Cardiac disease (congenital) | 1 | 6 yrs. | 0 | | | 12,000 | Marked cyanosis. |
| | 2 | 8 mos. | 0 | | | 11,800 | |
| Chorea | 1 | 9 yrs. | 0 | | | 6,000 | |
| | 2 | 12 yrs. | 0 | | | 8,000 | |
| | 3 | 3½ yrs. | 0 | | | 12,600 | |
| Diphtheria | 1 | 4 yrs. | + | V. M. | 56% | 20,400 | Most marked in intensity of any obtained. |
| Eczema | 1 | 3½ yrs. | 0 | | | 16,100 | |
| Infantile atrophy | 1 | 6 mos. | 0 | | | 12,000 | |
| Influenza (chronic, bacilli found) | 1 | 3½ yrs. | + | SL. | 8% | 9,600 | |
| Osteomyelitis | 1 | 7 yrs. | + | M. | 78% | 32,000 | |
| | 2 | 9 yrs. | + | M. | 86% | 33,000 | |
| | 3 | 6 yrs. | + | M. | 80% | 21,000 | |
| Otitis media (acute) | 1 | 4½ mos. | + | Av. | 64% | 32,000 | Thirty-third day. |
| | 2 | 3 yrs. | + | SL. | 20% | 26,200 | Seventh day. |
| Pericarditis | 1 | 18 mos. | + | V. M. | 66% | 60,000 | Purulent, pneumococcus infection. |
| | 2 | 9 yrs. | + | SL. | 32% | 11,500 | Comp. pulmonary tuberculosis. |
| | 3 | 11 yrs. | 0 | | | 18,000 | Following rheumatism. |
| Pharyngitis (septic) | 1 | 5 yrs. | + | SL. | 12% | 19,600 | |
| Purpura rheumatica | 1 | 9 yrs. | 0 | | | 11,100 | |
| Rhachitis | 1 | 20 mos. | 0 | | | 16,200 | |
| | 2 | 20 mos. | 0 | | | 15,400 | |
| | 3 | 21 mos. | 0 | | | 7,400 | |
| Rheumatism (acute articular) | 1 | 7 yrs. | 0 | | | 14,100 | |
| | 2 | 8 yrs. | 0 | | | 22,600 | |
| Rheumatism (chronic articular) | 1 | 8 yrs. | 0 | | | 13,000 | |
| | 2 | 2 yrs. | + | M. | 76% | 13,400 | Acute stage. |
| Starvation | 1 | | + | Av. | 44% | | After four days. |
| | 1 | | + | M. | 50% | | During tb. reaction. |
| | 1 | 13 mos. | 0 | | | 18,400 | |
| Scorbutus | | | | | | | |
| Tuberculosis | | | | | | | |
| Adenitis | 1 | 14 mos. | + | SL. | 22% | 22,200 | With severe second day anemia. |
| | 1 | 5 yrs. | 0 | | | 22,000 | Diagnosis based on lumbar puncture. |
| Meningitis | 2 | 4 yrs. | 0 | | | 19,600 | Diagnosis based on lumbar puncture. |
| | 1 | 8 yrs. | + | V. M. | 80% | 6,900 | Very sick, probable mixed infection. |
| Peritonitis | 1 | 11 yrs. | 0 | | | 20,300 | Bacilli found in sputum. |
| | 2 | 9 yrs. | | | | 14,200 | Tb. reaction+. |
| | 3 | 3 yrs. | 0 | | | 14,300 | |

theory that the iodine reaction is a measure of the degree of toxemia. The observations on cerebro-spinal meningitis, on acute nephritis and on anemia are especially interesting in connection with this point. The single observation in the case of diphtheria gave the most marked reaction in intensity of any I have seen. I have not seen any other observation on this disease. The result is what one would expect in a disease characterized by so very profound an intoxication.

SUMMARY.

A general summary of the results, though necessarily imperfect from the comparatively small number of cases observed, may yet be of some use for comparison with future observations. It would be as follows:

(1) The reaction is always present, usually of average and often of marked intensity, a high percentage of cells being affected in the following conditions: Lobar pneumonia, broncho-pneumonia, cerebrospinal meningitis, influenza (see above), empyema, suppuration (non-tubercular), and was found present in single cases of appendicitis, diphtheria and starvation.

(5) The reaction is absent in pleurisy, with effusion, functional indigestion, rachitis, articular rheumatism, congenital cardiac disease, chorea, infantile atrophy and was found absent in single cases of bronchitis, eczema, purpura, urticaria and scorbutus.

Clinical Department.

MIRROR WRITING.

BY CHARLES D. JONES, M.D., BOSTON.

Ophthalmic Clinical Assistant, Massachusetts Charitable Eye and Ear Infirmary; Consulting Oculist, Malden Hospital.

ACCOMPANYING this paper is an admirable specimen of that curious anomaly known as mirror writing. The author was a boy about seven or eight years old who had been referred to me because of his very peculiar handwriting. The eyes were normal and the boy's teacher was assured that the condition would gradually be outgrown. Some months later the boy had accustomed himself to write correctly most of the time; but his teacher, who has kept an intelligent eye upon him, stated that when he became tired or even in some cases confused from

merely changing his seat in school, he occasionally reverted to his old system. The boy is bright and the handwriting, when reversed, will be acknowledged excellent for one of his age. He writes usually with the right hand, sometimes with the left.

In considering the causes of this condition, the various explanations seem altogether inadequate. It is apparently more common in persons having some manifest mental trouble, but also occurs in those of normal mental capacity. In most cases the writing is done by the left hand, and this fact gives a clue to the only explanation offered which is at all rational. Mills, in the *Encyclopedia Medica*, argues on the supposition that it is left-handed, "that the movements which produce mirror writing . . . are primarily guided from the left cerebral cortex," through some preponderating influence which the left cells have over the right, the result being that the left hand makes movements symmetrical with those made by the right; and mirror writing results because the same muscles (on the two sides) are called into action simultaneously. The author lays some stress in elucidating this theory upon a particularly close association of the two hemispheres of the brain through the corpus callosum. This is a point for the neurologist to settle; it seems to me to afford little light. Even more barren of results are theories which assume that an "image" is formed on the "mind." One writer categorically states that "visual sense alone would give us a world upside down."¹ Physicians as a body have always appreciated less clearly than metaphysicians that the mere fact that the retinal image is inverted, as are all real images, has *per se* no bearing whatever on the final perception of the object. The writers just quoted render the problem even more complex when speaking in this manner: "It may be asked is the image or impression or change in the brain tissue from which the image is formed on the mind reversed like the negative of a photograph; or if a double vision be formed in the visual center, one on the right hemisphere and the other on the left, do the images lie to each other in opposite directions?" After reading such statements and conjectures, it is well to recall to mind plain physiological facts; to remember that the sensation of light is not dependent upon the existence of a retinal image. The following is good: "Some have supposed that this picture [the retinal image] acting upon the sensitive nerve is reproduced on the gray matter of the brain. But there is difficulty in assigning to the sensory nerve a power of producing such an effect as copying a pictorial representation of an object, and it is at variance with the recognized functions of the gray matter to suppose that it is a sensitive surface capable of receiving pictorial impressions."² Another author writing upon this question of mirror writing gives a long account of a child who persistently saw things

reversed, not only laterally, but even upside down; such is not the experience of persons previously blind who have been suddenly cured, and every care should be used to prevent error before accepting these results.

In the case here reported the boy copied objects, letters and words correctly, writing in the ordinary manner, but wrote mirror writing from dictation.

New examples upon card

Mirror writing is said to be not uncommon in England, in one group of 451 the percentage of mirror writers being 5.1. I am convinced it is much less frequent in this country. In several cases which I have been assured were mirror writers, the specimens have proved to be merely those of poor penmanship, due to ignorance and carelessness, and the writing quickly became normal under suitable instruction.

Medical Progress.

PROGRESS IN ORTHOPEDIC SURGERY.

BY ROBERT SOUTTER, M.D., BOSTON.

HIP DISEASE.

IN the last two years there has been considerable work done on hip disease. Most of the literature contains much that is familiar; many noteworthy articles I shall not mention. Some revived old methods, new features in old methods and new ideas on the disease itself.

Koenig,¹ in his extensive work on bones and joints, devotes considerable space to hip disease. Perhaps the most interesting part of his article is the comparison of tuberculosis of the hip and infectious coxitis and the classification of the latter into three groups. His work is well worth reading in detail. There are 568 cases of tuberculosis of the hip, 110 cases of acute infectious coxitis, 30 gonorrheal, 22 arthritis deformans, 20 miscellaneous. In all, the hip observations number 758.

The anatomy of the hip, the development of the bones, the pathology of tuberculosis are treated in detail. In tracing the location of tuberculosis:

- (1) Examples of pressure changes on the head of the femur without disease at that point.
- (2) Disease of upper part of head and cartilage.
- (3) Erosion of the upper head and cartilage called "superficial caries."
- (4) Cartilage about the head destroyed completely.
- (5) Destruction of the head and cartilage complete.
- (6) Disease of the outer part of the head of femur.
- (7) Inner part of the head diseased.
- (8) Wedge of tuberculosis in the head.

¹ Sweeney: St. Paul Med. Journ., 1900.

² Calderwood: Relations of the Mind and Brain.

¹ Huft und Kniegelenk, November, 1902

(9) Disease of the epiphysis extending into the neck.

(10) Sequestra formation in the head and neck.

(11) Caries sicca early; caries sicca advanced.

(12) Disease of the socket.

(13) Perforation of the socket.

(14) Spontaneous luxation with focus in pelvis.

(15) Necrosis of epiphysis and cartilage.

(16) Necrosis of the center of the bone.

(17) Focus in the neck only.

In 381 resections he noted the position of the primary tubercular focus. In brief, $\frac{1}{3}$ involves the head; $\frac{1}{2}$ the socket; $\frac{1}{13}$ the neck; $\frac{1}{38}$ the pelvis above the joint; the shaft and trochanter were each the primary focus five times in 381. As to the origin, it was positively primary in 185 cases.

Statistics, 381 resections: 146 involving the head; 187 involving the socket; 28 involving the neck; 5 involving the shaft; 5 involving the trochanter; 10 involving the pelvis above the joint. (p. 29).

Primary disease, 185: doubtful, 94; of the head: primary, 44; secondary, 48; uncertain, 34; neck disease, 28; trochanter, 5.

Socket: primary, 98; secondary, 49; uncertain (as to 1 or 2), 40.

Pelvis: primary, 8; secondary, 2.

Pelvic origin therefore occurred 197 times, femoral, 184.

In tubercular hip disease rotation disappears completely earliest, flexion last, but the disease may be present without loss of motion. It was observed that slight flexion, slight abduction and outward rotation was the position of early tubercular disease, though position only is no guide. Adduction position comes on later and with it inward rotation. Adduction is also the rule in acute cases, but primary adduction in tuberculosis is rare. The primary abduction will not be evident from statistics, for the majority of cases come under observation too late; moreover, in statistics the number of adduction cases is augmented by luxations and later the pathological conditions. These facts are borne out by the following:

Statistics of usual cases: abduction cases, 267; adduction cases, 232; in 68 acute cases 44 were in the position of adduction. Koenig considers disease of the ligamentum teres, granulations on it and in the socket the cause of adduction and of luxations and dislocation.

In 568 cases nearly two-thirds had abscess. Swelling of the joint may occur without abscess, but with abscess the joint is always involved. Origin of abscess is always in the joint.

As to the result of treatment of all cases it is noteworthy that Koenig reports 568 tubercular coxitis cases of which a little less than two-thirds had abscesses. But in 294 conservatively treated cases there were 49 abscesses; one in six. In 118 resections with disease of the socket one-fourth had pelvic abscesses. In another list of 156 resections only 12 did not have disease of the socket.

The temperature curve of tubercular coxitis

is characteristic: tubercular curve with slight rise in the afternoon, with low temperature in the morning.

Koenig believes the x-ray very valuable often, but not so valuable in adult hip joints nor in deep-seated disease of the pelvis or socket, whereas in superficial parts and the edge of the socket sequestra and disease may be made out.

Treatment. — Slight cases: bed with or without extension; later, up with crutches. More severe cases: extension with plaster of Paris fixation. Resection and operation used to be too frequent, but now that the treatment is well understood it is apt to be used too infrequently. Koenig operates in the following conditions:

(1) For abscess.

(2) Where there is severe joint disturbance.

(3) When there is severe shortening due to dislocation.

(4) When x-ray shows a focus distinctly.

(5) Often for fistulae.

(6) When treatment does not check pyogenic symptoms.

(7) If there is deformity or fistulae with difficulty in locomotion.

In these cases he rarely tries extension first, but operates, unless pus is very slight.

(8) Resection without abscess is justifiable if after a reasonable period of good treatment pain and swelling and disease does not improve.

(9) Resection is advised especially in adult cases and in the aged.

(10) For ankylosis with outward rotation.

Reposition is not a success. The age of occurrence and the duration are interesting, also the sex, two-thirds being male. Right and left are equally affected.

In 568 cases only 7 with double hip disease, nearly four-fifths were under 15 years of age and one-half 10 years and under.

The following statistics of age are of interest: 1 to 5 years of age, 152 cases; 6 to 10, 149; 11 to 15, 102; 16 to 20, 60; 21 to 25, 18; 26 to 30, 10; 31 to 40, 15; 41 to 60, 7.

Duration. — Two hundred and fifty-nine, or slightly less than one-half, last one year; 130, or slightly less than one-fourth, last two years; one-fourth slightly less than 3 years; $\frac{1}{35}$ last 4 and 5 years; the longest duration was one of 32 years; — four-fifths of the cases last from 1 to 5 years.

In double tuberculosis of bone in 24 cases, the following facts were observed: Hip and foot affected, 7 times; hip and hand, 3 times; hip and ankle, 10 times; hip and rib, twice; hip and sacrum, once; hip and sternum once.

Of hip tuberculosis and joint tuberculosis: knee, 7 times; foot, twice; elbow, twice, 11 of joint. There were then 24 cases of other bone tuberculosis and 11 cases of joint tuberculosis with hip tuberculosis.

Statistics on the frequency of each abnormal position in deformity, such as abduction with or without shortening; adduction with or without

shortening; shortening with or without abduction or adduction; real or relative shortening, etc., show:

- (1) Without abduction and adduction, 27.
- (2) Abduction 267, alone 184, with shortening 83.
- (3) Adduction 232, alone 68, with absolute shortening 164.
- (4) Real shortening alone 24, 164 adduction shortening; 83 abduction, 24 without abduction or adduction.

Another table shows atrophy of resected and non-resected cases, and of resected cases after resection.

Now tubercular hip cases are grouped under acute infectious coxitis, gonorrheal and rheumatoid. The grouping of infectious coxitis is interesting. There are 110 cases. The symptoms differ from tuberculosis of hip in that the onset is sudden and with fever. These vary from mild symptoms to those of severe acute osteomyelitis. The classification is based on pathological rather than the clinical condition into three groups:

- I. Synovial coxitis.
- II. Ostate coxitis.
- III. Acute osteomyelitis of bone about joint.

Group I. — In the synovial form the majority are trivial and limited to the synovial membrane. In acute purulent joints the prognosis is more favorable for children than for adults, both as to the disease and the return of joint function.

Group II. — Ostate coxitis resembles tuberculosis as to the region of bone affected. It is a disease of the joint and of the bones making up the joint. Of 73 excisions in acute coxitis 50 had bad disease of the bone; 15 of these the head and glenoid cavity were diseased; in 14 the glenoid cavity; in 13 the head alone; in 20 the epiphysis was involved; in 11 the trochanter, with either the socket or shaft.

The difference in the number of cases resected in tuberculosis and infectious coxitis makes it difficult to draw any reliable comparative statistics. Those with involvement of epiphysis of head are not readily classed here. There were three cases of disease of the head and epiphysis without involvement of the cartilage. The symptoms in acute coxitis come on suddenly, with hip pain, immediate and rapid increase of fever and delirium. With the sudden onset there may be chills and typhoid condition. In about two weeks fever disappears, and the disease takes the chronic form, leaving the patient generally run down.

In tuberculosis, abduction and rotation outward was more common. In acute infectious coxitis, adduction and rotation inward is the more common. There were in 68 cases 44 adduction position, 24 abduction position. Rotation outward is usually characteristic of disease of the epiphysis.

Age of occurrence. — One hundred cases: 86 were under 25; one third between 10 and 15; one half under 15.

Statistics. — Ages 1 to 10, 23; 10 to 15, 30; 15 to 25, 33; after 25, 16; under 25, 86.

Group III. — Osteomyelitis of the bones about the joint. There are two types:

(a) Pelvic ostitis. If operated on early it may not involve the joint.

(b) Femoral ostitis. Disease of trochanter or neck. Many of these die, especially when the joint is involved early.

Of the acute infectious cases 80 were operated on and 23 had simple incision for abscess or correction of deformity without incision.

In 72 resected cases 66 recovered; 6 deaths. The incision used was Lagenbeck's long posterior. Cases heal in 6 to 8 weeks. In 72 cases only two fistulae after 8 weeks.

Broca² treats the same subject as Koenig minutely, but uses another classification for non-tubercular coxitis, his basis being clinical.

If there are other joints, or if onset is sudden with fever, he would eliminate tuberculosis, especially without the presence of atrophy or without glandular enlargement or if the recovery is very rapid. He makes no synovial class and the others of Koenig's, but divides the cases clinically into suppurating and non-suppurating, operative and non-operative.

(To be continued.)

Reports of Societies.

THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

SEVENTEENTH ANNUAL MEETING, HELD MAY 12-14, 1903, WASHINGTON, D. C.

(Continued from No. 18, p. 493.)

(SECOND DAY — Continued.)

SOME SUGGESTIONS IN THE MANAGEMENT OF PROSTATICS ABOUT TO ENTER CATHETER LIFE.

DR. GEORGE K. SWINBURNE of New York read this paper. He believed that many cases of prostatic hypertrophy were introduced to catheter life, and allowed to use the catheter themselves, who for a longer or shorter period, by judicious management, could be saved from the frequent self-catheterization with its attendant dangers. The cases varied markedly in the rapidity with which the amount of residual urine increased according to the situation of the obstruction, but he said there was one element often overlooked, the superinduced congestion, or rather edema of the surrounding tissue, which increased the obstruction and consequently the amount of residual urine; when this obstruction and consequent congestion had been reduced then the amount of residual urine fell back to an amount due to the mechanical obstruction itself. Many of these patients could be brought back to the condition they were in before the onset of any acute symptoms, and kept there for a varying period of time; they would have nocturnal polyuria and a small amount of resid-

² Rev. Orthop. iii, 4, Paris, 1902.

ual urine, but the urine will be sweet and clean and the bladder remain uninfected; then careful dieting, abstemious living, the proper amount of exercise and the local treatment, etc., will cause a lessening of the physician's visits until they would not exceed twice or thrice a month. In those cases in which are found a considerable amount of residual urine, when it would seem dangerous to remove all the urine at a time, it seemed to him a good plan to replace the amount of residual urine with about the same amount of argyrol solution, 1-1,000, gradually diminishing the entire amount, and thus to prevent infection, and to reduce infection by the injection of $\frac{1}{2}$ oz. of a 10% solution argyrol. He claimed that this new salt of silver was non-irritating and had a marked effect in reducing the pain and inflammation; in his hands it had superseded the use of nitrate of silver solutions used for the same purpose. The object of his paper was rather to bring out an expression of opinion as to whether or not it was not often better to carry a patient over as long a period of time as possible before they themselves were allowed to resort to self-catheterization, but also to call attention to the beneficial results that could be had by the use of argyrol as a local urinary antiseptic.

Dr. H. M. CRISTIAN of Philadelphia believed we were drifting back to the conservative treatment in cases of prostatic hypertrophy. The life and happiness of the man now rested in his having a sterile urine; his trouble begins with bladder infection. In the conservative treatment he believed 85% of these lives could be made comfortable and prolonged by proper catheterization. The personal equation should be emphasized in these cases. The drug mentioned by Dr. Swinburne he had used to prevent attacks of cystitis with great benefit.

Dr. FRANCIS S. WATSON of Boston liked argyrol very much, and had also received the most brilliant results from the use of a 1% solution of methylene blue.

Dr. E. L. KEYES, JR., of New York, reported an instance in which the use of argyrol made the patient worse, the drug acting as a strong irritant.

Dr. GEORGE K. SWINBURNE of New York had never noted any signs of irritation from the use of this drug after an experience with it of one and a quarter years.

CANCER OF THE PROSTATE.

Dr. ROBERT H. GREENE of New York presented this communication, and said that he had great difficulty in finding any literature which bore upon this subject. Frequent symptoms were pain, referred to the perineum, to the rectum and to branches of the sciatic nerve; the amount of residual urine had little relation to cancer cases. The average age of all cases was sixty-eight years. The size and feel of the growth as found by rectal touch was of no special diagnostic value. There followed secondary lymphatic infection. Autopsies were made on seventy-one men; in 88% the glands were found

to be involved and in about 35% the inguinal glands were infected; in about 3% the axillary glands were involved.

He reported a case of this nature. The patient was sixty years old and had had gonorrhea forty years previous. At Christmas time, 1901, he had retention of urine, and was relieved by catheter. From then on he noticed pain in the right perineal region. There was but little residual urine. Urinary examination was negative. There was no tenderness over the prostate. The bladder was irrigated with nitrate of silver solution and he was given tonics, and all was done that was possible towards improving his general health. The pain continued. He insisted upon an operation. The diagnosis at that time was an abscess of the right lobe of the prostate, or else a small stone encysted in the prostate. The patient was operated upon last June, and the prostate was removed. He claimed that the operation injured his sexual functions. The pathologist reported the right lobe of the prostate to be cancerous. Dr. Guiteras presented some photographs of the case.

Dr. H. M. CRISTIAN of Philadelphia reported a case of cancer of the prostate in which sciatica was a very prominent symptom.

Dr. EUGENE FULLER of New York said that cancer of the prostate was apt to involve the bladder wall early, and when it extended beyond we were apt to get sciatica or pains running down the thigh. He said he was rather skeptical regarding the many diagnoses of cancer of the prostate received from pathologists. He thought they erred many times.

Dr. ROBERT H. GREENE of New York said that when we considered the number of times we meet with prostatic hypertrophies and the chronic infiltrations there, we should cease to be surprised at the frequency of cases of cancer of the prostate.

A MEDICO-LEGAL STUDY IN A CASE OF ALLEGED SYPHILIS.

Dr. ABNER POST of Boston reported this case to the Association, and asked that your reporter refrain from reporting it on account of possible medico-legal complications that might ensue.

THIRD DAY — MAY 14, 1903.

DEMONSTRATION OF THE AUTHOR'S COMPOSITE CYSTOSCOPE.

Dr. F. TILDEN BROWN of New York made this demonstration. With his instrument he was able to irrigate the bladder, make a cystoscopic examination and catheterize each ureter. It was important that the patient occupy the dorsal position upon a table, the lower end of which was elevated.

THE USE OF THE CYSTOSCOPE IN THE STUDY OF PROSTATIC HYPERTROPHY.

Dr. HUGH H. YOUNG of Baltimore presented this communication. He said that the use of this instrument in the study of prostatic hyper-

trophies had been doubted by many, many declaring it valueless. With the cystoscope he had had manufactured one was enabled to study the prostate from every side. The ordinary cystoscope had a right-angled prism. The instrument he had devised enabled one to look backwards. In order to get a view of the entire prostatic orifice it required six different pictures, each picture representing one-sixth of the circle, or 60°. Instead of a compound prism he used a four-sided prism, which enabled him to look backward and view the prostatic lobes. The object of his paper was not to demonstrate his instrument, but to show how it was possible to make an ordinary cystoscopic examination tell us the condition of the prostate in ordinary cases of prostatic hypertrophy. He exhibited a series of charts showing the pictures given by the six different turns of the cystoscope, and demonstrated how one could tell the kind of enlargement from a study of these pictures. He had a series of pictures taken of 120 cases which were of great value to him in his work in this connection. On account of imperfections in the instrument due to poor instrument makers in this country, his results had not been entirely satisfactory.

DR. W. K. OTIS of New York said that one of the principal objects in a cystoscope was to have sufficient room for light, and therefore his instruments were larger than usually used, about 30 F. He believed that a careful and methodical examination of the prostate still required more practical experience in order that an idea might be formed of the conditions presented.

REPORT OF A CASE OF FILARIASIS.

DR. F. TILDEN BROWN of New York reported this case. He said that a mistake in clinical diagnosis had been made in this case, but he was fortunate enough, in the microscopical examination which followed the operation, to find numerous embryos in different developmental stages of what he took to be *filaria Bancrofti*. The patient's blood failed to show the embryo, and he thought this might in part be explained by the supposition that the orchidectomy had removed all the female worms, if in fact more than one had originally been present. The patient was a German, thirty-four years old, in the United States Marine Hospital Service, and he had been stationed at Porto Rico for the past two years, and had had no fever or illness of any kind. During the past two months he noticed an enlargement and slight tenderness of the left testis. The possibility of its being a barrier to re-enlistment led him to enter Bellevue Hospital, New York City, for operation. Examination showed a moderate enlargement of the left testis, and it was difficult to determine whether the slight but tense effusion in the tunica vaginalis was responsible for the increase in size or not. A small nodule, the size of a marble, slightly tender, was felt where the midbody of the epididymis was apposed to the

testis. Which of the two organs it involved could not be determined. The spermatic cord was found to be larger than its fellow. The vas was thicker, but not beaded. He had had no gonorrhea for ten years, and never a swollen testicle from this cause or from traumatism. A diagnosis was made of tuberculous epididymitis, and the patient requested that the testis be removed. At the operation fully an ounce of straw-colored fluid was found occupying the tunica vaginalis. This sac, together with the testicle, the lower one-third of the cord and a considerable more of the vas was removed. Palpation of the specimen now showed a small nodule occupying not the epididymis, but the rete testis just underlying it. In cutting into the lesion a compact fibrous periphery was noted, and in its center a yellowish-white semi-fluid material, somewhat resembling tuberculous débris. A small amount of the adherent material was placed upon a slide and, when examined microscopically for tubercle bacilli, small wormlike forms were seen. Another slide treated with eosin glycerin showed a number of field clusters of lumbricoids having the characteristics of the *filaria sanguinis hominis*. The larvæ were granular and surrounded by a loose fitting hyaline membrane. Immature forms were of oval shape, and the intermediate forms showed the embryos coiled and doubled in a larger oval sac. Dr. Brown concluded that when cutting into the nodule he may have opened a dilated lymph vessel or space, the abiding place for the adult female filaria; the knife had probably severed this worm in several places, and in scraping it the uterine canals had been compressed and more or less emptied of their contents, and this might account for the great number of embryos found in the different developmental stages.

REMARKS ON SURGICAL TREATMENT OF CHRONIC BRIGHT'S DISEASE BY RENAL DECAPSULATION.

DR. RAMON GUIERAS read this paper. He said that through the efforts of Dr. George Edebohls an operation for the treatment of chronic Bright's disease had been launched, and has caused general interest among surgeons both in America and Europe.

This operation consisted either in partially decapsulating one or both kidneys, and fastening the denuded surfaces to the posterior abdominal wall, or of fully decapsulating these organs and replacing them in their fatty capsule. The former of these procedures had been in a great measure superseded by the latter, although in his mind there was still a question as to which was the better. At a meeting of the American Genito-Urinary Association, held in Atlantic City last year, he had presented a paper entitled, "The Operative Treatment of Chronic Bright's Disease," in which he had reviewed the literature of total decapsulation, and had reported two cases of his own, one of total decapsulation, the other of partial stripping of the capsule, together

with fixation of the organ to the abdominal wall. He had begun work last year as a skeptic, and had refused to operate upon many cases referred to his hospital wards, which he would now consider deserving of operative interference. His experience and the growing favor with which this operation was regarded by many of the leading surgeons led him to send a circular letter to the leading surgeons in order to ascertain their experience in this line of renal work. From the answers that he received from about one hundred and fifty of these letters, the surgeons were about equally divided *pro* and *con* on the operation. The theory as to the benefit to be derived from this operation was that the circulation of the kidney was increased by forming an anastomosis with the tissues of the abdominal wall or the fatty capsule, and thus functional activity was materially aided. Some went so far as to argue that the kidney after this operation could be compared with the lungs, as in these latter organs the bronchial arteries and the pulmonary anastomose and some of the return venous blood from the bronchial vein emptied into the pulmonary veins. Whether or not a corresponding result was obtained in the kidney would be considered later in concluding. The conditions which were considered favorable for the operation were movable kidney with casts and albumen, movable kidney associated with nephritis, chronic interstitial nephritis and diffuse nephritis. Over one hundred of these cases had been reported, 16% of which had been spoken of as cured, 40% as improved, 11% unimproved and 33% died. The cases which were most unfavorable for this procedure were those of chronic diffuse nephritis, of which there was a mortality of 75%. Many of these patients were operated upon *in extremis*, when they were suffering from general anasarea. Nearly all of them had been suffering from uræmic symptoms, while 75% of them were edematous. Many cases of albuminuria and cylindruria were not properly speaking Bright's disease, although if the causes that produced them were kept up long enough chronic nephritis might occur. Movable kidney was often associated with this condition, as there was a congestion present due to the tension on the renal vessels. This might be absolutely cured by nephrolexy. In order to have a true nephritis we must have an inflammation or degeneration of the blood vessels, interstitial tissue, the glomeruli or the linings of the tubules of the kidney. Such changes always occurred in both kidneys, although they might vary in degree in different organs. This was a generally acknowledged fact by pathologists, and had been proved by Kummel and Strauss in their investigations by means of urethral catheterization. He had looked over the records of five hundred autopsies ascribing deaths to chronic Bright's disease, and in not one instance could it be said that the nephritis was unilateral, and in only one had the reports indicated that one organ was more involved than the other.

(To be continued.)

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

SECOND SEMI-ANNUAL MEETING, HELD IN NEW YORK CITY
OCTOBER 13 AND 14, 1903.

FIRST DAY, TUESDAY, OCT. 13.

The meeting was held in the New York Academy of Medicine, under the presidency of Dr. A. T. Bristow of Brooklyn.

HEPATIC DRAINAGE.

Dr. J. B. DEEVER of Philadelphia, Pa., read this paper. He said that it was important to remember that the infection rather than the calculi was concerned in causing most of the mischief. These cases were not unlike those of appendicitis, at least in their relation to the surgeon. In addition to medical treatment, it was absolutely necessary to remove the obstruction and establish hepatic drainage. He had never regretted having done a cholecystostomy, though sometimes he had wished he had not done a cholecystectomy. If there were any suspicion of liver infection, free drainage of bile must always be secured. Dr. Deever drew the following conclusions: (1) Suppurative cholangitis should be operated on before infection had damaged the hepatic cells and before the retained bile had reacted injuriously on the system. (2) Cholecystostomy was the operation of election when the lesion was acute and the gall bladder had been functioning hitherto. (3) When there was calculous cholecystitis, with obstruction of the cystic duct, hepatic drainage was demanded, and this was especially true if infection were present or suspected. (4) Whenever there was any doubt, the surgeon should drain. (5) Abscess of the liver would be prevented and pancreatitis relieved by a prompt resort to such drainage.

Dr. A. VAN DER VEER of Albany agreed with the author's views as to drainage. He had had good results from posterior drainage down through the peritoneal pouch.

Dr. GEORGE R. FOWLER of Brooklyn cautioned against being too radical in the effort to secure direct drainage from the hepatic duct, because in the great majority of cases a successful issue would follow merely draining the gall bladder itself. From the mechanical standpoint, posterior drainage was excellent, but its practical execution was often most difficult.

THE TREATMENT OF CERTAIN CLASSES OF THE UNDERFED.

Dr. W. S. ELY of Rochester considered in this paper a class of persons who could be persuaded with difficulty to take sufficient nourishment. Such persons should be placed in a hospital under proper discipline, and then should be treated by rest and a diet of milk and raw eggs. At the commencement the patient might be given 4 to 8 oz of chocolate with two raw eggs alternately every two hours, and the effort should be to give in the twenty-four hours one quart of

chocolate, one quart of milk and six raw eggs. He had never yet seen among this class of persons a single individual who could not take milk with benefit. It must be expected that the tongue will be more or less coated, and no gain should be looked for the first week. The tendency to constipation should be counteracted by giving from six to twenty tablets of rhubarb daily. Under this treatment it was not uncommon to see the patient gain from one to three pounds a week for ten or twelve weeks, and this increase in flesh would be accompanied by improvement in digestion and in the general appearance. It was well to remember that if the physician had not the courage of his convictions, he should not undertake to carry out such a course of treatment, for, it would, in all probability, end in disappointment.

DR. EDWARD B. ANGELL of Rochester said that while he had formerly made use of this method of treatment he had latterly been more in favor of so arranging the regimen that the patient would have enough exercise to secure the much-needed oxygenation of the blood. He had been studying the blood pressure, and had learned that, contrary to the statements in the books, these cases were apt to show a marked reduction in the blood pressure.

FACULTIES OF THE MIND, NOT UNDERSTOOD AND NOT USED, WITH SPECIAL REFERENCE TO THE CURABILITY OF EPILEPSY.

DR. M. A. VEEDER of Lyons presented an interesting, but theoretical, consideration of the subject.

VACCINATION AND THE LAW.

DR. NELSON G. RICHMOND of Fredonia read this paper. He said that a good deal of difficulty had arisen in interpreting the law regarding the vaccination of school children in cases in which repeated vaccination had proved unsuccessful. In this connection it was well to remember that the number of so-called immunes was becoming steadily less, and that not infrequently a vaccination would not "take" until several attempts had been made. A letter was read from Dr. John Thompson of Edinburgh, in which the opinion was expressed that the famous "conscience clause" in the English law had really accomplished the purpose for which it was intended, *i. e.*, a weakening of the opposition to vaccination.

DR. A. JACOBI of New York insisted that he had the right, as a citizen, to demand that the state should protect him by compelling his neighbors to be vaccinated.

OTITIC SEROUS MENINGITIS; LUMBAR PUNCTURE; RECOVERY.

DR. FRANCIS HUBER of New York read this paper. Lumbar puncture was done on two successive days, and improvement quickly ensued. By the end of three weeks the child was practically well. No tubercle bacilli were found in the cerebrospinal fluid.

DR. A. JACOBI thought this case was probably one of serous meningitis, and that there was no connection between this and the mastoid disease.

SYMPOSIUM ON THE ROENTGEN RAY — THERAPEUTIC USE.

DR. A. D. BEVAN of Chicago took this for the topic of the opening paper of this symposium. He directed attention to a novel and very interesting observation, *viz.*, that the internal use of iodide in conjunction with x-ray had proved potent for good in blastomycetic dermatitis. With regard to the use of the Roentgen ray in tuberculosis outside of tuberculosis, he could only say that this form of therapy was promising. The x-ray seemed to possess a selective action on the epithelial cells of epithelioma, and if the latter were situated within one centimeter of the surface, the mass would melt down and become absorbed under the influence of the Roentgen ray. The method was particularly applicable to growths about the lip and eyelid where removal by the knife would cause deformity, but in all other forms of carcinoma, particularly if rapidly growing, deeply situated or of considerable extent, the growth should be removed by the knife, and then a course of about twenty x-ray exposures given. The speaker suggested that perhaps by some modification of the treatment, such as the use of iodine or arsenic, it might be possible to so lower the vitality of the cancer cells as to bring them within the sphere action of the Roentgen ray, even though the cancerous growth were quite deeply situated.

DIAGNOSTIC VALUE OF THE ROENTGEN RAY.

DR. C. L. LEONARD of Philadelphia, Pa., read this paper. In it he paid particular attention to the use of the Roentgen ray in the diagnosis of calculus of the kidney and ureter. He said that out of 300 observations of this kind, the presence of calculi had been demonstrated in 28%; that in 50% of the latter the calculi were in the ureter, and that in 19 of the ureteral cases the calculi were passed spontaneously in accordance with the advice to postpone operation because of the result of the x-ray examination. Dr. Leonard pointed out that the variations in the vacuum of the tube, which occur in most x-ray tubes, led to penetration of the calculi and a disappointing result. He personally made use of a self-regulating tube which would maintain the vacuum at the same point throughout the entire exposure.

FURTHER OBSERVATIONS UPON THE TREATMENT OF SARCOMA WITH THE ROENTGEN RAY.

DR. W. B. COLEY of New York was the author of this paper. He stated that in the past year and a half there had come under his observation at the General Memorial Hospital 103 cases of malignant growths in which the Roentgen ray had been used. There were 30 recurrent carcinomata of the breast, 42 inoperable sarcomata and 25 superficial cancers. In only one of the 30 recurrent cancers of the breast had a deeply

seated growth disappeared under the Roentgen ray. Theoretically, the use of the x-ray to prevent recurrence was most promising, yet his own experience had not realized these expectations. The use of the Roentgen ray before surgical operation was dangerous, not only because it deceived the patient and encouraged delay in submitting to operation, but because after such treatment the operating surgeon could not determine the true limits of the growth. In Pusey's recent book the statement was made that 77% of cases were apparently cured by x-ray treatment, but the statement was misleading, because only 7 of the patients had gone over eight months, and only one beyond fifteen months since the treatment.

Dr. GEORGE G. HOPKINS of Brooklyn thought his experience warranted him in stating that the x-ray was capable of curing the majority of cases of carcinoma of the breast.

Dr. W. E. FORD of Utica said that his observation of the effects of x-ray treatment in hospital led him to believe that the most it could do was to arrest for a time the growth of cancer of the breast, and that it absolutely failed in uterine cancer.

Dr. A. VAN DER VEER of Albany emphasized the value of the x-ray treatment as a means of affording relief to these sufferers.

Dr. BEVAN thought it was possible to make a diagnosis of renal calculus in 90% of the cases by a proper use of the Roentgen ray. Better definition would be secured if the x-ray exposure were made through an aperture in a sheet lead shield, thus excluding extraneous rays. Similarly, the skiagraph should be examined in a darkened room, the light only entering through the plate, and the observer standing at a distance of about twenty feet and using a good opera glass.

Dr. LEONARD said that he took care, when adjusting his apparatus, to see that the shadow of a possible calculus would not be superimposed on that of the bones of the pelvis.

Dr. COLEY thought that statements like that made by Dr. Hopkins should not be allowed to go unchallenged, for, so far, there was not one well-authenticated case on record in which the x-ray alone had effected a cure of malignant disease of the breast.

RADIUM IN MEDICINE.

Dr. SAMUEL G. TRACY of New York presented in this paper a brief sketch of the physical, chemical and physiological properties of radium.

THE LEGAL STATUS OF THE ROENTGEN RAY.

HON. WILLIAM W. GOODRICH, Presiding Justice Appellate Division, Supreme Court and Judicial District, delivered an address on this topic. He said that the first time x-ray photographs had been admitted as legal evidence was in Colorado in 1896, but that they had since been admitted in several states. In Kings County a complete x-ray apparatus had been exhibited in court. The competency of such evidence de-

pended upon the science, skill, experience and intelligence of the party making the x-ray photograph and testifying.

SPECIAL MEETING OF THE STATE SOCIETY.

A special meeting of the State Medical Society was called for the evening of Oct. 13, to consider what should be done towards bringing about the unification of the profession of this state. A large and representative audience was present. After reviewing the situation, the president, Dr. A. T. Bristow, said that the State Association had recently appointed a committee of conference with full power, and had requested the State Society to give its committee similar power.

Dr. D. B. ST. JOHN ROOSA of New York then moved the adoption of the following resolution:

"Whereas, The New York State Medical Association, at a recent special meeting, duly assembled, has, by unanimous vote, appointed a committee with full power to meet with the similar committee of the Medical Society of the State of New York to arrange for the unification of the two organizations under the corporate name of The Medical Society of the State of New York; Therefore be it

"Resolved, That the committee of conference of the Medical Society of the State of New York, already appointed, be given power equal to, and commensurate with, the powers recently granted the committee created by the New York State Medical Association for the purpose of unifying the two State Medical Societies into The Medical Society of the State of New York."

The motion was seconded by Dr. WILLIS G. MACDONALD of Albany and the resolution was unanimously adopted amid great enthusiasm.

SECOND DAY — WEDNESDAY, OCT. 14.

THE NEW YORK STATE HOSPITAL FOR INCIPIENT TUBERCULOSIS.

Dr. WILLIS G. MACDONALD of Albany described the hospital and exhibited plans of the same. The construction was quite novel, but retained all the advantages of the cottage plan, while providing, by a system of isolated apartments, the necessary protection from the rigors of the Adirondack climate. As regards the amount of sunshine, the speaker said that it had been determined by actual survey that, on the shortest day of the year, the sun would reach the porch at 8.45 A.M. and would not leave that porch entirely until 4.45 P.M. The base line of the hospital was 1,639 feet above the sea level. Patients would be placed in single rooms until sufficiently improved to make it proper for them to be placed in the small dormitories. When they were thoroughly convalescent they would be placed in a camp where, for about nine months of the year, they would live in tents or open barracks. While there was abundant sleeping space for 108 patients in the hospital, it was estimated that by the method of distribution outlined above, from 160 to 180 patients could be accom-

modated, the necessary room in the very cold months being secured, if need be, by temporarily refusing to admit new patients. The hospital, although larger than the Adirondack Sanitarium, and well constructed, would cost only \$212,000, or less than half that of the sanitarium.

(To be continued.)

Recent Literature.

Portfolio of Dermochromes. By PROFESSOR JACOB of Freiburg im Breisgau. English adaptation of text by J. J. PRINGLE, M.B., F.R.C.P., Physician to the Department for Diseases of the Skin, Middlesex Hospital, London. London and New York: Rebman, Limited. 1903.

Two of the four proposed parts of this atlas of the more common skin diseases have been published and lie before us. The avowed object of the work is not to depict the rarer forms of cutaneous disease, as is the aim of many atlases, but "to furnish to medical men, teachers and students a handy and comprehensive series of illustrations of the skin diseases most frequently met with in practice." The process employed is known as Citochromy, invented by Dr. Albert of Munich. Most of the illustrations are pictorial reproductions, by means of the process above mentioned, of models in the Breslau clinic, lent by Professor Neisser. They are, for the most part, very faithful counterparts of the diseases they represent, and the color scheme is lifelike. A few, *verruca necrogenica*, for example, are slightly disappointing. On the whole, the two parts already published are to be greatly commended. The announcement refers to the moderate subscription price, which it is thought will bring the work within the reach of all general practitioners and students.

A Chart of the Three Great Systems. Arterial, Venous and Nervous, together, in a Full, Living Human Figure. Lithographed in Five Colors.

As implied in the title, this chart, some two feet in width by three feet in length, is intended to represent graphically the course of the arteries, veins and nerves, together with a certain number of the internal organs. Bordering the human figure, upon which these anatomical structures are represented, is a brief descriptive text. Such a chart has a certain value in representing topographically the relations of these important elements of the body. It is, however, open to criticism from the fact that rather too great a complexity of detail has been introduced in representing particularly arteries and veins. The chart is to be recommended as a ready means of refreshing one's memory on certain anatomical points, but we can hardly agree with the prospectus, which suggests that it is suitable for use as a picture in the office or waiting room of a physician.

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THE THERAPEUTIC POSSIBILITIES OF RADIUM.

ALTHOUGH it is as yet too soon to say with certainty what the future possibilities of radium and allied substances are to be in therapeutics, it is evident, from the extraordinary properties of these substances and the experiments which have already been made, that we may look in the near future for positive practical results. Since the discovery of radium and polonium in 1898 by Professor and Madame Curie, naturally a great amount of work has been done in determining the properties of these hitherto unknown substances. The enormous expense of radium, owing to the highly adulterated state in which it is found, and the consequent difficulty of obtaining a pure product, has prevented as yet experiments on a large scale. There can, however, be no question that the resources of scientific laboratories will be brought to bear in such a way that the substance may be produced in sufficient quantities to render general experimentation possible.

Up to this time it appears that radium has certain qualities hitherto unknown to chemical physics. For example, it gives out heat constantly, and is the source of a high degree of energy. It is capable of rendering active, substances with which it is brought into contact; it has marked physiological effects; it is fatal to life under certain conditions; and finally it is apparently curative of certain pathological conditions. An idea of the energy of radium may be had from the statement made by Professor Curie that it maintains its temperature at 1.5° C. above its surroundings, which is equivalent to saying that the heat evolved from pure radium is sufficient to melt more than its own weight of

ice every hour. The facts that this evolution of heat is constant, and that radium loses none of its activity in consequence of its emanation, are the matters of interest confronting the scientific world. The character of the rays given off from the substance is as yet somewhat undetermined, but at least three varieties have so far been distinguished. In consideration of the extraordinary properties to which we have alluded, it is not a source of wonder that animal life is positively affected by the presence of the substance. Animals exposed to the salt contained in a closed tube succumb to its effects in varying periods, depending upon the time of exposure, after undergoing certain cutaneous and nervous changes. Apparently, also, the salt is capable of checking the normal development of the lower forms of animal life, as, for example, preventing the transition from the larval to the adult form in certain worms.

All this suggests at once the possible danger in the therapeutic use of the substance, and also its utility when properly controlled. Naturally experiments up to this time in treatment of diseased conditions have been few, owing to the very great difficulty of obtaining the substance. In the *British Medical Journal* for July 25, Mr. John Macintyre writes briefly in continuation of a previous article on work which he has done. He found that lupus and rodent ulcer were very favorably affected by exposure to the rays. Mr. Frederick Soddy also suggests the possibility of applying the rays of radium and thorium to the treatment of consumption. The theory being that inhalation of radium solution gives rise to the formation of a film of radio-active matter which persists for a certain definite time, it is conceived possible that radium would continue to exert its activity in the air cells of the patient's lung after the emanations themselves had been exhaled.

All this is to a certain extent theoretical as yet, but, in view of the extraordinary impetus which has been given to the therapeutic action of various little understood rays and emanations by the introduction of the x-ray, we have no right to assume any other attitude than one of expectant anticipation. It is perfectly clear that radium and the various substances which apparently are related to it have a definite physiological action on animal tissues. This being the case, it remains, as in other therapeutic matters, to determine sharply between the limits of danger and benefit. That this will be done experimentally in the near future, there can be no

reason to doubt, and we are certainly not too optimistic when we express the belief that new and serviceable therapeutic agents, through such investigations, will be found for a goodly number of human ills.

BEHRING ON TUBERCULOSIS.

We have referred in our columns to the experiments which Behring has recently carried on in the immunization of calves to tuberculosis. At the annual meeting of German Scientists and Physicians held at Cassel in September last, Behring amplified his views to a considerable extent. He again reported unqualified success in the vaccination, as he terms it, of young calves against tuberculosis by the injection of attenuated cultures of living human tubercle bacilli into their veins. His methods have been adopted on many large estates in Germany and Austria, and the demand for material has outgrown his capacity to furnish it, so that henceforth it will be put on sale. This method of immunization has recently been confirmed in Koch's Institute. Behring is confident that the extermination of tuberculosis in cattle is simply a matter of time.

The universality of tuberculosis received much emphasis from the speaker. He quoted Naegeli's observations in Zurich. Naegeli was able to demonstrate tuberculosis at the autopsy table in all bodies above the age of thirty. This is in striking harmony with Franz, who proved the presence of the disease in sixty per cent of the cases which he tested with three milligrams tuberculin and in ninety-six per cent of the cases tested with ten milligrams. In thickly settled communities practically the whole adult population is tuberculous. But tuberculous infection does not mean consumption. The case is analogous to diphtheria before the antitoxin days — the mild cases lived, the severe died.

Infection takes place in infancy. The gastrointestinal tract of infants, as of young animals, lacks protective qualities and allows the passage of tubercle bacilli. Those entering the body are stored away till a favorable opportunity for further development offers, which is afforded by lowered vitality and unhygienic modes of life. Convalescence from the acute exanthemata and injuries to the mucous membrane afford chances for later infection. In Behring's opinion infection by inhalation is unimportant. Behring hopes eventually to take advantage of the easy permeability of the infantile digestive tract by

immunizing infants with the milk of highly immunized cattle. As yet he has done no work in this direction.

Behring takes issue with Koch by asserting that the human and bovine forms of tubercle bacilli are simply different grades of the same species. He therefore further believes that the greatest care should be exercised in securing milk which is uncontaminated with tubercle bacilli. He points out how easily it may become infected. The prevention of the spread of tuberculosis, according to Behring, depends on the precautions taken to get pure milk and the annihilation of bovine tuberculosis. These two measures attained, sanatoria will become superfluous.

THE AMERICAN SOCIETY OF CLINICAL SURGERY.

THE American Society of Clinical Surgery will hold its first meeting in Baltimore and Philadelphia on Nov. 13 and 14.

The methods proposed by this new organization should prove interesting and instructive. Among medical societies they are original, so far as we are aware. For many years it has been growing increasingly evident that the old-time didactic lectures were inefficient in themselves properly to train students for practice. Supplementary clinical exercises and practical, personal instruction have come in large measure to supplement the old-time lectures.

With that thought as their guide a number of surgeons throughout the country have formed this new society for mutual improvement in surgical practice and teaching. As the letter of announcement states, these objects shall be sought by affording members opportunities of demonstrating actively and personally advances in surgery and of showing the results of recent work, clinical, pathological and of any other nature susceptible of demonstration; the meetings shall be broadly clinical, and few if any formal communications shall be allowed.

For some years back we have been wont to see active surgeons making annual pilgrimages about the country, visiting the clinics in various centers and keeping in touch with the best work of the broader community. So the new society will become for such men a labor-saving device. They will travel about in the companionship of their fellows, and in the towns visited the best work only will be shown for their inspection: operative procedures; new technique, laboratory methods, — anything of that nature which lends itself to

demonstration. It should all be interesting and practical, and stand beyond peradventure for work actually accomplished.

It is proposed to hold two meetings yearly, in November and March, each meeting to last from two to four days; and the meetings are to be migratory, the members passing from one neighboring town to another on successive days.

The experiment is a novel one, and its progress will be watched with interest.

MEDICAL NOTES.

AMERICAN PUBLIC HEALTH ASSOCIATION. —

The next annual meeting of the American Public Health Association will be held in Havana.

THE COST OF TYPHOID FEVER DURING A CAMPAIGN. — It is estimated that the cost to the British Government of typhoid fever during the South African campaign was not less than £4,000,000. This calculation is on a basis of 31,018 cases and each case as occurring in the cheapest trained infantry soldier. Of this total, 6,172 died; 15,120 were invalided home; 9,726 convalesced in South Africa.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. —

For the week ending at noon, Nov. 4, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 63, scarlatina 20, typhoid fever 21, measles 80, smallpox 0.

ACCIDENTAL POISONING AT THE TEWKSBURY HOSPITAL. — During the night of Oct. 27 eleven inmates of the State Hospital at Tewksbury accidentally took belladonna in dangerous amount. Careful investigation is being made of the accident, and Dr. Nichols, superintendent of the hospital, has made the statement that the patients received prompt medical aid and that no fatalities have resulted. The patients will undoubtedly recover. Dr. Nichols very wisely declines to make statements in the matter, pending a proper investigation.

LOSS OF LIFE IN GLOUCESTER FISHING FLEET.

— It is reported that 75 lives and 6 vessels have been lost in the Gloucester fishing fleet during the last year, with a total financial loss of \$82,500, partially insured. Of the 75 men lost 20 left widows with an aggregate of 49 children. It is furthermore stated that during the past twenty-five years upwards of 2,300 lives have been lost, and that since 1830 over 5,000.

OFFICERS OF THE MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY. — At the annual meeting of the Massachusetts Charitable Eye and Ear Infirmary, held Oct. 27, the following officers were elected: President, Dr. George B. Shattuck; secretary, Robert Homans; treasurer, Augustus Hemenway; executive committee, George P. Gardner, Charles Lowell, William H. Seabury; finance committee, Charles P. Curtis, Charles Lowell and Francis L. Higginson.

A UNIQUE BEQUEST. — It is reported that the Northampton Insane Asylum has recently acquired a fund of \$500, left in the will of a former inmate, the income of which is to be used to buy tobacco for inmates. The hospital is said to have accepted the conditions of the bequest.

NEW YORK.

SHOE LEATHER CURE FOR CONSUMPTION. — A good illustration of the efficacy of the "shoe-leather cure" for consumption, which may be commended to other patients in suitable instances, is afforded in the case of a gentleman pronounced to have pulmonary tuberculosis who recently arrived in New York after walking all the way from San Francisco. During his tramp of three thousand miles, which occupied a little more than two years, he wore out sixty-one pairs of shoes. The result appears, however, to have been eminently satisfactory, as it is stated that he is now "a well man, with increased weight, good digestion, firm muscles and clear brain."

THE MS. OF "TEN THOUSAND A YEAR." — By the will of the Rev. Edward Walpole Warren, late rector of St. James' Protestant Episcopal Church, New York, which has just been filed for probate, the original manuscript of the famous novel, "Ten Thousand a Year," by his father, Samuel Warren of London, is left to his son, A. Kennedy Warren, as an heirloom. Under the terms of the bequest the latter is forbidden to sell the manuscript without the consent of the other children, and then only in case of necessity. If that necessity arises, the British Museum is to have the first opportunity of purchase.

DAMAGES FOR RAILROAD INJURIES. — In the suit of Catharine Reddy of Yonkers on the Hudson, against the New York Central Railroad for \$100,000 damages, which has been on trial before Judge Gaynor of the Supreme Court at White Plains, Westchester County, the jury on Oct. 26 brought in a verdict of \$50,000 for the plaintiff. This is said to be the largest verdict ever rendered in the State of New York to a woman

for railroad injuries. Mrs. Reddy was badly injured in a wreck on the New York Central at Fancher, a town near Niagara Falls, and had to be carried into court on a chair.

THE PURE FOOD LAW. — With a view to expediting the examination of goods under the pure food law, it has been determined by Dr. Wiley, after a conference with the Treasury Department officials, to detail two experts for this work in New York. One of these is to select samples of goods liable to adulteration, and the other will make the necessary tests in the laboratory connected with the New York Custom House.

Obituary.

IN MEMORIAM—M. F. PILGRIM, M.D.

At a meeting of the Faculty of the New York School of Physical Therapeutics, the following resolutions were unanimously adopted:

Whereas, Death has removed from us our esteemed associate and confrère, Dr. Maurice Fiescher Pilgrim, whose faithful service as a teacher in the school, marked by keenness of thought, earnestness of conviction, honesty of purpose, loyalty and kindness of personality endeared him to all his fellow workers.

Be it resolved, That we, members of the Faculty of the New York School of Physical Therapeutics, extend to his bereaved family and friends sympathy and condolence, and, in token of this esteem, the secretary be instructed to forward a copy of these resolutions to his family, and to forward them for publication in *The Journal of Advanced Therapeutics*, *New York Medical News*, *American Medicine*, *Journal of the American Medical Association*, *New York Medical Journal* and *Boston Medical and Surgical Journal*.

HERMANN GRAD, M.D.,
Secretary.

Miscellany.

DYSENTERY AND ITS RELATIONSHIP TO TYPHOID FEVER.

In August, 1900, the British Secretary of State for War appointed a commission to go to South Africa and investigate the nature, pathology, causation and prevention of dysentery and its relationship to enteric fever. The investigation was divided into two parts: (a) laboratory work; (b) inspection of camps, water supply, etc.

The following are the conclusions under Division One (a) of the investigation:

(1) Dysentery in South Africa is not caused by amebæ, as there is some reason to believe is the case with the dysentery of certain other countries.

(2) That the organs in dysentery are abso-

lutely sterile. It is a local disease attacking the mucous and sub-mucous coats of the large intestine, and unlike enteric fever, the causal agent, if any, confines itself to the intestines.

(3) That in the large intestines no particular species of micro-organism stands out prominently as in the case of cholera, so that it is impossible in the present stage of the investigation to say that any special bacterium plays a prominent part in the causation of dysentery.

(4) That there is not sufficient evidence in this work to bring forward the theory that some of the normal inhabitants of the intestines belonging to the coli group take on a pathogenic power.

(5) That there is no connection between dysentery and enteric fever. Eberth's bacillus is not found in the organs or intestines of dysentery.

(6) That there is a certain amount of evidence to show that so-called cases of dysentery following enteric fever are relapses of enteric, where the disease has attacked the large intestine.

Under the Second Division (b) of the investigation we find the following summary of views as to the probable causes of the prevalence of enteric fever and dysentery in the army of South Africa:

(1) That in the absence of a fuller knowledge of the nature of dysentery, it is sufficient to regard both this disease and enteric fever as being essentially filth diseases, and both due to bacillary organisms intimately associated with and given off by the excretory products of men and animals. Further, that as far as their general etiology is concerned, both diseases may be considered to have a common origin.

(2) That the prevalence of enteric fever and dysentery among the troops in South Africa cannot be explained as being due in all cases to any one specific insanitary condition, but that various conditions contributed to the incidence and dissemination of these diseases in different places.

(3) That in some places these diseases were carried by the use of foul water (notably water from public supplies) which had been polluted, not only by the excreta of men and animals, but also by the decomposing bodies of animals.

(4) That in many places where enteric fever and dysentery were specially prevalent, the condition of the water supplies was insufficient to explain the occurrence of these diseases, but that in those cases it could be accounted for by the influence of close aggregation of men and animals in small encampments, fouling of the soil, the occurrence of personal infection, the effects of the swarms of flies which covered food, the men themselves, their clothing, and haunted the latrines and other places for disposal of refuse.

(5) That the influence of impure water, aggregation in crowded camps, fouling of soil, the prevalence of flies as carriers of specific filth, was accentuated by the preponderance of young men in the ranks and by the exhausting nature of the military work which these young soldiers had to perform.

(6) That notwithstanding the greatest care and precautions for the safeguarding of the generally accepted sources of these diseases, it is practically impossible to completely prevent their occurrence in an army hastily mobilized, operating in a country in which water is scarce, and whose ranks are largely filled with young men at an age notoriously liable to be affected by diseases of this nature.

(7) That in spite of the many difficulties favoring the incidence of enteric fever and dysentery in an army of young soldiers in the field, much can be done to lessen both the incidence and mortality from these affections by suitable and adequate sanitary measures.

Correspondence.

CONCERNING "EXTREMISM."

PHILADELPHIA, Oct. 31, 1903.

MR. EDITOR: In a previous number I had asked you for specific illustrations of what you were pleased to call my "extremism" and "overworked theory." Concerning the courtesy and impolicy of editorial criticism of a contributor's views, that is of course *de gustibus*, and of course, mere general charges, glittering generalities, as regards extremism are reducible to, "You think one way, I another." Referring to definite examples of my "overworked theory" you give:

(1) An implied denial of my accuracy in saying that I have cured thousands of patients of sick headache — on the average 99% of such patients. You cite "the experience of others with migraine." That is not the question at issue. If I have erred in observation and logic, unintentionally, as regards my own cases, it does not prove me wrong to cite vaguely the experience of others. If I have been untrue it would prove me unscientific. My case records, and any number of patients you please, may be inspected. That is the only way to prove me unintentionally wrong. I do not understand you charge me with willful misstatement.

(2) As to refraction by the Germans. Every American oculist who is not doing the same kind of work as they, knows well that what I have stated is absolutely true. This has long ago been thrashed out. The proofs are beyond all question that on the Continent there is no knowledge, desire or ability to do the kind of refraction work that we are doing in this country. All the conditions of success are utterly ignored. I will cite but a few facts:

(a) I have had many patients who had consulted the greatest oculists of Europe. Their prescriptions and their glasses were ludicrously wrong — the evidences of mere blunderings and guess-work.

(b) In an exhaustive monograph by Möbius on the ill-health of Nietzsche, fresh from the press, there is the evidence that the author and his colleagues know nothing about the existence of astigmatism or of its power to produce even the simplest reflex of headache.

(c) The latest edition of the best German work on diseases of the eye — Fuchs — is utterly wanting in its teaching as to all the essentials of accurate diagnosis and treatment of astigmatism and anisometropia, and the American editor felt it necessary to indicate the fact. Following only this great authority the refractive error of a patient could not be rightly diagnosed by the most expert refractionist.

It is not here a question of "fairness;" it is one of truth and accuracy of statement.

(3) Neither do I care for "judicial quality" in the sense charged, for it is to me usually very injudicious. Much of our editorial writing and textbook-making in medicine is thus injudicious — a *dilettante* averaging of conflicting opinions and taking some meaningless compromising, middle course, with no close scrutiny whatever of the facts. How much of our literature is this sort of word-making, opinion-mongering, theorizing, dealing

with ideas, avoiding extremes, — colorless echoings and fused repetitions! The essence of science is correct observation of facts and logical conclusions from them. I repeat that for twenty-eight years there has been no medical blunder and crime against both science and humanity equal to that of the willful ignoring of the rôle of eyestrain by the profession. Concerning the "unprejudiced statements" as to this professional neglect, I am not a defender of such errors because I am a journalist or a member of the erring profession.

Respectfully yours,

GEO. M. GOULD.

SCABIES AND IMPETIGO CONTAGIOSA.

Boston, Oct. 30, 1903.

MR. EDITOR: Although communications have from time to time appeared in the JOURNAL calling the attention of general practitioners and those who include the treatment of cutaneous affections in their practice to the modern prevalence of scabies in this community, it would seem probable, from the experience of dermatologists, that a large number of practising physicians, in particular those whose hospital and dispensary work dates back to an earlier period, are still unaware of the present frequency of this affection, especially among the more cleanly classes. That it is not uncommon for this disease to be overlooked in the better classes, and for lack of simple and appropriate treatment to be allowed to continue for an indefinite period, thus affording a chance for its continuous propagation to new subjects, is an undoubted fact. In any affection accompanied by much pruritus, and not exhibiting the type of some other well-defined dermatosis, the possibility of scabies should always be entertained, no matter how cleanly and above reproach may be the person and surroundings of the patient. Abundant opportunity for acquiring scabies is offered to those who travel or camp out, and once acquired it may be innocently transmitted to many others. As an illustration of its frequency of late, the following figures are cited, which represent the number of new cases observed during the last month at the Out-Patient Department of the Massachusetts General Hospital.

During the week beginning Sept. 28, 15 cases.

During the week beginning Oct. 5, 13 cases.

During the week beginning Oct. 12, 7 cases.

During the week beginning Oct. 19, 15 cases.

In other words, an average of two new cases a day has been recorded, and in most of these instances a history of a probably similar condition in one or more members of the patient's family has been obtained. And it should be further emphasized that these patients were by no means always of the more uncleanly class; in fact, the average of cleanliness was quite as high as that of the other patients treated at this institution.

Another cutaneous affection that may be referred to in this connection is impetigo contagiosa, meaning by this unfortunately long term the local, superficial, cutaneous abscess caused by the pyogenic micro-organisms. Formerly most of these cases were roughly grouped with the pustular forms of eczema, with which latter affection they are sometimes complicated. Apart from the common form observed in young children, which is usually seen in the form of superficial, as if "stuck on" crusts, common about the mouth, nose and ears, and often associated with pediculi capitis, cases in older children and in adults are frequently seen, of a more discrete rounded type, and sometimes looking at first sight not unlike ringworm. This form is not infrequent on the bearded face, in people whose habits of cleanliness are most scrupulous. Frequently this form appears as an epidemic in workshops, schools and factories. During the past week two such epidemics have been observed, one in the workmen employed in a machine shop and a second in a private school for boys of the first rank. Both scabies and impetigo contagiosa belong to the affections that are, as a rule, easily and quickly cured when recognized, and also to the class of affections that may be widely disseminated if allowed to remain without appropriate treatment.

Very truly yours,

JOHN T. BOWEN, M.D.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, OCT. 24, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|--------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York | 3,785,156 | 1,164 | 373 | 27.06 | 12.20 | 3.35 | 7.39 | 1.80 | |
| Chicago | 1,885,060 | 412 | 109 | 25.11 | 11.08 | 4.07 | 5.66 | 2.49 | |
| Philadelphia | 1,378,527 | 390 | 97 | 25.13 | 7.41 | 2.56 | 5.64 | 1.28 | |
| St. Louis | 618,481 | — | — | — | — | — | — | — | |
| Baltimore | 533,712 | 171 | 52 | 30.90 | 9.36 | 5.26 | 7.02 | 2.34 | |
| Cleveland | 427,731 | — | — | — | — | — | — | — | |
| Buffalo | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg | 351,745 | 136 | — | 27.21 | 11.03 | 8.82 | — | 5.88 | |
| Cincinnati | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee | 315,307 | — | — | — | — | — | — | — | |
| Washington | 295,103 | — | — | — | — | — | — | — | |
| Providence | 191,230 | 57 | 14 | 19.30 | 3.51 | — | 1.75 | — | |
| Boston | 603,163 | 190 | 60 | 22.63 | 6.84 | 1.58 | 5.78 | 2.11 | |
| Worcester | 132,044 | 32 | 10 | 9.38 | 9.38 | — | 3.12 | — | |
| Fall River | 115,549 | 26 | 14 | 23.08 | 7.69 | 3.85 | 7.69 | — | |
| Lowell | 101,959 | 32 | 13 | 15.63 | — | — | 3.13 | — | |
| Cambridge | 98,439 | 25 | 7 | 24.00 | 4.00 | — | — | 4.00 | |
| Lynn | 72,497 | 22 | 4 | 4.55 | — | 4.55 | — | — | |
| Lawrence | 69,766 | 21 | 11 | 33.33 | 4.76 | — | 28.57 | — | |
| Springfield | 69,389 | 17 | 6 | 35.29 | — | — | — | — | |
| Somerville | 68,110 | 11 | 1 | 36.36 | 18.18 | 9.09 | — | 9.09 | |
| New Bedford | 67,198 | 25 | 12 | 32.00 | 4.00 | 12.00 | — | 4.00 | |
| Holyoke | 49,286 | 14 | 7 | 14.29 | — | — | 7.15 | — | |
| Brookline | 44,873 | 9 | — | 22.22 | — | — | — | — | |
| Haverhill | 42,104 | 8 | 2 | 25.00 | 25.00 | 12.50 | — | — | |
| Newton | 37,794 | 12 | 2 | 8.33 | 16.67 | — | — | — | |
| Salem | 36,876 | 12 | 3 | 8.33 | — | 8.33 | — | — | |
| Malden | 36,286 | 6 | 2 | 33.33 | — | 16.67 | — | — | |
| Chelsea | 35,876 | 13 | 3 | — | 15.38 | — | — | — | |
| Fitchburg | 35,069 | 8 | 4 | 12.50 | — | — | — | — | |
| Taunton | 33,656 | 6 | 3 | 16.67 | — | — | — | — | |
| Everett | 28,620 | 2 | — | 50.00 | — | — | — | — | |
| North Adams | 27,862 | 2 | 2 | 50.00 | — | — | 50.00 | — | |
| Gloucester | 26,121 | 4 | 1 | 25.00 | — | 25.00 | — | — | |
| Quincy | 26,042 | — | — | — | — | — | — | — | |
| Waltham | 25,198 | 3 | 1 | 33.33 | — | — | — | — | |
| Brookline | 22,608 | — | — | — | — | — | — | — | |
| Pittsford | 22,589 | 8 | 4 | 12.50 | — | — | — | — | |
| Chicopee | 21,031 | 1 | — | — | — | — | — | — | |
| Medford | 20,962 | 6 | 3 | 16.66 | 16.67 | — | — | — | |
| Northampton | 19,883 | — | — | — | — | — | — | — | |
| Beverly | 15,302 | — | — | — | — | — | — | — | |
| Clinton | 15,161 | 5 | — | — | — | — | — | — | |
| Leominster | 14,805 | — | — | — | — | — | — | — | |
| Newburyport | 14,478 | 1 | — | — | — | — | — | — | |
| Woburn | 14,300 | — | — | — | — | — | — | — | |
| Hyde Park | 14,175 | 7 | 2 | 28.57 | — | — | — | — | |
| Adams | 13,745 | 4 | — | 50.00 | — | — | 50.00 | — | |
| Attleboro | 13,677 | — | — | — | — | — | — | — | |
| Marlboro | 13,609 | 2 | — | 50.00 | — | — | — | — | |
| Melrose | 13,600 | 4 | — | 25.00 | — | — | — | — | |
| Westfield | 13,418 | 6 | 2 | 16.67 | — | — | — | — | |
| Milford | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 2 | 2 | — | — | — | — | — | |
| Framingham | 12,534 | — | — | — | — | — | — | — | |
| Peabody | 12,179 | — | — | — | — | — | — | — | |
| Gardner | 11,928 | 6 | 3 | 33.33 | — | 16.67 | — | — | |
| Weymouth | 11,344 | 3 | — | 33.33 | — | — | — | — | |
| Southbridge | 11,268 | 3 | — | 66.67 | — | — | — | — | |
| Watertown | 11,077 | 3 | 1 | 66.67 | 33.33 | — | — | — | |
| Plymouth | 10,730 | — | — | — | — | — | — | — | |


Deaths reported, 2,925; under five years of age, 830 (Pittsburg not reporting); principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 746, acute lung diseases 263, consumption 351, scarlet fever 12, whooping cough 9, cerebro-spinal meningitis 7, smallpox 17, erysipelas 1, puerperal fever 7, measles 9, typhoid fever 57, diarrheal diseases 169, diphtheria and croup 103.


From whooping cough, New York 3, Philadelphia 2, Chicago, Pittsburg, Boston and Gardner 1 each. From erysipelas, New York 1. From smallpox, Pittsburg 9, Philadelphia 8. From measles New York 7, Boston and Providence 1 each. From cerebro-spinal meningitis New York 3, Boston 2, Baltimore and Watertown 1 each. From scarlet fever Chicago 3, New York, Philadelphia and Providence 2 each, Baltimore, Pittsburg and New Bedford 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Oct. 10, the death-rate was 15.8. Deaths reported, 4,554; acute diseases of the respiratory organs (London) 146, whooping cough 46, diphtheria 45, measles 34, smallpox 5, scarlet fever 42. The death-rate ranged from 4.7 in Horsey to 24.0 in Bootle, London 15.8, West Ham 5.7, Brighton 12.1, Portsmouth 19.8, Southampton 13.7, Plymouth 16.8, Bristol 12.0, Birmingham 17.7, Leicester 14.7, Nottingham 16.3, Bolton 18.0, Manchester 19.2, Salford 17.3, Bradford 14.2, Leeds 16.5, Hull 14.8, Newcastle-on-Tyne 21.1, Cardiff 13.0, Rhondda 13.9, Liverpool 19.1, Handsworth 9.1, Middlesbrough, 21.4.

METEOROLOGICAL RECORD.

For the week ending Oct. 24, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | | Ther- mometer. | | Relative humidty. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|--|-----------------|-------------|-------------------|----------|----------------------|-----------|-------------|-----------------------|-----------|----------------------|-----------|--------------|-----------|---------------------|-----|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | |
| | | | | | | | | | | | | | | | |
| S. 18 | 29.63 | 55 | 65 | 45 | 82 | 55 | 68 | W | S | W | 12 | 13 | O. | C. | .34 |
| M. 19 | 30.06 | 47 | 55 | 39 | 67 | 68 | 68 | S | N | W | 6 | 9 | F. | C. | 0 |
| T. 20 | 29.86 | 61 | 70 | 52 | 74 | 65 | 70 | S | N | W | 24 | 5 | C. | C. | .1 |
| W. 21 | 30.13 | 51 | 58 | 44 | 58 | 46 | 52 | N | N | W | 6 | 8 | F. | C. | 0 |
| T. 22 | 30.26 | 50 | 61 | 38 | 67 | 75 | 71 | N | N | W | 2 | 15 | C. | C. | 0 |
| F. 23 | 29.94 | 60 | 70 | 50 | 84 | 81 | 82 | S | N | W | 12 | 11 | O. | C. | .20 |
| S. 24 | 30.01 | 43 | 50 | 36 | 65 | 54 | 60 | N | N | W | 12 | 10 | O. | C. | 0 |
|  | 29.98 | | 61 | 43 | | 67 | | | | | | | | | .54 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † indicates trace of rainfall.  Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE TWENTY-ONE DAYS ENDING OCT. 22, 1903.

BAILLIACHE, PRESTON H., surgeon. Detailed to represent the service at meeting of the American Public Health Association at Washington, D. C., Oct. 26. Oct. 15, 1903.

CARMICHAEL, D. A., surgeon. Granted leave of absence for thirty days from Oct. 16. Oct. 5, 1903.

KALLOCH, P. C., surgeon. Granted leave of absence for three days. Oct. 5, 1903.

WHITE, J. H., surgeon. To proceed to Gulf Quarantine Station and assume temporary charge. Oct. 8, 1903.

CARRINGTON, P. M., surgeon. Two days' leave of absence from Oct. 15, 1903, under paragraph 189 of the regulations.

MAGRUDER, G. M., surgeon. Granted extension of leave of absence, on account of sickness, for two weeks from Oct. 7. Oct. 13, 1903.

VERTENBAKER, C. P., passed assistant surgeon. To proceed to Beaumont and Houston, Texas, for special temporary duty. Oct. 2, 1903. To proceed to El Paso, Texas, for special temporary duty. Oct. 5, 1903.

FERRY, J. C., passed assistant surgeon. To proceed to Charlottesville, W. Va., for special temporary duty. Oct. 12, 1903.

NYDEGGER, J. A., passed assistant surgeon. Bureau letter of Sept. 4, granting Passed Assistant Surgeon Nydegger leave of absence for one month from Sept. 13, 1903, amended so that said leave shall be for one month from Sept. 23. Oct. 10, 1903. Granted leave of absence for ten days, on account of sickness, from Sept. 13. Oct. 13, 1903.

MATHEWSON, H. S., passed assistant surgeon. Department letter of Sept. 23, granting Passed Assistant Surgeon Mathewson leave of absence for forty-five days from Sept. 22, amended so that said leave shall be for forty-five days from Oct. 3. Oct. 7, 1903.

GRUBBS, S. B., passed assistant surgeon. Granted leave of absence for five days. Oct. 8, 1903.

LUMSDEN, L. L., passed assistant surgeon. To proceed to Beaumont, Texas, for special temporary duty. Oct. 2, 1903. To proceed to Eagle Pass, Texas, for special temporary duty. Oct. 5, 1903. To proceed to El Paso, Texas, and assume temporary charge of the station. Oct. 13, 1903.

ANDERSON, J. F., passed assistant surgeon. To proceed to Baltimore, Md., for special temporary duty. Oct. 1, 1903.

FRICKS, L. D., passed assistant surgeon. Granted leave of absence for one month from Nov. 1. Oct. 17, 1903.

RICHARDSON, T. F., assistant surgeon. To proceed to San Antonio, Texas, for special temporary duty. Oct. 21, 1903.

FRANCIS, EDWARD, assistant surgeon. To proceed to the City of Mexico, Mex., for special temporary duty. Oct. 6, 1903.

BAHRENBURG, L. P. H., assistant surgeon. Granted leave of absence for seven days from Oct. 14, 1903, under paragraph 191 of the regulations. Granted extension of leave of absence for seven days from Oct. 22. Oct. 17, 1903.

FORD, C. B., acting assistant surgeon. Granted leave of absence for three days from Oct. 24. Oct. 22, 1903.

JACKSON, J. M., acting assistant surgeon. Granted leave of absence for thirty days from Oct. 5. Oct. 9, 1903.

SIBREE, H. C., acting assistant surgeon. Granted leave of absence for six days from Oct. 6. Oct. 6, 1903.

STANTON, J. G., acting assistant surgeon. Granted leave of absence for thirty days from Oct. 10. Oct. 13, 1903.

BROWN, F. L., pharmacist. To proceed to St. Louis, Mo., and report to medical officer in command for temporary duty. Oct. 10, 1903.

GOODMAN, F. S., pharmacist. To proceed to Laredo, Texas, and report to Surgeon G. M. Guiteras for special temporary duty as special disbursing agent. Oct. 2, 1903.

WOODS, C. H., pharmacist. To rejoin station at Chicago, Ill. Oct. 10, 1903.

MASON, M. R., pharmacist. Relieved from duty at Nome, Alaska, and directed to proceed to San Francisco, Cal., and report to medical officer in command for duty. Oct. 8, 1903.

PROMOTIONS.

G. A. MORRIS, pharmacist of the third class. Promoted to be pharmacist of the second class, effective Sept. 5. Oct. 3, 1903.

CHARLES NAPLES STEGER. Re commissioned as assistant surgeon in the Public Health and Marine Hospital Service to correct original commission, effective Sept. 16. Oct. 12, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING OCT. 31, 1903.

C. N. FISKE, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from May 15, 1903.

E. T. MORSE, pharmacist. Detached from Navy Yard, Boston, Mass., and to the Navy Yard, Portsmouth, N. H.

D. N. BERTOLETTE, medical inspector. Detached from duty at Naval Dispensary, Washington, D. C., and to continue other duty.

F. L. PLEADWELL, surgeon. Detached from the "Kear-sarge" and to duty at the Naval Dispensary, Washington, D. C.

C. H. T. LOWNDES, surgeon. Detached from Naval Hospital, Boston, Mass., and to the Naval Academy, Annapolis, Md.

J. J. SNYDER, passed assistant surgeon. To the "Kear-sarge."

KARL OHNESORG, assistant surgeon. Detached from the Naval Academy and to the Naval Hospital, Boston, Mass.

H. A. DUNN, assistant surgeon. To the Naval Proving Ground, Indian Head, Md.

SOCIETY NOTICES.

NEW YORK STATE ASSOCIATION OF RAILWAY SURGEONS. — The Thirteenth Annual Meeting will be held in the New York Academy of Medicine, Thursday and Friday, Nov. 12 and 13, 1903.

NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL. — The trustees of the New York Orthopedic Dispensary and Hospital announce that the surgeon-in-chief, Dr. Russell A. Hibbs, will give a course of clinical lectures on orthopedic surgery at the institution, on Tuesday and Thursday afternoons, at four o'clock, from Nov. 10 to Dec. 15 (both inclusive). The course will be free to the medical profession and students. No lecture will be given Thursday, Nov. 26.

J. ARCHIBALD MURRAY,
Chairman Committee on Clinical Instruction.

NEW YORK STATE CIVIL SERVICE COMMISSION. — Examinations for Superintendent and Resident Physician in the New York State Hospital for the treatment of incipient pulmonary tuberculosis. The State Civil Service Commission will hold open competitive examinations for the above-mentioned positions, Nov. 28, 1903, in various cities throughout the state. Intending competitors must fill out application blanks and file them in the office of the Commission before noon of Nov. 23. Applicants will be duly notified of the time and place of examination. Non-residents of the state will be admitted. For further particulars and application blank, address Chief Examiner,

STATE CIVIL SERVICE COMMISSION,
Oct. 29, 1903. Albany, N. Y.

THE AMERICAN SOCIETY OF CLINICAL SURGERY. — The first meeting of this Society will be held in Baltimore and Philadelphia, Nov. 13 and 14, 1903.

APPOINTMENTS.

DR. WALTER C. HOWE and DR. DAVID D. SCANNELL have been appointed Third Assistant Visiting Surgeons at the Boston City Hospital, dating from August.

BOOKS AND PAMPHLETS RECEIVED.

A Manual of Hygiene and Sanitation. By Seneca Egbert. A.M., M.D. Third Edition. Enlarged and thoroughly Revised. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

The Proper Perineal Prostatectomy Incision. By Nicholas Senn, M.D., of Chicago, Ill. Reprint. 1903.

Address.

PRESENT PROBLEMS—AN ADDRESS TO THE NURSES OF THE LAKESIDE HOSPITAL.¹

BY J. G. MUMFORD, M.D., BOSTON,

Assistant Visiting Surgeon, Massachusetts General Hospital.

Good nurses are born for their work.

Poeta nascitur, non fit is as true of you as it is of the lawyers, doctors, ministers and policemen. You can manufacture out of the most unpromising material a good engineer, or carpenter, or sailor, or even janitor; but when it comes to those persons whose work depends on their contact with other people, who deal in personal equations and not in impersonal figures — then there enters into the problem a new and wonderful group of elements which are a part of the birthright of some, while the others without them stagger through life, blind, puzzled, indignant with the fates: tact, humanness, womanliness, manliness, the appreciation of proportion, the attribute of "sweet reasonableness," the rare sense of humor. And of course you are to take this reflection as meaning that some of us are better workmen than are others. To him that hath, is as true as ever it was, but we should have to despair indeed if we were to believe that from him that hath not shall be taken away even that which he hath.

You trained nurses have had your place in the world's work now for more than a generation, and it seems to me it is time to look about occasionally and ask what you have made of yourselves.

I have heard and read many addresses given to nurses on such occasions as this, and in the main the speakers have devoted themselves to two topics — your usefulness and your education. Nurses have been told a thousand times that theirs is the noblest of professions; that nursing is woman's true sphere. Poets have been invoked to demonstrate that by day you comfort the sick, by night you soothe the dying. *Weeping willows* have been made to rhyme with *lonesome pillows*, and the rest of it.

It's all true enough. No one appreciates it all more than I do. It is a noble profession, and the good you do is beyond measure.

Then there is that other subject — your education. That is a great subject. You have begun it well here in this training school, but the most important part is to come, and I want to talk with you in some fashion about that.

At the outset of your work in life after leaving the training school, you are in a position quite different from that of any other professional people known to me; you are equipped for practice and you assume at once the full standing of the experienced workman. You are deemed — for so tradition has arranged it for you — as competent as the women who have grown gray in harness. You expect as a right the maximum wage, — twenty-one or twenty-five dollars a

week, or whatever the sum may be in your particular locality, — and as a general thing you get no less. Did it ever occur to you what that state of affairs may mean? Try to apply the same principle to other professions or trades, if such a conception is possible. What would you say if you had to pay a young journeyman plumber or carpenter the same wages that you pay the master craftsman? How readily would you call in the youthful doctor or lawyer if his fees were those of the eminent specialist or jurist? The thought is inconceivable. But you will say there is no parallel in the two cases; the young nurse is equipped for her work as well or better than the old one. The nurse fresh from the hospital is likely to be better than the nurse grown stale. She is familiar with the latest methods; she knows the new drugs and the new instruments; she has served only with physicians who are leaders in their several departments; she is keener, more alert, more interested. All that is so true that it seems unanswerable, but if followed to its logical conclusion it means this — that the younger the nurse, the better the nurse; the older the nurse, the worse the nurse. Is that a pleasant prospect? Is that creditable to a noble profession? The youngest nurse is best for the community, if you choose to put it so, but is that a condition best for the nurse herself? I have had old nurses — women with fifteen or twenty years' experience — come to me complaining bitterly that their practice was leaving them, that their old patients never sent for them, that the doctors no longer employed them. We have in Boston an institution called "A Home for Aged Women," part of the income of which is specifically devoted to helping women who have grown old in the care of the sick. That fund is called the Doane Fund, and I assure you the beneficiaries under the Doane Fund are but a fraction of those needy ones who clamor for relief.

All this is a very serious business; it is not a cheerful topic to air before you as you start generously forth on your life work, yet it is a very significant fact, and it must give pause to those of you who are wont seriously to consider the life problem.

When the trained nurse became an accepted fact twenty-five or thirty years ago, she was looked upon as an exponent of our modern altruism — as a secular sister of charity, so to say; but she was not taken seriously as a professional woman. Of course she had to live and she had to be paid. Nurses are few in number, and they were greatly needed. The cost of a nurse was fixed high, for it was a matter of supply and demand; but a nurse was a nurse, the laborer was thought worthy of his hire, and so from the outset the pay was good while work was to be had. But there was no progress for the individual.

There was no progress. It was there, and it is there that the fatal weakness in the nurse's profession inheres. Of what other toilers in this busy world can the same be said? The chore boy can rise to be head waiter; the unskilled

¹ Cleveland, Ohio, May 25, 1903.

laborer can rise to be boss of the gang; the apprentice may become a foreman; the office boy may become a judge of the Supreme Court; the house officer may become a great surgeon. That is what life means to most of us. Work; steady unceasing, increasing work; with widening opportunities, with proportionate returns, with an honorable goal. Those are some of the things that make life worth the living; and with them go other things which to some count for more even than material success — increased occasions for usefulness, a broadening horizon, a closer and more generous contact with our kind, a full career, and at the end the unspeakable satisfaction that we have not lived in vain.

I fear we are all of us very weak human beings. Few of us were born to be great, but that is no reason for curtailing our chances, and as yet it seems that the chances of nurses are not what they might be made.

My predecessors in this office have said some very stirring words about what nurses are and what they are to be — words very stimulating and instructive. Those gentlemen have told how your education is to be broadened and how your place among the world's workers is to be made more honorable and more secure; but I cannot help feeling that those happy prophecies of theirs were addressed more to the nurses of the future than to you who here and now are taking up the task of caring for the sick.

I wish I had some ready, practical solution for the problem which I have suggested; some method by which you could become stronger and wiser, more learned, more skillful and more in demand individually as the years pass; but the problem is one which cannot be answered off-hand. It is one which you yourselves must solve, painfully, laboriously, by the slow process of evolution. I have some thoughts, however, which you may take for what they are worth — old thoughts many of them, futile perhaps in some sort, but occurring not infrequently to those of us who have your welfare at heart.

In the first place let me tell you that unless your circumstances and training are very different from those of most of the nurses known to me, it is a mistake to start in as specialists. Such specializing may come later as your careers develop, but at the outset take everything that comes to you unless you feel yourselves unqualified. Don't pose as surgical nurses or medical nurses or obstetrical nurses, and, above all, don't refuse to nurse men. For a good while yet you will need all the experience you can get, and you can get it only in general nursing. Don't tie yourselves to one doctor. He may fail you, for he too is but mortal, and nurses can quickly be lost to view and hopelessly sidetracked.

Don't refuse poor cases. I wish some fashion might be devised by which the poor could be effectively cared for in their homes. By the poor I do not mean the starving and the destitute. They are looked after by the hospitals and the district nursing associations, but I mean the families of men on small salaries. If the father earns

forty or fifty or even one hundred dollars a month, he cannot well pay out twenty-one dollars a week for a nurse in addition to all the other heavy expenses which illness entails.

Such people get often the best of *medical* care, because competent young doctors will treat them for the sake of practice and old doctors from a high sense of the sacred obligation that rests upon their calling.

Don't mistake me! I am perfectly well aware that nurses do take poor patients, but I think if you consult some of your older sisters and listen to some of their talk you will find that they often look upon such service as a hardship and feel that the good-natured charitable ones are imposed upon and even lose caste.

Remember that what I am saying is suggestive merely and is crudely sketched; but would it not be possible to establish traditions in your profession similar to the traditions of physicians — that in some fashion no call for help should be refused? You are banding yourselves together into clubs and associations, and such banding is distinctly for your best interests as well as for the best interests of the community. In some way which should not interfere with the liberty of the individual would it not be possible for such associations to see to it that its younger members, without serious pecuniary loss, might give a portion of their time to the poor, and that the doctor, when asking for such help, might not have to approach you with an apology? To such suggestions as this, nurses have replied to me: "Very true, some nurses do take cases for small fees, but they soon come to be known as cheap nurses and lose their chances for the paying cases." Truly that is a lamentable fact and a lamentable tale. It does not count for better things that such is the case, and it rests with you in your organizations and in your public spirit to see to it that such things cease to be.

There is our first thought: that poorly paid, little regarded work be done, that thus the field for the work of all be widened and that out of such small beginnings great reputations may be made. For mark me, this thing that I tell you is true: a professional reputation, whether of lawyer, doctor or nurse, must rest on foundations broader than the flatterings and praises of a few wealthy clients or patients. Such thin reputations are erected in years and are shattered in days. None of us is safe who depends for work on the fickle fancies of the few. Gain the confidence of the whole community, of the poor and the rich, of the little doctors and the great ones — then you may rely upon an assured future.

You will tell me that this may all be true, but that it does not meet my earlier query: Is the young nurse the better nurse, the old nurse the worse nurse? There indeed is another problem. So far as "up-to-dateness" goes, perhaps in a superficial sense the young nurse may be the better; but the fault will be your own if that remains true in the future. Remember that I am speaking now of the great majority of your number — of those who go out into private prac-

tice. You must not allow yourselves to grow rusty and inefficient. Already in your school you have been taught to study and to use your minds and to do your own thinking. That is the best thing you have learned here. Having learned that, you must apply it ceaselessly. I need not insult your intelligence by telling you to keep up your reading. You must do more than that; you must continually cultivate the habit of observing, deducing and recording — those three attributes of the trained mind. The ward and the sick-room are your laboratories, and with due regard to the humanities you must take advantage of that fact.

Lately at the Massachusetts General Hospital, and at some other hospitals I believe, we have established ward courses for graduates. As yet those courses have attracted all too little attention; but nurses are beginning to appreciate their value, and before long I hope to see alumnae returning in increasing numbers for such work.

As you progress, too, you will find, or you will make, various opportunities for reviewing and for supplementing your present knowledge. You will gravitate towards special lines of work in which you will be regarded as expert. For many of you whose temperaments so lead you, an occasional course in some hospital or other institution will appeal, and you will find such experience of advantage. I am not referring to those who propose devoting their lives to institution work, but to the private practitioners among you. A summer spent every few years as operating assistant or substitute head ward-nurse will keep you in touch with the new things, for, indeed, new things come slowly in the active lives of most of us.

But, after all, the best and most important thing will be constant serious coöperation among yourselves for the betterment of your profession, and that coöperation, to accomplish its purpose, must be along democratic lines. It is all very well to have small clubs and cliques for social purposes and for special work, but when it comes to those organizations which really strengthen your profession and deepen its foundations you cannot afford to depart far from the democratic idea. This I say from a considerable knowledge of how similar problems have been met and solved in my own profession. There is a democracy of science, and in a true sense you nurses are workers in the scientific field.

Last year Dr. Osler gave a delightful address to the Canadian doctors on what he called "Chauvinism in Medicine." He pointed out how we all, regularly educated and licensed practitioners, belong to one great family; how there are no school, city, state or national boundary lines among those whose pursuit is the truth; how jealousy and local conceit and the decrying of those whose work lies without our little circle lead to narrowness, to self-stultifying and to the destruction of that very edifice of science which the best among us are faithfully and laboriously building. The address was a fine plea for the brotherhood of science and of man; a plea

which nurses as well as doctors might well listen to and heed. It is by a banding together of all the efficient in one great sisterhood that you can raise your profession to the stability of those other professions with which you must come to be ranked. I beg of you to note that word *efficient*. I am not asking you to open your ranks to the incompetent, the unscrupulous, the impudent, the charlatans untrained. You must steadfastly refuse them your countenance as you are doing; but you must recognize the efficient among yourselves — those who have proved their worth by years of work and the winning of recognized diplomas, no matter whence they come or what their school. If you do not do this, if you do not so strengthen your own hands, you will continue to invite the competition of the pretenders, and you will be emulating the example of some of the labor unions, which destroy their own ends by encouraging a fatuous mediocrity.

I could specify easily examples of what I mean, and tell of certain groups of nurses, graduates of certain hospitals, who persistently look down with a silly and irritating jealousy upon those outside of their own little circle. Perhaps such conditions do not exist in this part of the world. I certainly hope they do not, but let the warning stand, nevertheless.

It will not be long, I believe, before a recognized and legalized sharp line of cleavage will be drawn between trained or registered nurses on the one hand and the masses of the untrained on the other. In the bill providing for the examination and registration of trained nurses, which is before the New York Assembly, Miss Palmer pointed out that in that state there were *twenty-five hundred trained nurses and fifteen thousand untrained nurses*. The bill is being introduced through the agency of the New York State Nurses' Association, and will prove a great step in advance. The other day in Massachusetts a similar organization was formed by some three hundred and fifty nurses, assembled in Faneuil Hall for that purpose. Many hospitals and schools throughout the state were represented. The same work is going on in other states. It is a very real and important work, I believe; and I do sincerely trust it will lay the foundation for that catholicity of purpose, that broadening of horizon, that capacity for true progress, which must attach to every vocation that is to succeed.

There is another aspect of the nurse's problem which will be more immediately obvious to most of you than are any of those questions which I have raised; I mean the attitude towards you of the public and especially of individuals among your patients. The public has long since come to recognize vaguely your value and to turn to you for help, and the public approves of the trained nurse as an institution. But there are many dull and wrong-headed people who persistently think ill and speak ill of the nurse as an individual. This sentiment rises usually, you will find, from some unfortunate or unpleasant

experience with some special nurse. You will hear a foolish person say, "I don't believe in trained nurses," and he will say it to you with a smirk of self-approval. But you will just as often hear the same individual remark that he does not believe in doctors. When that sentiment has been addressed to me I have always felt soothed and stimulated, glad that the world has produced one more person of tact and sensibility.

There is, however, a very considerable number of reflective men and women who will tell you that they do not regard nurses as professional persons very seriously. Their reasons are in part those I have already suggested in this address; but these critics feel, in addition, that most nurses in the very nature of their circumstances, from the fact that they are young, single women, do not look forward to nursing as their life work. It is said that they take up nursing from a great variety of inadequate reasons—to kill time, to find new sensations, to make a little money, to become independent and the like; but, that as a matter of fact, they do not intend to remain nurses; that they expect a more secure settlement and to become wives and home-makers like the rest of their sex. In all candor, we must admit that there is a great deal of truth in this, for such is the state of mind of many nurses. If the anticipated events occur, the nursing lives of many nurses are to be short ones. Now, as a matter of fact, the average nursing life is about ten years, and is not ten years of professional life something seriously to be regarded? The lawyer and the doctor have average professional lives of about twenty years; twice as long as the nurse's, but sooner or later the lawyer and the doctor leave the stage—they die, they grow old, they retire. Of what consequence is the reason? Where then are to we distinguish? The doctor dies, the nurse marries, if you choose. Is the career of the doctor, which lasts twenty years, to be applauded, and the career of the nurse, with her ten years, to be dismissed with flippant words?

But there are other more immediately obvious hardships than this skeptical estimate in store for you—so you will be told with much truth. The great and standing grievance which very many nurses come to cherish against their patients and their patients' friends is a lack of consideration. Many persons employ a nurse not for her knowledge, experience and skill,—those things they are apt to question,—but in order to spare themselves. To them a trained nurse is a human machine to be secured, wound and ready to go indefinitely. Such persons will not spare *you*. They will keep you busy day and night. It is such treatment, which I regret to say is all too common, that helps to breed in nurses a sense of antagonism, a certain hardness, and brings about that state of mind which thinks of and refers to patients as *cases* and not as afflicted human beings. Perhaps, too, the doctors are in a measure responsible for this attitude of nurses, because, as your training in the hospitals shows you, the doctors,

with their press of work, unavoidably regard their ward patients as cases and as material. Of course that is a mental attitude deplorable alike for doctors and nurses. The doctors with their wider experience and more diversified lives, are able mostly to subdue the tendency at will. For you it may be somewhat more difficult, but it is a task to be done.

Another remedy for this tendency, perhaps the most important remedy for you as your lives develop, is to seek the special line of work that you do best. At present there are three broad classes among nurses, each class having its subdivisions. The three classes are: private nurses, institution nurses and district nurses. Their three lines of work are quite distinct, each having its particular interests, suited to different temperaments. I think I should choose to be a district nurse if I were a nurse. The private nurse earns more money, the institution nurse sees a greater variety of practice and has regular hours, the district nurse has greater independence and comes into the closest contact with humanity. So let each one choose.

Such very briefly are some of the problems which must be met and solved by nurses and nurses' associations. I fear I may not have told you very much that is going to be of immediate practical value, but how is that to be done in a fifteen-minutes talk at the end of a three years' course?

The question is often asked, What is the one thing most essential for a nurse's success? The answers are as various as the questioners,—good health, yes, that is essential; cleverness—you can get on without too much of that; good temper, tact, courtesy, gentleness, courage, interest, fidelity, unselfishness—all those are fine, useful traits; if you have them not, perhaps you can cultivate them. Sometimes I have thought that the attitude of the sister of charity is the best thing a nurse can attain, that self-effacement, that thought only for the patient which those good women are supposed to have. To this some nurse will answer: Yes, but we are taught to consider the doctor first and the patient second.

Truly, it is a thorny path, to be sought and followed by each individual according to her best lights and endeavors, and when you argue it all out to the last analysis, why is it not true that the great essential for success in nursing is the same as for success in the other walks of life? Saneness, a sound philosophy, a clear-eyed outlook on the world as it is—there is nothing new in that thought. Socrates, Epictetus, St. Paul and Marcus Aurelius held this view.

While you work preserve your health; find recreation, physical and mental. Don't forget how to play, but play in season. If the patient overworks you, tell the doctor you need help. Get an hour or two of exercise in the fresh air every day; get six to eight hours of sleep out of the twenty-four; eat three regular meals and eat them slowly. Faithfully keep up the routine of cold bathing as you do the wearing of fresh linen. Keep your mind alert and interested;

know things outside of your profession; cultivate a hobby. That eminent lawyer and writer John C. Ropes once told me that it was necessary for every successful professional man to have some constant outside pursuit. His own hobby was Napoleon and matters pertaining to military history. During his later years I suppose he knew more about Napoleon than did any other living man. His hobby kept him fresh, eager, interested and supremely interesting. You women can have your hobbies, whether you take to Napoleana, or the D. A. R., to botany, painting, embroidery, stamp-collecting, astronomy or wood carving. All such things are honest, instructive, wholesome, and they count for good.

And mark you this, that as you broaden yourselves you acquire more of that true sense of humor which is a large part of the philosophy of life. As the years pass, it makes that life more abundantly worth the living, "for truly, this humor is an adjunct divine, and as far beyond the trivial word for it as 'love' is or 'charity.'" No definition or happy phrase sums it correctly or rates it high enough. It is a balm of life. It makes for greater things than clean laughter from the lungs. It is the root of tolerance, the prop of patience. It suffers long and is kind; serves to tune each little life-harmony with the world harmony about it, keeps the heart of man sweet, his soul modest, and at the end when the light thickens and the mesh grows tight, humor can share the suffering vigils of the sleepless, can soften pain, can brighten the ashy road to death."²

This is not a sermon. It is not even a lecture, but a plain talk by a working man to working women, and remember, as the Cambridge poet said two hundred years ago,

"A woman's work, grave sirs, is never done."³

Original Articles.

STOMACHAL AND INTESTINAL DERANGEMENTS AND AFFECTIONS OF THE FAUCES, PHARYNX AND AIR PASSAGES.

BY BEVERLEY ROBINSON, M.D., NEW YORK.

ONE reason why the older practitioner of medicine is less enthusiastic about new findings is doubtless to be explained by the fact he has noted many times, *i. e.*, that the current of medical thought and action revolves, as it were, in a circle. Given a certain period of time, more or less, and the opinions and treatment of physicians which had become banished almost completely for a while return and become again the rule of thought and action. It may be, and in this wisdom has taught the lesson which is born of ripe experience, that convictions and measures which had been pushed to their uttermost are once more received and followed, but in a far more rational and conservative manner.

I shall only cite a few examples familiar to all to prove my statement. Take bleeding in pneumonia, for example, and mark the generally received judgment in former years — on the one hand, a local inflammation of the lung and on the other the curative effect of excessive depletion. Take calomel — in massive doses, repeated more than once, it might be, to jugulate an incipient inflammatory process of the pleura. Take opium — the panacea of peritonitis (so called) in its acute form when declared, and repeated frequently until both pulse and respiration were reduced very markedly in frequency or affected sensibly as to rhythm or volume. These ideas, this treatment, based probably upon erroneous convictions to a certain degree, were without question, according to actual knowledge, excessive, and hence often resulted in direct injury to patients. At times, however, benefits great and evident followed, and many notable and direct cures were surely established. To-day mercury, opium, bleeding, are employed more judiciously, as our knowledge of morbid processes has advanced, or at all events changed. We may fairly add, I believe, that just as formerly our notions about certain things were excessive, at present, perhaps, they are somewhat too conservative, and only later we shall know when and to what extent to make use of these and other very valuable remedies in the best way. And we shall also modify our present convictions about many diseases, and thereby, perhaps, approximate greater truth.

Not very long ago, and in my own experience, those who recognized a very manifest correlation or dependence between gastro-intestinal troubles and those of the respiratory organs were regarded by many, especially prominent specialists in laryngology, as being behind the times, prosaically so, and as requiring new lights and fresh guidance. They argued with the German school of the day that local treatment, medical or surgical, was the main essential object to keep constantly in view, and a great deal of the talk or doing about dyscrasia, constitutional defects, the influence of climate, of season, of habits, of occupation, etc., was drifting far away from the best that could be accomplished in actual practice. And thus sprays to the nose and throat, inhalations of divers sorts, local applications with brush or sponge to diseased parts, cauterizations, burnings with electro-cantery, the use of trephine and saw, knife and chisel, were the order of the day.

To talk of Epsom salts, nitre, aconite, blue mass, spirits of mindererus, cubebs, etc., was to raise an incredulous sceptical smile, and to court more or less immediate and forcibly expressed opposition. And yet look how the pendulum swings! how we are returning once more to time-honored methods which have disappeared for a period, only to return with renewed and accentuated truth and power. This belief has been forced upon me again, I am glad to say, by more than one paper I have read or listened to within the last few years. It has been rendered doubly

² Eden Phillpotts, in "Sons of the Morning," p. 479.

³ Mr. Eusden, at the Cambridge Commencement, 1714.

true by the tenor of more than one debate, and the remarks of more than one able and expert speaker.

Having introduced my subject, I shall in a brief way refer to several instances in my own experience, to corroborate my statements and further, if possible, to carry conviction to some wavering minds which need yet to be instructed, as I believe, and thus to acquire correct appreciations of what to me and others seem almost obvious facts. Of course I do not wish to be understood as telling what is new; I know indeed a great deal is threshing again old straw, but this is a good, almost essential work for some one, especially when the younger men in the profession seem ignorant, practically of what has been known, considered and has guided many in the counsel towards and care of patients. The importance of the recognition of the facts referred to is to me unquestionable. And this is a truth both in acute and chronic diseases of the digestive organs as causing morbid determinations in the air passages. In a similar way the latter affections are occasionally causative in producing both acute and chronic digestive derangements. Such effects are, however, much less frequent. In such instances the nature of the disorder may be nervous in origin. Again there are a few clear instances of chronic inflammation of the stomach and bowels which are of catarrhal nature.

It has been taught and understood pretty generally in the past few years that chemical analyses of stomachal contents after a test meal were very important from the point of view of diagnosis and also of treatment. So far as curative interference with patients is concerned, I must take exception to this statement as being always true clinically. From a scientific point of view, I do not question the value of every accurate acquisition of facts. But when from facts we adopt theories, which, although true many times, are not invariably so, but have numerous exceptions, we are liable to be led astray ourselves, and to mislead others. I have noted occasionally that the very diet and drugs which from any rational standpoint we could discover were least well adapted to a given patient were just the ones most useful or effective. Not infrequently the discovery of this fact has been the result, not of study, or previously acquired knowledge, but of the merest chance apparently. Again, I have remarked, as we all have, that whenever a patient has a great and persistent longing for a particular food, or drink, it is unwise always to deny them the satisfaction of eating or drinking as they would, on the ground that the craving was irrational and that the patients would surely suffer from wrong indulgence. Time and again by permission accorded to the patient to partake of what he or she desired the experience has proven very beneficial, and that too, not only for a short time, but also during a period more or less lasting. On the other hand, I would not deny that now and then this yielding to the opportunity of a patient about food, or drink, has

seemed like weakness on our part, and as being opposed to our sober, better judgment, and subsequently, when bad consequences were observed, we have reproached ourselves bitterly for having done an absolute wrong and having been inimical to our patient's progressive improvement. How to avoid just such instances, how to give information which in advance will guide us to right conduct unerringly, we do not know at present. Later, perhaps, the unfortunate exceptions will be explained on rational grounds, and with improved knowledge. Until then we must simply watch and wait.

It is a trite statement to make when we affirm to-day the great utility of the laryngoscope and rhinoscope to general medicine; and because the overzealous or narrow minded and ignorant have been led away by its frequent and great usefulness to see things and to perform operations which their blinded vision mistakes and their deft hands had better have let absolutely alone, is not reason enough to ignore just claims or to fail to recognize facts and observations only possible through the employment of special instruments. One can see and note the very rapid effects produced on the nasal, pharyngeal and laryngeal mucous membrane of a dietary indiscretion and of its resulting digestive upset. And this is surely more satisfactory in every way than merely to make guesswork of it. The pituitary membrane becomes engorged, irritable looking, more vascular; the larynx becomes congested and infiltrated. Frequent sneezing, nasal obstruction, hawking, secretion of mucus; or cough, expectoration, wheezing, mucous râles, dyspnea, may be observed rapidly to occur. And with the occasional, frequent or habitual recurrence of the cause of these sequelæ their presence will be remarked more or less continuously. Acute coryza is ordinarily attributed to the effects of cold, of sitting in a draft, wet feet. It is also due to a contagion transported directly from another similarly affected. Dust laden atmosphere or close, confined, badly ventilated, overcrowded rooms may cause it; so too it may be the expression of an overloaded system, or indeed of a manifest gouty state. Finally, however, I believe a disordered stomach or bowels is not infrequently causative, and it is only by attention to these derangements, either by diet or suitable medication, or both combined, we may combat it in the best, shortest manner. I admit that to make the differential diagnosis of these cases is very difficult at times, and I am inclined to believe it is made sometimes therapeutically by observing how ineffective usual remedies, local or general, are.

What is true of simple coryza is also true of acute catarrh of the naso-pharynx and of superficial acute tonsillitis of the simple variety. It is no unusual observation to make that within an hour or two after a meal too abundant or rich, or after partaking of a particular food or drink that occasions stomachal distress or malaise of one sort or another, repeated hawking and spitting of frothy or gelatinous-looking mucus

from the throat and naso-pharynx occur. If the throat is examined at the time, the tonsils, pillars of the fauces and pharynx are partly covered with secretions of this nature. If the disturbance has been recurrent the uvula is relaxed, pale, elongated, glistening and somewhat edematous looking. Where the tonsils are inflamed superficially, there is some swelling and redness locally, with stiffness of the neck, or some soreness or difficulty in swallowing. The follicular tonsillitis of children usually, and the same disease in adults, which relatively is infrequent, seems often to follow excessive indulgence in rich or sweet foods (pastry, cake, candy, etc.). There may be, and no doubt is, at times a complicating dyscrasia, rheumatic or gouty perhaps, or an infection which localizes itself here, the nature of which is far from being accurately determined always, yet it is surely correct to assume or believe that the dyscrasia, or infection, would not become evident unless the imprudence or wrong doing had occurred. The fact that the white deposits over the mouths of the tonsillar follicles are not seen always immediately, and that twenty-four or forty-eight hours may elapse before they appear, is not sufficient reason to make me change my belief about the nature or manner of their growth. Even presuming the deposit on the tonsils be of microbic origin, it would not find a favorable site for its development unless the mucous membrane were morbidly changed so as to favor it. Of course there are grades, differences of this disease termed follicular tonsillitis. In some instances the general disturbance of the system is of such a nature that I am satisfied as to its infective character. Not only is there much depression, fever and great weakness during the immediate attack, but subsequently, for many days, and after all signs of local disturbance have entirely disappeared, the patient is visibly in a weakened state that shows itself by pallor, inappetence, weak, rapid pulse and marked prostration of bodily energy.

The dividing line between some such cases and diphtheria is far from easy to determine. Clinically almost all the symptoms of diphtheria may be defined, barring the bacterial finding of the real Löffler bacillus, and we may have just as much, nay, even more, cause for anxiety about the patient than if the diphtheria bacillus had been found. In just such a case I have known antitoxin to prove almost immediately and wonderfully remedial when other means had signally failed and the patient's condition was very serious, indeed imminent. It is not uncommon to encounter asthmatic seizures which are evidently due to an attack of acute indigestion. A too abundant meal late in the day will frequently be followed by a wakeful, distressing night, and very great dyspnea, with loud, sonorous rhonchus stamp the attack. These attacks may also be occasioned by what appears perfectly simple food, and yet which from one cause or another disagrees. In a young child, many years ago, I saw an instance where a tumbler of milk taken at bed-time would bring on an attack of asthma

soon after the little one had been asleep. With the attack of asthma there was a severe eruption of urticaria. If this child ate a slice of bread with the glass of milk, the asthma did not occur, showing the effect of the cereal doubtless in breaking up the curd and making it more digestible. The most efficacious and quickly acting remedy was found to be frequently repeated doses of lime water, neutralizing in this way, as I believe, the organic acids formed in excess. While this "peptic asthma" is a well-defined entity and generally described, it is not taught that nervous dyspepsia is at least an accompaniment occasionally of asthma, and may be to a certain degree caused or aggravated by the latter. Such cases are unusual and not readily determined. Instead of causing stomachal intolerance or an attack of diarrhea, I have known eating fresh mushrooms to occasion very pronounced edema of the uvula, so much so indeed as to cause very distressing symptoms of choking. I have not known such an attack to be caused by canned mushrooms. Although the apparent symptoms of gastro-intestinal indigestion may not be discovered, I feel confident that a closer scrutiny would reveal them. The treatment of such a case resides in the immediate application repeatedly of burnt alum to the uvula and a cathartic dose of mineral water or salts. The cause of the throat irritation proceeds in many instances from direct contact with the acid renvols which come from the stomach. At the same time, the ptomaines generated in the stomach or bowels cause a general poisoning of the economy through the blood after absorption from the peptic or intestinal glands.

One important fact is undoubted at times, *i. e.*, that we find the same micro-organisms in the throat and in the stomach. As to whether they were swallowed, and their presence thus explained in the stomachal contents, or they were originally developed in the stomach and brought into the throat by regurgitation, is not settled. The relations of chronic disorder of stomach and bowels to nasal and naso-pharyngeal catarrh were first insisted upon in this country by Wm. H. Daly as far back as 1882. In the former, Daly saw the cause of many catarrhal conditions of these passages. Where it was not evident that the digestive disturbances preceded those of the respiratory tract, they always aggravated them when present. And if through judicious dietary and treatment we got the stomach and bowels in good working order, we found that frequently there was no occasion to make local applications to the throat or nose, or to do many operations for the relief of hypertrophic rhinitis or for obstructive disease in this organ (the nose), of divers sorts. On the other hand, chronic naso-pharyngeal catarrh may become the "fonsetorigo" of digestive troubles, mainly through repeated dropping of unhealthy secretions from the throat and subsequent swallowing them. In these instances there is no doubt in my mind that moderate and sensible local treatment of the nose and throat is much to be followed and praised.

Indeed, unless we free up nasal or throat obstructions in many such instances through proper septal operations, or the removal of adenoids, or enlarged, chronically diseased tonsils, we shall fail signally to benefit or relieve the consequent digestive disorders. The two conditions of inflamed throat and chronic dyspepsia may march together, and as one organ or condition improves so will the other. If, likewise, one organ grows worse, so will the other. It is, however, difficult or impossible invariably to discover through symptoms and the patient's history in which organ the trouble started. Therapeutically we must make use of our brains first of all and act intelligently according to the case we have in hand. If there be evident faulty conditions in the nose or naso-pharynx, these should often be corrected as far as may be by local applications or operatory procedures. At the same time, the habits should be regulated and the diet made simple, nutritious and moderate.

Nervous, run-down women of middle age, who suffer also from menstrual difficulty, are apt to have atrophic nasal catarrh. A wisely adopted rest cure and the continuous use of the glycerophosphates of lime and soda will prove helpful. To club men who are bloated, red, corpulent, and also suffer from a thickened engorged mucous lining of nose and throat, low diet, abandoning the use of alcohol and free diuresis through Poland water or Celestins Vichy, will prove useful. The presence of incipient or more advanced cirrhosis of liver and venous engorgement of the entire upper air tract among these men is also what we encounter time and again. It is clear from the foregoing how essential it is for throat specialism which is broad, conscientious and useful to be guided and directed many times by a knowledge of general medicine. This statement does not prevent my recognition of the great advantages derived directly many times from the rhinoscope and laryngoscope in skilled hands. It is against their abuse that I and others cry a halt.

ROUTINE TREATMENT IN A GENITO-URINARY CLINIC; FUNCTIONS OF SUCH A CLINIC.

BY F. J. COTTON, M.D., AND R. F. O'NEIL, M.D., BOSTON,

*Surgeon and Assistant Surgeon, Genito-Urinary Department,
Boston Dispensary.*

THE study of records which forms the basis of this paper was undertaken for the writers' private information, with the added hope that we might extract something that would help in treatment. In the end, however, it is published, not because anything of especial technical value has been found, but because the study has raised broader questions as to the functions and use of a clinic of this class which seem worth discussing.

The paper is, therefore, presented in two parts, on the one hand the technical data, on the other the discussion of these broader problems.

PART I.

In the mere impressions left with us by routine medical work there is always a large element of error. To check this in regard to this particular clinic the writers have looked up the records of part of their last service, covering August and September, 1902, in the Genito-Urinary Department of the Boston Dispensary.

This clinic is a large one and seems to enjoy the confidence of the afflicted throughout and beyond the South End. The year's average of new cases is, roughly, 2,000. The daily total of all old and new cases varies from 15 to 50. For this paper 328 case records were worked over.

The diagnoses recorded were as follows:

| | |
|---|-----|
| Chancres or early syphilis | 13 |
| Chancroids | 27 |
| (with bubo) | 2 |
| Bubo (alone) | 1 |
| Acute gonorrhea | 130 |
| Chronic gonorrhea, anterior | 48 |
| Chronic gonorrhea, anterior and posterior | 26 |
| Chronic prostate and vesicular disease | 11 |
| Follicular or periurethral infection | 3 |
| Epididymitis (alone or without urethral dis'ge) | 4 |
| Gonorrheal rheumatism | 2 |
| Stricture | 13 |
| Balanitis | 5 |
| Venereal warts | 6 |
| Torn frenum | 1 |

Non-Venereal.

| | |
|---|---|
| Hydrocele | 6 |
| Varicocele | 2 |
| Senile prostate | 7 |
| Retention from spasm | 1 |
| Irritable prostate | 2 |
| Impotence | 1 |
| Neurasthenia (sexual) | 7 |
| Hematuria | 1 |
| Paraphimosis | 1 |
| Edema of prepuce (no known cause) | 1 |
| Induration of corpora cavernosa | 1 |
| Eczema of scrotum | 2 |
| Scabies | 1 |
| Pediculi pubis | 1 |
| Genito-urinary tuberculosis | 2 |

The relatively small number of syphilitics is in part explained by the fact that all definitely diagnosed syphilis at the dispensary is referred to the Skin Room.

TREATMENT.

Chancres were treated expectantly with washes and powders until such time as the diagnosis could be confirmed — then transferred.

Chancroids were usually disinfected so far as possible by the use of strong carbolic acid, followed by alcohol. With this (and sometimes as sole treatment) frequent cleansing at home with creolin or other washes, and the application of boric acid or other non-cohering powder, formed the routine. In the period covered there chanced to be no circumcisions for chancroids — splitting up the dorsum for chancroids with phimosis was done in one case only.

Buboes were always treated by simple drainage without very free opening or dissection. Abortive treatment was not tried, as we had only broken-down and "ripe" buboes to treat, and

were fortunate enough to have none form from chaneroids under treatment.

Gonorrhea in hyperacute cases was treated in the beginning with internal medication, — copiba or santal with diuretics and alkalines, — under the usual rules of relative rest and hygiene. In all other acute cases where it was possible, copious and frequent irrigations, with hot permanganate solutions or with weak silver nitrate or weak corrosive solutions, were used. In selected cases, especially when seen early in their course, definite attempt at bactericidal treatment was added to the above routine.

In cases with a developed acute posterior urethritis, the general trend of treatment was conservative. Treatment of the anterior disease was continued, and every two or three days in quieter cases a posterior (Diday) irrigation added.

In the later stage of anterior disease astringent injections, medications through the endoscope and mechanical dilation (Kollmann dilators usually) were the means most used.

Late stages of posterior infection were combatted with strong instillations with the Uitzmann deep syringe, and prostatic massage was occasionally used.

Home treatment with injections was not advised or prescribed in any stage of the disease.

As to the complications. No cases of suppurative prostatitis were met in this service. There were but three cases of follicular or periurethral abscess — one lost track of, two sent to hospitals for operation. There were but two cases of true cystitis secondary to gonorrhea — both were treated with bladder irrigations.

Epididymitis was treated by suspensory, relative rest and hot fomentations or poultices in the acute stage; later with suspensory and with nitrate paintings, or, more often, ointment of mercury and belladonna.

Of the late sequelæ the *chronic prostatic* conditions (including many of those often classed as vesiculitis, neurasthenia, etc.) were treated by urethral dilatation, topical applications to the deep urethra and prostatic stripping by rectum — usually with good, if not permanent, results.

Strictures were treated by gradual dilatation — successfully in all of our series but one, which was referred to hospital for operation.

Venereal warts were treated by snipping off and touching up the base with chromic, nitric or acetic acid.

Balanitis was satisfactorily treated by the usual means of surgical cleanliness.

The few cases of senile prostatic disease were treated for the complicating cystitis, one had had a prostatectomy performed; others were advised to submit to operation, but none of those in this series accepted this advice.

RESULTS.

As to the results of treatment, we may preface by saying that these probably represent good average results, certainly no worse than aver-

age for this or other clinics of this class. Certainly in this clinic within the past few years, with graduate assistants replacing undergraduates, there has been a marked improvement in the detail work and apparently in the results. Accordingly, though it was obvious that some patients were attending too irregularly to get much benefit of treatment, yet we were not prepared for so poor a showing as to attendance and finished results. So far as we know or can judge, the attendance, or lack of it, would be much the same for other months of service.

The net data are as follows:

As to syphilis there are no data beyond those of diagnosis and transfer.

Of 29 chaneroids, 11 were discharged cured or practically healed; 10 disappeared improved but not healed; 5 disappeared after only one or two visits; 4 disappeared early, unimproved; 2 were sent to institutions; 2 were doing badly when last seen. Two cases had buboes when first seen and there was one bubo with a healed chaneroid. No buboes developed under treatment.

Of the acute gonorrheas, 20 were cured in four to twelve weeks; 30 quit uncured after some treatment; 80 did not return at all after one or two visits.

Of the chronic anterior gonorrheas, 22 were discharged cured; 11 were uncured at the time of the last entry.

Of the chronic posterior and anterior infections, 7 were cured, 9 were not. Fifteen others came but once or twice.

Of the chronic prostate and vesicle cases (including post-infective infiltrated prostate with vesicles obstructed but not infected), there were 11 in all. All were temporarily relieved, though none were discharged as cured.

Of the strictures one was sent to the hospital for operation, the rest were effectively treated by gradual dilatation.

METHODS.

From these results it is possible to deduce relatively little as to the most useful methods. The series of chaneroids is perhaps best worth study, for a series of 29 cases of soft sores with 25 fairly well followed and without a fresh bubo is not the usual showing, nor was it previously the rule in this clinic under other older methods. We believe that the disinfection with strong carbolic acid for one minute, followed by alcohol, while it does not always cut short the infection, at least helps to disinfect, and certainly has a marked advantage in that it leaves no slough. It is to the fact that no sloughs were left, and that the patients were elaborately cautioned to remove all scabs at each of the frequent home dressings, that we would attribute the good results. It is apparently a fact here, as in general surgery, that a thoroughly drained wound however infected will rarely give serious glandular infection. Certainly this aim in treatment will bear emphasizing in relation to chaneroids and bubo formation.

As regards the treatment of the urethral infections, the moral as to methods is less simple. It is a question if the *totals* here given show anything except rather poor average results. From the study of *individual* cases and records, however, the writers are only confirmed in their conviction gained by observation in private practice, that it is desirable in all save a few very acute cases to give all acute anterior gonorrheas active local treatment with copious and frequent irrigations, combined in favorable cases with the use of protargol or other silver germicide. This seems to be the ideal treatment up to date. Later in the disease astringent irrigations, medication by the endoscope and graduated stretching have their place. Posterior infections seem to do best under not too frequent local treatment, begun only after the stormy stage is past.

On this basis of treatment we get results pretty consistently in proportion to the faithfulness, frequency and skill of the local treatment.

In past years we have all had a relatively large experience in this same clinic with the results of the usual home injections with the old-time clap syringe, using all sorts of injections, including some of the organic silver germicides. As a consequence nearly all of the surgeons have abandoned this scheme of treatment as far as possible. The average results were no better, the number of relatively serious mishaps much larger, and we did not then get the early and excellent results now not infrequent under proper care.

Properly carried out, irrigations in the hands of the physicians are much safer, and the method if persistently followed is capable of curing some early cases in two weeks or less, of greatly diminishing the frequency and severity of posterior urethral involvement and consequent complications, and of greatly promoting the comfort of the patient during treatment even where cure is not prompt. The method has no disadvantages *per se*, except the time and trouble required.

It is satisfactory, however, only when consistently carried out; on an irregular and irresponsible class of patients it does not therefore show greatly better *average* results than may be seen with average treatment — or perhaps with no treatment at all.

We see, however, no reason for dropping desirable methods because patients who do not come fail to get cured, and we are still confident that except for better technique we are not now likely to benefit by any change in routine.

PART II.

THE BROADER QUESTION.

The broader question for which we ask further consideration is that of the conduct of gonorrheal cases in a public clinic — the other classes of cases require no special remark.

With regard to the gonorrheal cases the real question is, not what is the best treatment, but what is the best clinic routine. We believe there is no question that active local treatment is the

ideal method, and feel sure that few of those who have thoroughly worked over the curative (as distinct from the palliative) treatment of gonorrhea will disagree with us.

Such treatment we have attempted to carry out as a clinic routine — what the results are under routine conditions we have seen. Certainly they do not show up very well, and the discrepancy between the results here and in properly handled office practice is obvious. Certainly we can hardly be satisfied with curing only one-quarter to one-third of our cases as we now do. As we have said, it does not seem wise to return to old methods — they were no better even in the general average and with much less possibility of doing good: the newer methods we are carrying out as well and as faithfully as we can. Can we do anything to change the conditions under which we work?

The problem is a rather complex one, for a clinic that treats venereal disease has various responsibilities. The ordinary out-patient clinic provides opportunities for the cure or relief of the patient, for the education of the attending surgeon, for the instruction of the student. All this the venereal clinic must do, and beside this must discharge a duty to the public in combating, so far as may be, the prevalence of venereal disease and that neglect of its treatment which so largely favors its spread. Through education of the practitioner and of the student, and by direct education of the public, this must be accomplished. Let us take up one by one these objects of our work, and it becomes clear that in no respect are we accomplishing what might be desired.

CURE OR RELIEF OF THE PATIENT.

As things stand, a proportion of patients are rapidly and permanently cured without complications. A smaller proportion recover after some weeks as a result of our treatment — so far good; but both these classes in our list together include but 15%. What have we done for the rest? 61% we certainly did not benefit, for they came to the clinic but once or twice anyhow. The other 24% drifted off — somewhat relieved in many cases, but not cured. Undoubtedly many of these cases got well, but it is too large a stretch of optimism for us to consider ourselves responsible if they did. We are very apt, it is to be feared, to consider ourselves very useful and to give ourselves the benefit of every doubt. Would it not be fairer to say frankly that we are curing something under 20% of our gonorrheal patients and that 80% of them receive no substantial benefit from our treatment?

EDUCATION OF PATIENTS AND THE PUBLIC.

This is most important perhaps of all our aims, save that of cure. If a patient has a broken leg it matters little what he thinks about it — he usually believes what we tell him and lets us do what we can. Not so with gonorrhea — the public is too amply misinformed. Every man has heard that it is "no worse than a cold," and

as a rule he knows several liars who "always cure their doses right up without any trouble." If we tell him that the disease is a serious one, and that safe and effective treatment involves much trouble and may take some time, he has no notion of believing us.

Time is likely to modify his personal notion of the seriousness of his case, but he does not change his theory; he simply considers himself "a hard luck case," and blames any treatment he may casually have subjected himself to as the reason for his continued trouble, and tries something else. The old rooted idea that gonorrhea is a troublesome trifle, and serious trouble the rare exception, sticks like a burr.

Beyond this the patient may in a public clinic learn by observation that venereal disease is not always a jesting matter, and he learns that we doctors consider gonorrhea serious, possibly very serious, and not likely to be quickly cured. What he does not learn is that it is curable in most cases under proper conditions, with proper skill and care, in far less than the time usually taken. The difference in results between "santal-midi" and the average of the clinic is not obvious enough to him to outweigh his inertia.

This is not theory but fact, and humiliating as it is to admit, it must be admitted that a very large share of the popularity of our dispensary clinic is due to the fact that "Mixture XVI" is good and cheap and is dispensed only to its patrons. It is certainly a good copaiba mixture, but it has no virtues different from those that other mixtures have, and at best can only shorten an attack, and usually only masks it. But it must certainly not be seriously contended that we are having full success in educating the public so long as it uses us, with our consent, largely as a cheap and handy drug store.

PROTECTION OF THE PATIENT'S FAMILY AND OF THE PUBLIC.

In so far as we cure — definitely cure — our cases, we help in this direction of course. In so far as we simply palliate and diminish a discharge with copaiba or the like, we probably do more harm than good so far as the public protection is concerned. The man who transmits gonorrhea is not the man who has a florid discharge, but he with whom "it comes back when he stops taking the medicine," in short, the man who is fooling around a clinic or drug store. In so far as we make the patient comfortable and tacitly agree that he is doing very well when he is really doing very ill, we encourage indifference on his part, and endanger rather than protect the public.

EDUCATION OF THE PHYSICIAN OR SURGEON ATTENDING.

Such of us as have the privilege of working in a clinic of this sort year after year have an opportunity for learning to treat minor genito-urinary surgery and venereal disease that is of the greatest value. What we learn is pretty directly proportionate to our intelligence and effort. Personally we can complain in no way of the present

status except in so far as we are forced to waste time on irresponsibles.

EDUCATION OF THE PRACTITIONER.

It is obvious that this is very important, both in regard to the indirect education of the patients and in regard to improving the routine treatment. In this community, at least, it is apparently inevitable that gonorrhea should as a rule be treated by the general practitioner rather than the surgeon or specialist. The rôle of the latter is to run a clinic, to treat a few cases, to serve in times of trouble and consultation, and to impart what he may of knowledge acquired by special experience to his fellow practitioner.

It requires no argument to prove that the average practitioner has a somewhat scanty knowledge of the cure of venereal disease, and is over much under the influence of the older palliative methods of treatment or the spell of advertised "ethical" cures. That this may be helped is obvious, but this must be done in large part by example rather than talk. Such example is best given in the practice of public clinics. That the effect of such example is nullified by the ragged and apparently inconsistent results under present conditions is obvious. If we are going to convince others we must have not occasional but consistent good results to show.

EDUCATION OF STUDENTS.

The present system is gravely defective in this respect. The student has been taught in the schools as a rule a somewhat theoretical and inco-ordinate idea of the pathology and treatment of gonorrhea. The textbooks are, with few exceptions, full of the history and natural history of genito-urinary disease, and hopelessly vague and behind the times as to actual treatment.

The student brought in actual contact with cases is naturally and logically impressed with the fact that the cases he sees under treatment are mostly doing rather badly. He must, if normally skeptical, conclude that the statements given as to the better results of better conditions are rather likely to be rose-tinted. So far as can be judged, the average student who has had clinical instruction in genito-urinary work usually learns to do irrigations rather inefficiently, while he not infrequently acquires a profound distrust of their efficiency, or of the use of any local treatment.

Having been a layman before he was a student, he usually knows that the drug-store type of treatment is the one under which most of those infected do well or ill, and against a return to it in his practice he has to balance only an assurance on our part of the better results of a better method which we demonstrate, but the actual results of which he has seldom, if ever, seen.

This running survey will perhaps illustrate our meaning when we say that the present routine fulfils none of its functions to any satisfactory extent, except in so far as it offers opportunity to the surgeon in charge to learn his work.

Self-deception is very easy, and no doubt we all feel that we are doing a vast deal of good to such cases in our clinics, but on closer inspection is it so? It seems to us doubtful to say the least.

It does not seem in our judgment that we can accomplish more by any change from the present general routine; our change must come from a more rational attitude on the part of the patient.

Mere talking (telling patients what we think and believe they should do) is useless.

It may be argued that better work and better results will bring about a better attitude on the part of our clinic. To this may be answered that in the past few years there has been an improvement in the work of this clinic in all respects and an improvement in the results in patients that are attending to the business in hand, but no visible improvement in the general attitude. At best not all results can be good, and now the good results are swamped in the flood of "casuals," with whom we are temporizing.

We are, in short, temporizing and playing with a problem we should confront, with the result that we are not in any direction accomplishing what we should for the energy expended.

Our duty as medical men is to cure disease where we can, and it would be neither humane nor wise to exclude from our help those with venereal disease. However, despite the tales we hear, gonorrhea in males is very rarely acquired, save in the usual way; when the patient has so acquired it, we may be sorry for him, but it is a question if our professional duty must impel us to look to his comfort alone — to let him do as he pleases, when he pleases, and in so doing to jeopardize what power we have to improve the standard of treatment and to combat the prevalence and spread of gonorrheal disease in general.

It seems to us of first importance that we should help the patient in proportion as he will help himself, but that our larger duties should be paramount to our obligation to try to help those who care little or nothing for our help. It is far better that we should help educate the profession and the public and raise the standard of treatment in gonorrheal and venereal disease at large by limiting ourselves to conditions where we can give adequate example and instruction, than that we should confine ourselves to the vague philanthropy of doing what little we can for everybody. If we were to adopt a sort of discipline in a clinic of this sort, consent to treat only such patients as would consent to follow out directions and come back when told to, entirely discontinue the complacent ordering of copaiba mixtures and Royal P. syringes; and refuse to tolerate the man who "meant to come back earlier, but got to drinking last week" and all the other irresponsibles who fall from good but weak intentions, we should be better off.

There would be some apparent, but only apparent, hardship. Patients can always go elsewhere — even now they drift from clinic to clinic; they can always be treated somewhere as we now treat them — on their own terms.

We have rather an excess to-day of all sorts of clinics. There is no danger that the poor will be neglected if they seek aid. As to others than the poor, they do not belong in a clinic. The single man with gonorrhea whose work makes it impossible for him to attend regularly at any clinic should not in most cases be obliged to depend on a clinic for his care.

By limiting our care, then, to those who deserve it, we should inflict little or no hardship. Should we not better discharge our professional duty? Surely we could under such conditions give more and better care to the patients who did attend to business. We could do better work in observation for the benefit of ourselves and others. We should be in better position to influence the work of our brother practitioners in this line of cases, and we should be able to ensure much better work by the practitioners of the future by giving adequate and really demonstrated instruction to the student of to-day.

What has been written here is on our part a deduction from past experience in clinic work as well as from study of the data cited above. So far as possible we have given our reasons, and our conclusion, debatable of course, is here presented for discussion.

We believe that it would be for the best interests of all concerned that a special genito-urinary clinic should treat cases of gonorrhea only under such conditions as are in the surgeon's judgment consistent with proper treatment and good results. This is not to be taken in any way as a criticism of the present use of genito-urinary clinics at large, — the good done in other classes of cases more than justifies them, — it is simply our answer to the question as to the proper treatment of gonorrhea in such clinics — an expression of our conviction that some discipline and regulation is needed in such clinics if we are to make them of proper service.

SOME PRINCIPLES INVOLVED IN THE THERAPEUTIC APPLICATIONS OF RADIOACTIVITY.¹

BY WILLIAM ROLLINS, BOSTON.

IN 1900 experiments were made on animals to determine the value of radioactivity in diagnosis and therapeutics. The results as relating to diagnosis were briefly referred to so far as they were apparent with radium 1,000 in a paper, "The Cathode Stream and X-Light," in the *American Journal of Science* for November, 1900. With the more powerful radium now available the results may be different. No report of its therapeutic uses was made at that time, but radium 1,000 was made into capsules, with non-radiable walls to limit the action to the diseased tissue. These were given to Dr. Williams, and recommended for use in treating lupus and superficial cancers. Later (1901), radium of greater strength was used. As the experiments on animals had shown radium to have a potent effect on

¹ This paper was submitted for publication September, 1903.

tissue, attention was called to its use in therapeutics in the BOSTON MEDICAL AND SURGICAL JOURNAL for Jan. 23, 1902, while waiting for Dr. Williams to report his experience. Now that Mr. Lockwood has formed a company to extract radium from Utah carnalite, radioactive substances are certain to attract more interest in the therapeutics of the future, when ether waves and emanations will receive attention in the medical schools, professorships of ether and radioactive therapeutics being established; therefore it may be well to mention some precautions, after stating a few facts, not easily accessible, about radium which is selected as a type of radioactivity. The Curies, who discovered radium and polonium, found radium gave off ether waves of various lengths—some long enough to affect the eye as light, others longer, or heat waves. In addition to ether waves, the Curies, Strutt, Rutherford and Soddy have found radium sends off particles of various sizes: A-particles, about the mass of hydrogen atoms, which constitute 99% of the radioactivity. These have positive charges. They are easily absorbed by thin layers of matter; cardboard, for example. Their activity is reduced one-half by aluminum 0.005 mm. thick. They are about one hundred times as hard to deviate in a magnetic field as the next form, or B-particles, which are only a thousandth as large, negatively charged and supposed to be the same as the cathode stream particles in an x-light tube. They penetrate further into substances, being reduced in intensity one-half by aluminum 0.5 mm. thick. The third form of activity, or gamma rays, have not yet been certainly deviated by a magnet. They are very penetrating, their intensity being reduced one-half by aluminum 80 mm. thick. Whether they are ether vibrations or flying particles is not certain.

For the present when using radioactive substances in internal therapeutics the substances cannot themselves be employed, on account of their high price. Advantage must be taken of the investigations of physicists like Rutherford and Soddy, who have shown when a radium salt is dissolved in water it gives off "emanations," which can be collected in air in a gas-holder over mercury and used in internal medicine as first recommended by Soddy. When radium is dissolved, 75% of its radioactivity is at once liberated, the 25% remaining consisting of A-particles. When the first rush is over, radium in solution is constantly giving off more emanations, the amount being as great as in the dry state. This is important to remember, for it shows radium in solution can be depended on as a constant source of emanation to be used in therapeutics. Even the emanation itself can be employed to produce fresh radioactivity. If a small volume of air containing the emanation is put into another gas-holder containing air, the whole volume will rapidly become radioactive, the intensity increasing until balanced by the rate of decay through the metal holder. In this connection it may be well to mention that radioactivity is an attribute of many substances, all the common metals, for example,

show it. From mercury Strutt has obtained so radioactive a gas as to make it probable that part of the therapeutic action of this metal is due to radioactivity, and this may be true of other substances now used in therapeutics. Air enclosed in cylinders of common metals like copper, tin and zinc becomes radioactive.

One writer has proposed placing a glass tube of radium in the middle of a cancer. The experiments on animals, which have been mentioned, indicate this would be unwise, for before the peripheral parts of the new growth were affected, the destruction of both healthy and diseased tissue near the radium would have resulted, for the intensity of the action varies roughly as the square of the distance from the radium, therefore the tissues within a millimeter of the radium would receive twenty-five hundred times as powerful a treatment as those five centimeters away, and the continued presence of the radium, which would be necessary to affect the peripheral parts, would prevent the formation of fresh healthy tissue in the interior.

But it is with reference to diseases on or near the surface that the results of the experiments on animals will be considered now, and when radioactive substances are used for this purpose the following precautions are to be observed:

As the radiations and emanations of the radioactive substances spread in all directions, and some of them have destructive powers on animal tissues, the radioactive substances must be used in tubes, cases, plasters, etc., with non-radiable walls, that the activity may escape only in the required direction and be reinforced by the induced radioactivity from the inner surface of the container. This precaution is necessary to prevent injury to the physician and healthy tissues of the patient. Particular attention must be given as with x-light to the protection of the eyes, as animals can be made blind by radioactive substances as well as by x-light.

In using the radioactive substances in disease of or near the skin, the depth of the diseased tissue to be affected must determine the distance at which the radioactive substance is placed from the surface of the patient, for the reason mentioned,—activity diminishes approximately as the square of the distance, though really more rapidly on account of the complex nature of the activity.

If the radium is placed ten centimeters from the skin, the intensity at a depth of one centimeter is nearly as great as at the surface for the more penetrating forms of activity. In many cases, therefore, the sound tissues below the diseased will be acted upon by a destructive agent whose activity would be nearly as great as at the place of disease. The correct way in treating a skin disease with a radioactive substance is to consider to what depth it is desirable to confine as far as possible the activity. If to a slight depth, the radioactive substance should be almost in contact with the skin, the duration of the application being of proper length but always shorter than when at a greater distance. In this case healthy tissue at a depth of one centimeter

would be acted on by radiations and emanations whose intensity would be less than one-hundredth of those striking the skin; obviously a more scientific method.

In regard to the construction of containers for limiting the radiation to the area to be treated, the plan of wooden cases, either stationary or held in the hand and made non-radiable by paint, composed of an oxide of a heavy metal like lead, which were recommended in using x-light, may be employed, metals being substituted for wood, as the fact of their being conductors of electricity is unimportant. Any heavy metal, lead, for example, is suitable. When radioactive substances are used in the form of plasters which require to be flexible to allow them to be adapted to the patient, the back of the plaster should be of material which is made fluorescent by the radioactive material, for in this way the unused radiations are rendered less destructive. The substance of the plaster is to be made like a condenser, of alternate sheets of lead or tinfoil and oiled cloth or paper, and charged from some convenient source of electricity, for such a construction is more non-radiable to the A and B-emanations than an equal thickness of metal in solid form. This condenser construction is applicable to the walls of the tubes or cases to be held in the hand, and containing the radioactive substances, when it is desirable to have the source of activity at a greater distance from the skin,—as it will be to a greater extent than at present when the price of radium is reduced sufficiently to allow it to be employed in a sufficiently concentrated form to use in treating internal diseases by allowing the activity to enter through the skin.

When this is the case, the precautions as to distance should be observed which have already been given for the use of x-light under the same circumstances.¹

Professor Barker of Philadelphia suggested several years ago that the radioactive substances might take the place of x-light in surgical diagnosis. It was on the strength of his statement the experiments mentioned were made with radium 1,000; though with this the results were unsatisfactory, it would be well to repeat the experiments with pure radium bromide, which can now be purchased by any rich person.

Medical Progress.

PROGRESS IN ORTHOPEDIC SURGERY.

BY ROBERT SOUTTER, M.D., BOSTON.

(Concluded from No. 19, p. 518.)

ARTHRITIS is the rule if there is bone disease near a joint. This is the reason arthritis is so common in children, where the epiphysis is apt to be diseased. Osteomyelitis is in the diaphysis, away from the synovial contact. Points where ostitis

are most frequent, arthritis is rare and late in coming on.

By arthritis is meant suppurating arthritis, not serous or plastic, due to neighboring inflammation. Osteomyelitis may spread rapidly, and attention will be on the joint rather than the bone.

Then there is a very detailed account of growth of bone, and particular emphasis is placed on the Y-shape of the cotyloid, at the junction of the three pelvic bones. Invasion of the hip joint comes from the head, not the trochanter of the femur. Of course infection may come from the femur neck or trochanter, but these are rarer and slower than from bones of the joint. Herein is Koenig right in his true coxitis and his osteomyelitis.

Whether the Y-cartilage of the glenoid, the cartilage of the head or the joint becomes involved, the clinical aspect and treatment are regardless of the origin; therefore the clinical aspect and treatment warrant simultaneous consideration.

There may be bone disease of ilium or of the neck and trochanter, but where the head or the glenoid cavity bones are affected the joint will be involved as a rule. Dislocation is favored by the disease of the round ligament and capsule. Perforations are commonest at the junction of the pubo-femoral and ischio-femoral portion of the capsule, also under the psoas tendon. This is rare, but is more common in adults than in children. Generally perforation is behind. Dislocation is rare without bone lesion.

Pseudo-luxation may occur, due to:

- (1) Disease of ligamentum teres and the glenoid cavity being filled with granulations.
- (2) From division of the head and neck.
- (3) Due to erosion of the head, which is then smaller.

Broca believes the outcome of mild and severe non-tubercular coxitis depends on early diagnosis and vigorous treatment. Disease of the femoral epiphysis or acetabular disease is nearly always complicated with purulent arthritis. Pericardial drainage will often be sufficient. Unless there is serious disease in the capsule at the time of operation, resection need not be done. Mortality is 50%. Good results by drainage of the joint without resection. Excision is performed in very severe cases only.

H. L. Taylor³ reports on 40,027 cases; 13,000 cases of tuberculosis, two-fifths being of the hip. Primary lesion being nearly always in the cancellous tissue near an epiphysis. Primary synovial tuberculosis is very rare. Insidiousness is characteristic of tuberculosis. Early symptoms are: limitation of motion, limp, anxious expression.

Suppurating arthritis of infancy is acute infectious. Aseptic evacuation is followed by recovery; it seldom becomes chronic. Taylor notes the antagonism of rickets and tuberculosis and of rheumatism and tuberculosis; also one case of gout and tuberculosis.

¹ Boston Med. and Surg. Journ., April 24, 1902; Electrical Review, July 25, 1903, Note 166; Electrical Review, Aug. 15, 1903, Note 167.

³ American Medicine, 1902.

Shortening is due to:

- (1) Lack of growth of the affected leg.
- (2) To restraint of the affected leg.
- (3) Overgrowth of the well leg.

Pomniceano and Bolintineano⁴ of Bucharest report a cinematograph study of walk in hip disease. The report confirms what we are used to seeing: patient drags affected leg, does not lift till it passes the vertical; the step is longer with that leg, that is, he rests a shorter time on it; patient leans forward and toward well side; the upper extremities are flexed and used in balancing.

Lance⁵ has several interesting articles on disease of the bones about the joint. Tuberculosis of the pelvic bones without coxalgia occurred but 38 times in 1,000 cases observed in nine years. Early cases of abscess with little or no limp, the coxitis must have been secondary to disease of bones about the joint. This he confirmed by x-ray very often.

John Dane of Boston⁶ studied the amount of motion allowed by hip splints and points to the value of grasping the pelvis in obtaining good fixation rather than the thorax which by leverage increases jar on hip, unless the leg, thigh, pelvis and thorax are immobilized by a plaster or leather spica. The amount of motion allowed by each splint as measured by him will be given later.

Special cases have been reported:

La Gin Chagua⁷ reports 16 cases of spontaneous dislocation of the hip in coxitis. Jouon, a rare form, a forward dislocation in coxalgia; the only one he has found in literature. Begoin, rapid development of tubercular disease with dislocation on pubes.

Treatment. — Lubloff⁸ immobilizes in hip disease, using for position that which would be most favorable in case ankylosis should occur. He does not favor osteotomy where ankylosis is not complete, nor does he favor excision. For fixation he prefers Billroth's spica, including both hips and thighs from the ribs to the knees and the weight of body supported on tuberosities of ischium. Abscess is treated by iodo-glycerine injections.

Senn believes that where with good treatment the general health fails excision and clearing out of all diseased tissue of the acetabulum, with removal of the trochanter, is indicated. After thorough cleaning out of all tissues wound is packed with iodoform gauze. Tampon is removed and replaced as may be necessary, the whole heals almost by first intention. By removing all foci rigorous disinfection, an early change in dressing is not necessary, that is, iodoform gauze should remain one to two weeks.

Lane⁹ of London makes an incision from anterior-superior spine transversely over trochanter to posterior-superior spine, including all

museles, divides glutei tensor vaginae femoris. He says there is little bleeding (if one is quick). In this way the posterior-superior and anterior parts of the joint are exposed. The tissue and the joint are cleaned out thoroughly and filled with sulphur gauze; in 48° under an anesthetic he cleans away any slough. This is repeated in 48°, again in 48° S. O. S. When clean he puts in cyanide gauze, repeats, and when all is clean and dry the muscles and ligaments are sutured and limb put in best possible position.

Downs operates early in hip disease, especially when there is abscess —

- (1) To evacuate pus.
- (2) To ascertain extent of disease.
- (3) To drain.
- (4) To see if excision is necessary.

Excision is indicated if head and neck are extensively diseased and when epiphyseal line is involved, even if head and neck are normal. Excision of head and neck is wrong without removing the great trochanter.

Excision is indicated earlier in weak children, and always where rise of temperature shows mixed infection and when caries and necrosis are present. He uses a rapid method: a small opening is made in the capsule and the pus evacuated; then the Deyon instrument is put in; and in fifteen minutes for the whole operation, or ten minutes for actual, he is able to clean out the whole disease.

E. H. Bradford¹⁰ reports successful dislocation of hip, with drainage of joint for acetabular disease used as an extreme measure. In another extreme case with persistent night cries, other means being exhausted, the hip was flexed and adducted and held this way by plaster of Paris. This put the adductor muscles out of commission and was successful in relieving the case.

Archambaud¹¹ treats hip disease mechanically without immobilization; report of 71 cases only one death. He corrects deformed position and uses Hessing's apparatus with an axillary crutch, bodily massage, etc.

Vulpus¹² thinks that in tubercular coxitis early excision is indicated where there is profuse suppuration, necrosis and high fever. He uses immobilization with plaster of Paris.

Lovett¹³ in a report on the value of traction alone or fixation alone finds that traction is the more valuable. Both are often necessary in order to limit the amount of motion well inside what nature allows. It is logical to use a splint suited to each case:

The ordinary

(1) Hip splint with three and one-half pounds of traction and one peroneal strap allows 35 to 40° of motion in flexion.

(2) With almost unbearable traction 15° of motion.

(3) Dr. Dane shows that with three and one-half pounds and two perineal bands, 16 to 27°.

⁴ Zeit von Orth., 1902.

⁵ Rev. Orthop., Paris, 1902.

⁶ Trans. Amer. Orthop. Ass., 1902.

⁷ Paris, J. Roussae, 1901, 80.

⁸ Archiv. f. clin. Chir., lxiii, 67.

⁹ Med. Press and Circ., Lond., lxxi, 341.

¹⁰ Trans. Amer. Orthop. Ass., 1902.

¹¹ Rev. Orthop., Paris, 1902.

¹² Zeit. Orthop., ix, 4.

¹³ Trans. Amer. Orthop. Ass., 1902.

(4) The Dane splint with one band, 9 to 11° motion.

(5) With two bands, 6° motion.

(6) The Lovett¹⁴ splint allows even less. It is for this reason particularly adaptable to cases with 20 to 30° of motion in flexion and less. Severe cases will often not have to be kept in bed.

R. W. Lovett¹⁴ advises the ordinary splint for cases with 45° or more of motion; the Dane splint for cases with 25 to 35; the Lovett splint for cases with 20 to 30° or less.

Hoffa¹⁵ reports 30 cases of subtrochanteric osteotomy with much improved walk and with markedly less fatigue in walking.

Young¹⁶ says operations in hip disease can be avoided by early vigorous treatment, as shown by cases in private practice. Deformity requires correction. Cases may require aspiration or incision for abscess; erosion, excision or amputation. Indications and methods are given.

There is a report by Dr. Walker¹⁷ on the use of creosote as an anti-tubercular treatment. The urine was negative; even with very large doses the patients seemed more comfortable, had fewer night cries; but little effect on the disease and often bad temporary gastric disturbance is noted.

Jouon¹⁷ reports a case of dislocation in tubercular coxitis reduced successfully eighteen months later.

Myers suggests the use of pneumatic perineal straps.

Leroux¹⁸ reports great success in the marine treatment of tubercular bone and joint disease.

Reports of Societies.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

SECOND SEMI-ANNUAL MEETING, HELD IN NEW YORK CITY, OCTOBER 13 AND 14, 1903.

(Concluded from No. 19, p. 524.)

(SECOND DAY — *Concluded.*)

TECHNIQUE OF OPERATIONS ON THE TONGUE.

DR. R. H. M. DAWBARN of New York read this paper. He advocated the operation of removal below the jaw, and particularly the ligation of the external carotid, before attacking the submaxillary triangle. Experience had shown that this procedure was not likely, as had been supposed, to lead to secondary hemorrhage. The author also strongly advised that the patient be so placed as to prevent the entrance of fluids into the air passages, and that after the operation no pillow should be allowed under the head. A better procedure than packing the mouth was the rubbing of aristol into all raw surfaces.

¹⁴ Trans. Am. Orthop. Ass., 1902.

¹⁵ Zeit. Orthop., 1902.

¹⁶ Am. Orthop. Ass., 1901.

¹⁷ Archiv. Ped., N. Y., xviii, 525.

¹⁸ Rev. d. Orthop., Paris, 1902.

¹⁸ Rev. Orthop. Paris, 1902.

DR. A. T. BRISTOW of Brooklyn disagreed with the author regarding making the ligation of the external carotid the first step of the operation. He liked to spend a week in such preparatory treatment as removing carious teeth and having the other teeth frequently scrubbed with an antiseptic solution.

DR. A. A. VAN DER VEER did not favor the postural treatment, and expressed the belief that the patient should not be kept in bed longer than was really necessary.

DR. W. G. MACDONALD of Albany also disapproved of the postural treatment, and said that he ordinarily expected to see his patient up the day after operation.

DR. A. ERNEST GALLANT of New York spoke of the influence of unskilled etherization in the production of post-operative pneumonia.

POTABLE WATERS.

DR. E. S. WILLARD of Watertown was the author of this paper. He said that a bacteriological examination was of more service than a chemical one in determining the potability of water. The quality of cistern water depended largely upon the material of which the cistern was constructed. If of metallic construction, these parts should be coated with asphalt and paint. There was no objection to cement except that it made the water a little harder. The two principal systems of water purification were the English system of slow sand filtration and the American system of rapid mechanical filtration. The latter method included the use of some coagulant, such as alum, by which the suspended matter was deposited.

DR. F. C. CURTIS of Albany commented upon the laxity of the municipalities in this country as compared with those of Europe. Taking the mortality rate as a measure of the purity of the water supply, he said that the rate in New York city was 20 to 25, whereas in London and some large European cities it was only 10 or 15. Previous to the installation of the filtration plant in Albany in 1899, the rate in that city had ranged from 50 to 120, but had since been 15 or less.

CONSERVATION IN PELVIC INFECTION.

DR. JOHN O. POLAK of Brooklyn argued from the results obtained in 79 cases of acute infection in favor of a modification of Pryor's iodine treatment.

DOSAGE: A PLEA FOR PROPER MEDICATION. FIRST PAPER — DIGITALIS.

DR. A. JACOBI of New York presented a paper with this title. He pointed out that although digitalis leaves after having been kept for a year in a tight tin box appeared unaltered, even on microscopical examination, physiological experiments showed that this drug had lost more than 50% of its potency. When a prompt and decisive action from digitalis was required, neither powdered digitalis nor the infusion should be prescribed. Digitalin, being a glucoside, was a very uncertain preparation, so much so, indeed,

that oftentimes a quantity equal to ten times the theoretical dose would be found inert. In chronic diseases of the valves and muscle of the heart, digitalis might be given with benefit to adults for months at a time in a daily dose of four to six grains.

THE DISPENSARY TREATMENT OF TUBERCULOSIS.

DR. J. W. BRANNAN of New York described in this paper a method of treating tuberculosis which was about to be used in the city dispensaries. The plan was to utilize the dispensary for examining these patients and instructing them; to send a nurse to the patients' homes to see that the instructions were enforced and to see that the patients received proper food.

DR. JAMES A. MILLER of New York, who had already gained experience in this kind of work at another dispensary, stated that the patients were provided with paper sputum pouches, each pouch costing one cent, and being used for twelve hours or less. The patients were weighed and inspected once a week, and once a month were subjected to a thorough physical examination. Out of 160 dispensary patients so treated during the past six months, 49 were now in active occupations.

THE CAUSES AND PREVENTION OF INFANT MORTALITY IN NURSERIES AND ASYLUMS.

DR. E. H. BARTLEY of Brooklyn was the author of this paper. Among the more important causes of morbidity mentioned were inherited weakness, starvation, neglect, overcrowding, improper diet and infectious diseases. In the management of diarrheal diseases it was important to isolate the patient, disinfect the napkins and exclude or destroy flies.

A MODIFIED ALLIS ETHER INHALER.

DR. A. F. ERDMANN of Brooklyn exhibited this modification, intended to overcome certain difficulties met with in adding ether to the inhaler while the patient was in the Sims' position. The modification consists in cutting transversely through the side of the rubber sheath a slot about one-quarter of an inch wide and three or four inches long, and in using a metal or rubber cap on the ether inhaler as required.

SYMPOSIUM ON TYPHOID FEVER: A LOGICAL DEFINITION OF TYPHOID FEVER.

DR. H. A. FAIRBAIRN of Brooklyn in this paper discussed the general nature of this disease, insisting that its clinical manifestations varied so with the particular organ or organs in which the infection was focused that errors must needs arise if one considered only its clinical aspect.

ANOMALIES AND DIFFICULTIES OF DIAGNOSIS IN TYPHOID FEVER.

DR. HENRY L. ELSNER of Syracuse presented this paper. He said that the prodromal period varied greatly, both as to length and severity.

Thus it might extend over several weeks, and be practically afebrile; again, it might only last three or four days and be attended by urgent symptoms. These severe cases usually terminated in death in about two weeks. Some studies that he had made of the blood pressure showed that typhoid fever was characterized by a low arterial pressure, being 130 to 140 mm. in adults, and correspondingly low in children during the first week. The pressure was rarely high except in the presence of complications. A tremulous condition of the tongue with fibrillary twitching he had learned to look upon as quite characteristic of the early days of typhoid. In a series of 110 cases he had found diarrhea present in only 84, while many had been constipated. In only 8 of the cases was no eruption found, although in some instances only a few spots were detected, and these in unusual locations. An early and positive diagnosis of typhoid in infants was rarely made; nevertheless, continued fever in a child without localized disease and with enlargement of the spleen should lead to a suspicion of typhoid. The presence of leucocytosis would argue against typhoid. Sepsis and endocardial infection must not be forgotten. The most that Ehrlich's diazo reaction could do was to excite one's suspicion that typhoid was present; it was not to be compared to the Widal reaction for exactitude.

THE MANAGEMENT AND TREATMENT OF TYPHOID FEVER.

DR. EGBERT LEFEVRE of New York took up this phase of the subject. Referring to milk diet, he pointed out that, in the process of digesting milk, the latter was coagulated in the stomach into masses of variable size and hardness and that the stomach of the typhoid patient found difficulty in thoroughly disintegrating these coagula. Under an exclusive milk diet the stools were larger and contained more undigested food than when a mixed or semi-liquid diet were employed representing the same quantity of proteids, carbohydrates and fats. Another point that should not be forgotten was that whereas in other diseases in which an exclusive milk diet was considered advisable, the patient was gradually accustomed to the digestion of milk, in typhoid fever the physician usually felt called upon to pour large quantities of milk into his patient's stomach so soon as he had made the diagnosis of typhoid. For these reasons Dr. LeFevre said he believed in varying the diet somewhat, though making it an invariable rule to give no food to a typhoid patient that could not be passed through a fine wire sieve. Water, either plain or acidulated, with hydrochloric acid or lemon or orange juice, was very acceptable to the patient, and the diet might well be varied by giving coffee, cocoa, tea, kumys and junket. Sometimes it was well to grate up stale bread and pass this through a fine sieve. Such a dietary he had found produced less tympanites than an exclusive milk diet. The addition of egg to milk made the latter more difficult of digestion, but

when the afebrile stage had been reached, the yolk of an egg could be stirred into bouillon or soup. A cold jelly bouillon was taken with a relish by many of these patients. When there was intestinal hemorrhage, it could be satisfactorily controlled by dissolving half an ounce or an ounce of commercial gelatin in a pint of water, and giving the patient from 2 to 4 oz. of this mixture at short intervals. It was very important to clear out the bowel daily by means of an enema, and where purgatives by the mouth seemed to be indicated he preferred phosphate of sodium, sulphate of magnesium, or, best of all, small doses of castor oil. When stupor, delirium, respiratory and gastrointestinal disturbances showed the need for an intestinal antiseptic, such remedies might be prescribed, but their administration should not be governed by the degree of fever. The routine use of a bath whenever the body temperature reached 102 or 103° F. was now rapidly falling into disuse, and more than three or four baths a day were rarely needed. The speaker advocated the use of acetanilid or phenacetin in small doses, because when so given they quieted the nervous system and improved the patient's general condition without depressing the heart. If quinine were given, it should be in an initial dose of 15 gr., and followed by 5-gr. doses every six hours. He thought it was a mistake to give strychnine in large doses as a routine measure; it should only be given when the heart flagged and in doses to meet the indications. In this disease he believed alcohol was both a stimulant and a food.

THE ITHACA EPIDEMIC.

DR. L. COVILLE of Ithaca read a paper with this title, which he illustrated with lantern views. He said that there had been 1,300 cases of typhoid in the first six months, and about 80 additional ones during the past summer. The latter had been traced to the infection of a broken well by a walking case of typhoid. It was worthy of note that for nearly two years the citizens of Ithaca had received warnings of the pollution of their drinking water, and there had even been a few cases of milk typhoid every autumn for several years. Last December the type of the disease suddenly changed; the disease became more virulent, and the cases no longer failed to give a positive Widal reaction. Constipation had been the rule during the epidemic, and most of the patients presented a peculiar dull red throat, such as is commonly seen in gouty subjects. There were 79 deaths. Of the 300 cases seen by Dr. Coville, 150 agglutination tests were made, and in most instances a positive Widal reaction was obtained between the third and tenth day of the disease. Among the remarkable features of this epidemic were: the great variations in the course of the disease, the comparative freedom from relapses and the absence of milk infection. It was also interesting to note that no plumbers working in infected houses and no employees working in the sewers or at the city pumping station developed typhoid.

THE LESSONS OF THE ITHACA EPIDEMIC.

DR. GEORGE A. SOPER of the State Department of Health spoke on this theme. He said that not only was Six-Mile Creek infected, but there were probably one hundred sources of this infection. It was strange that although the citizens of Ithaca, the local board of health and even Cornell University knew of the danger which menaced the health of the city, nothing was done to avert the calamity. Nothing was done for a long time after the epidemic started to check the progress of the disease. The local board of health seemed powerless, there was no system of reporting infectious diseases, so that new cases could not be ferreted out, and several thousand of the people continued to drink the city water. So far, \$25,000 had been expended in the effort to suppress the disease. About \$10,000 of this sum had been spent in laboratory work and in the compilation of statistics. The State Board of Health had had the water from nearly every well in the city analyzed, and about 30% of these were either poor or positively dangerous.

THE EPIDEMIOLOGY OF TYPHOID FEVER.

DR. CYRUS W. FIELD, 2d, of New York read this paper. He said that typhoid fever was disseminated chiefly in three ways: (1) By personal contamination; (2) by pollution of the water supply, and indirectly, of the milk supply; and (3) by means of household insects. It had been proved that the typhoid bacilli could live in ice for five months and that soiled clothing might prove a source of infection for two or three months. Not infrequently the urine as a source of infection was overlooked, and it was very common to see hospital internes handle typhoid urine as carelessly as ordinary urine when making urinary examinations.

DR. J. L. HEFFRON of Syracuse opened the general discussion on typhoid fever. He said that it was rather remarkable that although typhoid had been first differentiated from typhus by an American physician, and although many important additions to our knowledge of typhoid had been made by Americans, the people of this country should allow Europeans to surpass them in the attention given to the protection of the water supply from infection by this disease. Practically every one of our public water supplies were to-day so infected, and it was not uncommon for one community to allow its sewage to pass on and infect another water supply. It was high time that physicians should move in this matter, and see to it that each city water supply was protected by the installment of a competent purification plant. With regard to diet in typhoid fever, he desired to commend to the thoughtful attention of the profession generally the admirable paper just presented by Dr. LeFevre, particularly his discussion of the exclusive milk diet in typhoid. As to so-called intestinal antiseptics, he desired to say that for the past two years he had been using acetozone, and while it was not very agreeable to take, it cer-

tainly was the most efficient remedy of this class that he had ever tried.

DR. A. JACOBI said that as the typhoid bacilli not infrequently were present in the urine long after they had disappeared from the feces, it behooved the careful medical practitioner to look well after this too commonly neglected source of infection. He desired to take issue with Dr. LeFevre concerning the use of acetanilid, whether in small or large doses. The action of this drug was to convert hemoglobin into methemoglobin; in other words, it does just what chlorate of potassium does when it produces poisoning. Acetanilid was an anilin poison, and the most dangerous remedy of this group. It very commonly gave rise to cyanosis, showing its profound effect on the blood.

DR. LEFEVRE replied that he had never seen any bad results from the use of 2 or 3 gr. of acetanilid in febrile conditions, except in persons presenting an idiosyncrasy. Moreover, he had at one time made examinations of the blood of a number of persons taking acetanilid, and had been unable to substantiate the assertion that acetanilid destroys the hemoglobin.

THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

SEVENTEENTH ANNUAL MEETING, HELD MAY 12-14, 1903, WASHINGTON, D. C.

(Concluded from No. 19, p. 521.)

(THIRD DAY—*Concluded.*)

REMARKS ON SURGICAL TREATMENT OF CHRONIC BRIGHT'S DISEASE BY RENAL DECAPSULATION.

NEPHRITIS in both kidneys might often be found existing in connection with movable kidney on one side. In this case nephrolexy might improve the patient's condition by arresting the process, although it might not cure the disease where pathological changes had taken place to the same degree that a patient was cured of typhoid fever, pneumonia or some other disease of this nature where resolution had taken place. Pousson believed that there was a sympathy between kidneys as between eyes, and an operation on one would frequently relieve the condition existing in the other. This idea was applicable to cases of nephritis that had come under his observation, in which he found by urethral catheterization all the evidences of nephritis of both kidneys, and yet some time after nephroplexy of one organ the common urine coming from both organs showed no evidence of Bright's disease, although the percentage of urea did not come up to the normal in the twenty-four-hour specimen. In chronic nephritis tension was relieved by splitting the capsule. He did not believe that it was necessary to entirely decapsulate the organ in order to afford relief. Those who had split the capsule of the kidney over its convexity would remember the gap which developed at this point when this covering had been holding the organ tightly and this gland

had been congested. M. Mongour was of the opinion that diminishing the renal venous tension would increase the arterial tension and thus favor the flow of urine. Splitting the capsule, and to a certain degree decapsulation, would also by diminishing the blood tension take the strain off the heart by necessitating a diminished flow on its part. It was still a question with the author whether it was better to partially decapsulate the kidneys and to make them fast to the abdominal wall, or fully to decapsulate and return them to the fatty capsule. From the firm adhesions which he had seen between the kidney and the posterior abdominal wall, and the scant vascularity he had observed in the fatty capsule, he felt that the former method might later be the one of choice. Again, it was not well known just how much of the blood supply could be obtained from the fatty capsule, and he had not noticed reports of the estimate of the amount of additional circulation derived in this way from autopsy records. Experiments on dogs, according to Dr. Johnson of San Francisco, tended to show that the blood supply obtained from the fatty capsule was very meager. Dr. Johnson said that the renal capsule consisted of two layers, the outer of which is thicker. In decapsulation the outer always came away leaving the inner lacerated, but adherent. After decapsulation a thin exudate appears on the surface, which with the remains of the inner layer of the old capsule became a fibrous investment resembling microscopically the normal capsule of the gland, in that it stripped readily and became more and more fibrous. In some cases it was thicker and in some cases thinner than the original. Generally it was thicker after two months, according to Albarren and Bernard. Up to three and one-half months it was simply a fibrous mass, when it could be differentiated into two layers. In no case was there a considerable anastomosis between the renal and perineal blood channels. Even if the relation of a dog's kidney to the surrounding tissues was not the same as those in man, it was still probable that the reconstruction of the capsule was the same, and this reconstruction in three and a half months would probably indicate the renewal of tension in the kidney, and consequently the recurrence of the symptoms. It might also account for the many deaths that occurred after this period. It seemed to him that as long as the patient with chronic Bright's disease was comfortable and ridding himself of sufficient solids, we should treat him in a conservative way by means of diet, waters and medicines. But if the process was advancing rapidly, and there was fear of the heart becoming overtaxed, the time had arrived for operative interference. In cases of interstitial nephritis operated upon, the albumen and casts might disappear, but the amount of solids given out in the urine might still remain the same. In almost all cases reported there had been some uremic symptoms and varying degrees of edema, while in a number of cases there had been general

anasarca. In the first group of patients, those having some uremic symptoms of chronic edema, an operation could be resorted to in case medical treatment was of no avail. In cases of anasarca, especially if the heart was very bad, it was a question whether one should operate or not. Some have said that this was the time that operation was imperative, but the histories give a mortality of 50% in these cases, 25% were unimproved and finally died, and but 25% were cured or improved. He had never had the courage to operate in these cases. After all operations the patient must be kept quiet for some time and treated medically. In chronic nephritis, when the patient was passing little or no urine, operation was imperative. Drs. Marx and Whitacre had operated in such cases with marked success. On the other hand, Rockey operated upon a case for suppression, and lost the patient in twenty-four hours. Freeman operated upon a patient who was passing a fair amount of urine and in good condition, and the patient died in eighteen hours of suppression. In order to understand these cases better the separate urine from each kidney should be obtained by urethral catheterization and examined. It must be remembered that operation for chronic nephritis by decapsulation was as yet a new procedure and might require many modifications. We could remember when hysterectomy, prostatectomy, intestinal anastomosis and even hernia were considered difficult and dangerous operations. Therefore we might hope that sometime these hopeless cases might be cured radically and without danger by the surgeon's knife.

DR. GEORGE M. EDEBOHLS of New York said that he had not yet reached any definite conclusions regarding the value of this operation, and certainly not as definite as those reached by Dr. Guiteras. It would be from two to five years before it would be known exactly just what the operation or its modification would do for these patients suffering from Bright's disease. He said he would not go into the subject fully, because his views had already been published in the *New York Medical Record* March 28, 1903. Out of 59 patients operated on 11 could safely be considered in the ranks of permanent cures. Before a patient should be placed upon the list of cures he said he should be free from albumen and casts for a period of six months at least, and continuously. The improvement that had followed this operation had been so uniform that it offered encouragement to continue the work. As one absolute result he mentioned the increased excretion of urea; where the output before operation may be below one hundred grains per day, it would be increased to five hundred grains per day within four or five weeks. In his published articles he had tried to subdue his enthusiasm, but his results had been better than pictured; every patient had been relieved of their headaches, backaches, the circulation had been improved, the heart's action improved, and some patients seemed to pass from an apparently hopeless condition to one of comfort. The

operation itself he considered to be a very simple one. If Bright's disease affected a movable kidney he would not anchor that kidney unless it presented symptoms that were due to that condition; if such symptoms did exist he then anchored it. When such kidneys are returned to their fatty beds, often they become more or less fixed, due to the infiltration about them. Two weeks ago he was able to examine the kidneys removed from a patient on whom he had performed this operation four months prior. This death was independent of any kidney operation. Serial sections were made and enormously dilated and enlarged blood vessels were shown, which penetrated from the fatty capsule through the capsule proper into the kidney substance. The capsule proper was shown to be reproduced. Further findings in this examination will be published later.

DR. EUGENE FULLER of New York reported two cases he had operated upon; in one there was a marked amelioration of the symptoms; in the other no report could be made because the patient passed from his view.

DR. ARTHUR T. CABOT of Boston reported favorably regarding the operation. He thought we should discriminate more in regard to the selection of cases for operation.

SUB-PARIETAL INJURIES OF THE KIDNEY.

DR. FRANCIS S. WATSON of Boston read this paper. He said that a personal experience of five cases of sub-parietal injury to the kidney had recently led him to make a thorough study of the subject, in the course of which he had collected, formulated and analyzed clinical data of 660 cases, which included all previously published cases of importance. This investigation brought to his notice a number of points which had hitherto received little or no attention. (This paper was published in full *JOURNAL*, July 9 and 16, 1903.)

DR. EUGENE FULLER of New York reported an interesting case. A butcher's helper had one quarter of a beef fall on his shoulders, from which he experienced considerable pain on one side and increased frequency in micturition, and blood in the urine shortly after the injury. He had been around to different places, and cystoscopic examinations revealed nothing. Dr. Fuller cut down upon a tumified mass and found an immense cold abscess holding over a pint of thick pus. The walls of the abscess cavity were three-quarters of an inch in thickness and very dense and fibrous. No kidney could be found. He thought that, at the time of the injury, a rupture of the kidney occurred with extraperitoneal clots of blood, which gradually broke down into pus; the back pressure probably destroyed the kidney.

OBSERVATIONS ON THE EFFECT OF CATHETER DRAINAGE ON THE FUNCTION OF THE KIDNEYS IN INTERSTITIAL NEPHRITIS AND PYELONEPHRITIS.

DR. ARTHUR TRACY CABOT of Boston read this paper. He termed his paper a study in patho-

logical physiology. He urged operating surgeons to observe more closely the behavior of organs under the varying conditions which they themselves imposed. By such observations many important contributions to pathological physiology have been made, and doubtless many others were under our eyes waiting to be noted. (For the full paper, see JOURNAL, Nov. 19, 1903.)

OFFICERS ELECTED.

For President, Dr. EDWIN C. BURNETT of St. Louis, Mo.; for First Vice-President, Dr. F. TILDEN BROWN of New York; for Secretary, Dr. JOHN VAN DER POEL of New York. Next place of meeting, St. Louis, Mo.

Recent Literature.

A Narrative of Medicine in America. By JAMES GREGORY MUMFORD, M.D., Assistant Visiting Surgeon to the Massachusetts General Hospital and Instructor in Surgery in the Harvard Medical School. pp. 508. Philadelphia and London: J. B. Lippincott Co. 1903.

Dr. Mumford has undertaken a difficult task, and has accomplished it admirably. The book is interesting from cover to cover, and if it had nothing more to commend it, this is saying much when we consider the usually uneventful lives of the persons it portrays. As its title indicates, the book does not pretend to be a systematic history of medicine, but rather a narrative of conspicuous men and events during the earlier periods of medical history in America. The narrative, for sufficiently obvious reasons, stops at about the middle of the last century, omitting, therefore, the era of greatest progress. Beginning, then, with colonial medicine in the seventeenth and eighteenth centuries, Dr. Mumford gives us an excellent sketch of the prominent men of this early time and, more important than this, a picture of the general crude character of medical theory and practice, and of the popular attitude toward medicine as a profession. As the author frequently points out, it is somewhat pathetic to see how completely the names of the men who were leaders in their day have passed out of mind, and how little impress the individual made upon medical progress. In Dr. Mumford's opinion Boylston is the only American physician deserving a permanent place among the masters up to the middle of the eighteenth century.

The more conspicuous work of Rush, Smith, Warren, Shippen, Bard, Jones, Morgan and many others, with the stirring events of the Revolution, are graphically described. One also gets from this part of the book an excellent idea of the first attempts at systematic medical education in Philadelphia, New York and Boston. The early part of the nineteenth century receives detailed description. Particularly interesting is the account of the gradual development of surgical practice, with the innumerable difficulties which beset it before the discovery of ether. Among

the physicians of this period, Chapman, Francis, Gibson, Jackson, Drake, are some of the notable men to whom critical attention is drawn.

A chapter each is devoted to the discovery of ether, the founding of the American Medical Association and some tendencies in modern medicine. The circumstances attending and following the introduction of ether are told in a spirit of fairness, which cannot fail to commend this chapter to students of this curiously involved controversy. We also cordially commend to our readers the history of the foundation of the American Medical Association, a subject about which many of us are too ignorant. The final chapter of the book on "Some Tendencies in Modern Medicine" is a fitting ending to this altogether satisfactory volume. Naturally enough, the question of specialism is discussed, based on a statistical inquiry, which is suggestive, if not conclusive. Here again the author stands in the attitude of a disinterested spectator, and views the facts as they are. We may well ponder what he says of doctors new and old.

For such a book we have no word of adverse criticism. As we said at the outset, Dr. Mumford has set himself a laborious task, which he has completed in a way to deserve the gratitude of all who are interested in medicine, whether within or without the profession. The book is eminently readable, and has a style of its own, which often suggests in its characterization of men the epigrammatic manner of President Eliot. It should certainly have a wide reading.

Essays on Clinical Medicine. Being reprints of papers published at various times in the *American Journal of the Medical Sciences*. By BEVERLEY ROBINSON, A.M., M.D. Philadelphia: William J. Dornan. 1903.

Dr. Robinson has collected and published in book form various papers dating back to 1889, which have already appeared as journal articles. The papers are largely given over to disease of the heart and lungs, with the addition of an early paper on "Creosote as a Remedy in Phthisis Pulmonalis," a discussion of uremia and "A Study of Some Cirrhoses of the Liver." The papers are the result of a wide personal experience, and as such should receive an attentive and cordial reading.

A Manual of Medical Treatment or Clinical Therapeutics. By I. BURNEY YEO, M.D., F. R. C. P., Emeritus Professor of Medicine in King's College, London, etc. Tenth edition; fifteenth thousand Vols. I and II. Chicago: W. T. Keener & Co. 1902.

These two volumes are of convenient size, the first containing 696, the second 762 pages not including the indices. The text is written in an interesting manner, and the subject matter has been surprisingly well brought up to date when it is borne in mind that this is a tenth edition. The two volumes present the status of medical treatment to-day, and do not aim at being original.

THE BOSTON

Medical and Surgical Journal

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PHYSICIANS' LIABILITY INSURANCE.

No physician can contemplate with equanimity the possibility of suits for alleged malpractice. The chief anxiety, however, is not that he may suffer in pocket, but rather in the high reputation and good name that he bears in the community. Most physicians, if sued, would spend their last dollar in defending themselves against what they deem a wicked and blackmailing assault upon their good reputation and their slender savings. From long experience they know better perhaps than any other class of men that many if not most actions of tort against moneyed defendants are but legalized robbery. When, therefore, a case comes home to themselves they, conscious of no wrong-doing, cannot but regard a malpractice suit as a kind of blackmail levied under forms of law.

Physicians, in the treatment of their patients, may be ignorant, careless, and neglectful, and may thus inflict injuries which will be recognized and resented by honest patients; for these injuries compensation through legal channels may be sought by the aid of lawyers of high standing and integrity. Few suits for alleged malpractice, however, can be regarded as honest efforts for the redress of real injuries. The skilful, experienced and careful practitioner may be, through no fault of his own, the object of attack. Indeed, it is the skilful and successful physician who suffers rather than the ignorant and unsuccessful.

Now for the annoyances, not to say the mental and physical distress and money loss; what is the remedy which, on the whole, will prove the wisest, the most just, the least expensive?

We have had a large experience in studying civil malpractice suits in this Commonwealth; and we have done our share in trying to demonstrate the truth upon the witness stand. We know that most suits are absolutely without good foundation, and unsupported by medical evidence worthy of serious consideration. We know that ignorance and carelessness are human, but we are convinced that human errors are less likely to occur under the responsibilities of life and health than under the responsibilities of business and property. Yet, try as one will to do his best, one may, for one reason or another, become forgetful, careless, indifferent. Indeed, in spite of the greatest care, one may do things which, from their very nature, cannot be satisfactorily explained before a lay jury. The discovery of a gauze sponge in the abdomen during convalescence from a laparotomy is, for example, an experience which few abdominal surgeons have escaped, even when more elaborate precautions against this accident have been taken than against any other in the operative technique. We know that such an occurrence is in the long run unavoidable, especially in those abdominal emergencies in which success requires the highest skill in operative technique and the greatest speed in its completion. In explaining to a jury, this,—the nightmare of abdominal surgery,—the surgeon would, at best, cut but a sorry figure. No effective defence under these conditions seems possible; and yet the surgeon, far from being careless or ignorant, has been careful, painstaking and experienced. His chief horror is in the occurrence of just this accident; he has taken care in every way to provide against it; and yet he overlooks the sponge. In every conceivable lesion, medical and surgical, he may be called upon to show, to the satisfaction of a jury, the wisdom of his treatment. He cannot see, perhaps, in any case how he has been at fault. Indeed, he may, when especially pleased with his work, find himself blamed; or, when blaming himself, find himself praised.

Now, knowing that he may be accused of malpractice with or without good grounds, mulcted in large damages, proved careless and ignorant against the evidence or the weight of evidence, harassed perhaps for years by relentless counsel,—admitting these truths, what is the sensible man to do? Ought he not to copy the man of business, who provides against disaster by timely insurance? A moderate annual premium will insure the physician, if not against the anxieties and the loss of time incident to a

trial at law, at least against the loss of money. The physician, however, is fighting rather against attacks upon his reputation than against financial loss. To preserve his reputation he would gladly sacrifice his money. Moreover, he fears that when an insurance corporation stands behind him, he will lose that sympathy which has hitherto made juries so reluctant to bring a verdict against him; that a rich and fresh field will be opened for successful legal exploitation; and that he will suffer more than he does now, if not in pocket, in what he values more, — his reputation and his peace of mind.

We ourselves fear that there is much in the last consideration. Inadmissible as the evidence may be, the court, try as it may, cannot keep from the jury the fact that behind the physician stands the rich corporation. The judge may charge the jury against the prejudice which corporations inspire, but they will nevertheless be influenced by that prejudice. Their sympathies will not be, as now, either with the physician or divided between physician and patient: they will be entirely with the patient; and the physician, fighting for his good name, will find that good name smirched by an adverse verdict. Furthermore, is not this experience likely to be more and more frequently repeated?

Again, according to some insurance policies, the company has the right to settle claims against it in its own way — at its own time. Rather than fight a case, even one in which the physician is clearly not at fault, and in which he may be sure of a favorable verdict, the corporation may choose the cheaper way of settlement. In this case the insurance company will have done that which the physician would have spent his last dollar to prevent — it will have forced upon the physician the practical admission of culpability when he felt himself guiltless, insulted and aggrieved. True, if he wishes to fight the case when the insurers wish to settle it, he can, at his own risk and expense, do so. Is it not a fair inference — or at least a grave fear — that the liability companies may at times sacrifice the physician's good name to save themselves expense?

Within the last two weeks two malpractice suits have been tried in Massachusetts. In both suits the physicians had been advised to make the best settlement that they could. In neither would they consent to compromise, even though the compromise could have been effected for a sum much less than the probable cost of trial.

In one case the jury disagreed; in the other there was a verdict for the defendant. These physicians, in fighting to the last against what they considered a wrong and an injustice, have done much to discourage similar suits against other physicians. On the other hand, these suits compromised, as we feel sure they would have been under liability policies, could not but encourage other suits.

The restraining effect of insurance on the number of suits for malpractice is said by the insurance companies to be great. This may well be doubted unless the companies fight in every case. A policy of settlement to avoid the expenses of litigation would, we feel sure, encourage and multiply these actions of tort. Many physicians are undoubtedly threatened by suits for malpractice by unscrupulous men who hope, by working upon the physician's fears of publicity, to extort from him small sums in settlement. Against actions of this kind an insurance policy would undoubtedly be discouraging.

There is one form of insurance which really insures against suits. The company, for a certain premium, agrees to spend in any year the principal in actually defending the physician; it does not agree to pay the verdict. Here, it seems to us, is the real insurance that the physician needs — insurance which discourages suits by fighting them to the highest courts of the land; which tries to protect, from first to last, the physician's *amour propre* and reputation; which yields better than anything else that peace of mind so essential to the physician's welfare, and gives him the assurance that he has a friend, and a powerful one, in the time of the greatest professional annoyance that he can possibly undergo. We admit that a policy of defence of this kind, with another covering the money liability, has given us a peace of mind which the ever-dreaded malpractice threat had never before permitted. When confronted by a bad result, a complaining patient, a threatening letter, the physician turns at once to the consoling thought that he has a strong and resourceful defender.

On the whole, we are becoming convinced that liability insurance is a good thing for physicians. The faults in the systems, if any now exist, as is quite possible, will in time be corrected, and the medical profession will not so frequently be placed in the humiliating position of explaining and justifying to an ignorant jury some of the most trying and important acts and decisions of a professional life.

ATHLETICS FOR GIRLS.

ATHLETICS for men have come in for their share of criticism and discussion during the past few years. The football question is perennially discussed in the lay and medical press with no other effect visible than an increased popularity of the game. The question of athletic exercises for girls is of somewhat more recent date, but is apparently one capable of as diverse opinion as is expressed in the case of men. The growth of the athletic spirit in girls' schools and women's colleges has given rise of late to a certain skepticism as to the value of it all, and whether or not the more violent exercises in the way of competitive sports have not been carried to a harmful degree.

No doubt girls of good physical health have been stimulated by the prowess of their friends of the other sex to undertake games which of late years have brought in the element of competition, which secondarily has led to public games and sports. So important has the matter become in the minds of those interested in the physical training of girls and women that at a recent meeting of the Boston Physical Education Society, Miss Hill, director of physical training in Wellesley College, started the discussion which has since grown to large proportions. In her investigations Miss Hill had found that girls in a suburban school undertook the most vigorous forms of exercise, like running and jumping, and had boy coaches and no competent woman instructor. The girls also held field days.

Another instance cited was the uncontrolled playing of basket ball in unventilated rooms without proper medical supervision. As a result of Miss Hill's comments, a committee from the Physical Education Society has been appointed, with Miss Hill as chairman, to look into the matter. The committee is working slowly to determine, if possible, all the elements entering into the problem of the health of girls, and particularly of the relation between the school or college and the parents. Miss Hill is in general of the opinion that exercises for girls at school have been improperly regulated up to this time, that there is a growing tendency among young girls to indulge in sports which lead to publicity, and possibly through over-excitement and over-exertion to positive injury. Competitive games for girls she does not believe in.

To any one who has seen a modern game of basket ball played by young girls, the feeling must have been uppermost that the exercise was of such a character that a few years ago it would

have been thought possible only for vigorous boys. We have no desire or intention to criticize the playing of basket ball, or any other game of skill by women, provided only, as Miss Hill suggests, their training be properly regulated; in other words, with certain modifications, precisely the same principles should apply to the training of women for athletic sports as to that of men. The question of the appropriateness of women taking part in public exhibitions does not in the least concern us. On the other hand, we are convinced that the modern athletic tendency among women has been a helpful one, and that properly regulated it should lead to a stronger and better-equipped race of women than we have had heretofore. There certainly can be no reason why all such sports should not be completely regulated to meet the physical organization of women. In the meantime it must be remembered that athleticism may be and in fact is overdone by certain enthusiasts, especially when enthusiasm is combined with the inexperience of youth.

THE NOBEL PRIZES.

WE have from time to time commented on the fact that prizes have increased in number quite beyond their usefulness and that the end to be subserved is frequently lost for various obvious reasons. In the first place, there are evidently too many prizes. The credit which comes to the successful competitor is too small to attract the best men, and there is certainly in many quarters a feeling that it is rather beneath the dignity of the scientific investigator to expose his wares for money. It is perfectly clear to any one who observes, that the ablest men do not attempt to gain the ordinary prizes, and it has frequently been the experience of prize committees that no essay worthy of the award is received. Furthermore, the offering of money is not in general an adequate stimulus for scientific work, although we are glad to admit that occasionally the combination of financial need and ability go hand in hand. In general we regret to see money left for the purpose of establishing prizes. The self-respect of the scientific world would certainly be enhanced if much of the money for this purpose could be withdrawn.

Standing in a wholly different category from this type of prizes is the foundation which renders possible the so-called Nobel prizes. We have in this foundation an ideal method of encouraging the best scientific research, and it is

a gratification each year to see very considerable amounts of money bestowed upon men who by general consensus of opinion have achieved something notable in science or literature. It will be remembered that by the terms of this foundation, made in 1895, upward of eight million dollars was left to encourage original work in five different departments of learning, among which medicine was included. Notices have been recently sent out for the suggestion of a candidate for the prize in the section of physiology and medicine to be given during the year 1904. By this general vote of the scientific men of the world, an eminently just decision is usually reached regarding the value of work done during the preceding year. The final award comes as a surprise to the recipient. He has made no effort to gain the prize beyond an abstract devotion to scientific work of the highest order.

It will no doubt be many years before another foundation of the amount and character of this is established, but we have no hesitation in expressing the hope that, if money be left for the encouragement of research, it may take some such form as this rather than make a personal appeal to the cupidity of the contestants. The one is altogether worthy of the highest scientific ideals, and the other, we are forced to admit, tends rather to detract from than to add to the ends of science.

EUTHANASIA.

A FLURRY of excitement appears to have been aroused by certain utterances of the Rev. Mr. Wright, a New York clergyman, on the subject of euthanasia. Mr. Wright has recently made the suggestion that persons with incurable disease should be relieved from their sufferings by artificial means. Naturally he has safeguarded this proposition by various suggestions, such as the consent of the person concerned, of his family and of a jury composed of physicians and possibly of a clergyman. There was nothing particularly original in the point of view expressed. It has no doubt been discussed at various times and places since the days of the Greeks. The fact remains that a public protest, both from lay and medical sources, has arisen such as Mr. Wright, no doubt, little expected. The fact of the matter is that this question of hastening death under any circumstances whatsoever is not to be talked of in public. That euthanasia is at times produced most legitimately there can be no question. That a general doctrine should be spread abroad urg-

ing the production of painless death in certain conditions as a routine measure will always receive the condemnation it deserves. This is one of the many matters which may best be left to the individual discretion of the physician and to the family, as well as to the sufferer himself.

The question continually presents itself to the physician in active practice, whether or not, in cases which are eventually fatal, it is wise to postpone death through various possible artificial means, such as stimulation of the heart or artificial feeding. We are inclined to think that the consensus of opinion now is that it is the part of humanity to allow a patient to die without such artificial stimulation when the inevitable end could in any case only be postponed. Here again principles are certainly not to be laid down. By far the safest method, and the most in accord with our principles of morality, is to judge each case on its merits and to attempt no promulgation of a general theory.

MEDICAL NOTES.

THE ORGANISM OF SMALLPOX.—At a meeting of the Section of Biology, New York Academy of Medicine, held Nov. 9, 1903, Dr. Gary N. Calkins spoke on "The Life History of the Organism of Smallpox," which has been named *Cytoryctes variolæ* Guar. It will be remembered that Dr. Calkins has been associated with the recent work on smallpox in Boston.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, amounting to about one hundred and eighty dollars, will be made on July 14, 1904, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the secretary of the college on or before May 1, 1904.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award.

ATTITUDE OF BRITISH PHYSICIANS TOWARD PUBLICITY.—It is stated that the British Medical Association not long since sent a request to the lay press urging that the names of physicians attending cases should not be made public in its columns, with the exception of those in attendance upon any member of the royal family.

LAW AGAINST THE CORSET.—The *Medical Record* makes the statement that a Dr. Maréchal of Paris is urging the passage of a law making the wearing of a corset by any woman under thirty years of age a penal offence. *Apropos* of this rather radical legislation, it is stated that a woman in Buffalo recently died through the penetration of her heart by a corset steel, and we have also been informed of a very serious x-ray burn resulting from the wearing of a corset during treatment. In spite of these occurrences, we imagine the corset will still remain in use.

KING EDWARD'S SANATORIUM.—The foundation stone of King Edward's Sanatorium for tuberculosis was laid Nov. 3 at Lord's Common in Sussex. It will be remembered that sometime since Sir Edward Cassel left about a million dollars for the purpose of providing a sanatorium for tuberculous persons in England. This is the beginning of the realization of that bequest.

A COLUMBIA UNIVERSITY HOSPITAL.—It is reported that the trustees of Columbia University are considering the possibility of constructing a hospital, to be under the control of the department of medicine. It is estimated that the preliminary cost of such a hospital will be in the neighborhood of two million dollars.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon Nov. 11, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 82, scarlatina 17, typhoid fever 13, measles 99, smallpox 0.

NEW ENGLAND DEACONESS HOSPITAL.—Exercises on the laying of the corner stone of the new Deaconess Hospital in Longwood were held Nov. 5. Among the speakers were Governor Bates, Dr. M. H. Richardson and Rev. Dr. James M. Buckley of Brooklyn, N.Y. Through vigorous attempts on the part of the management, upwards of \$42,000 has been paid in, of which over \$37,000 has been paid for land and other items. It is proposed to erect merely the left wing with a frontage of about one hundred feet, three stories in height. There will be accommodations for forty-

two beds, together with adequate operating rooms and other accessories. This hospital has done a good work in an unostentatious way, and should receive sympathy and encouragement both within and without the profession of medicine.

NEW YORK.

MORTALITY STATISTICS.—The Health Department reports show that during the month of October the mortality in the city represented an annual death-rate of 16.05, as against 15.75 in September and 16.00 in October, 1902. The corrected death-rate, excluding non-residents and infants under one week old, was 15.19. Among the diseases which showed a decline in mortality were the following: The weekly average of deaths from whooping-cough decreased from 6.5 in September to 3 in October; the weekly average of deaths from acute bronchitis decreased from 27 to 23.5; from diarrheal diseases, from 151.5 to 86.25; and from diarrheals under two years of age, from 133.25 to 79.25. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from diphtheria and croup increased from 28.75 to 34.5; from scarlet fever, from 4.5 to 5.25; from measles, from 3.25 to 4.75; from typhoid fever, from 16.75 to 18.5; from pneumonia, from 61.5 to 77.25; from broncho-pneumonia, from 36.5 to 43.5; from pulmonary tuberculosis, from 133.75 to 144.75; from cancer, from 43.25 to 49.25; from Bright's disease and nephritis, from 91.5 to 93; and organic heart diseases, from 71 to 86.25. During the month 4 deaths from influenza were reported.

ANOTHER PAVILION FOR ST. LUKE'S.—Through the generosity of Mrs. Plant, widow of the late Henry B. Plant, St. Luke's Hospital is to have another elaborate pavilion added to its buildings. This new structure will be located on the southeast corner of the hospital grounds, overlooking Morningside Park, and in its general features will resemble the two other pavilions facing on 113th Street. It will occupy the same area of ground as the others, or about seventy feet each way, although it will be somewhat taller, as the land on which it is to stand is lower than that around it. It will be connected with the Minturn Pavilion by means of a corridor, and the roof is to be provided with a garden and a solarium. The original plan of the magnificent new St. Luke's contemplated ten pavilions in all, and five of these have already been erected and occupied.

UNION OF MEDICAL SOCIETIES. — At a meeting of the Medical Society of the State of New York held at the Academy of Medicine, New York, on Oct. 13, a resolution, offered by Dr. D. B. St. John Roosa, was adopted empowering the committee appointed some time ago for the purpose of conferring with a similar committee of the State Medical Association to take final action in the matter of the union of the two societies. As mentioned in the JOURNAL, the committee of the State Association had previously been authorized by that body to take such action as would consummate the desired union.

NEW APPOINTMENTS COLUMBIA MEDICAL SCHOOL. — At a meeting of the board of trustees of Columbia University held Nov. 2, the appointment of the following new professors in the medical department was announced: Dr. Joseph A. Blake, Professor of Surgery; Dr. George E. Brewer, Professor of Clinical Surgery; Dr. John S. Thacher, Professor of Clinical Medicine; Dr. Frederick Peterson, Professor of Psychiatry; Dr. Samuel W. Lambert, Professor of Applied Therapeutics. Dr. George M. Lefferts, who has announced his intention of retiring from the chair of laryngology in June next, when he will have completed thirty years of service in the College of Physicians and Surgeons, presented to the university his extensive and valuable collection of apparatus for illustrating the teaching of laryngology and rhinology, and the trustees ordered that the apparatus should be hereafter known as "The Leffert's Collection."

RATIO OF STREET ACCIDENTS, NEW YORK AND LONDON. — It is stated that while no less than 538 persons were killed by vehicles in the streets of New York last year, information furnished from Scotland Yard shows that in the metropolitan district of London, with its 688 square miles of territory, the total number of such fatal accidents was but 158.

Correspondence.

MEMORIAL TO MR. WILLIAM CADGE.

BOSTON, Nov. 6, 1903.

MR. EDITOR: Some members of our profession may be glad to know of the fund now being raised in England — memorial to William Cadge, the eminent writer and operator. His great success in the treatment of stone in the bladder is well known. Those desiring to contribute may send directly to Dr. Michael Beverley, Treasurer, Norwich, England. Subscriptions are limited to one guinea each.

Yours very truly,

H. H. A. BEACH, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 31, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . | 3,785,156 | 1,179 | 169 | 25.19 | — | 2.46 | 5.09 | 1.53 | |
| Chicago . . . | 1,885,000 | 473 | 118 | 23.88 | 13.32 | 4.01 | 6.34 | 1.48 | |
| Philadelphia . | 1,378,527 | 466 | 106 | 22.96 | 7.51 | 1.50 | 8.6 | 2.36 | |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 181 | 54 | 20.11 | 11.41 | 1.08 | 2.71 | 3.26 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 125 | — | 26.40 | 14.40 | 4.00 | 5.66 | 4.80 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,507 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 62 | 17 | 25.80 | 12.90 | 1.61 | 8.06 | 3.22 | |
| Boston . . . | 603,163 | 159 | 49 | 20.52 | 12.58 | 1.89 | 5.03 | 2.92 | |
| Worcester . . | 132,044 | 27 | 12 | 33.33 | 7.40 | — | 11.10 | 3.70 | |
| Fall River . . | 115,549 | 35 | 13 | 22.85 | 11.42 | 5.71 | 8.57 | — | |
| Lowell . . . | 101,959 | 23 | 9 | 21.74 | 17.39 | 8.70 | — | — | |
| Cambridge . . | 98,639 | 17 | 6 | 29.41 | 11.76 | 11.76 | — | — | |
| Lynn | 72,497 | 21 | 5 | 23.81 | 4.76 | 9.52 | — | 9.52 | |
| Lawrence . . | 69,766 | 20 | 10 | 45.00 | 5.00 | 5.00 | 20.00 | — | |
| Springfield . | 69,389 | 19 | 4 | 10.52 | 10.52 | — | — | — | |
| Somerville . . | 68,110 | 23 | 7 | 21.74 | 17.39 | — | — | — | |
| New Bedford . | 67,198 | 29 | 10 | 38.37 | 17.44 | 3.49 | 13.95 | 6.97 | |
| Holyoke . . . | 49,286 | 10 | 7 | 30.00 | 20.00 | 10.00 | 20.00 | — | |
| Brockton . . | 44,873 | 7 | 4 | 14.30 | — | 14.30 | — | — | |
| Haverhill . . | 42,104 | 20 | 4 | 5.00 | 5.00 | — | — | — | |
| Newton . . . | 37,794 | 7 | 2 | 28.60 | 14.30 | 14.30 | — | — | |
| Salem | 36,876 | 13 | 3 | 15.40 | 15.40 | 7.70 | — | — | |
| Malden . . . | 36,286 | 7 | 2 | — | — | — | — | — | |
| Chelsea . . . | 35,876 | 13 | 1 | 7.70 | 7.70 | 7.70 | — | — | |
| Fitchburg . . | 35,069 | — | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | 14 | 2 | 42.84 | 21.42 | 7.1 | 21.42 | 7.14 | |
| Everett . . . | 28,620 | 10 | 3 | — | — | — | — | — | |
| North Adams . | 27,962 | 5 | — | — | 40.00 | — | — | — | |
| Gloucester . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | — | — | — | — | — | — | — | |
| Waltham . . . | 25,198 | 8 | — | — | 25.00 | — | — | — | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 6 | — | 33.33 | — | — | — | — | |
| Chicopee . . . | 21,031 | 7 | 3 | 28.60 | 14.30 | — | — | 14.30 | |
| Medford . . . | 20,962 | 4 | — | 25.00 | 50.00 | — | — | — | |
| Northampton . | 19,883 | 5 | 1 | — | 20.00 | — | — | — | |
| Beverly . . . | 15,302 | 5 | — | — | — | — | — | — | |
| Clinton . . . | 15,161 | 3 | 1 | 33.33 | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 2 | 1 | — | 50.00 | 50.00 | — | — | |
| Woburn . . . | 14,300 | 4 | — | 50.00 | — | — | — | — | |
| Hyde Park . . | 14,175 | — | — | — | — | — | — | — | |
| Adams | 13,745 | 7 | 5 | 42.90 | — | — | — | — | |
| Attleboro . . | 13,677 | 5 | 2 | 20.00 | — | — | — | — | |
| Marlboro . . | 13,609 | 3 | 0 | — | — | — | — | — | |
| Melrose . . . | 13,600 | 2 | — | 50.00 | — | — | — | — | |
| Westfield . . | 13,418 | 7 | 2 | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | — | — | — | — | — | — | — | |
| Framingham . | 12,534 | 3 | 1 | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | 3 | 2 | 33.33 | — | 33.33 | — | — | |
| Weymouth . . | 11,344 | 1 | 0 | — | — | — | — | — | |
| Southbridge . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 1 | — | 100.00 | — | — | — | 100.00 | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,044; under five years of age, 681; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 726; acute lung diseases 208, consumption 371, scarlet fever 19, whooping cough 12, cerebrospinal meningitis 7, smallpox 11, erysipelas 4, puerperal fever 7, measles 9, typhoid fever 62, diarrheal diseases 140, diphtheria and croup 84.


From whooping cough, New York 3, Chicago 1, Philadelphia 2, Baltimore 1, Pittsburg 2, Lowell 1, Woburn 1, Adams 1. From erysipelas, New York 2, Providence 1, Clinton 1. From smallpox, Philadelphia 8, Pittsburg 3. From measles, New York 6, Chicago 1, Philadelphia 1, Pittsburg 1. From cerebrospinal meningitis, New York 3, Boston 1, Worcester 2, Somerville 1. From scarlet fever, New York 7, Philadelphia 6, Baltimore 3, Boston 1, Worcester 1, Woburn 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Oct. 17, the death-rate was 15.8. Deaths reported, 4,573; acute diseases of the respiratory organs (London) 175, whooping cough 42, diphtheria 43, measles 45, smallpox 0, scarlet fever 35.

The death-rate ranged from 3.3 in Hornsey to 26.5 in Middlesbrough, London 15.3, West Ham 17.8, Brighton 15.0, Portsmouth 15.0, Southampton 11.8, Plymouth 13.0, Bristol 10.9, Birmingham 18.3, Leicester 13.3, Nottingham 17.6, Bolton 15.9, Manchester 20.3, Salford 24.2, Bradford 15.6, Leeds 15.3, Hull 13.0, Newcastle-on-Tyne 19.9, Cardiff 14.8, Rhondda 15.3, Liverpool 19.5, Sunderland 17.4, Sheffield 19.0.

METEOROLOGICAL RECORD.

For the week ending Oct. 31, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|-------------|-------------|--------------|----------|--------------------|-----------|-------------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| | | | | | | | | | | | | | | |
| S. 25 | 29.83 | 38 | 44 | 31 | 64 | 58 | 61 | N W | N W | 7 | 2 | O. | C. | 0 |
| M. 26 | 29.76 | 41 | 46 | 36 | 62 | 52 | 57 | W | W | 20 | 13 | O. | C. | 0 |
| T. 27 | 30.06 | 38 | 42 | 33 | 54 | 46 | 50 | W | W | 16 | 12 | C. | C. | 0 |
| W. 28 | 30.08 | 38 | 46 | 31 | 54 | 46 | 50 | N W | N W | 9 | 5 | C. | C. | 0 |
| T. 29 | 30.04 | 46 | 61 | 31 | 64 | 54 | 59 | W | S W | 9 | 11 | C. | C. | 0 |
| F. 30 | 30.07 | 58 | 69 | 48 | 69 | 56 | 62 | W | W | 12 | 9 | C. | C. | 0 |
| S. 31 | 30.14 | 62 | 71 | 52 | 59 | 36 | 48 | W | S W | 12 | 8 | C. | C. | 0 |
|  | 30.00 | | 54 | 37 | | | 55 | | | | | | | 0 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. **Mean** for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOV. 5, 1903.

VAUGHAN, G. T., assistant surgeon-general. Appointed as member of committee to consider and report upon the matter of uniforms and insignia for officers and employees of the Customs Service. Nov. 3, 1903.

CARTER, H. R., surgeon. Leave of absence for one day, Oct. 29, 1903, under paragraph 189 of the regulations.

BILLINGS, W. C., assistant surgeon. Relieved from duty at Quebec, Canada, and assigned to duty in office of the United States Commissioner of Immigration at St. Johns, N. B. Nov. 5, 1903.

KERR, J. W., assistant surgeon. Granted leave of absence for two days from Oct. 18, 1903, under paragraph 191 of the regulations. Relieved from duty at the Immigration Depot, New York, N. Y., and directed to proceed to Duluth, Minn., for temporary duty as medical inspector of aliens. Oct. 28, 1903.

STANSFIELD, H. A., assistant surgeon. Granted leave of absence for ten days. Nov. 2, 1903. Upon expiration of leave to report at Bureau, Washington, D. C. Nov. 2, 1903.

WILLE, C. W., assistant surgeon. Relieved from duty at Philadelphia, Pa., and directed to proceed to Baltimore, Md., and report to medical officer in command for duty and assignment to quarters. Nov. 2, 1903.

BOGGESE, J. S., assistant surgeon. Granted leave of absence for three days from Nov. 3. Nov. 2, 1903.

CLARKE, F. N., acting assistant surgeon. Granted leave of absence for twenty days from Nov. 8. Oct. 29, 1903.

ECHEMENDIA, D. M., acting assistant surgeon. Granted leave of absence, on account of sickness, for thirty days from Oct. 5. Oct. 16, 1903.

TAPPAN, J. W., acting assistant surgeon. Granted leave of absence for seven days from Nov. 2, 1903, under paragraph 191 of the regulations.

ACHENBACH, JOHN, pharmacist. Granted leave of absence for six days from Oct. 26, 1903, under paragraph 210 of the regulations.

BOARD CONVENED.

Board convened to meet at Baltimore, Md., Nov. 2, 1903, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon H. R. Carter, Chairman; Assistant Surgeon M. W. Glover, Recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING NOV. 7, 1903.

ELLIOTT, M. S., surgeon. To the Naval Hospital, Norfolk, Va.

EVANS, S. G., surgeon. Detached from Naval Hospital, Norfolk, Va., and to the "Cleveland."

WHEELER, W. M., surgeon. Detached from the Naval Hospital, Newport, R. I., and granted leave for thirty days.

BLACKWELL, E. M., passed assistant surgeon. Detached from the "Hancock" and to the "Castine."

SPEAR, R., passed assistant surgeon. Detached from the "Wheeling" and to home and await orders.

ODELL, H. E., passed assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and to the "Wheeling."

MURPHY, J. A., assistant surgeon. To the Navy Yard, Washington, D. C.

RICHARDSON, F. A., acting assistant surgeon. To the Naval Hospital, Newport, R. I.

SCHWERIN, L. H., acting assistant surgeon. Detached from the "Yankton" and to the "Southery."

ELMER, M. K., assistant surgeon. Detached from the U. S. R. S. "Independence" and to the "Pensacola."

DABNEY, V., acting assistant surgeon. Detached from the "Pensacola" and to duty with Recruiting Party No. 4.

CHAPMAN, R. B., acting assistant surgeon. Detached from duty with Recruiting Party No. 4 and to the Navy Yard, Mare Island, Cal.

TAYLOR, E. C., assistant surgeon, and REEVES, I. S. R., assistant surgeon. To the Naval Museum of Hygiene and Medical School, Washington, D. C.

MARSTELLER, E. H., surgeon. To the "Columbia."

KENNEDY, J. T., passed assistant surgeon. Commissioned passed assistant surgeon with rank of lieutenant.

OHNESORG, K., passed assistant surgeon. Commissioned passed assistant surgeon with rank of lieutenant from March 3, 1903.

MILLER, J., CAMPBELL, F. E., assistant surgeons. Ordered to Naval Museum of Hygiene and Medical School, Washington, D. C.

HIGH, W. E. G., assistant surgeon. To the "Constellation."

SOCIETY NOTICE.

THE fourth annual meeting of the AMERICAN ROENTGEN RAY SOCIETY will be held at the University of Pennsylvania, Philadelphia, Dec. 9 and 10, 1903.

JAMES B. BULLITT, M.D., Secretary,
Louisville, Ky.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—There will be a meeting of the society in Sprague Hall, Medical Library Building, on Monday, Nov. 16, 1903, at 8.15 P.M.

Papers: F. G. Balch will report Cases of Intussusception; Dr. A. K. Stone will present a paper entitled "Cardiac Displacement."

ARTHUR K. STONE, M.D.,
Secretary.

543 Boylston Street.

RECENT DEATHS.

JULIAN J. CHISOLM, M.D.—Dr. Chisolm, who long held an enviable position as an ophthalmologist in Baltimore, died Nov. 1, in Petersburg, Va., at the age of seventy-three. During the greater part of his active life he was a frequent contributor to periodical medical literature.

DR. EMIL ROSENBERG of New York, who was the senior medical officer of the Northwestern Life Insurance Company, and who was widely known both in this country and abroad as an authority on the subject of life insurance, died on Nov. 4, at the age of seventy-four years. He was a native of Germany and was graduated at Berlin in 1855. He came to the United States in 1868, and has been a medical examiner for the Northwestern Company ever since that date.

BOOKS AND PAMPHLETS RECEIVED.

Ein Melanosarkom des Ciliarkörpers im allerersten Beginn der Entwicklung. By G. S. Derby, M.D., of Boston. Reprint. 1903.

Ueber die Abhängigkeit der Wirkung der Augentropfen von ihrer Temperatur. By G. S. Derby, M.D., of Boston. Reprint. 1903.

L'Inoscopia. By André Jousset of Paris. Reprint. 1903.

L'Inoscopia. By André Jousset. Archives de Médecine Expérimentale et d'Anatomie Pathologique, Maro, 1903.

Septicémie et Endocardite Tuberculeuses "Primitives" Diagnostiquées Pendant La Vie. By M. M. Brallion et André Jousset. Reprint. 1903.

Des Septicémies Tuberculeuses. By André Jousset. The Community and Tuberculosis. By Beverley Robinson, M.D., of New York. Reprint. 1903.

Congenital Dislocation of the Hip, and Lorenz's Method of Treating It. By J. Jackson Clarke, M.B. (Lond.), F.R.C.S. Reprint. 1903.

The General Practitioner and his Relation to Early Surgical Operations. By E. B. Montgomery, M.D., of Quincy, Ill. Reprint. 1903.

Preventive Medicine and Natural Selection. By Chas. V. Chapin, M.D., of Providence, R. I. Reprint. 1903.

M.D., Disease, and the Health Officer. By Charles V. Chapin, M.D., of Providence, R. I. Published by American Public Health Association. 1903.

Original Articles.

OBSERVATIONS ON THE EFFECT OF CATHETER DRAINAGE ON THE FUNCTION OF THE KIDNEYS IN INTERSTITIAL NEPHRITIS AND PYELO-NEPHRITIS.

BY ARTHUR TRACY CABOT, A.M., M.D., BOSTON,

Surgeon to the Massachusetts General Hospital.

My contribution may best be termed a study in pathological physiology.

Physiology teaches us much about the behavior of normal organs under varying conditions; but the study of the manner in which diseased organs perform their functions falls to the clinician. Modern surgery, dealing as it does with vital parts, affords opportunities for physiological and pathological investigation which are becoming more and more appreciated. Surgery is one of the most important branches of experimental medicine. The operating surgeon has opportunities of studying the behavior of organs under varying conditions which he himself imposes. His work in this respect resembles that of the physiological experimenter. The full value of his experiments depends on the thoroughness with which he investigates the conditions existing before and after his intervention. By such observation, many important contributions to pathological physiology have been made and doubtless many others are constantly under our eyes waiting to be noted.

The kidneys are organs that offer an especially favorable field for this sort of study, and I offer to-day some observations on their functions as affected by the relief of pressure. This subject is a large one, and I do not propose to speak at this time of that part of it which relates to the relief of pressure by incision or stripping of the capsule, although I have a number of observations on the beneficial results of such operations.

I am going to speak of the effect of relief of internal pressure in the kidneys. An increase of internal pressure is brought about usually by some obstructive lesion in the outer urinary passages. A sudden and complete obstruction causes a cessation of renal excretion, but when this obstruction comes about gradually, the kidneys adapt themselves to it and go on separating the urine from the blood under a constantly increasing tension. The cases in which I have made my observations on this condition are those of old men suffering from obstructive disease of the prostate. The polyuria that insidiously establishes itself in such cases is well known. The urine gradually drops in specific gravity, but at the same time increases proportionately in quantity. The elimination of solids diminishes but slowly, for the urine makes up in quantity what it lacks in quality. Presently, however, the point is reached where the dilute urine, even though greatly increased in amount, does not succeed in carrying off the waste products in sufficient amount and characteristic symptoms of systemic poisoning manifest themselves. That this series

of events is in the main due to a gradually developing interstitial nephritis is generally accepted, as proved by abundant pathological demonstration. It is probably true that this polyuria is at first in part functional; but that the disturbance of function gradually tends to bring about organic changes of a sclerotic character, there can be no doubt. Some students of the subject believe that this interstitial change in the kidney is part of a general sclerotic change in the organs and blood vessels of the body, the enlargement of the prostate being only another manifestation of the general condition. This explanation of the phenomena is urged by so great an authority as Professor Guyon. Another belief is, that the condition of the kidney is secondary to the enlargement of the prostate and due directly to the obstruction to the flow of urine. This view is the one held by the writer and by the majority of observers as explaining the causation of interstitial nephritis in these cases. It is plain that when the bladder is tensely filled there is an increase of tension in the kidney. There can be no doubt about this fact, proved by so many cases of distended ureters and hydronephrotic kidneys, due to obstruction in the urethra.

Experimental investigation of the influence of the obstruction in the prostate upon the kidney is not easy, on account of the difficulty of reproducing in an animal the gradually forming obstruction which educates the kidney little by little to perform its functions under a greatly increased tension. Considerable light on this question may, I think, be obtained clinically by the study of our cases with such experimental investigations as are afforded by the surgical procedures properly resorted to for our patients' relief.

For many years, I have treated a certain proportion of these cases by the installment of an in-lying catheter. This method gives us an unusual opportunity for studying the effect of the simple relief of tension. After severe operative procedures on the prostate, there is so much general disturbance of all functions and the operation does so much besides simply relieving the tension that it is difficult to estimate exactly the cause and amount of the subsequent relief. The introduction of drainage by a catheter, on the other hand, inflicts no trauma and produces no decided change in the condition beyond that incident to emptying the bladder. Once empty, the viscus is kept drained. The urine is removed as rapidly as it flows in. The ureters and pelves of the kidneys empty themselves and afterward remain empty. We are justified in believing that the relief of pressure extends even through the uriniferous tubules into the Malpighian bodies and diminishes the tension around the vascular glomeruli. If, now, the relief of this tension in the urinary passages is followed by a resumption or great improvement of function on the part of kidneys partially disabled, we are justified in supposing that the previous interference with the function of these organs was in large part due to the tension and so primarily due to the obstruction that caused it.

It is upon the observation of this course of

events in a considerable number of cases that I base my adherence to the belief that the prostatic condition is in largest degree responsible for the changes in the kidney. Besides the interstitial change in the kidneys of these patients we have also in most of the cases that come into the surgeon's hands an inflammatory condition which has extended from the bladder up the dilated ureters to the pelvis and finally to the parenchyma of the kidneys. This is the pyelo-nephritis found almost invariably in the post-mortem examinations of patients who have died of uremia consequent upon obstructive conditions in the prostate. As a rule, the micro-organisms that cause this inflammation are introduced into the bladder by the surgical use of instruments for the relief of retention. This accident is so difficult to avoid in cases requiring constant catheterization that its occurrence brings no just reproach to the surgeon. Practically, every bladder habitually emptied by a catheter is sooner or later infected. Fortunately the valvular opening of the ureter prevents the extension of this inflammation backward to the kidneys in the majority of cases. When, however, the ureters are greatly distended, the orifice in the vesical wall is opened somewhat and extension of the inflammation backward is easy. This condition of active inflammation engrafted upon an interstitial nephritis complicates the clinical picture in a certain degree. Fortunately, however, the pyelo-nephritis is quickly relieved in most cases and it is then possible to watch the gradual change in the urine which marks the slow improvement in the secreting portion of the kidneys.

I do not propose to speak of the methods of establishing catheter drainage further than to say that the plan I have followed is to put a soft catheter into the bladder and to so arrange it that it draws the urine steadily without irritating the vesical walls. It should be fastened so that it stays in place and should be watched so closely as to insure that it shall never stop running for more than a few minutes at a time. This is no new proceeding, but is usually employed for the relief of conditions in the bladder and urethra. I have found no satisfactory account of its effect upon the function of the kidneys.

Langlois and others have noted that enlarged kidneys are reduced by bladder drainage. Langlois says, "It is difficult to know to what this reduction in size is due; whether to the diminution of congestion or to the emptying of a kidney dilated by retention." I would urge, and I hope to show, that the effect of diminishing the pressure in the kidneys is *the most important good* obtained by catheter drainage in these prostatic patients with damaged kidneys. If this is accepted, it is equally clear that all operations which successfully remove prostatic obstruction must owe a large part of the good service that they render to this relief of back pressure and intra-renal tension. For the purposes of this investigation I have taken it for granted that a patient with obstructive disease of the prostate and dilated

bladder may be regarded as having some degree of interstitial nephritis if the urine is abundant and of very low specific gravity. If such a patient is suffering from anorexia, nausea and dry mouth, either with or without psychical disturbances, these are to be looked upon as symptoms of uremia due to this interstitial nephritis. If, in addition to these symptoms, he has a high fever and the urine contains pus, it is to be regarded as probable that he has pyelo-nephritis. This supposition is strengthened if one or both kidneys are found to be tender or enlarged. I have found that when efficient drainage is afforded to patients offering the above clinical picture of a pyelo-nephritis, complicated by a preëxisting interstitial nephritis, in the vast majority of cases a very great amelioration or even total disappearance of febrile and uremic symptoms is brought about. It has been my practice to favor diuresis by the administration of large quantities of water. This I have done with the purpose of assisting elimination and also to flush out the kidneys and thus wash out the inflammatory products. If the kidney pelvis is not yet infected, the increased flow of urine running down the ureters without any back current offers conditions unfavorable to the extension of inflammation upwards even if the bladder becomes infected. In some cases, when the constant drainage has been too soon changed for intermittent catheterization, a return of fever and other inflammatory symptoms give evidence that backward extension has again occurred. In such cases I have found that by persisting in the continuous drainage the time has finally been reached when it could be safely dispensed with.

The most reasonable explanation that I can offer for this finally acquired safety for kidneys that have earlier shown a tendency to this retroinfection is that the ureters gradually contract somewhat when the internal pressure is relieved, and also that, the bladder being no longer stretched, its muscular coat recovers its tone and restores the valvular condition at the ureteric orifices; thus giving back to us the physiological barrier that nature normally affords. The first effect on the urinary excretion produced by drainage is a very considerable increase in the amount of urine. In one case the daily amount of urine, which had been eight pints shortly before and had fallen to six pints at the time the drainage was established, rose to sixteen pints shortly after the catheter was tied in. This was an extreme case, but a considerable increase in quantity is noted in all of these patients. I regret that I have no accurate data to show how great an increase of elimination of solids is obtained by this increase in quantity of the urine. That there is a considerable increase is shown first by the fact that the specific gravity does not diminish in proportion as the amount of urine increases and secondly, by the improvement of the patient's condition, which attests a greatly increased elimination. After this first accession of polyuria the quantity of urine gradually falls while the specific gravity rises. The amount of this improvement

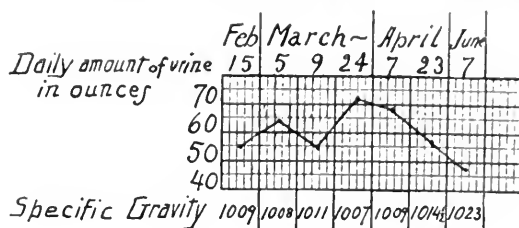
differs in different cases. In some patients the quantity of urine and its specific gravity return to within normal limits; in others, while stopping short of this, the restoration reaches a point where the elimination is wholly adequate for the individual. I have one patient, a man of eighty-nine who is seemingly perfectly well and vigorous for his age, who is excreting but little more than one-half the so-called normal amount of urea.

Before proceeding to the detailed report of cases, and in order to avoid misapprehension, I wish to say that I do not regard this method of treating prostatic patients with the in-lying catheter as in any way superseding other operative procedures. It is applicable to very old or very broken patients who are not fit subjects for serious operation, also to patients who will not consent to operation and, finally, it is of great use in preparing patients for some more serious operation. Many of these patients with pyelonephritis and already commencing uremia are not fit subjects for prostatectomy, but by a course of treatment with the in-lying catheter their condition may be so much improved that they will bear, without serious risk, operations which before this preparation would have been almost certainly fatal.

In presenting these cases I have been greatly handicapped by the imperfection of my records. In many instances where frequent examinations gave information as to quantity and constitution of the urine, the written records of these observations have been lost or destroyed. Thus many cases that remain in my memory as striking illustrations of the course of events that I have described cannot be given with the documentary evidence that would make them convincing. It was this experience of my own shortcoming in a set of cases in which I take great interest that inspired the remarks at the beginning of this paper on the importance of our conducting our surgery and recording our observations as if we were engaged in laboratory experiment. All of the cases used in this study were in private practice. Hospital cases are too soon lost sight of to give an adequate idea of the amount of improvement in kidney function. The histories reported have been selected because they present uncomplicated pictures of the condition to which attention is directed. Many other cases have been met in which similar conditions have existed, but in which the presence of stone, of cardiac or of pulmonary disease has caused confusion in the symptoms.

CASE I. J. D. L., sixty-seven years of age, was troubled in the autumn of 1897 with frequency of urination which greatly increased over what it had previously been. In December catheterization was commenced. Twelve or thirteen ounces of residual urine. For some weeks catheterization was regularly carried on without untoward effect, but in February Mr. L. suddenly began to have considerable fever, temperature rose to 103° F. and he became seriously ill. I now saw Mr. L. and after twenty-four hours tied in a catheter. The temperature fell quickly to normal. After a week or ten days the catheter was left out, but this was at once followed by a rise in temperature. After further waiting this attempt was repeated with the same result. Mr. L. was now allowed to be up and about

with the catheter in place and he began to attend to business, stopping the catheter for intervals of one to two hours. Finally, when the bladder showed itself to be tolerant of this condition, the catheter was left out and he resumed the ordinary condition of a catheter patient passing the instrument once at night and four times in the daytime. At the present time, March 7, 1903, Mr. L. is in excellent general condition and engaging in active business. The accompanying chart is of especial interest. It illustrates the return of renal function in these cases when the internal tension of the kidney is permanently relieved and fairly presents the sort of improvement noted in greater or less degree in all of these patients.



It will be seen that on Feb. 15 and again on March 5, and again on April 23, the quantity of urine was approximately 55 oz. in the twenty-four hours. Observing the specific gravity, it will be seen that whereas on Feb. 15 it was 1009, it had risen on March 5 to 1011 and on April 23 it had risen to 1014. On the 7th of June, when Mr. L. was fully recovered, the quantity of urine was 48 oz. and the specific gravity 1023. The kidneys had thus returned to doing practically normal work.

CASE II. W. B. W., old man with long-standing bladder difficulty. Seen Feb. 18, 1898, in consultation with Dr. Webber. Mouth dry, no appetite, much nausea, somnolence a marked feature. In-lying catheter established, followed by immediate improvement and, later, establishment of catheter life. Seen in 1901 and at that time had had no return of renal difficulty. In this case no systematic watch of the urine was kept, but the quick disappearance of pronounced uremia and the restoration of normal renal function made it a striking illustration of the relief that catheter drainage brings to laboring kidneys.

CASE III. T. B. D., a frail man of fifty-seven, seen June 18, 1901, with Dr. Underwood of Gardner, Mass. Urinary difficulty for a number of years. Slow, small stream, shutting off at times while passing. For past year strength has been failing. In past six weeks has begun to have stomach symptoms, anorexia, nausea, dry tongue. A few days before, Dr. Underwood, finding the bladder distended to above the umbilicus, passed with some difficulty a small silver catheter and drew two quarts of very pale urine. Since then has had to draw the urine twice a day. The patient's temperature has gradually risen to 101.5° F. At the time of my examination the bladder could be felt reaching nearly to the umbilicus. Neither a soft rubber catheter nor a flexible coude catheter would enter the bladder. With a long wire stylet a soft rubber catheter was introduced and fastened in place. Thirty-seven ounces of urine of very low specific gravity were withdrawn. Under constant drainage the temperature soon came to normal and remained there; the tongue gradually became moist and clean and the appetite returned. The urine, varying in specific gravity between 1003 and 1005, was secreted in amounts varying somewhat from day to day, but always in the neighborhood of 100 oz. On July 5, 1901, the specific gravity was 1003, the reaction was neutral, there was a large trace of albumen. The sediment was moderate in amount and consisted of pus, many large round cells (prostatic), a few normal blood cells, occasional hyaline casts, many triple phosphate crystals (probably deposited after passing). Mr. D.'s recovery was slow and it was the middle of August before the catheter could be taken out and passed only as occasion required. He returned home and gained 30 pounds in weight within the next five weeks. In December, 1901, he weighed 147 pounds, which he regarded as his full weight. Twice he had an increase of vesical inflammation due to cold and

fatigue. He finds that urotropin quickly clears up the urine when it becomes cloudy. Feb. 3, 1903, he writes that he now weighs 150 pounds and feels well if he does not overdo. July 24, 1903, Dr. Underwood writes that the quantity of urine is from 70 to 90 oz. a day, with a specific gravity of 1006 to 1008. He sees Mr. D. occasionally non-professionally and he looks very well.

CASE IV. I. D. B., a strong man of seventy-two, called upon me Nov. 14, 1900, on account of an annoying incontinence of urine. For several years had had occasional frequency of urination with some discomfort in the act. Two years before, while suffering from bronchitis, had difficulty amounting almost to a stoppage. This passed off, but since then the incontinence had gradually appeared. The bladder could be felt projecting well up into the abdomen after urination. The prostate was of about $1\frac{1}{2}$ times the normal size as determined by rectal touch.

Mr. B. was passing six and a half pints of urine in the twenty-four hours. It was clear, light in color and had a specific gravity of 1003, no sediment. Catheterization was started, the instrument being used at first once a day with antiseptic precautions. From 10 to 12 oz. of urine were drawn at each catheterization. After about a week the catheter was used twice a day and very soon a slight cloud began to appear in the urine and the temperature began to rise. Nov. 26 the catheter was tied in. There was some slight hematuria when the bladder first collapsed, but this did not seriously complicate the drainage and soon cleared up. Nov. 27 the fever reached 103° F. and the patient began to be nauseated and somewhat delirious at night. The cardiac action at this time became so unsatisfactory that Dr. F. C. Shattuck saw Mr. B. and continued to care for the medical treatment for a number of days. Cardiac stimulants and free catharsis were well responded to and two days later the temperature fell to normal. The nausea and slight delirium persisted, however, for some days longer. In this case the cessation of drainage was difficult. When it was tried after a fortnight to leave the catheter out for part of the day, he had a return of vomiting, the temperature rose to 102° F. and the quantity of urine fell from 100 oz. to 65. For four days he had mild uremic symptoms, which slowly cleared up with a return of excretion to a daily amount of over 100 oz. It was not until the seventy-ninth day that the drainage was left off altogether and ordinary regular catheterization was begun. When convalescence was finally accomplished the specific gravity of the urine had risen from 1008 to 1012 to 1015. This patient has been so comfortable with the regular use of the catheter that he shrinks from the consideration of operative measures. Jan. 16, 1903, he was in perfect health and weighed 180 pounds, which is more than for many years.

CASE V. F. B. W., sixty-three years of age. Patient dated his bladder trouble from an attack of the grippe in 1901, although he had had a slight hemorrhage from the bladder the year before. In January, 1902, he consulted Dr. Albert Wood of Worcester, because he was urinating frequently and his abdomen was increasing in size. The bladder was found distended above the umbilicus. Patient was pale, had backache and was very thirsty, with a dry mouth and slight headache. Catheter was passed Jan. 27 and 40 oz. of urine drawn. The urine was pale, slightly muddy. No elevation of temperature. Specific gravity 1008. After this the catheter was passed twice a day and the urine was never fully drawn except the first time. On Jan. 30 I saw him in consultation with Dr. Wood and Dr. Homer Gage. He was thirsty, with a dry mouth and loss of appetite. On the following day the catheter was tied in. At that time the daily amount of urine was from 65 to 80 oz. For three days after the establishment of catheter drainage the urine was tinged with blood, there was a little increase of temperature and the patient was slightly delirious. Gradually, however, his mouth became moist, his mind cleared up and all his symptoms improved. Catheter drainage was continued for three weeks, after which time the catheter was passed at regular intervals. He has steadily improved in health and now obtains by the catheter from 40 to 60 oz. of urine daily. Examination of urine made Feb. 23, 1903, shows the specific gravity to be 1017.

CASE VI. H. S. P. Seen Dec. 27, 1902, with Dr. R. W. Swan and Dr. Albert Wood. A strong, large man of sixty-seven, weighing 230 pounds. Frequent urination for many months, in past fortnight every fifteen minutes. Never stoppage, never hematuria. Has lately had uneasy pain in perineum all of the time, aggravated by passing water, also some pain in lower abdomen. Three days ago his appetite failed him. Has a dry mouth. For a considerable time he has been passing a very greatly increased quantity of water. Some little time ago it was eight pints in the twenty-four hours; in the past week it has fallen to six pints. The urine is clear with a specific gravity of 1005 and contains hyaline and granular casts. The abdomen is very large and hard in the lower segment. The outline of the bladder cannot be made out. Two pints of urine were drawn in the recumbent position and the catheter was then withdrawn, although the flow was still with a good jet. Catheter was later introduced and tied in. Jan. 7, 1903, Dr. Swan reports that patient is eating better. The quantity of urine increased very much on fastening in the catheter, reaching in one day sixteen pints in the twenty-four hours. After the first considerable increase in the quantity of urine, which followed the drainage, the quantity gradually fell to three quarts. The catheter was presently removed and was afterwards passed four times daily, drawing urine to the amount of two quarts in the twenty-four hours. The specific gravity just before drainage was 1005. It rose gradually to 1012 to 1015. Feb. 25, 1903, Dr. Swan reports that the patient says that he feels better than for a year past.

Although it is not intended to enter on any full discussion of catheter drainage here, a few remarks on some of the general bearings of the subject may not be amiss. The introduction of the catheter life in the presence of a tensely distended bladder is a delicate performance. Every one is familiar with the danger of too suddenly emptying such a bladder, and those of us who formerly carried out the plan of cautiously drawing but a part of the urine at each catheterization, or of drawing all of the urine and at once introducing a proper quantity of sterile or mildly antiseptic fluid to restore the partial distension of the bladder, know that even with the greatest care in our antiseptic precautions a cystitis was pretty sure to develop. If this occurred early it was likely to lead to a pyelonephritis which, while often recovered from, led to a fatal issue in a considerable proportion of cases. Since I have learned to apply the drainage of an in-lying catheter to these cases at the outset of the cystitis, I have been able to so modify the course of things that the fear of a fatal result has given way to a feeling of considerable confidence in a favorable issue. I have even finally come to feel that immediate drainage of an over-distended bladder is often better than to make any attempt at intermittent catheterization. By thus at once establishing a constant outflow, we remove all danger of back-flow up the ureters and thus greatly diminish the chances of pyelo-nephritis.

Case VI is a good example of this plan of treatment. In carrying out catheter drainage one important question which arises is, How long shall the drainage be continued and how shall the return to catheter life with intermittent catheterization be safely accomplished? I have made it my habit to continue the catheter drainage until all symptoms have disappeared and the urine has returned to a tolerably normal condi-

tion. If on attempting to leave out the catheter there is a return of fever and the quantity of urine sharply diminishes, it is to be concluded that the ureteric orifices have not yet recovered their valvular condition, and that irritation of the kidneys has again been produced by the back-flow of infected urine from the bladder. Probably the increase of tension plays a part also in producing this renewed evidence of renal irritation. In such a case the drainings should be at once restored and continued, not only till the symptoms of trouble disappear, but for a considerable time longer. Then another attempt may be made, and if the kidneys have shown themselves prone to relapse the change should be made very gradually. Often I have begun by stopping the flow through the catheter for a gradually lengthening period of time each day; and presently I have removed the catheter in the morning, left it out for two or three hours and then reintroduced it and fastened it in place. The next step is to take the catheter out in the morning, simply draw the water in the middle of the day and reintroduce the catheter in the afternoon. In this way, gradually lengthening the intervals as safety allows, I have succeeded in every case and finally returned to the usual catheter life.

It will be seen by referring to my cases that oftentimes the duration of the drainage has been very considerable. Cases I and IV were especially interesting in this regard, for in these patients each attempt to remove the catheter was followed by a return of pyelitis until at last I allowed them to go about freely with the catheter still in place. Mr. L. (Case I) kept the flow shut off for gradually lengthening intervals and attended to his business, going to the office each day. Finally, when the bladder showed complete tolerance for two or three hours at a time, the catheter was left out and the patient has since been well with ordinary intermittent catheterization.

CONCLUSIONS.

First. The relief of tension in kidneys that owing to long obstruction are exhibiting the clinical phenomena of interstitial nephritis usually brings about a return of normal function. From this, it would appear that the renal condition is directly due to the obstruction and increased tension.

Second. It seems probable that in cases of dilated ureters, permitting regurgitation of urine from the bladder back into the pelves of the kidneys, a long drainage of the bladder will permit such a shrinkage of the ureters and ureteral orifices as to restore the normal valvular action of the ureters and the retro-flow of the urine will thus be stopped.

It is reported that at a meeting of the Montreal League for the Prevention of Tuberculosis there was much sentiment in favor of the establishment in the city of a dispensary for tuberculosis.

UNCLEAN MILK, BOVINE TUBERCULOSIS AND THE TUBERCULIN TEST—THEIR RELATION TO THE PUBLIC HEALTH.*

BY E. R. LARNED, M.D., CHICAGO, ILL.,

Professor of Physiology and Physiological Chemistry, Dearborn Medical College.

THE dangers at our very doors from the sale of impure milk and from the lax administration of laws enacted to eradicate such dangers, and the incomprehensible complaisance on the part of the public, particularly the medical profession, towards these evils, compel the preparation of this paper. It requires no argument to show that the twenty-story building requires good material if it is to be solid and secure, and yet, judging by their actions, a great many people seem to think that it matters little what kind of material goes into the building of the human structure; they "feed on thorns and expect to pick roses," but later they discover they have sown germs and are reaping ptomaines. The human body is a wonderful laboratory, but it does not prevent the formation of deadly poisons within its very being, once the essential germs are taken into it. Milk has always been an article of man's diet and forms the entire nourishment of the early existence of all animals. Pure milk is the most important article of food entering into daily use, for it contains all the elements necessary for the growth of the young, and because it forms the entire nourishment of children at an age when they are unable to resist any tampering with their food.

"To relieve suffering and to prolong life" is the privilege of the physician, but to *prevent* disease is his *duty*, particularly when efficacious methods of so doing are known to him. The intelligent prevention of disease is one of the most important subjects of the day. The universal progress causes the public to be no longer satisfied that a physician enter a house, prescribe remedies and depart. The public wants to know the nature and origin of the sickness and the most suitable means of preventing its recurrence, and it is our duty to supply this important information. It is a matter of common knowledge that milk is one of the most easily and most universally adulterated of the great food products and to-day the greatest menace to the physical well-being of the American people lies in the uncontrolled sale of adulterated food products. From the importance of the subject and the ease with which milk may be contaminated, great attention has been paid to it, and we have the results of thousands of analyses and a great many investigations to guide us in our studies of the subject. Although the preservation of human health is of the first and highest importance, the perfection of sanitary methods demands that the health of the domesticated animals upon which mankind depends so largely for food and which are kept in such close proximity to the human dwelling should be likewise cared for and protected and, as will be shown

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later, it is in such care of the lower animals that our own health depends in a very great measure.

As this paper, properly, deals only with impure, adulterated, or unclean milk and related conditions I will only speak briefly of pure milk as it should be. No milk should be sold as "whole milk," nor used nor offered as such if it contains more than 88% of watery fluid or less than 12% of total solids, of which 3% should be butter fat.¹ Nor should it contain any pus, mucus, nor any pathogenic germs of any kind; moreover, in my opinion, every drop should be "pasteurized" — that is — immediately after being drawn from the cow it should be aerated, strained and put into suitable bottles which have been previously sterilized, and heated to a temperature of 170° F. for at least fifteen minutes and then rapidly cooled to 45° and kept there until the bottles are delivered unopened to those intending to use the milk. Aeration removes gases which impart the "cow odor" to the milk, and rapid cooling to 45° F. prevents the formation of lactic acid, as the germs of lactic acid are almost inactive below 50° F.² Heating the milk to 170° F. for fifteen minutes kills all organisms found in milk, nothing remaining alive but the resistant spores of some bacteria.³ Freeman⁴ found that for the practical purpose of rendering milk safe as an article of food it is not necessary to make repeated heatings, that one heating at 167° F. to 170° F. for fifteen minutes, followed by rapid cooling by immersing the container in cold water, would kill the adult forms of most microbes, and that milk so treated remained unaltered for three days. Under all circumstances I forbid that infants shall be fed upon raw milk, when by the simple procedure of pasteurization we have the means of rendering milk *safe* and more digestible. The pasteurization of milk is an extremely easy operation, and if mothers better appreciated the dangers to which their little ones are exposed from the use of raw milk from unknown sources, especially in the summer time when it may be teeming with bacterial growth, more of them would use this simple precaution. It is estimated that one third of all children die before they are three years old, and one of the leading causes of infant mortality is unwholesome milk. Bad milk cannot be made perfect by pasteurization, but the danger from its consumption can be lessened. The process is very simple and the necessary apparatus is inexpensive.

Experiments carried out by the Maryland Experiment Station of the Bureau of Animal Industry show that there is very little difference in the digestibility between raw and pasteurized milk, while the latter is much the safer.⁵ Milk which is from cows who are diseased in any way, or to which has been added any of the following commonly used adulterants, viz., annatto, termeric, coal-tar colors, starch, salt, cane-sugar, glycerine, syrup, boric acid, salicylic acid, borax, formaldehyde, benzoic acid, sodium carbonate or chalk,⁶ should not be sold as "pure whole milk," and infractions of this rule should be firmly

dealt with and prosecuted according to the laws already on our statute books. Although, fortunately, the milk secretion is in abeyance during many diseases to which cattle are subject, it is not so in all, nor in every case of the same disease, and in a few conditions the milk presents somewhat definite chemical and microscopic characteristics which are fairly constant to the unaided eye, nose and palate; however, milk ordinarily is all that is to be desired. These adulterants are all used by sellers and producers of milk and may be easily detected by the appropriate chemical procedures described in technical works. To ascertain the bacteriologic and microscopic conditions of milk, however, it is necessary to have recourse to somewhat complicated laboratory processes, which, familiar to most of us, are quite mysterious to the uninitiated. The discoveries made in laboratories have worked great changes in professional opinion and at the same time have lengthened the span of life and introduced the miraculous into modern science, for the apparently impossible of yesterday is not only the possible but the common thing of to-day.⁷ The use of coloring matter in milk or cream, although greatly improving its appearance, has been shown by recent investigation to seriously interfere with the pancreatic and peptic digestions.⁸ As for the alleged harmlessness of formaldehyde, it is only necessary to refer to the death of the brilliant young pathologist Straub of Munich, whose death is directly attributed to his working in the gas.⁹

Young states that formaldehyde added to milk as a preservative impairs the nutritive value of the milk and interferes with the digestive processes.¹⁰ The people of Omaha, Neb., were afflicted with a milk supply so altered by the addition of preservatives that the sanitary authorities warned the citizens of the great danger of feeding infants with the milk.¹¹ Annett shows from experiments that the use of boric acid and formalin as milk preservatives are very injurious to the health of the consumer and particularly so to the health of infants.¹² He states his belief that the great infant mortality rate from "diarrhea" of many large towns may be closely connected with the almost universal practice, particularly during the summer months, of systematically "doctoring" the milk by means of preservatives, by milk dealers, etc. He intends carrying on further experiments to obtain facts for furthering the prosecution of such offenders against public health. As the dairy industry has always been one of the most slovenly conducted branches of food production, it is with the utmost difficulty that those who are engaged in it can be induced to understand or appreciate the value of modern cleanly methods, while the additional labor required will make the profits shrink to an alarming extent. Although our sanitary laws, when and where they are enforced, have improved the quality of milk, particularly as to its chemie composition, only a bare beginning has been made in regard to making certain that the supply is *pure and healthful*. Chemic altera-

tions are due to criminal tampering on the part of the dealer, while bacterial alterations and diseased conditions are due to ignorance or neglect which are almost criminal.

Lestes¹³ gives the results of his investigations of milk and says that milk that contains pus, mucus, or germs is utterly unfit for human use, but that these restrictions would entail the condemnation of 80% of the samples he examined. No farmer dreams of allowing a cow with an inflamed udder to suckle a calf, so why should he be allowed to sell such contaminated milk? Lestes also shows the folly of mixing the milk from healthy and diseased cows. Lemiere¹⁴ states that the death rate of Lille, France, under two years is 398.6 per 1,000, and in one parish 520. Gastro-enteritis is responsible for a very large proportion of these deaths and the author truly remarks that this is preventable in a great measure by insuring a pure milk supply. The difficulty of a general correction of the faulty methods of milk production and the adoption of improvements are mainly due to the increased cost of the milk production and the consequent higher price to the consumer. And if the state should undertake to at once enforce these changes, the business of the dairyman would be temporarily ruined. The farmer cries out in alarm where the "tuberculin test" is proposed and when the worst cases are to be rectified at once a great cry of sympathy goes up that some one is being persecuted and the press of the country is filled with the jargon of vote-seeking politicians who, while seeking the favor of the cities, will not do anything to incur the displeasure of their farmer, dairymen or cattle-breeding constituents. At a meeting of the farmers, dairymen and the Illinois State Board of Agriculture held in Chicago, in 1899, an organization was formed for the purpose of protesting against the enforcement and advocating the repeal of the stringent laws passed by the legislature relative to the eradication of tuberculosis in cattle. Great dissatisfaction is expressed among farmers of this state over the compulsory killing of cattle for tuberculosis. "At a recent examination on the dairy farm of W. G. Thornton by State Veterinarian Lovejoy and Live Stock Commissioner Johnson¹⁵ eight cows of a herd of twenty showed signs of tuberculosis. The state board slaughtered them in the presence of several hundred people. Four of the cows were found free of the disease, while the other four cows were only slightly infected. Dairyman Thornton has retained lawyers and will prosecute the case." I will undertake to show that the tuberculin test, if correctly and intelligently applied, is most infallible in the diagnosis of bovine tuberculosis, and I doubt very much that "four out of eight" reacting cows were free from the disease.

Secretary Wilson of the Department of Agriculture, in an interview published in the Chicago papers in 1899, is said to have remarked that "he feared that Governor Tanner's proclamation relating to the importation of cattle was too drastic." He did not approve the slaughter of

cattle suspected of tubercular infection unless the case developed *indisputable* symptoms of the disease. He sincerely hoped that the State Board of Health would not permit the indiscriminate slaughter of cattle suspected of tuberculosis, to the detriment of the dairy interests of the country. Secretary Wilson's cautionary advice is worth careful consideration, but I would like to ask what are the *indisputable symptoms* of tuberculosis? There seems to be some difficulty among scientific minds as to this question. Legislation cannot make honest men of dishonest men, and ill-directed legislation is often worse than none, but the annual sacrifice of thousands of innocent young lives upon the altar of impure milk and public sentiment will sanction *any* destruction of cattle necessary to the eradication of tuberculosis. So let us shed a little light upon this dark subject where "ignorance seems to reign supreme." It requires the strong hands of law and justice to deal with it and I demand to know if any consideration of money or politics can be permitted to weigh against a possible danger to the lives of our children.

Emmet Holt¹⁶ points out that the most important preventative measures in the treatment of "summer diarrhea" of infants comprise careful inspection of milk sold in cities and close supervision of those selling milk and the sterilization of all milk sold. Lübbert has shown¹⁷ that milk as it usually comes from the dairies contains bacteria which have the power of peptonizing it and as this process of peptonizing goes on the milk often becomes very poisonous, especially to individuals under two years of age, and may bring about a fatal enterocolitis or "summer complaint." Hirsh,¹⁸ Sibman,¹⁹ Spiegelberg,²⁰ Monti²¹ and Escherich²² have all lately contributed to our knowledge of the flora of the gastro-intestinal tract. Their observations agree and point to the streptococcus enteritis as the etiological factor in the acute diarrheas of infants where the stools are frequent and slimy. They also agree that these organisms find their way into the child's intestines through milk and that these identical micrococci have been recently isolated from cow's milk. Eastes writes as follows²³: "I have also not the slightest doubt that unboiled milk containing streptococci is also to be held responsible for some of the cases of infantile diarrhea and mortality." Holst²⁴ observed a series of cases of acute gastric catarrh which he attributed to the ingestion of milk containing streptococci. He reports cases of gastric disturbance in four families, apparently caused by raw milk, for only those members of the families that partook of the raw milk were affected. In each instance he found that the patients had partaken of milk from cows suffering from inflammation of the udder. Niven²⁵ reports extensive poisoning among the patrons of a single milk dealer. The patients suffered from "diarrhea, sickness and abdominal pain," and only those persons who had partaken of the milk were seized. A bacteriologic examination revealed the presence of *bacillus coli communis* and strep-

tococci. It was ascertained that one of the cows in the dairy supplying the milk had been suffering from garget for some time, and on the day when the milk which caused the sickness was produced, the inflammation of the udder of that cow was most marked. While the author considers streptococci to be the cause of the trouble, yet he does not present conclusive evidence in support of that belief. Stokes²⁶ writes: "The prevalence of the acute intestinal disorders among children using cow's milk is well known and many of these conditions are caused by the organisms of suppuration. It would seem, therefore, that milk from diseased cows, containing these germs, might often be the cause of intestinal troubles, especially in young infants. Busey and Kober²⁷ hold similar views based upon the authority of Kruger,²⁸ Bang²⁹ and others. Bergey³⁰ observed sickness in an infant fed on milk from a first-class dairy and an examination revealed the presence of streptococci in the milk. "This result led to the employment of milk from other first-class dairies and the examination of each yielded the same results, viz., the presence of large numbers of streptococci."

Nothing definite can, as yet, be stated with regard to the significance of the presence of streptococci in the milk of healthy cows. Beck³¹ believes that they are closely related with the streptococci which Escherich found in infantile enteritis. Hirsch³² has described in minute detail the progress of a fatal case of gastro-enteritis in an infant, in which streptococci was the etiologic agent. He found the organism like *streptococcus involutus*, described by Kurth, and found it to be pathogenic to white mice only. Libman,³³ Tavel and Eguet³⁴ and DeCervenville³⁵ have made similar observations. Heath³⁶ of Buffalo suggests the following as being worthy of being incorporated to fortify existing laws relating to the milk industry:

(1) Prohibition of sale of milk over thirty-six to forty-eight hours old. (2) Prohibition of disinfectants. Milk-house conditions must preclude their necessity. (3) Supervision of contagious diseases as to milk routes. (4) Abolition of street peddling and grocery store dealers. (5) Sterilization at dairy and preparation for ultimate delivery with labels of data. (6) Arbitrary attitude towards dairies supplying cities and over which no jurisdiction exists.

Pierson,³⁷ Assistant Chief Dairy Division, Department of Agriculture, gives the following as the ordinary conditions that should be found in every well-managed dairy:

(1) A roomy, clean, dry, light and well-ventilated cow stable. This is absolutely necessary to keep cows in the best of health. (2) Healthy and clean cows which appear well fed and contented. (3) Abundance of pure water given to the cows at least twice daily. (4) Feed of good quantity. The food must be free from dirt, decay or a musty condition. (5) A spirit of kindness towards the stock by every one employed about them. (6) Provision for aërating, straining and

cooling the milk, in a clean atmosphere free from all stable odors, immediately after being drawn from the cow. (7) Provision for washing and sterilizing all utensils which come in contact with the milk. (8) Facilities for storing the milk and keeping it cold.

To show that these are not simply theoretical and visionary possibilities, the brilliant example of the Royal Danish Veterinary School in reference to the milk supplied to the city of Copenhagen may be cited. At no other place are modern methods in such general use nor are they controlled with such efficiency. In this country New York, Massachusetts, Pennsylvania, Iowa and Minnesota have legislated along these lines, but in all of the laws there is the defect of too much of the feature of money, "protection to the farmer." In our own immediate neighborhood several instances of voluntary improvement have demonstrated that even with the increased cost of production and increased selling price there is still a good chance of success and that in the end the intelligent consumer will appreciate the honest efforts expended in his behalf. Such examples as the work of Dr. Russell of the Wisconsin Experiment Station in supplying milk to Madison and Milwaukee and his development of pasteurized milk for infants and invalids, the work of Gurler of DeKalb, of the Clover Hill Farm, and the Walker-Gordon Laboratory in supplying milk to Chicago, are worthy of the highest commendation. Reviewing these demonstrations, any doubt as to the possibility of supplying cities with milk of a high standard of quality and purity for general distribution must be removed and these examples should be emulated by every dairyman in the business.

To show what may be accomplished by systematic inspection and prosecution, the example of the Department of Health of Chicago may be cited: In August, 1895,³⁸ the authorities issued instructions ordering the entire force of the municipal laboratory to bend every energy towards improving the milk supply and to vigorously prosecute all dealers selling milk or cream not in accordance with the city ordinance. The number of samples collected and analyzed was at once increased and the prosecution of offenders reduced the number of samples below grade from 60% of all samples collected to 5% in a few weeks. Over 14,000 samples were examined in 1895 and over 25,000 in 1896. Vigorous prosecution and publication of the names of dealers has shown its effect not only on the dealers themselves but on the farmers who supply them. In cases where the milk has been found wanting in any particular, the dealer has stopped taking milk from this farmer and thus the farmer has been forced to supply good milk. It has been repeatedly held in courts that shippers of milk below grade cannot recover in a suit for payment. Every analysis of milk made represents a sanitary inspection of the premises where the sample was taken as well as an examination into the quality of the milk. Moreover, special sanitary inspec-

tions are made whenever the circumstances seem to warrant. I have visited many dairies in the immediate vicinity of the city of Joliet, Ill., but I have yet to find one where proper and adequate hygienic sanitary measures are carried out, and I have yet to find one where there are not abundant avenues for infecting the milk. In almost every quart of milk sold in that city, after standing, a sediment collects which upon macroscopic examination appears to be dirt and microscopic examination and culture experiments prove to be teeming with germs. I have observed this not once but many times and I submit that this is not the kind of food for our babies, our aged and infirm or sick. Are we to allow such conditions to go on unprotected? Or is it not rather our duty to issue a warning to the public and to call things by their right names — to point out in unmistakable terms the enormous danger to public health that arises from mistaken ideas of cleanliness, and the slaughter of innocents caused by the idiotic methods employed in our milk production.

Recently I made some cultural experiments with milk sold in the city of Joliet, and I give you the results according to notes made at the time. The technique of these bacteriologic investigations was carried out in the simplest manner, to test the milk for the presence of germs of the "typhi-colon group" as well as other pathogenic forms. Beyond the colon group, just mentioned, no particular efforts at the identification of separate species were made — that being left for the future. Samples of milk, averaging one pint each, were purchased in the open market from the various dairies supplying milk to the residents of this city, from cows tested with tuberculin and those not so tested. These samples were put into pails provided for that purpose and which had been subjected to steam sterilization. The milk was at once carried to the laboratory and put into tall sedimenting glasses which had also been steam sterilized and allowed to stand for twelve to eighteen hours, being kept at a temperature ranging from 45° to 50° F. during this time. Then 10 cc. of milk were drawn into a sterile pipette and placed in the tube of the centrifuge, which was then whirled at a speed of 3,000 revolutions for five minutes. After the bulk of the milk had been poured off, a small portion of the sediment remaining in the bottom of the tube was taken up with the platinum loop and used to inoculate tubes of sterile glucose gelatin, which were at once put into the incubator and kept at 70° F. for periods varying from one to four weeks. Positive reactions were obtained in nearly every example. Second, and in some cases third, inoculations from the original gelatin cultures were grown in glucose-glycerine agar, on slants, in stab and in plates. These agar tubes and plates were kept in the incubator at a temperature of 35° to 40° C., and in forty-eight hours showed numerous colonies which continued their growth in such exuberance that in a few days the surfaces of the media were entirely covered. Cover slips

prepared from these cultures showed germs with the same morphologic characteristics as the direct smears from the milk. Control tubes of uninoculated media which were always opened with the inoculated tubes and in every way subjected to the same manipulations and conditions have remained absolutely sterile — consequently we can attribute the positive results produced in the samples to the presence of undesirable constituents in the milk examined. Litmus agar slants were prepared from the colonies of the third generation growing upon litmus agar and an acid reaction was shown in twenty-four hours, continuing, with the formation of gas cavities, until in from three to four days the media had entirely changed from blue to red. Glucose bouillon inoculated with these cultures and put in the fermentation tube rapidly developed gas which was easily identified as H and CO₂.

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(To be continued.)

Clinical Department.

A CASE OF MYXEDEMA.

BY ADDISON S. THAYER, M.D., PORTLAND, ME.

THIS patient was first seen by me Oct. 21, 1902. A severe nosebleed caused hurried search for a doctor, at a time when doctors were making their afternoon calls. An orthopedic surgeon, Dr. E. G. Abbott, after telephoning to several general practitioners, kindly responded in person, plugged the posterior nares, and transferred the case to me.

The classical symptoms of myxedema had been present for years — some symptoms for more

than twelve years. There was waxy pallor of the skin, bagginess of subcutaneous tissues, falling out of hair, constant lachrymation, hemorrhages from mucous membranes, subjective and objective deficiency of body heat, and slowness in thought, speech and motion.

The stumbling gait and its consequences seem especially worthy of note. As the patient herself afterwards expressed it, "I could not get my foot forward fast enough to prevent stumbling, and I could not get my hands in front of me in season to break the fall and save my face from bruises."

This patient is, perhaps, uncommonly susceptible to thyroid medication, which began the same evening. At no time has she been able to take in a single day more than two of Parke, Davis & Co.'s thyroid tablets without intracranial pressure, "nervousness," or tachycardia. After two weeks the dose was reduced to one tablet daily; after three months, to one-half tablet, once daily, — at which time all of the above symptoms had almost wholly disappeared.

The accompanying photograph was taken two weeks after the beginning of treatment, when there was already a noticeable improvement in appearance. The fall which caused the nose-bleed had caused also bruises and distortion of feature; and it was necessary to wait for these swellings to subside, in order that the picture should present no abnormalities except the residue of myxedema.

A CASE OF EPILEPSY AND NEPHRITIS SIMULATING PUERPERAL ECLAMPSIA.

BY PHILIP H. COOK, M.D., WORCESTER, MASS.,

House Obstetrician, City Hospital.

M. H., aged thirty-four, of American birth and parentage, IV-para, entered the Worcester City Hospital on Aug. 13, 1903, at 10.30 P.M., well advanced in first stage labor and was admitted to the Maternity Ward on the service of Dr. Foster H. Cary. Friends who came with her stated that she was of a nervous disposition and subject to epileptic seizures, the last of which had occurred about one month ago. Preceding labors were normal. Last one was six years ago. No particulars of attacks were obtainable. Patient stated that she was about nine months pregnant. Had felt well throughout pregnancy, aside from the convulsion one month since. No headache, nausea and vomiting, or epigastric pain. Said eyes had not troubled her.

On physical examination, pulse 108, good volume and tension. Tongue shows old scars. Heart negative. Marked edema of legs and feet, none of face or hands. Skin moist. Catheterized specimen of urine was pale in color. Nitric acid test showed it to be laden with albumen.

Labor progressed normally and child was born at 12.43 A.M., Aug. 14. Pulse 80 after birth of placenta. Patient soon went to sleep and passed a good night. At 9.50 A.M.,

Aug. 14, patient asked to have curtain lowered, as light hurt her eyes. Twenty minutes later the nurse's attention was attracted by a sound "like filing a saw," and going into the room she found patient in a convulsion. The head moved quickly from side to side, the eyes rolled and there was frothing at the mouth, without, however, any admixture of blood. The arms were rapidly flexed and extended, while the thumbs were closely flexed across the palms. The jaws were clenched and the teeth gritted continually. The whole body quivered and tossed from side to side. A gag was inserted and a few whiffs of ether given during the convulsion, which lasted about two minutes. The patient now passed into a semi-comatose condition, responding to supra-orbital pressure. Pulse just after the convulsion was 100, good volume and tension. Temperature normal. Respiration noisy and stertorous in character. Skin moist. A hot pack was ordered, to be continued for half an hour. Before the end of this time the patient had recovered consciousness and was talking rationally. She had no recollection of anything which had occurred during the attack. Shortly after recovering she complained of headache and restlessness, which yielded readily to treatment. Milk diet and diuresis were ordered and the pulse taken every twenty minutes through the day. It never rose above 84 and reached that point only twice. During the afternoon considerable edema of the lower lids was noted.

Urinalysis showed: Albumin $\frac{1}{4}\%$ +, sugar, 0; color, pale; specific gravity, 1010; reaction, acid; bile, 0.

Sediment: Many hyalin and fine granular casts, considerable squamous and large round epithelium. Rare normal corpuscle, leucocyte and small round cell.

Late in the afternoon the patient's husband called and from him the following facts were obtained. She had been subject to attacks for fifteen years and treated by several physicians without benefit. No aura till two years ago, since when the seizures have been preceded a few minutes by dimness of vision. Following this comes convulsion lasting a few minutes, then stupor lasting about half an hour. Has injured herself during convulsions. Attacks sometimes only twice a year, but have come as often as once in two weeks. The children, the last of whom was born six years ago, are all well, but inclined to be nervous.

The patient now began a perfectly normal convalescence. Her temperature never exceeded 98.6, nor her pulse 90. A urine chart was kept for three days, with results as follows: Aug. 14, 79 oz., urea, 231 gr., albumin $\frac{1}{4}\%$ +; Aug. 15, 81 oz., albumin trace; Aug. 16, 84 oz., urea 252 gr., albumin trace. Sediment as before.

On Aug. 24 albumin was reported as slight trace. Sediment. Some pus and blood, no casts seen. Edema had nearly disappeared. Patient was now allowed an increase in diet. At 10 P.M. she had an attack similar in every respect to the first one, but preceded by a shrill cry.

A gag was inserted, and full consciousness returned in about twenty minutes. Pulse 88, temperature 98.4. From this time on the convalescence was uneventful. The child, which on account of the mother's tendency it was thought unwise to put to the breast, did well on modified milk and on Aug. 27 both patients were discharged well.

Medical Progress.

RECENT PROGRESS IN THERAPEUTICS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

THE TREATMENT OF RENAL CALCULI.

R. A CASE OF MYXEDEMA.

In general the pursuit of any one-sided diet can lead to the formation of renal calculi particularly if combined with irregularities in drinking. Exclusive meat eaters acquire uric acid calculi, vegetarians oxalic or phosphatic stones. Health lies in a mixed diet. Highly spiced and salted food favor hyperacidity of the stomach and this is harmful in many ways to those disposed to renal stones. The salt of the food goes directly over into the urine, increasing its specific gravity.

The constituents of the stone should be determined. This is far more easily done than supposed, and is summarized in Klemperer's article, but cannot be considered in this review. Having determined the character of the stone, a diet



be taken in the day, which means 500 cc. (1 pint) at each meal and about the same quantity between meals and before retiring. Water is the best liquid. Klemperer gives a diet table illustrative of this idea and says that patients who pass 250 cc. bright, clear urine every three or four hours during the day can be assured that they are protected from the formation of new calculi.

toward changing as much of this free acid as possible into combination with a base, sodium acid urate, which is reasonably soluble at body temperature. Acid can exert a great influence in this direction, because a meat diet furnishes acid elements to the urine, a vegetable diet furnishes alkalies. With a preponderance of meat diet and little vegetable food the free uric acid in the urine reaches 80 to 90%, while on a mixed diet the rela-

¹ Klemperer: Die Therapie der Gegenwart, Sept., 1903.

² See Hall: Berl. klin. Woch., 1903, Sept. 21, p. 868.

than twelve years. There was waxy pallor of the skin, bagginess of subcutaneous tissues, falling out of hair, constant lachrymation, hemorrhages from mucous membranes, subjective and objective deficiency of body heat, and slowness in thought, speech and motion.

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Medical Progress.

RECENT PROGRESS IN THERAPEUTICS.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

THE TREATMENT OF RENAL CALCULI.

Prophylaxis. — Each stone consists of a crystalline and organic element. The organic element becomes visible when the crystal is carefully dissolved. This ground substance has not been isolated, but the micro-chemical reactions suggest an albuminous substance and Klemperer¹ thinks it the mucin which is present in all normal urines. This is of the greatest importance in prophylaxis, because formerly it was supposed that a catarrh of the mucous membrane must be present before a stone could form and this lithogenous catarrh eluded treatment. Now it is recognized that a calculus can always form, if crystals are precipitated in the urinary passages, and the first aim therefore of prophylactic treatment is to prevent this precipitation. But as neither one nor several crystals form a calculus unless they adhere, the second task of prophylaxis is to remove these smallest aggregations of crystals. This second task is simpler and the same no matter the form of crystal. It is purely mechanical.

A renal calculus will never form if there is a copious flow of fluid through the urinary passages. Crystals are more readily precipitated from a concentrated solution and less thoroughly washed along. Consequently calculi are found in heart disease, in the first few months of life, after acute illnesses, but they are rare in diabetes mellitus unless as a result of energetic treatment, and never found in diabetes insipidus. Women drink notoriously too little fluid, men do not err so much in this direction, but they drink irregularly through the day. One portion of urine will be concentrated, another dilute. The first rule then is that liquids shall be taken freely and at regular intervals so that the quantity of urine shall be 1,500 to 2,000 cc. in twenty-four hours. To attain this 2,500 cc. of liquid must be taken in the day, which means 500 cc. (1 pint) at each meal and about the same quantity between meals and before retiring. Water is the best liquid. Klemperer gives a diet table illustrative of this idea and says that patients who pass 250 cc. bright, clear urine every three or four hours during the day can be assured that they are protected from the formation of new calculi.

In general the pursuit of any one-sided diet can lead to the formation of renal calculi particularly if combined with irregularities in drinking. Exclusive meat eaters acquire uric acid calculi, vegetarians oxalic or phosphatic stones. Health lies in a mixed diet. Highly spiced and salted food favor hyperacidity of the stomach and this is harmful in many ways to those disposed to renal stones. The salt of the food goes directly over into the urine, increasing its specific gravity.

The constituents of the stone should be determined. This is far more easily done than supposed, and is summarized in Klemperer's article, but cannot be considered in this review. Having determined the character of the stone, a diet should be planned which takes into consideration the character of food which leads (1) to the formation of the particular stone and (2) influences the solubility of the substances forming the stone.

DIETETIC PROPHYLAXIS AGAINST URIC ACID CALCULI.

The uric acid of the urine comes from the nucleo-proteids which form the essential constituent of the nucleus of the cell. A meat diet therefore favors uric acid, particularly the cellular organs like thymus, liver, kidney, but a milk and egg diet with farinaceous dishes and vegetables² causes no uric acid. In general 1 pound of meat produces in twenty-four hours 1.5 gm. uric acid, 1 pound thymus 2 to 3 gm. On a milk and vegetable diet the uric acid falls to 0.4 to 0.6 gm. per day. It never wholly is absent, because cells are constantly breaking up in the body. One half pound meat is a proper quantity to allow and it makes no difference whether it is white or red (light or dark). Fish can be reckoned as meat. Bouillon need not be forbidden since the extractives which it contains increase unessentially the quantity of uric acid. (This is contrary to the usual belief.)

The second and more important question is how to hold in solution so insoluble a substance as uric acid. The uric acid exists in the urine as an easily soluble salt and as an acid which is very insoluble. Only a small part of the latter is really soluble, the greater part being held in a sort of suspension from which by shaking alone it may be precipitated. The urine holds the uric acid in suspension by reason of the colloidal property which is furnished by the normal coloring matter, urochrome. The darker colored a urine is, the more uric acid can it hold in solution. Over this colloidal property, diet exerts no influence, consequently all energies must be directed toward changing as much of this free acid as possible into combination with a base, sodium acid urate, which is reasonably soluble at body temperature. Acid can exert a great influence in this direction, because a meat diet furnishes acid elements to the urine, a vegetable diet furnishes alkalies. With a preponderance of meat diet and little vegetable food the free uric acid in the urine reaches 80 to 90%, while on a mixed diet the rela-

¹ Klemperer: *Die Therapie der Gegenwart*, Sept., 1903.

² See Hall: *Berl. klin. Woch.*, 1903, Sept. 21, p. 868.

tion between free and dissolved uric acid is about half and half. By an increase of vegetable food the uric acid appears more and more as a salt and is so excreted. If vegetable food is persisted in to the exclusion of other food the urine finally becomes alkaline from calcium phosphate. Practically it is sufficient if the two forms of uric acid are excreted half and half. This is accomplished when large quantities of fruit and vegetables are eaten with moderate quantities of meat, fish and leguminous vegetables. A plateful of vegetables should be taken twice daily and at least a pound of fruit.

The uric acid will be excreted as a salt, when the diet is of a mixed character containing a moderate quantity of meat, if 1 gm. (15 gr.) bicarbonate of soda is given five times daily. The more meat, fish and leguminous vegetables given, the more soda required. The soda is administered to best advantage three or four hours after a meal. It is not required just after a meal, because at that time the acid elements of the blood are being used to form HCl in the stomach. Klemperer suggests giving bicarbonate of soda in the form of a natural mineral water. The CO₂ contained in such also tends to favor the solubility of the uric acid. The necessary quantity of soda bicarbonate to be given can be determined by the reaction of the urine. Any one can convince himself of the effect of a meat or vegetable diet upon the reaction of the urine by living upon one or the other exclusively for a few days and then testing the urine with litmus paper.

[We have not as yet sufficient data to say positively in what condition the uric acid exists in the urine, but at the body temperature there is no reason to believe that uric acid is not all present in the form of a salt. When urine cools and some uric acid crystals form there is a change from the form of a salt to the form of a free acid.]

Urochrome has not been satisfactorily proven to hold uric acid in a colloidal condition. Klemperer performed one experiment in which he found that the uric acid was precipitated a little more slowly from a solution of sodium urate, to which uric acid had been added, in the presence of urochrome than in its absence.

The administration of alkalies in the food or the addition of alkalies to a urine cannot influence the solvent power of the urine for uric acid unless enough alkali is given to make the urine actually alkaline. This is true as well of lysidin, piperazin and the other organic bases as of sodium bicarbonate and lithium salts. This should be expected from theoretical reasons and has been shown to be true by experiment.

In an article published by Klemperer in Vol. 5, p. 48, of the *Zeit. für physik. u. diätet. Therapie*, he states that carbonic acid decreases the solubility of uric acid but increases the solubility of the acid urates of sodium and potassium.

We would refer to an article recently published in this JOURNAL by McCrudden, 1903, Aug. 6, p. 149, for a further discussion of this subject. — E. P. J.]

THE PROPHYLAXIS OF OXALIC ACID CALCULI.

The calcic oxalate of the urine is chiefly derived from the food. Considerable quantities occur in spinach, tea, cocoa and smaller amounts in the remaining vegetables, fruit and beer. Meat is poor in oxalic acid except for the connective tissue elements. Oxalic acid occurs most as the insoluble calcium salt in the food, but is set free by the hydrochloric acid of the stomach. The more acid the gastric juice, the more oxalic acid is set free to find its way into the urine. Therefore by the avoidance of spinach, tea, cocoa and the gristle of meat and by the use of an alkali with meals the urine will contain little oxalic acid. It does not become wholly free from it, because of endogenous sources like creatinin and glycocholic acid.

The solubility of oxalic acid is increased in the presence of acid sodium phosphate, but as this is produced through the agency of an excessive meat diet, this method is impracticable. A more favorable resource is open. Calcium oxalate is more readily soluble in solutions of magnesium salts than of calcium salts. The former then are desirable and preponderate in meat, leguminous and farinaceous foods, potatoes and apples, while the latter, the calcium salts, are relatively abundant in milk, eggs and fresh vegetables.

DIETETIC PROPHYLAXIS OF PHOSPHATIC CALCULI.

Calcium phosphate is precipitated in an alkaline urine. This occurs when the urea is broken up by bacterial invasion into carbonic acid and ammonia. This condition is best met by treating the primary condition by lavage of the urinary tract, etc. But the urine is often alkaline because of fixed alkalies, instead of the volatile ammonia. This often occurs coincidentally with the secretion of HCl in the stomach and is a normal occurrence, a few hours later the urine returning to an acid reaction. If the gastric juice is removed by vomiting or by washing out the stomach, the urine remains persistently alkaline.

Prophylaxis consists in restoring the general bodily condition to a healthy plane and treating the digestive disturbance. A mixed diet is to be preferred, since experience shows the complete avoidance of vegetables is unavailing. Vegetables and fruit, however, should be taken only in moderate quantities and alkaline waters totally interdicted. Plain water or water charged with carbonic acid is advisable since this passes to a considerable extent into the urine and by increasing the number of acid molecules contributes to the solution of the phosphates.

VEGETABLE FOOD IN GOUT AND NEPHRITIS.

Hall contributes an interesting article upon this subject.³ It has been the custom to restrict meat as much as possible in gout and nephritis. Formerly it was supposed that white meat was less harmful, but recent investigations have shown that the difference in the content of ex-

³ Berl. klin. Woch., 1903, Sept. 21, p. 868.

tractives between white meat and red meat is slight. Though much attention has been devoted to the study of the purin derivatives in meat and to their exclusion from the diet, vegetables have been allowed freely and without distinction. How irrational such a course is the following table shows:

| <i>Food.</i> | <i>Purin Nitrogen in per cent of undried food.</i> |
|--|--|
| White bread, rice, tapioca, cabbage, cauliflower, lettuce | 0. |
| Potatoes | 0.0007 |
| Onions | 0.0036 |
| Asparagus, cooked | 0.0086 |
| Pea meal | 0.0156 |
| Oatmeal | 0.0212 |
| Beans | 0.0250 |

From this table it is obvious that though white bread, rice, lettuce and potatoes are wholly or nearly free from purin bases and so belong in a purin-free diet, other vegetables like onions, asparagus, beans and pea meal and oatmeal contain an abundance of extractives. This fact explains an observation of V. Nooden, who obtained about the same quantity of uric acid when a patient was fed with asparagus, beans and sauerkraut as he did when the patient was on an ordinary diet. Douglas also found 0.702 gm. uric acid in the urine of twenty-four hours from a patient whose diet was rich in peas, beans and lentils and only 0.675 gm. uric acid when the same patient was on the customary meat diet. Hall found in three individuals living on a diet free from extractives that the addition of beans caused an increase of uric acid in the same way as meat. The increase in extractives amounted to half the quantity of the extractives contained in the beans given.

The following table shows that various forms of beer contain many purin derivatives:

| <i>Substance.</i> | <i>Purin Nitrogen in per cent.</i> |
|--|------------------------------------|
| Claret, Volnay, Sherry and Port wines | 0. |
| Milk | 0.0002 |
| Lager beer (A). | 0.0052 |
| (B). | 0.0020 |
| Pale ale | 0.0058 |
| Porter | 0.0061 |

There is about the same quantity of uric acid forming material in one quart of beer as in three and one third ounces of beef. It is still an open question whether purin bodies in the food exert an influence on the development and course of gout and nephritis, but the close relation between these bodies in the food and the formation of uric acid is no longer uncertain. At present the dietetic treatment of these affections will only follow rational lines when besides meat, the vegetable foods such as peas, beans, onions, asparagus and oatmeal are restricted and beer absolutely forbidden.

TOXIC SYMPTOMS FROM UROTROPINE.

Urotropine is so extensively used that it is well to bear in mind that it is not harmless.

Coleman⁴ states that toxic symptoms like strangury occur with comparative frequency if the urotropine is not properly diluted. The susceptibility of individuals varies so much that the drug should be constantly controlled by examination of the urine. Signs of renal irritation, frequent and painful micturition, hematuria, hemoglobinuria, irritation of the stomach and bowels, headache, tinnitus aurium all may occur. Withdrawal of the drug is soon followed by a disappearance of symptoms.

FORMALIN INHALATION IN PULMONARY TUBERCULOSIS.

Spengler⁵ advises formalin inhalations in pulmonary tuberculosis and fetid bronchitis. He prepares a solution containing ether 75 cc., absolute alcohol, 20 cc.; formalin, 5 cc. Ten drops of this are placed in a tumbler and about ten or twelve inspirations taken, the mouth being removed from the glass for expiration. The first inspirations should be superficial, the latter ones deep. The inhalations are made every other day at bedtime, and intermitted after a fortnight, to be resumed in a few days and continued as before.

TOXIC SYMPTOMS FROM ASPIRIN.

Dr. Franke⁶ recounts his experience on taking 1 gm. (15 gr.) of aspirin for pains in the calves of the legs. In fifteen minutes there was swelling of the upper lip which quickly spread over the whole face. This was followed by difficulty in swallowing, frequent respiration and a rise in the pulse rate to 160. These symptoms subsided gradually after twenty minutes, to be replaced in an instant by a rash like urticaria over the whole body, but chiefly upon the backs of the hands, the neck and feet. On the next morning all signs had disappeared save the swelling and tense feeling of the lips and eyes. The writer explains the poisoning by the supposition that by some chemical change in the stomach phenol was set free and rapidly absorbed.

EXPLANATION OF FAVORABLE ACTION OF REST IN BED ON THE FEVER OF PULMONARY TUBERCULOSIS.

Pickert⁷ explains the good effects of rest in bed on the fever of phthisical patients by the passive congestion of the lungs which is thereby produced. If this is so, the reverse of this condition, or anemia of the lungs, should be followed by fever. This he was able to show to be the case. If phthisical patients, who have gotten free or nearly free of fever by lying abed for several weeks, are allowed to sit up, the temperature varies considerably according to whether their feet are resting on the floor or are extended horizontally. In the former position there is a venous hyperemia of the legs with consequent diminution of blood in the upper part of the body. Systematic experiments showed differ-

⁴ Medical News, 1903, Aug. 29.

⁵ Cit. Am. Med. 1903, Sept., p. 418.

⁶ Cit. in Therap. Monat., 1903, Oct., p. 550.

⁷ Cit. Zeit. f. diätet. u. phys. Therap., 1903, Oct., p. 410.

ences reaching even $1\frac{1}{2}^{\circ}$ C. on single days. The highest temperatures always occurred on those days during which the legs were at no time in a horizontal position.

DANGER IN DISPENSING TABLETS.

One of my friends recently had the following sad experience. A mother brought to his office a child seventeen months old with convulsions. The baby had found a bottle containing pink tablets. By an unfortunate circumstance a file was near by and before any one was aware the baby had broken the bottle and swallowed all the tablets. The mother at once gave mustard and water, but not a sufficient quantity to induce vomiting. The child at first was not indisposed, but in about one and one-half hours convulsions began. The child was then taken to the doctor, but lived only fifteen minutes in his office.

I understand that one large firm has discontinued coloring its tablets, because they attracted the attention of children and led to several instances of poisoning.

Reports of Societies.

AMERICAN NEUROLOGICAL ASSOCIATION.

TWENTY-NINTH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 12, 13 AND 14, 1903.

FIRST DAY — TUESDAY, MAY 12.

DR. J. W. PUTNAM of Buffalo, president, in the chair.

ADDRESS OF PRESIDENT.

The Congress of American Physicians was founded because the interdependence of the different branches of medicine was recognized by the master minds of the profession. The time had come when specialists needed to broaden their interests and enlarge their views of the field of medicine. Specialism is so engrossing that its devotees are in danger of becoming narrow in their interests and their activities.

The range of diseases we are called upon to treat is so large and so varied that it would seem impossible for us to become narrow.

The chronic cases of paralysis with deformities from various cerebral spinal and peripheral causes form a large and hitherto hopeless class. For years those afflicted with diplegia, hemiplegia and spastic paraplegia have sought medical aid in vain. Tendon transplantation and the principles which govern the operation should find a place in our chapters on treatment. It should be taught to the student from the neurological standpoint as well as from the surgical. We have long ago made common cause with the surgeon in cerebral and spinal operations; let us extend it to the domain of surgery of the neuro-muscle machine. To the surgeon belongs the technique. To us belongs the duty of selecting cases for operation and of enlarging its field of usefulness. The after care of the patient is as

important as the surgical. The operation must be followed by an education, both mental and physical, which we must direct. It is only through co-operation that the best results will be obtained.

Hitherto the relation of neurology to obstetrics has not been sufficiently appreciated nor emphasized. The effect of prolonged labor upon the child is being studied, and requires much more careful investigation in order to determine the effect of cranial birth injuries upon the brain. The obligation rests with us to sound the note of warning in season and out of season that epilepsy is in a large number of cases due to cranial birth lesions. The lesson must be so impressed that it will be a rule with accoucheurs to examine the head for fractures or undue depression after severe labor. When this practice has become a rule, and the cranial injuries are treated early and carefully, we may see as a result a diminution in the number of cases of epilepsy, idiocy and cerebral birth palsies.

THE SIGN OF THE ORBICULARIS.

This was the title of a paper by DR. GEORGE W. JACOBY of New York. The sign of the orbicularis is a symptom which consists of the inability of a hemiplegic voluntarily to close the eye upon the paralyzed side except in conjunction with the other eye. Thus in cases of hemiplegia the temporo-facial branch of the facial nerve is often so slightly affected as to lead to doubt whether the upper facial territory is involved at all. If in such a case the hemiplegic be asked to close both eyes together, he is able to do so without difficulty. He is also able to close the eye upon the sound side while keeping the eye upon the affected side open, but he is unable to reverse this procedure and close the eye upon the paralyzed side while keeping that upon the unaffected side open. This sign has hitherto been supposed to occur in central paralysis only. It was claimed by Jacoby that in many cases of peripheral paralysis this sign is present, and can be found if sought for at the proper time. These observations formed the basis for the following conclusions: (1) The statement of Bard that the sign is invariably lacking in peripheral facial paralysis, and is therefore a distinguishing mark of central affection, is incorrect. (2) The presence of the sign in peripheral paralysis is further proof of the existence of commissural fibers between the nuclei of the seventh nerves. (3) The sign is of clinical value in so far as its presence in peripheral paralysis shows that complete recovery has not yet occurred. (4) The secondary over-action in the orbicularis palpebrarum, which is late in appearance, and always coincides with some recovery in power, does not occur in those cases in which the sign having been present has passed away.

DR. G. L. WALTON of Boston thought it important to bear in mind that unilateral control of the lid movements differs on the two sides in health. More individuals can close the left eye alone than can close the right eye alone. This

may be due to the better education of the left cerebral hemisphere, for the education consists in learning to hold one eye open, not to close one eye.

DR. JACOBY said that the independent closure of each eye was entirely acquired, and that in countries where a great many pursuits are followed which necessitate the independent closure of the eyes, it is much greater than in countries where those pursuits do not exist.

THE ACHILLES REFLEX AND THE FRONT TAP.

This was the title of a conjoint paper by Drs. GEORGE L. WALTON and W. E. PAUL of Boston. It was stated that the Achilles jerk has been extensively studied, but has not taken the place it should as a routine test of equal importance with the knee jerk; the front tap has not been extensively studied. The Achilles jerk is practically of equal constancy with the knee jerk, is more uniform in excursion and requires less skill than the knee jerk. In tabes the writers have found it absent more constantly than the knee jerk. The kneeling posture is preferable in most cases. In 500 cases without central nervous disease this reflex was wanting on both sides in only one instance; on one side, in four. Sluggishness of the tendon reflexes in health may be due to prior toxic affection, as diphtheria. In epilepsy the Achilles reflex and knee jerk are active except during the attack. The Achilles jerk is sometimes absent in osteo-arthritis with sciatic pain. The writers explain the front tap as allied to ankle clonus, though not of its sinister import. The foot being dorsally flexed by the examiner puts the calf muscles on the stretch, and the tap upon the tibialis anticus, by tending to dorsally flex the foot still further, suffices to produce contraction of the calf muscles. This reflex was present in 40% of 500 individuals healthy or suffering from no nervous disease. In epilepsy, hysteria, neurasthenia and other neuroses, it was found present in about 75%. It was never found present in tabes or other hypotonic affections.

THE REFLEXES IN LONG DISTANCE RUNNERS.

This was a paper by Drs. PHILIP C. KNAPP and J. J. THOMAS of Boston. They had made a comparative study of the knee jerk and allied reflexes in the participants in the "Marathon" run of twenty-four miles taken before and after the run, showing the influence of severe physical exertion combined with mental excitement upon the reflexes. In some cases the knee jerks were lost; in all, the plantar reflexes were more or less exaggerated.

These two papers were discussed together.

DR. F. W. LANGDON of Cincinnati said he had made it a rule to test the ankle jerk in tabes and other conditions. He had not found it uniformly absent in tabes, but had seen a number of cases of tabes with the knee jerk and ankle jerk preserved. In sciatic neuritis it is either markedly diminished or absent on the affected side.

DR. JOSEPH COLLINS of New York found the

ankle jerk more frequently absent in tabes than the knee jerk, the ankle jerk sometimes disappearing earlier than the knee jerk, which is a more constant manifestation. In the depressed or vasomotor type of neurasthenia he had found the "front tap contraction" diminished or absent in a large proportion of cases.

DR. C. L. DANA of New York said that the ankle jerk was absent in one-half the cases of so-called sciatica. It is not so easy to test the ankle jerk as Dr. Walton has stated. It may also be elicited by re-enforcement.

DR. H. T. PATRICK of Chicago had been in the habit of testing the ankle jerk in every case, and had noted a difference in the two sides more frequently than in the case of the knee jerk. In some cases of tabes the knee jerk disappears first; in others the ankle jerk is the first to disappear.

DR. PHILIP ZENNER of Cincinnati had observed a number of instances in elderly individuals in whom the ankle jerk was absent. The nervous system appeared to be normal.

DR. JACOBY said that in cases of tabes when the ankle jerk is present a careful examination will show that the knee jerk is also present, but that we may have the ankle jerk absent and the knee jerk present. The loss of the ankle jerk usually precedes the loss of the knee jerk.

DR. KNAPP agreed with Dr. Walton in his conclusions regarding the ankle jerk. He thought that the front tap contraction seemed more or less associated with ankle clonus. It has considerable significance as an indication of exaggeration of the tendon reflexes.

DR. WALTON in closing the discussion said that probably those cases of sciatica with loss of ankle jerk result from pressure on the nerve trunks by the products of osteo-arthritis of the spine, or possibly from neuritis. He had been surprised to find how persistent the ankle jerk and the knee jerk are in advancing age. There is no invariable rule regarding the priority of disappearance of the knee jerk or ankle jerk in tabes.

(All of the speakers agreed that the best method of obtaining the ankle jerk was to have the patient in a comfortable kneeling position on a chair during the examination.)

PRIMARY SARCOMATOSIS OF THE CENTRAL NERVOUS SYSTEM.

This was the title of a paper and the report of cases by Drs. WM. G. SPILLER and WM. F. HENDRICKSON of Philadelphia. In the first case the symptoms were those of brain tumor and of transverse lesion of the thoracic cord. Multiple sarcomata of the brain and spinal cord were found. In the second case the symptoms were those of cerebellar tumor, and operation was done. Many tumors, some large and some small, were found in the membranes and nerve roots of the brain and spinal cord. In the third case the symptoms were those of a transverse lesion of the thoracic cord. A primary sarcoma of the spinal cord substance was found. Attention was called to the comparatively few symptoms

present in Case 2, notwithstanding the extensive sarcomatosis. The resemblance to syphilis of the nervous system was also discussed. The occurrence of a tumor in the cerebello-pontile angle in many of these cases of sarcomatosis was mentioned, and the question of operation was raised. The importance of the recognition of sarcomatosis of the central nervous system was emphasized, especially as regards surgical intervention when the symptoms seem to indicate that only one tumor is present, as in Case 2.

SPINAL CORD TUMOR TREATED BY OPERATION.

DRS. JAMES J. PUTNAM and J. W. ELLIOT of Boston reported three cases of tumor involving the spinal membranes.

The first case was noteworthy because the tumor, which proved to be a sarcoma, involved the axis and atlas and had caused a generalized paralysis, together with marked impairment of the respiration.

The growth was not sharply delimited, but was removed, so far as possible, with the curette.

In spite of the serious nature of the disease the patient has improved so much that he is now keeping a small store.

Three years have now elapsed and there has been no recurrence of the disease.

In the second case, a new growth, which was likewise of sarcomatous character, formed a collar about the spinal cord and dura at the junction of the cervical and dorsal region. The removal was successfully accomplished, but the respiration became much impaired even during the operation. The next day the temperature began to rise and continued to mount rapidly until the patient's death on the second day.

This result recalled one of the rarer effects of spinal injury. No cause could be ascertained for it, unless it were that the dura was punctured slightly at the time of operation.

In the third case, which was one of secondary cancer, involving the vertebral column and membranes in the lower dorsal region, the operation had been undertaken distinctly for the relief of pain. The growth was discovered at the expected point and was removed, so far as possible. The main point of the operation, however, consisted in the cutting of two spinal nerve roots, which were involved in the tumor. As a result of this, the patient's condition was considerably ameliorated for a number of weeks, at the end of which time she was seized with convulsions and other signs of involvement of the brain, and died shortly afterward.

The last two papers were discussed together.

DR. W. A. BULLARD of Boston said that where we have to deal with the dura and the membranes of the spinal cord, laminectomies are not so harmless as one might suppose. In a recent case in which there was anterior dislocation of the fourth cervical vertebra, laminectomy was done for pachymeningitis. The operation was successful surgically, but after forty-eight hours fever developed, and the patient died without apparent cause. He had seen the same result in other cases.

DR. B. SACHS of New York believed that cases of general sarcomatosis are not so very rare. He had seen a case of multiple gliosarcoma in a child which ran a rapid course. In a man forty years of age a tumor appeared on the frontal bone. On account of the multiplicity of symptoms the question was raised whether the disease was of syphilitic origin or sarcomatosis. The case terminated fatally, and proved to be a general sarcomatosis. He did not think special credit was due any one for making a correct localization for spinal cord or brain disease. The question of greater importance is to be able to determine before operation the character of the morbid process. In this connection he cited a case in which all the signs of spinal cord tumor were present, and an accurate localization recorded. Upon operation no growth was discovered. The patient died two weeks later. Macroscopically the cord appeared normal, but on microscopical examination a number of small tubercles were found in the dorsal and sacral roots with tuberculous infiltration of the cord.

DR. H. T. PATRICK of Chicago reported a case in which a tumor apparently sprang from the auditory nerve. The patient had gradually become quite deaf, this having been preceded by rhythmic tinnitus. The tumor was very easily removed, and proved to be an osteo-sarcoma of the petrous portion of the temporal bone, the deafness being due to protrusion of the growth into the internal ear. Death took place shortly after the operation.

DR. WM. C. KRAUSS of Buffalo referred to a successful case of removal of a spinal cord tumor from the cervical region which he reported at last year's meeting of the Association. Five months after the operation the patient died. The tumor was a small round-cell sarcoma.

DR. M. A. STARR of New York asked Dr. Putnam if there had been any respiratory difficulty during the operation for tumor of the axis. In a case of fracture of the third cervical vertebra there were distinct pressure symptoms upon the cord. During etherization he stopped breathing. Artificial respiration was kept up. The second time, chloroform being used, all voluntary respiration ceased. With artificial respiration during the entire operation a considerable amount of bony callus was removed with the relief of pressure. The boy is now in perfect health at the end of five years. He thought Dr. Spiller had done great service in presenting the subject of multiple tumors of the brain and spinal cord. He referred to a case in which a tumor was localized in the motor zone, but at the operation no tumor was discovered. The patient was tuberculous and lived four months. At the autopsy eight tumors were found scattered around in different areas of the brain, none being located in the motor zone. One tumor had absorbed about one-half of one lobe of the cerebellum, for which no symptoms at all had been present. The medullo-pontal junction is a favorite point for tumors. He had seen five cases. In all of these operated upon death resulted. Sudden

death is very common in all brain tumors. He recently had two cases of tumor of the cerebellum. Both patients died suddenly.

DR. G. J. PRESTON of Baltimore spoke of malignant cerebral tumor following disease in the breast, and reported a case in which the growth was localized in the parietal region but was found in the ponto-bulbar region.

DR. COLLINS referred to a case of sarcoma in the abdomen which terminated fatally. Multiple sarcomata were found in the brain and spinal cord.

DR. C. L. DANA said that a few years ago he saw a patient in whom a sarcoma was successfully removed from the cervical portion of the cord. Improvement followed. In a case of removal of a tumor from the pontine angle the patient died. He called attention to the fact that cerebral softening from arterial fibrosis sometimes simulates brain tumor exquisitely.

BRAIN TUMOR.

DR. C. EUGENE RIGGS of St. Paul reported two cases of brain tumor (endothelioma) with characteristic symptoms of involvement of the left motor area. Both were submitted to operation and terminated fatally.

DR. CHARLES K. MILLS of Philadelphia spoke at length in regard to operation for brain tumors. He believed that the cause of failure in operation was often due to imperfect methods of procedure. In Philadelphia they had gradually evolved more and more rapid methods of operation. He recommended the large osteoplastic flap made by a combination of the use of the trephine with the dental engine. He considered this method of value on account of the saving of time. In the last operation the skull was opened in eight minutes without shock. He believed strongly in operation for brain tumors in the majority of cases, if they were at all accessible.

DR. STARR said that the best method to use was Doyen's electrical apparatus, and he considered it as rapid as the method spoken of by Dr. Mills. By this means it was possible to cut through the skull in fifteen seconds. He considered this a great improvement upon the old-fashioned way of cutting with chisel and hammer.

DR. DANA had seen the instrument mentioned. He thought there was a good deal more in the surgery than there was in the burr. In one of the prominent hospitals in New York, with this burr he had known it to take over an hour to get through the bone. With the best instrument the surgeon must be trained in its use.

DR. SACHS thought the question of time scarcely entered into the technique. He did not consider the fatal issue in so many cases the result of the modern operation.

DR. J. W. PUTNAM of Buffalo was opposed to the statement that slowness makes no difference. He did not believe it possible to settle on one form of operation, because different surgeons will find that their own speed differs with the instrument.

(To be continued.)

Recent Literature.

The Practical Application of the Röntgen Rays in Therapeutics and Diagnosis. By WILLIAM ALLEN PUSEY, A.M., M.D., Professor of Dermatology in the University of Illinois, and EUGENE WILSON CALDWELL, B.S., Director of the Edward N. Gibbs X-Ray Laboratory, University and Bellevue Hospital Medical College. New York: W. B. Saunders & Co. pp. 591.

The book is written in collaboration by Dr. Pusey and Mr. Caldwell, the former a dermatologist, the latter a practical scientist. It is divided into two parts, the first of which, by Caldwell, deals with the use of tubes, interrupters, induction coils and static machines and with fluoroscopy and radiography. The several lists of apparatus are very complete and the descriptions detailed. This part is preparatory.

The body of the book deals with the therapeutics of the x-rays, exhaustively considered by Pusey. A description full, interesting and lucid of the effect of the x-rays upon the tissues and upon bacteria is followed by a discussion of the phenomena observed. The bulk of the second part consists of a description of diseases which the author has treated with the x-rays. Numerous illustrative cases are cited, accompanied by a brief discussion and summary of the results obtained. The tone of this part of the book is conspicuously judicial. This observer has used the x-rays in a large number of cases of great variety with the evident intention of determining their efficacy, and throughout he weighs his facts without prejudice. Failures and successes are both recorded. The last chapter gives the general conclusions. Here Dr. Pusey gives his estimate of the relative susceptibility to the x-ray treatment of the various diseases, and states that this method finds its greatest field in malignant disease. It is interesting to note that Dr. Pusey recommends in operable cases a combination of surgical and x-ray treatment.

The book is indispensable to those who use the x-rays as a therapeutic agent, while its illustrations are so numerous, its descriptions of apparatus, of technique and of tissue changes so complete, that it becomes valuable to every one.

Nose and Throat Work for the General Practitioner. By GEORGE L. RICHARDS, M.D., Fall River, Fellow of the American Laryngological, Rhinological and Otolological Society, etc. New York: International Journal of Surgery Co. 1903.

This is a little book of three hundred and thirty pages, intended as an elementary manual for the general practitioner and the student. Although the author does not mention any such origin, it is just such a book as a lecturer, whose duty it is to cover the field in ten or twelve lectures, might easily produce by writing out his lectures, and inserting such diagrams as happened to come to hand. Of course the lecturer

would describe cases that he had seen, and show instruments that he uses, and draw a better picture of some diseases than of others, also with so little room, subjects of more or less importance would be omitted. Viewed from this standpoint, the book is good. The description of diseases is clear, and the choice of treatment judicious. Going a little more into detail, the abnormalities of the nasal septum, atrophic rhinitis, empyema of the accessory sinuses, tracheotomy, adenoids, are well described. More difficult subjects, such as nasal and laryngeal neuroses, fibroid tumors of the naso-pharynx and chronic ethmoiditis, with polypi and asthma, are somewhat disappointing. No mention is made of the possibility of an infectious origin of acute cold, which is worthy of consideration, at least on account of the number of its advocates. The subject of tuberculosis should include lupus, which is distinct and common enough to be at least mentioned. The inflammatory diseases of the tonsils are a little confusing, and the etiology of pharyngo-mycosis omitted, while its treatment is unnecessarily strenuous. As a whole the book is attractive and trustworthy.

An Atlas of Human Anatomy. For Students and Physicians. By CARL TOLDT, M.D., assisted by ALOIS DALLA ROSA, M.D. Translated from the Third German Edition and adapted to English and American and International Terminology by M. Eden Paul, M.D. (Brux.), M.R.C.S., L.R.C.P. First Section: A—The Regions of the Human Body; B—Osteology. Illustrated. New York: Rebman Company. 1903.

This is the first volume of a translation of Toldt's *Atlas of Human Anatomy*, the translation being from the third German edition and adapted to English, American and International terminology. In the translator's preface it is suggested that, inasmuch as the science of human anatomy is purely descriptive in its methods, and its field not very extensive, it is one of the few sciences in which something approaching finality has been reached. Atlases of anatomy in English have hitherto been fragmentary, and it is said that up to the appearance of this work, no actual pictorial representation of all the data of human anatomy has been available. In this first volume of the series, which deals with, first, the regions of the human body, and, secondly, with osteology, there is a very strict adherence to the atlas plan. Descriptive text is small in amount and closely associated with the very numerous drawings which occupy each page. Various anatomical structures of importance are specifically indicated on each cut. The drawings are carefully made and in very considerable detail, without unnecessary elaboration.

In general, so far as one may determine from a first installment, this atlas when completed will represent an important addition to the means of study of human descriptive anatomy. The difficult matter of nomenclature has been met by the translator as well as could be expected in the

present unsettled state of English terminology. The volume is bound not very attractively in art canvas, and is provided with an exhaustive index.

The Work of the Digestive Glands. Lectures by PROF. J. P. PAWLOW, Director of the Physiological Department of the Institute for Experimental Medicine, and Professor in the Imperial Military Academy of Medicine, St. Petersburg, etc. Translated into English by W. H. THOMPSON, M.D., M.Ch., F.R.C.S., King's Professor of the Institute of Medicine, Trinity College, Dublin, etc. Illustrated. London: Charles Griffin & Co., Limited. Philadelphia: J. B. Lippincott Co. 1902.

Professor Pawlow's lectures, originally published in Russian, soon appeared in German and French, and now, after the lapse of some five years, have been translated into English in an admirable manner by Professor Thompson. Pawlow's work attracted attention, because he took advantage of the most recent surgical methods in his study of digestive secretions. He was able to separate from the original stomach a fold of mucous membrane, out of which he formed a small stomach which communicated with the surface by a fistula. The technique of the operation was such that the nerve supply of the two stomachs was preserved intact, though the mucous membrane was distinct. The small stomach thus served as a model of the larger, but the juice secreted by it was uncontaminated by food, and so allowed of more accurate observation.

The chief principle Pawlow deduced from his work was the specific excitability of the nervous mechanism of the glands. In accordance with this property the glands furnish a secretion which is adapted in quality and in quantity to the food eaten; for example, a meat diet stimulates an abundant flow of gastric juice, while a fat diet decreases it. Some months ago we commented upon this work of Pawlow in our Department of Progress in Therapeutics, to which we would now refer.¹

Popielski² has recently subjected Pawlow's work to rigid critical analysis. We hope that Professor Pawlow will be able to meet these criticisms.

Radium and Other Radio-Active Substances; Polonium, Actinium and Thorium, with a Consideration of Phosphorescent and Fluorescent Substances, the Properties and Applications of Selenium and the Treatment of Disease by the Ultra-Violet Light. By WILLIAM J. HAMMER, Consulting Electrical Engineer. Illustrated. New York: D. Van Nostrand Company. 1903.

This small book of seventy-two pages discusses matters relating to radium, selenium and ultra-violet rays, together with various collateral topics. The book is a timely one and details many facts, both historical and scientific, which it behooves us to know. It is profusely illustrated.

¹ Boston Med. & Surg. Journ., 1902, No. 6.

² Wien. med. Presse, July, 1903.

THE BOSTON

Medical and Surgical Journal

THURSDAY, NOVEMBER 19, 1903.

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THE MASTER-WORD IN MEDICINE.

AMONG other events of interest on the occasion of the opening of the new laboratories of the Medical Faculty of the University of Toronto, recently held, was an address by Dr. William Osler on "The Master-Word in Medicine." Dr. Osler for very obvious reasons has come to be the most sought-for speaker on such occasions in the English-speaking world. Not a year passes that he does not yield to the calls made upon him to address men about beginning their professional life. These addresses never fail in suggestiveness and point the way quite unerringly to the young man about to begin his difficult lifework. This last address delivered at Toronto is not unlike many of its predecessors, and offers food for thought not only to those to whom it was primarily addressed, but also to those of maturer years who are failing or succeeding in the struggle.

We are not surprised to find that Dr. Osler takes as the master-word "Work," which he regards as an essential of success, an opinion with which he will no doubt find few to take issue. Interest in one's work he finds the first step toward success. He lays stress upon the necessity of systematic habits of work; he urges charitableness toward brother practitioners; he insists that we should "cultivate the gift of taciturnity and consume our own smoke with an extra draught of hard work so that those about us may not be annoyed with the dust and soot of our complaints." These certainly are truths often reiterated, but coming from Dr. Osler, with his peculiar charm of statement, they still find lodgment in our minds. It is a source of

personal satisfaction to us to find that Dr. Osler in this same address denies the reality of what he calls the "bogie of overwork." Of this he says:

Much study is not only believed to be a weariness of the flesh, but also an active cause of ill-health of mind in all grades and phases. I deny that work, legitimate work, has anything to do with this. It is that foul fiend Worry who is responsible for a large majority of the cases. The more carefully one looks into the causes of nervous breakdown in students, the less important is work *per se* as a factor. There are a few cases of genuine overwork, but they are not common. Of the causes of worry in the student life there are three of prime importance, to which I may briefly refer.

If students of medicine and practitioners as well could realize the truth of these statements it would be well for the peace of mind of a large element in the profession.

In spite of the fact that Dr. Osler questions the value of introductory addresses, we quite agree with our contemporary, the *British Medical Journal*, when it says, speaking of this address, that his own furnishes an excellent justification for the existence of the custom. We commend it to our readers as a lay sermon of more than ordinary merit.

THE SPRECKELS PHYSIOLOGICAL
LABORATORY.

WE have already alluded to the establishment of the Rudolph Spreckels Physiological Laboratory at the University of California. It will be remembered that this laboratory was established on a somewhat different basis from others of a similar sort in this country. It was designed primarily to further research in physiological lines, with the understanding that teaching of elementary students should be a somewhat secondary consideration. This laboratory was formally dedicated Aug. 20 of this year.

Apart from the addresses made, the occasion was rendered notable by the presence of Professor Ostwald, who had come from Europe to California for the purpose of assisting in the dedicating of the new laboratory. Prof. Jacques Loeb, to whom in large measure has been due the conception of this laboratory and who is to be its director, delivered at the dedicatory exercises a brief address entitled, "The Limitations of Biological Research." After commenting upon the significance to American research that a laboratory of this character should be established, he outlined in a general way the direction

and tendencies of the work which it is proposed to carry on. He urged the necessity of recognizing physical chemistry as the foundation of biology, and defined as one of the fundamental problems of biology the necessity of answering the question as to whether or not it is possible to making living matter out of dead matter. Regarding this question, which has been a bone of contention for centuries, he felt that it was not too bold to prophesy that through the study of enzymes a solution might be forthcoming. Biologists, he thinks, will either succeed in transforming dead matter into living matter, or they will ultimately find that there is as definite a discontinuity between dead and living matter as between two chemical elements. A second problem facing the modern biologist is the question of transforming one species into another. In this he expresses the belief that we shall either succeed in bringing about a large transformation from the original form or determine the fact that at a certain point the constancy of a species is reached.

In general, Professor Loeb's address, brief as it was, expresses admirably the importance of biological research. Under such leadership as this new laboratory will have, there can be no question that we may in the near future look for results of very positive scientific value. Professor Loeb's preliminary work is a sufficient guarantee of this.

THE ORGANISM OF SMALLPOX.

As announced in our issue of last week, Dr. Gary N. Calkins of New York spoke, Nov. 9, at a meeting of the Biological Section of the New York Academy of Sciences, on "The Life History of the Organism of Smallpox." As is now universally known, Dr. W. T. Councilman and his colleagues have been working for many months past on the etiology of smallpox. Preliminary conclusions were presented at the meeting of the American Association of Pathologists and Bacteriologists, held at Washington in May of this year. At that time Dr. Councilman presented strong evidence to show that the causative agent in smallpox was a parasite of the protozoön type. Certain details in the life history of this parasite were at that time not definitely made out. This work has been prosecuted since by Dr. Calkins at Dr. Councilman's request and, as stated in a report of the meeting, published in the *Medical Record*, the results of this research were presented at Dr.

Councilman's suggestion. Dr. Calkins described in detail the various phases of the life history of the organism, illustrated by lantern slides made from actual specimens. So far as one may learn from the report before us, this work is a confirmation of the opinion expressed by Dr. Councilman in May that a protozoön is the actual cause of the disease.

An added interest was given to the meeting by a discussion of certain inoculation experiments made by Dr. Brinckerhoff, whose name from the first has been identified with this research. Dr. Brinckerhoff obtained striking results through the inoculation of apes, in each of which there had been a development of a lesion analogous to the vaccinia lesion. In general he had found that the disease in the monkey was comparable to the disease as observed in man, and, furthermore, his findings regarding time relations between the various stages of the parasite and the evolution of the lesion were quite in accord with results obtained by Dr. Calkins on human lesions. This second published report on the progress of this important work must be regarded with much interest. The final, detailed results of the investigation will now be awaited with even greater expectation than before.

THE GERMAN EMPEROR.

THE penalty of position is admirably exemplified in the experience through which the German Emperor is now passing. Discussion is rife in medical and lay circles throughout the world as to the present character and future possibilities of the affection with which he is afflicted. So far as one may judge from published reports, it is sufficiently clear that the growth which has been removed from the larynx is of benign character and in itself presages no serious outcome. This is the expressed opinion of Professor Schmidt, who performed the operation, and also of Professor Orth, who made the microscopical examination.

Such growths as this are not unusual and certainly are not in themselves inimical to life. It is eminently natural, however, that people should recall the fate of the Emperor's father and also circumstances concerning his mother's death. How justified such apprehensions may be it is quite impossible to prophesy, and we are inclined to think that it is the part of wisdom, as well as of good taste, to await the outcome, whatever it may be, without speculation. In the meantime the world will certainly wish the

Emperor a speedy recovery from his present disability and will sincerely hope that the disease may have been entirely eradicated, as frequently happens in such cases.

MEDICAL NOTES.

POSSIBLE SANATORIUM AT CAPRI. — It is stated that Professor von Behring has proposed to transform the villa of the late Herr Krupp, which he has purchased, into a laboratory and sanatorium for tuberculosis. The residents of the island have instituted a vigorous protest and hope to thwart the proposed innovation, giving as one reason the dependence of the island upon foreign visitors, which it is maintained would be largely prevented in case a sanatorium were established.

A CORRECTION. — In a statement made in our issue of last week regarding King Edward's Sanatorium for Tuberculosis it was erroneously implied that Sir Edward Cassel, who gave the money for the sanatorium, had died, and that the money had been left in the form of a bequest. The facts are that Sir Edward Cassel is still living and that a gift and not a bequest made possible the King's Sanatorium.

THE D. W. HARRINGTON LECTURESHIP, UNIVERSITY OF BUFFALO. — The Medical Faculty of the University of Buffalo has chosen Dr. Samuel J. Meltzer of New York to deliver these lectures for 1903. The subject selected by Dr. Meltzer is "Edema, a Consideration of the Physiological and Pathological Factors Concerned in its Formation." The lectures will be delivered in the Medical College Nov. 30 and Dec. 1, 2 and 3, at 5 P.M. The medical profession is cordially invited to attend.

These are the first lectures given on this foundation. Lectures will be given as often as the income from the fund will warrant.

PROFESSOR VON MIKULICZ ON AMERICA. — In lecturing recently at Breslau, according to the *Medical News*, Professor von Mikulicz spoke of his recent trip to the United States. He praised American surgeons, and said he found more fruitful ideas among them than among the French or English. Part of the allusion was as follows: "The time is past when we were the givers and the Americans the receivers. The American character has as a fundamental feature unlimited self-confidence. The American believes he can do anything that is wanted, and he wishes to see America regarded

as the most beautiful and most preëminent land in the world. Nevertheless, we have no ground for fear, for, in the sharp economic contest, the Germans have some advantages over the Americans. The latter recognize the efficiency of the Germans, calling them the "Yankees of Europe."

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 18, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 63, scarlatina 38, typhoid fever 22, measles 119, smallpox 0.

ADULTERATION OF PHENACETIN. — In the Boston Municipal Court on Monday, Nov. 9, the case of the Commonwealth v. Mansfield & Gardner came up for trial. The firm pleaded *nolo contendere* and was fined \$100. This was a case of drug adulteration introduced by the State Board of Health, the article in question being phenacetin adulterated with acetanilid.

BEQUEST TO NEW HAVEN HOSPITAL. — By will of the late Sarah B. Harrison of Connecticut the New Haven Hospital gets \$30,000, to be used for the establishment of free beds.

HARVARD MEDICAL SCHOOL SCHOLARSHIPS. — The Faculty of the Harvard Medical School announces the following awards of scholarships for the ensuing year:

The Edward M. Barringer Scholarship of \$500, divided as follows — \$300 to G. S. Amsden, 3M., and \$200 to H. W. Godfrey, 2M. The Isaac Sweetser Scholarship of \$250 — to A. H. Crosbie, 2M. The Claudius M. Jones Scholarship of \$250 — to S. J. Beach, 3M. The Hilton Scholarships of \$225 each — to C. R. Metcalf, 2M., and W. A. Sawyer, 2M. The Alfred Hosmer Linder Scholarship of \$200 — to T. Ordway, 3M. The Eveleth Scholarships of \$200 each — to E. H. Place, 4M., L. S. Beals, 4M., and L. G. Beeley, 4M. The Edward Wigglesworth Scholarship of \$200 — to C. L. Overlander, 3M. The Charles B. Porter Scholarship of \$200 — to R. S. Stearns, 3M. The Faculty Scholarships of \$200 each — to L. Arkin, 4M., W. H. Clark, 4M., H. B. C. Riemer, 4M., and W. C. Woodward, 4M. The John Thomson Taylor Scholarship of \$200 — to B. E. Sibley, 3M. The Lucius F. Billings Scholarship of \$200 — to R. H. Goldthwaite, 2M. The Orlando W. Doe Scholarship of \$100 — to W. L. Barnes, 4M. The Charles Pratt Strong Scholarship of \$100 — to C. H. Staples, 4M.

NEW YORK.

ACCIDENTS FROM X-RAYS. — At a meeting of the Society of Medical Jurisprudence held Nov. 9, Dr. Carl Beck read a paper on the "Medico-Legal Aspect of Accidents Caused by X-

Rays." In it he said that undesirable results frequently attended the use of the x-ray, even when it was applied by the most expert operators. In order to avoid such consequences as far as possible, he advised that a very careful study should be made of each individual patient so as to determine as nearly as might be done the proper duration of an exposure. While some persons may be subjected without harm to long exposures at frequent intervals, others are so sensitive to the effects of the rays that only short exposures, given at long intervals, can be borne without injurious results. At this meeting Theodore Sutro, Esq., was renominated for president and Dr. Carl Beck for vice-president.

OFFICERS OF NEW YORK STATE ASSOCIATION OF RAILWAY SURGEONS. — At the thirteenth annual meeting of the New York State Association of Railway Surgeons, which was held at the New York Academy of Medicine on Nov. 12 and 13, the following officers were elected: president, Dr. Charles G. J. Finn, Hempstead, Long Island; vice-president, Dr. G. T. Conn, Concord; secretary, Dr. George Chaffee, Brooklyn (re-elected); treasurer, Dr. J. K. Stockwell, Oswego. Dr. Henry Flood of Elmira presided, and among the papers read were the following: "Car Sanitation," by Dr. James A. Exton; "The Diagnosis of Injuries to the Head," by Dr. C. B. Herrick; "The Diagnosis of Injuries to the Hip," by Dr. Wisner R. Townsend; "The Modern Treatment of Wounds," by Dr. Walter Lathrop and "Traumatism as a Factor in the Causation of Hernia," by Dr. William B. Coley. In the discussion of the latter Dr. A. J. Gilbert said that hernia had cost the railroad companies more money than any other one cause, and declared that it was "a frightful source of fraud, particularly among employees."

HOSPITAL SATURDAY AND SUNDAY ASSOCIATION. — The board of trustees of the Hospital Saturday and Sunday Association held its first meeting of the season on Nov. 10. The application of the St. Andrew's Convalescent Hospital for admission to the Association was favorably acted upon, and this brings the membership up to forty institutions. The New York Hospital, which is the wealthiest member, formally waived its privilege to receive a share of the annual collection. The general agent reported on the prospects of the coming Hospital Saturday and Sunday. Last year the collection amounted to \$83,500, a considerable increase over any previous year.

CONSTITUTIONALITY OF BUILDING LAW. — The constitutionality of certain disputed sections of the building law has been upheld by Justice Freedman of the Supreme Court in his decision on the Moeschen case, which has interested a large number of builders and tenement property owners, the decision sustaining the verdict of a jury in the Municipal Court before which the first trial was held. Some time ago Mrs. Moeschen was ordered to substitute modern closet drains for backyard "school sinks" in a tenement which she owned. She appealed to the courts on the ground that the order was an unreasonable exercise of the state police power, and as such unconstitutional. In view, however, of the importance of the question involved, and the case being a pioneer, Justice Freedman states that the request made by both parties for permission to appeal to the Appellate Division should be granted.

FIVE THOUSAND DOLLARS FOR AN EAR. — The newspapers mention that no less than one hundred and fifty persons willing to part with an ear for \$5,000 applied at the office of a physician, a wealthy patient of whom had offered that amount for an ear of the right size and shape to take the place, by means of a grafting operation, of one that he had lost.

DIPHTHERIA AT ELMIRA. — A severe outbreak of diphtheria recently occurred in the New York State Reformatory at Elmira, but by the prompt and free use of antitoxin it appears to have been quickly suppressed, with but a small mortality.

ACCIDENT INSURANCE POLICIES. — An accident insurance policy issued to one Coles of the New York Casualty Company stipulated that it did not cover injuries resulting directly or indirectly from fighting, wrestling, scuffling, altercation, quarrel or assault. Coles, the insured, was employed as a bartender, and while on duty in this capacity had occasion to order a noisy individual from the premises. The disorderly person refused to go, and grappled with Coles, who, while forcibly resisting the assault, or while pushing the aggressor from the room, was injured. On an appeal of the case, which at first was decided against the insured, it has been held by the Second Appellate Division of the Supreme Court that the facts did not operate as matter of law to deprive the insured of all claim against the company, and hence it was an error to dismiss a complaint in an action for

indemnity on the ground that insured violated the policy.

Miscellany.

THE PHYSIOLOGY OF BITTERS.

THE custom of taking bitter appetizers immediately before the heavy meals of the day is widespread, both in this country and abroad, the object being, of course, to stimulate the secretion of gastric juice. Latterly it has been suggested that it would be more physiological to make use of a small quantity of alkali instead, as that is known to exercise a favorable influence upon peptic secretion. The chief objections to the use of bitters have been based on researches by Tehelzov, who found that the administration of large doses of quassia hindered rather than helped the digestive process. Reichmann, moreover, showed that in the fasting stomach, the secretory activity of which is normal or diminished, a bitter drink produced less secretion of gastric juice than a draught of distilled water. These experiments take account solely of the specific action of the bitters, and do not regard their reflex effects. These have been particularly studied by Borissov, whose results are analysed in a recent number of *La Semaine Médicale*. He made use of Pawlow's method of sham feeding in a dog in which esophagotomy had been performed and a gastric fistula also established. The bitter substances, therefore, did not pass into the stomach, and the reflex effects of their presence in the mouth could be accurately judged. Borissov found that if a little wad of wool soaked in tincture of gentian was put into the mouth immediately before food was administered, a marked stimulant effect upon gastric secretion resulted; but if the bitter was used fifteen to thirty minutes before the meal it was quite inefficacious. It is concluded, therefore, that these substances have the power of rendering gustatory sensations more acute and of exercising a temporarily stimulant effect upon gastric secretion; for this purpose they should be given immediately before the meal in small doses and in the form of tincture (10 to 20 drops) rather than cachets or pills. We may remark upon this that the habit is obviously susceptible of abuse, particularly, when, as is usually the case, some strong alcoholic liquor is used as the vehicle of the bitter. As a matter of fact, such a stimulant action is the real function which is intended to be subserved by the soup which is taken at the beginning of a meal. There is a tendency — even outside the city of London — to consume this in somewhat large quantity; in such cases it tends to be harmful rather than conducive to digestion; but there can be no doubt, on the other hand, that the use of a tablespoonful or two of a hot and sapid fluid at the beginning of a meal is an excellent means of giving the stomach a fair start in the performance of its functions. — *British Medical Journal*.

RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, NOV. 7, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | | |
| New York . . . | 3,785,156 | 1,184 | 335 | 23.39 | 15.62 | 3.55 | 4.14 | 2.11 | | |
| Chicago . . . | 1,885,000 | 476 | 115 | 21.43 | 14.07 | 3.57 | 6.51 | 2.10 | | |
| Philadelphia . . | 1,378,527 | 420 | 112 | 19.51 | 11.18 | 2.85 | .95 | 2.85 | | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | | |
| Baltimore . . . | 533,712 | 148 | 32 | 22.97 | 10.79 | 2.70 | 2.03 | 2.03 | | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | | |
| Pittsburg . . . | 351,745 | 153 | — | 29.41 | 15.03 | 3.82 | 3.26 | 4.57 | | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | | |
| Providence . . . | 191,230 | 65 | 15 | 23.07 | 4.61 | 4.61 | — | — | | |
| Boston . . . | 603,183 | 195 | 53 | 26.15 | 12.82 | 3.59 | 6.15 | 2.56 | | |
| Worcester . . . | 132,044 | 25 | 7 | 12.00 | 16.00 | — | — | 4.00 | | |
| Fall River . . . | 115,549 | 25 | 13 | 25.00 | 20.00 | 4.00 | 12.00 | 4.00 | | |
| Lowell . . . | 101,959 | 32 | 8 | 21.85 | 9.37 | — | 3.12 | 3.12 | | |
| Cambridge . . . | 98,639 | 24 | 4 | 33.33 | 16.67 | — | — | — | | |
| Lynn . . . | 72,497 | 22 | 2 | 18.18 | 4.54 | 4.54 | — | 13.63 | | |
| Lawrence . . . | 69,768 | 21 | 11 | 38.09 | 9.52 | 4.76 | 14.28 | 4.76 | | |
| Springfield . . . | 69,389 | 19 | 9 | 26.31 | 21.05 | — | — | 10.52 | | |
| Somerville . . . | 68,110 | 9 | 1 | — | — | — | — | — | | |
| New Bedford . . | 67,198 | 27 | 9 | 25.92 | 18.51 | 3.70 | 3.70 | 3.70 | | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | | |
| Brookton . . . | 44,873 | 7 | 2 | 57.20 | — | 14.30 | — | — | | |
| Haverhill . . . | 42,104 | 10 | 1 | 10.00 | 10.00 | — | — | — | | |
| Newton . . . | 37,794 | 7 | — | — | 28.60 | — | — | — | | |
| Salem . . . | 36,876 | 12 | 3 | — | — | — | — | — | | |
| Malden . . . | 36,288 | 11 | — | 27.27 | 9.09 | — | — | — | | |
| Chelsea . . . | 35,876 | 8 | 2 | — | — | — | — | — | | |
| Fitchburg . . . | 35,069 | 11 | 5 | 18.18 | 9.09 | — | — | — | | |
| Taunton . . . | 33,656 | 8 | 1 | 37.50 | — | 12.50 | — | — | | |
| Everett . . . | 28,620 | 8 | — | 25.00 | — | — | — | 12.50 | | |
| North Adams . . | 27,862 | 5 | — | 60.00 | — | — | 20.00 | — | | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | | |
| Quincy . . . | 26,042 | 4 | — | — | 25.00 | — | — | — | | |
| Waltham . . . | 25,198 | 4 | 1 | — | — | — | — | — | | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | | |
| Pittsfield . . . | 22,589 | 1 | — | — | — | — | — | — | | |
| Chicopee . . . | 21,031 | 4 | 2 | — | — | — | — | — | | |
| Medford . . . | 20,962 | 7 | — | 42.90 | 14.30 | — | — | 14.30 | | |
| Northampton . . | 19,883 | 7 | 1 | 14.30 | 14.30 | 14.30 | — | — | | |
| Beverly . . . | 15,302 | 4 | — | — | 25.00 | — | — | — | | |
| Cilanton . . . | 15,161 | 6 | 1 | 50.00 | 16.67 | — | 16.67 | 16.67 | | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | | |
| Newburyport . . | 14,478 | 1 | 0 | — | — | — | — | — | | |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — | | |
| Hyde Park . . . | 14,175 | 6 | 1 | 33.33 | 16.67 | — | — | 16.67 | | |
| Adams . . . | 13,745 | 2 | 0 | — | — | — | — | — | | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | | |
| Marlboro . . . | 13,609 | — | — | — | — | — | — | — | | |
| Melrose . . . | 18,600 | — | — | — | — | — | — | — | | |
| Westfield . . . | 13,418 | 5 | 1 | 60.00 | 20.00 | 20.00 | — | 20.00 | | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | | |
| Revere . . . | 12,722 | 1 | — | — | — | — | — | — | | |
| Framingham . . . | 12,534 | — | — | — | — | — | — | — | | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | | |
| Weymouth . . . | 11,344 | 0 | 0 | — | — | — | — | — | | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | | |
| Watertown . . . | 11,077 | 1 | 0 | 100.00 | — | — | — | — | | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | | |

Deaths reported, 2,985; under five years of age, 747; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 687, acute lung diseases 405, consumption 322, scarlet fever 15, whooping cough 11, cerebrospinal meningitis 7, smallpox 18, erysipelas 7, puerperal fever 7, measles 10, typhoid fever 77, diarrheal diseases 114, diphtheria and croup 99.

From whooping cough, New York 5, Chicago 2, Philadelphia 1, Baltimore 1, Boston 1, Fitchburg, 1. From erysipelas, New York 3, Philadelphia 1, Baltimore 1, Providence 1, Boston 1. From smallpox, Philadelphia 4, Pittsburg 14. From measles, New York 5, Philadelphia 1, Boston 3, Worcester 1. From scarlet fever, New York 5, Chicago 3, Baltimore 2, Pittsburg 1, Providence 1, Boston 1, New Bedford 1, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Oct. 24, the death-rate was 15.9. Deaths reported, 4,610; acute diseases of the respiratory organs (London) 194, whooping cough 45, diphtheria 58, measles 55, smallpox 1, scarlet fever 36.

The death-rate ranged from 4.0 in Hornsey to 30.8 in Tynemouth, London 15.1, West Ham 17.9, Brighton 13.3, Southampton 9.5, Plymouth 11.6, Bristol 12.5, Birmingham 20.6, Leicester 14.9, Nottingham 13.8, Liverpool 18.8, Bolton 18.0, Manchester 15.9, Salford 24.2, Bradford 17.7, Leeds 15.6, Hull 16.7, Cardiff 11.5, Rhondda 19.6, Merthyr Tydfil 21.8, Middlesbrough 24.1.

METEOROLOGICAL RECORD.

For the week ending Nov. 7, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r. | | Rainfall in inches. |
|------|------------|--------------|----------------|--------------------|-------------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | | Daily mean. | Daily maximum. | Daily minimum. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 1 | 30.09 | 56 | 63 | 49 | 66 | 53 | 60 | W | W | 7 | 10 | C. |
| M. 2 | 30.08 | 56 | 66 | 47 | 62 | 46 | 54 | W | W | 8 | 4 | O. |
| T. 3 | 30.03 | 58 | 68 | 49 | 65 | 47 | 56 | W | W | 10 | 10 | C. |
| W. 4 | 29.87 | 63 | 74 | 52 | 73 | 57 | 65 | W | W | 11 | 10 | C. |
| T. 5 | 29.58 | 51 | 64 | 38 | 83 | 78 | 80 | S W | N W | 12 | 14 | R. |
| F. 6 | 29.86 | 35 | 39 | 31 | 86 | 95 | 90 | N | N | 9 | 10 | O. |
| S. 7 | 29.98 | 35 | 40 | 30 | 84 | 50 | 67 | W | N W | 14 | 12 | F. |
| Mean | 29.93 | 59 | 62 | | 67 | | | | | | | .42 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ~~Mean~~ Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOV. 12, 1903.

PETTUS, W. J., assistant surgeon-general. Detailed as inspector of unseizable property in the Hygienic Laboratory. Nov. 12, 1903.

GREENE, J. B., passed assistant surgeon. Granted leave of absence for twenty days from Nov. 15. Nov. 9, 1903.

ANDERSON, J. F., passed assistant surgeon. To proceed to Detroit, Mich., for special temporary duty. Nov. 5, 1903.

TRASK, J. W., assistant surgeon. Granted leave of absence for four days from Oct. 17, 1903, under paragraph 191 of the regulations.

SALMON, T. W., assistant surgeon. To proceed to Philadelphia, Pa., and report to medical officer in command for duty. Nov. 7, 1903.

MASON, W. C., acting assistant surgeon. Granted leave of absence for five days from Nov. 19. Nov. 7, 1903.

OWEN, HENRY, acting assistant surgeon. Granted leave of absence for thirty days from Nov. 8. Nov. 9, 1903.

Achenbach, John, pharmacist. Granted leave of absence for seventeen days from Nov. 20. Nov. 7, 1903.

BOARD CONVENED.

Board convened to meet at Chelsea, Mass., Nov. 12, 1903, for physical examination of an officer of the Revenue Cutter Service. Detail for the board—Surgeon R. M. Woodward, Chairman. Assistant Surgeon W. C. Rueker, Recorder.

APPOINTMENTS.

Thomas William Salmon of New York commissioned (recess) as assistant surgeon. Nov. 7, 1903.

George Neves of Oklahoma appointed pharmacist of the third class. Nov. 13, 1903.

RESIGNATION.

Pharmacist Frank Siedenburgh resigned, to take effect Oct. 4, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING NOV. 14, 1903.

D. N. CARPENTER, Surgeon. Detached from the "Chicago" and ordered home to wait orders.

R. B. CHAPMAN, assistant surgeon. Appointed assistant surgeon with rank of lieutenant, junior grade, from Oct. 28, 1903.

O. DIEHL, surgeon. Detached from the "Oregon" and ordered to the "New Orleans."

M. S. GUEST, surgeon. Detached from the "New Orleans" and ordered to the "Oregon."

H. D. WILSON, surgeon. Detached from the Naval Station, Olongapo, P. I., and ordered to the "Vicksburg."

G. M. MAYERS, assistant surgeon. Detached from the "Vicksburg" and ordered to the "El Cano."

J. M. BRISTER, assistant surgeon. Detached from the "El Cano" and ordered to the "Isle de Cuba."

C. BIDDLE, surgeon. Detached from the "Puritan" and ordered to the "Lancaster."

SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY.—There will be a special meeting of the Section for Obstetrics and Diseases of Women in Sprague Hall, Boston Medical Library Building, No. 8 The Fenway, Nov. 25, 1903, at 8 P.M., to consider the advisability of holding meetings during the coming winter for the reading and discussion of papers, etc. Dr. Charles S. Bradley will present a paper on "An Account of the Work, including Obstetrical Technique, at the Lying-in Hospital of the City of New York."

W. H. GRANT, M.D.
Secretary.

RECENT DEATHS.

George Julius Engelmann, M.D., M.M.F.S., of Framingham died in Nashua, N. H., Nov. 16, 1903, aged fifty-six years.

Charles Marshall, M.D., a prominent physician of Huntingdon, Province of Quebec, Canada, died suddenly of apoplexy, on November 13, in New York, where he had just arrived on a visit to some relatives. He was a graduate of the medical department of the New York University, and after studying for some time in Europe, settled in Huntingdon, his birthplace. He was a member of the Medical Board of Governors of the Province of Quebec and was prominent in the Masonic order.

BOOKS AND PAMPHLETS RECEIVED.

Textbook of Operative Surgery. By Dr. Theodor Kocher. Authorized translation from the Fourth German Edition. By Harold J. Stiles, M.B., F.R.C.S. Edin. Illustrated. London: Adam and Charles Black. 1903.

Traité de Radiologie Médicale. Publié sous la direction de Ch. Bouchard. Illustrated. Paris: G. Steinheil. 1904.

Traité d'Hygiène. Procédés Rapides de Recherche des Falsifications et Altérations. Par le Dr. P. Smolensky. Traduction du russe par S. Broïdo et A. Zaguelmann. Annotée par L. Guiraud et A. Gautié. Illustrated. Paris: G. Steinheil. 1904.

Les Nerfs du Coeur Chez les Tabétiques, par le Dr. Jean Heitz. Paris: G. Steinheil. 1903.

Illinois State Board of Health. Report on Medical Education and Official Register of Legally Qualified Physicians. 1903. Mammalian Anatomy with Special Reference to the Cat. By Alvin Davison, Ph.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Clinical Talks on Minor Surgery. By James G. Mumford, M.D. The Old Corner Bookstore, Boston. 1903.

The Medical News Visiting-List. Philadelphia and New York: Lea Brothers & Co. 1904.

Transactions of the Obstetrical Society of London. Vol. XLV. For the year 1903. Part III., for June and July. Edited by Anand Routh, M.D., and Herbert R. Spencer, M.D.

University of California Publications. Physiology. The Limitations of Biological Research. By Jacques Loeb.

University of California Publications. Physiology. The Relations of Biology and the Neighboring Sciences. By Wilhelm Ostwald.

Atlas of the External Diseases of the Eye, including a Brief Treatise on the Pathology and Treatment. By Prof. Dr. O. Haab. Authorized translation from the German. Second Edition. Revised. Edited by G. E. de Schweinitz, A.M., M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Quiz-Compends? No. 7. Compend of Gynecology. By William H. Wells, M.D. Third Edition, Revised, Enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Transactions of the Association of American Physicians. Eighteenth Session, held at Washington, D.C., May 12, 13 and 14, 1903. Vol. XVIII.

The Medical Epitome Series. Normal Histology. A Manual for Students and Practitioners. By John R. Wathen. A.B., M.D. Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

A Treatise on Orthopedic Surgery. By Royal Whitman, M.D. Second Edition. Revised and Enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

Infection and Immunity, with Special Reference to the Prevention of Infectious Diseases. By George M. Sternberg, M.D., LL.D. Illustrated. New York and London: G. P. Putnam's Sons. 1903.

The Medical Epitome Series. Anatomy. A Manual for Students and Practitioners. By Henry E. Hale, A.M., M.D. Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

A Text-Book on the Practice of Medicine. Designed for the Use of Students. By James Magoffin French, M.D. Illustrated. New York: William Wood & Co. 1903.

Original Articles.

THE TREATMENT OF DIFFUSE PERITONITIS¹

BY B. F. LUND, M.D., BOSTON.

By diffuse peritonitis is meant that rapidly spreading inflammation of the peritoneum which resulted from perforation of the appendix or other viscus, in which the inflamed area is covered with pus or fibrin, and is not walled off by adhesions from the peritoneal cavity. Such a peritonitis may, if it has invaded all the recesses of the greater peritoneal cavity, be called a general peritonitis. A general peritonitis differs in extent and not in character from a diffuse peritonitis. This condition is one which the surgeon is called upon so often to treat, and one in which his methods and results are of so great importance to his patients, that a thorough discussion of the methods is always of vital interest.

Whatever methods are adopted, a large mortality will always attend the surgeon's efforts in those cases of peritonitis which come to him late, with the greater portion of the abdominal cavity invaded by the process and the system overcome by toxemia. Nevertheless, by intelligent methods of treatment, the mortality, even in extensive, if not entirely general, cases of diffuse peritonitis, has been greatly lowered, and it is to some of the methods which in the writer's experience have seemed to contribute to this lowering of mortality that he wishes to call attention in this paper.

The literature of the treatment of diffuse peritonitis is enormous, and methods of treatment which seem diametrically opposed have or had their ardent advocates. One writer advises irrigation; another condemns it because it distributes infectious products through the peritoneal cavity. One advises drainage, another avoidance of drainage, etc., so that to the uninitiated the matter seems to be in a state of apparent confusion. Even as to the point which seems to the writer the most important point of the treatment, *i. e.*, that the infecting focus should be immediately removed, there is still a difference of opinion among surgeons. It is to this point, which seems to him one of vital importance, that the writer would first invite attention.

There can be no question that the peritoneum will absorb or segregate by adhesion a certain quantity of infectious material. But if an indefinite supply is poured into the cavity by a necrotic perforated appendix or ruptured intestine the peritoneum cannot take care of it. A surgeon in a large hospital who has been called upon to treat cases of general peritonitis which have been poorly observed, neglected and have not sent for surgical aid until the entire abdomen was invaded by the process, the intestines paralyzed, and the patient suffering from septicemia, finds it hard to believe that, without the removal of the infecting viscus, the peritoneum can wall off

all septic processes. In perforative peritonitis, early or late, the removal of the infecting focus is imperative, as so well stated by Dr. Joseph A. Blake of New York in a recent article on the treatment of diffuse peritonitis: "The advocates of the treatment by rest will concede that the patient will be much better off with the appendix out if it can be done without operation. We have then simply to weigh the dangers of toxemia and the shock of operation against the danger of continued infection, both systemic and peritoneal from the appendix itself, or the escape of its contents."

With a short anesthesia and quick operation the danger of interference is much less than that of procrastination. Dr. A. J. Ochsner of Chicago, the most eminent advocate of the waiting policy in diffuse peritonitis, states that at no matter what stage a case of diffuse peritonitis comes into the hands of the surgeon, in case the stomach is washed out and nothing administered by it, nourishment being kept up by rectal injections, thus keeping the stomach and small intestines absolutely at rest, in a vast majority of instances the process will become walled off, the acute symptoms subside, and the patient can be safely operated upon at a later date. Dr. Ochsner adduces statistics in proof of his contention.

This policy of waiting in acute perforative peritonitis has been tried at the City Hospital, and the writer has occasionally seen a case which exhibited the symptoms of a diffuse peritonitis wall off and quiet down. A more frequent result of this policy has been the progress of the disease to such an extent that the operation had to be done under conditions much more serious than obtained when the case first presented itself. These cases have afforded a comparison of the value of quick anesthesia and operation with a waiting policy. In the former case the patient suffers no shock, but is relieved from the constant influx of septic material from the infected organ. The current of infectious material is started out of the abdomen instead of into it, and the patient is placed on the road toward recovery.

Ten years ago the writer well remembers the position taken by Dr. Worcester of Waltham, at a memorable discussion in Boston, in which he advocated the early operation or as soon as the diagnosis is made, in all cases of appendicitis. He well remembers the controversy that followed, in which several of Boston's most noted physicians and surgeons advocated the policy of waiting for the formation of the abscess and of adhesions before operating. The courage displayed by Dr. Worcester at that time has been rewarded by the adoption of his opinion by the majority of conservative surgeons throughout the country. Experience has proved that a patient with a perforation draining outside the abdomen is much better than if one enclosed within its impermeable walls and free to distribute poison throughout its cavity.

The writer has observed so many cases of appendicitis apparently "quieting down," with

¹ Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

a normal temperature and pulse, in which a sudden rise of temperature and an alarming aggravation of the patient's symptoms have proclaimed a perforation or rupture of an abscess previously limited by adhesions, that he is convinced of the dangers of a waiting policy. The dangers of an early operation in which drainage is employed are not much greater than that of the operation in the interval, and many lives which would have been sacrificed by waiting for the subsidence of the acute attack are unquestionably saved.

Where cases are seen early, as they should be, by the surgeon — within twenty-four or forty-eight hours — all will admit that there should be no question of waiting for the interval with its danger of perforation, but that operation should be done at once. In cases seen later, after the process has had a further start, a waiting policy is indicated still less. After the fire has a better start it is still more dangerous to wait before turning the hose on the flames.

Now in regard to the methods of treatment. Granting the importance of immediate removal of the infecting focus, a complete removal of all necrotic tissue is indicated whenever possible. In the first place a complete removal takes the entire source of infection out of the peritoneal cavity, instead of leaving a smouldering focus behind to prolong the period of suppuration and the necessity of drainage. Where the appendix is the source it should always, where feasible, be removed entire. The writer firmly believes that in a case of salpingitis where, as he so frequently has seen, one badly diseased tube is removed and another, which is only slightly inflamed and contains only a little pus, is left behind, because it is considered improper to sterilize the patient, an absolutely wrong policy has been followed. The tube which has been left behind remains as a smouldering focus of infection, and not infrequently becomes the cause, if not of acute peritonitis, at least a chronic peritonitis causing bands of adhesion between the intestines and the pelvic wall. It often becomes acutely inflamed and necessitates a second operation for its removal, an operation rendered much more difficult by the adhesions resulting from the previous operation, and the chronic inflammation. Further, a chronically inflamed appendix stump may be the cause of fresh fibrous adhesions throughout the peritoneal cavity resulting in intestinal obstruction requiring operation for its relief. A thorough removal, therefore, of the infected focus is necessary as well for the future as for the immediate welfare of the patient.

The second object to be attained after a removal of the infecting focus is a thorough cleansing of the peritoneal cavity and the placing of it under the most favorable conditions for the subsidence of the infection and return to a normal condition.

For this purpose for several years the practice at this hospital has been in the majority of instances in cases of diffuse peritonitis to thoroughly

irrigate the peritoneal cavity with deci-normal salt solution at a temperature of 110°. This process the writer believes to be of great importance and value. Through a long glass nozzle of large caliber pushed into all the recesses of the cavity several quarts or gallons of salt solution are introduced, which comes out of the wound with a violent rush and brings out fragments which otherwise would have remained to prolong suppuration and interfere with convalescence. A warm salt solution soothes instead of irritating the peritoneum, and cleanses every portion of it without rendering necessary the removal of the intestinal coils from the abdominal cavity with the shock which accompanies that procedure. A certain amount of salt solution is left behind, which, being absorbed by the lymphatics, increases the amount of fluid in the vascular system. Another portion of the fluid is immediately taken up by the gauze which is used for drainage, and starts a current from the abdomen out into the dressings and aids in removing any infectious material which may not have been washed out during the operation. From every point of view, then, the process of irrigation seems to be a valuable one. The infectious material is not spread by it from one portion of the peritoneal cavity to another, because through the tubes it is carried to the bottom of the pelvis and other peritoneal recesses, and the current is from there out from the wound, not through the wound into the distant portions of the peritoneal cavity. A certain amount of loose fragments of fibrin are washed out by this irrigation, but attached portions must be left behind. The writer believes it wiser to leave them there than attempt their removal. The occasional washing out of a fecal concretion which otherwise would have been left behind is a valuable result of this procedure.

Only a few years ago Dr. Finney of Baltimore advised removal of the intestines from the abdominal cavity and sponging with gauze to remove adherent flakes of fibrin from them, but this process leaves raw bleeding surfaces with lymphatics open for further infection. It also increases the shock of the operation by evisceration and handling of the coils. The writer believes that it is an unnecessary and usually harmful proceeding.

After removal of the infecting focus and infectious products the next question to claim attention is that of drainage. The writer is an advocate of gauze drainage for the following reasons: In the first place, even if only for a few hours before adhesions are formed about the drainage wicks, these wicks by capillarity remove a large quantity of fluid, some of it presumably septic, from the peritoneal cavity. The irritating effect of the gauze causes, immediately after the drainage of the fluid, the formation of adhesions which wall off the infected area from the general cavity and prevent further reinfection of that cavity, and the subsequent formation of local residual abscesses by any infected material which it may not have been possible to remove

at the operation. For the drainage of the pelvis gauze wicks are used, and among them is placed a glass tube passing to the bottom of the pelvis. The glass tube is not of much direct value as a drain. It is removed at the end of twenty-four hours, and is generally found at that time filled with coagulated fibrin. The writer believes it of value, however, in keeping the gauze in the original position in which it is placed, and preventing its becoming entangled by the movements of the intestines, thus possibly producing obstruction. Gauze drainage alone is employed for the stump of the appendix, and is generally sufficient for drainage of the right flank. The wrapping of gauze wicks in rubber tissue, while it facilitates their removal, prevents, in the writer's opinion, the action of the gauze in the production of adhesions, and is a harmful rather than useful procedure. About such a drain, instead of hard and dry adhesions, as in the case of a gauze drain, there form soft and moist barriers. It does not seem to the writer that ease of removal compensates for the other disadvantages of such drains. The tube, as stated above, is removed at the end of twenty-four hours; the gauze drains, if the cases progress well, are removed in about four or five days, being slightly loosened on the second and third days, and on the fourth day carefully removed. If they are removed carefully and slowly, one at a time, an anesthetic usually is not necessary.⁵

Dr. Blake, in his paper quoted above, advocates the abandonment of the drainage, and supports his contention by a series of cases in which the drains were not carried into the peritoneal cavity, but through the wound; or, in other words, he does not close the wound, but allows the peritoneal fluid to flow out through it, carrying his drain, as far as the writer can make out from the description, to the bottom of the parietal wound, but not into the peritoneal cavity. He advocates the use of drainage only in case it has been impossible to remove the necrotic material, and in cases where there is doubt whether all the infectious material has been removed. It seems to the writer that this doubt does exist in a large majority of cases of diffuse peritonitis, and he therefore advocates the general use of gauze as drainage. Gauze drainage, where properly used and supported by tubes, has not in the cases observed by the writer been the cause of intestinal obstruction.

The assistance of abdominal drainage by gravity has been suggested and tried many times. A few years ago in the Johns Hopkins School, elevation of the foot of the bed was suggested after suture of the abdomen, in order that the abundant lymphatics of the diaphragm might take care of what infectious material had been left in the peritoneal cavity. This procedure was quite extensively tried, but was found uncomfortable and attended by, at least, no decrease of mortality, and has been generally abandoned.

The opposite procedure, namely, the elevation of the head of the bed after drainage of the

abdomen in order to permit immediate flow of the fluids left after operation into the pelvis, whence they are quickly sucked out by the capillary action of the gauze and tubes, has *a priori* more to recommend it. It was suggested to the writer by Dr. Murphy of Chicago, who stated that his cases of perforative peritonitis were brought to the hospital sitting up in the ambulance, and were kept sitting up in bed in an almost upright position after the operation. The writer tried this procedure in a severe case of general peritonitis on a little boy in the hospital. The greater part of the cavity of the peritoneum was infected. The boy, after the usual operation and appendectomy, was drained by a large rubber tube brought out at the lower end of the wound and kept sitting up in bed by strapping the legs to a Bradford frame, with his back against a head rest. Although the position was somewhat exhausting, the drainage was very free from the wound, and the boy made an excellent recovery. He was allowed to recline after the fourth day. There were no complications in the way of secondary abscesses. The next case, a little girl in very poor condition, with general peritonitis, in which this plan was tried, proved fatal. The position was very irksome to the child, and, although drainage was free, she grew so weak that she had to be lowered in bed.

Since these experiences the writer has confined himself to the elevation of the head of the bed, about one foot above the level, by placing under the head of the bed the blocks which are ordinarily used to elevate the foot of the bed in fractured femur. One or two pillows are also placed beneath the shoulders. This position gives slant enough to the body to allow the fluid to flow from the flanks into the pelvis, and is not exhausting to the patient as is the more complete upright position. The writer believes that where elevation of the head and shoulders is used the incisions in the flank which were formerly not infrequently practiced by him are unnecessary. The cases in which moderate elevation has been practiced, and these included all the cases which have come under the writer's care since last spring, there have been six cases with four recoveries, certainly a favorable showing, although the number is at present too small to prove of value in forming an estimate of the method. The procedure is one that certainly does no harm, and, it seems to the writer, is probably an aid in the treatment of these cases.

In regard to that grave class of cases of general peritonitis accompanied by distention of the intestines, which frequently, when the surgeon is first called to see them, present the appearance of cases of intestinal obstruction, a few words only should be added here. The subject was fully discussed and elaborated upon by the writer in a paper "On the Value of Enterostomy in Selected Cases of Peritonitis," published in the *Journal of the American Medical Association* for July, 1903. In the treatment of these cases, in addition to the measures given above, an incision

about one inch long is made in the small intestine, and the distended coils drawn outside the abdomen as far as possible, emptied of their contents, and two ounces of a saturated solution of epsom salts injected into the lumen. The opening is then closed with a continuous suture of silk or linen thread. After the operation on these patients early attempts are made to move the bowels by enemata of turpentine, glycerine or saturated solution of epsom salts, and if these efforts prove ineffective, the distention of the abdomen increases, and the patient grows worse, a second enterostomy is done. This procedure consists in opening the abdomen in the median line by a short incision, suturing the first distended coil of small intestine which presents to the transversalis fascia, tying in a glass tube connected with a rubber tube, and thus giving the feces a direct opportunity to escape and allowing the paralyzed intestine to recover itself. This procedure has proved effective in certain desperate cases where death was apparently impending after operation for diffuse peritonitis. For the details of the cases and full discussion of the method the reader is referred to the paper given above.

On looking over the records of hospital and private cases for the last four years the writer finds that he has operated upon thirty-four cases of general peritonitis in which all, or at least four-fifths, of the greater peritoneal cavity was involved in the process. Cases of diffuse peritonitis covering only a slight area have not been included. Twenty-three of these cases were due to perforative appendicitis, of which 10 recovered and 13 died, a mortality of 57%. Most of these cases which died were in very poor condition. Four were moribund, the pulse being so weak that no attempt was made to find the cause of the peritonitis; the abdomen was simply opened and drained by a glass tube in the pelvis; two of these operations were done under local anesthesia, as the patient's condition and constant vomiting precluded a general anesthetic; no cases were refused operation on account of the poor condition of the patient.

Of the remaining 11 cases, 4 were due to salpingitis. Of these cases one recovered and three died; one was due to perforating typhoid ulcer, also died; two to rupture of intestine by external violence, of these one died and one recovered; one to perforated gastric ulcer, which recovered; one fatal case due to perforated duodenal ulcer; and one to perforation of the posterior *cul de sac* by a splinter of wood introduced through the vagina. We have, therefore, a total of general peritonitis from all causes of 34 cases with 20 deaths, or 59%.

The writer's time has not been sufficient to analyze the records of the cases of early diffuse peritonitis which he has operated during that time. The mortality of the early cases, however, has been extremely low. One case of perforated typhoid ulcer, which was fatal; one case of perforated gastric ulcer, which recovered; and one case of ruptured intestine, which recovered,

are not included in the above list of 34 cases, because the peritonitis, though diffuse, was not extensive enough to be termed general.

Complications in the way of residual abscess formation, etc., have been rare. Intestinal distention, which could be definitely attributed to the pressure of gauze drains has not occurred in the writer's experience, except in perhaps one case, and in this case the cause of the distention was doubtful. One of the cases of general peritonitis died in ten days after the operation of portal phlebitis, the peritoneal process having subsided. The writer's cases of enterostomy previously published have not been included in these cases, as in none of those cases was the peritonitis general at the time of the primary operation. In three of the fatal cases used as the basis of this paper secondary enterostomy was done unsuccessfully, but the patients died from septicemia, and not from abdominal distention. Although the mortality in the above list may seem high, yet it seems to the writer that the showing is on the whole a favorable one, when one considers the lateness of the operation and the desperate condition of a large number of the cases which are brought to this hospital, and although nothing particularly new has been contributed to the treatment, he has felt that, from time to time, a discussion of the treatment of so important and frequent a class of cases is in order.

In view, also, of the recent advocacy of the rest treatment of peritonitis and of the great conflict of opinion regarding the propriety of most of the methods which experience has proved in the writer's hands to give the best results, he has felt it his duty to present his reasons for his attitude, and if this paper has any influence in establishing procedure of the early removal of the cause of diffuse peritonitis, he will consider his task well worth while.

A CLINICAL STUDY OF ONE HUNDRED AND TWELVE CASES OF MOVABLE KIDNEY.¹

BY RALPH C. LARRABEE, M.D., BOSTON.

This paper is based principally on two hundred and seventy-two patients examined in the Female Medical Out-Patient Department of the Boston City Hospital during a four months' service in 1902. The cases were chosen at random, without reference to symptoms, appearance or other evidences of movable kidney.

The patients were examined bimanually in the dorsal position, and any tumor of the proper size, shape and consistency, which could be pushed back into the normal position of the kidney, was accepted as a movable kidney. A few cases which were doubtful on the first visit were re-examined after a cathartic, but most of the negative cases were examined but once. A few only were examined in the upright position as well as in the dorsal. One or two were rejected

¹ Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

entirely because satisfactory examination was impossible.

One or both kidneys could be felt in 112, or 41½% of the 272 cases studied. High as this figure seems, it was exceeded by that of Godard, Danhieux and Werhoogan,¹ who found 46%, while others have estimated that 60 or even 80% of all women have movable kidney. The figure resulting from this study is probably too low rather than too high. It is, of course, possible that a distended gall bladder, a neoplasm or even a mass of feces may have been occasionally mistaken for a movable kidney, but it is not likely that this was the case to such an extent as to seriously impair the results. On the other hand, the negative cases include a number of women so obese that a tumor the size of the kidney could hardly have been felt. Besides, since it was impractical to examine the negative cases repeatedly and in various postures, it is likely that a number of cases were overlooked, for a movable kidney often slips back into position when the patient lies down, and cannot then be felt. In more than one instance the kidney was felt by an assistant, who, in the course of his manipulations, replaced it so that it could not be palpated again until the patient was directed to cough or to stand up. It is surprising how often movable kidney is found if it is looked for, and how often it is overlooked unless especially sought. Therefore figures based on the number of cases diagnosed in a general clinic where especial attention is not being paid to this point are of no significance. While it is probably true that the class of women making up our out-patients is especially susceptible, yet if regularly sought for in patients of the better class the condition will be found so frequently and so regardless of the symptoms for which relief is asked that one becomes very skeptical as to its importance in causing illness and suffering.

The right kidney alone was affected in 98 of the 112 cases. Both kidneys were palpable in 13, the left alone in but one. In this latter case the patient had a tubercular process in the right lung. This is of interest, as the x-ray has shown that in phthisis the excursion of the diaphragm on the affected side is limited to the upper portion of its normal range.² It is possible, therefore, that in this case the right kidney did not get pushed down far enough to be felt in inspiration. Where both kidneys were felt the right was the more movable in all but three cases, the left not being the more movable in any.

We may somewhat arbitrarily class the cases according to the degree of mobility as — first, palpable, where the kidney can be felt only in deep inspiration; second, movable, where the organ can be held down during expiration; and third, floating, where the kidney can be pushed freely about. Thirty-nine cases in this series belong to the first class, 49 to the second and 24 to the third. It is a question in how many of the first group the kidney, though palpable, was not abnormally movable. In three of the 39 only the tip of the organ could be felt. In others the

whole kidney could be felt, but could not be held down during expiration. In most cases the lower third to two-thirds could be grasped between the examining hands — a degree of mobility that will doubtless be accepted by most as beyond physiological limits.

The frequency at different ages was as follows:

| | | |
|----------------------|--------------------|-------------------------|
| Below 20 | 21 cases, of which | 17% had movable kidney. |
| 20 to 29, inclusive, | 92 " " | 45% " " " |
| 30 to 39 " " | 65 " " | 52% " " " |
| 40 to 49 " " | 40 " " | 43% " " " |
| Over 50 " " | 36 " " | 42% " " " |

This agrees with the results of others in placing the occurrence as being most frequent in young adult life, but there were 5 cases over sixty years of age and one over seventy. It seems probable that, as Wolkow and Delitzin,³ Mathieu⁴ and others state, movable kidney is not rare in old age. The slight decrease in old people may be due to the leaving off of corsets or to the common increase of flesh after the menopause.

Children were not included in this series. In another series, however, of 37 children, 10 boys and 27 girls, systematically examined in the children's room of the Boston Dispensary, there occurred three cases, of which two were very slight or doubtful (one boy and one girl). The third, a girl of seven, had a right kidney which was easily felt, but which did not appear to be causing symptoms. This is in marked contrast to the work of Rosenthal,⁵ who was able to feel the kidney in 50% of the girls examined and in 10% of the boys.

But four nationalities were represented in sufficient numbers to justify mention. Of 93 Americans 37% had movable kidney, of 69 Irish 51%, of 41 natives of the British provinces 49% and of 22 Russian Jews 36%.

The conditions of married life do not seem, according to this study, to favor very notably the occurrence of movable kidney, since it was found in 41% of the single women and in 44% of the married and widowed. Notes as to the number of pregnancies were made in 107 of the positive cases, with the following results:

| | |
|----------------------------------|----|
| Never pregnant | 51 |
| One pregnancy | 6 |
| More than one pregnancy. | 50 |

It is unfortunate that no record of the number of pregnancies was kept in the negative cases for comparison, as authorities differ so widely on these points. Some, including Senator,⁶ state that women who have borne children are especially susceptible, while others, like Hilbert,⁷ Kuttner,⁸ and Küster,⁹ deny any such influence. According to Mathieu,⁴ it is commoner in women who have borne children than in those who have not, but commoner in those who have had but one child than in those who have had several. In 36 of the married women here studied, an effort was made to determine the relation of the lesion to the frequency of pregnancy. It was found that 17 of the 36 had been pregnant four or more times at average intervals of less than two years, and that 14 had given birth to six or more children.

The cases here reported show strikingly the effects of emaciation as a causal factor, for 66% of the patients in whom movable kidney was found said that they had lost weight, though such statements were often not supported by objective evidences. The accompanying table, based on the 166 cases in which the notes mentioned the state of bodily nutrition, shows that the condition is much more common in thin people:

| | | | | |
|-------------------------------|----|---------------------|----|----------|
| Obese | 6 | had movable kidney, | 27 | did not. |
| Well nourished | 34 | " | 43 | " |
| Fairly nourished | 19 | " | 13 | " |
| Poorly nourished or emaciated | 19 | " | 5 | " |

The comparative rarity of the condition in the obese may be due in part to the difficulty of feeling the kidney, even though much lower than normal. It will be observed that, although a much greater proportion of the poorly nourished than of the well-nourished showed movable kidney, yet over a half of the positive cases were of the latter class. Indeed, it was striking how many plump, healthy-looking young women possessed movable kidneys.

Trauma was given as probable cause in but one case, the patient dating her symptoms to a fall four years before. She also had a retroverted uterus. In no case was the movable kidney a consequence of surgical operation, all of the six cases showing laparotomy scars being on the negative list. But 4 out of 14 patients who said that they had had operations on the pelvic organs showed movable kidney. Forty-four of the positive cases complained of cough, often slight.

All but nine patients wore corsets or other constrictive articles of clothing. Efforts to classify them according to the kind of corsets or to determine the effects of tight lacing were unsuccessful.

As to the diseases which brought these patients to the hospital, it was noted that conditions accompanied by wasting or impairment of nutrition presented the largest percentage of movable kidney. Fifteen cases of phthisis out of 27 had it; anemia and chlorosis, 12 out of 25; chronic gastric indigestion, 7 out of 12; cancer, 3 out of 5; neurasthenia, 5 out of 11. Movable kidney appeared to explain the symptoms in but 8 of the 112 cases in which it was found. The diagnosis was "enteroptosis" in 8 others. Thus ptosis of the kidney, alone or with other organs, was considered to be the cause of the symptoms complained of in but 14% of the patients presenting the lesion. This agrees closely with the work of Hilbert,⁷ according to whom symptoms arise in 15%.

The study of the symptoms is based on all 112 positive cases and on 150 of the negative ones. Taking the symptoms most commonly attributed to movable kidney, we have the following results: First, pain in the back or lumbar region was present in 11 positive and 14 negative cases. Second, abdominal pain in 21 positive and 31 negative cases. Third, throbbing in the abdomen in one positive case (an aneurism) and in one negative case. Fourth,

a sensation of a tumor slipping about in the abdomen in 3 positive cases. Fifth, dragging or undefined discomfort in the abdomen in 2 positive cases and in one negative case. Sixth, dyspepsia in 41 positive and 46 negative cases. Seventh, acute crises of severe abdominal pain in 4 positive and 2 negative cases. Eighth, jaundice in one negative case. Ninth, neurasthenia and kindred neurotic conditions in 17 positive and 18 negative cases. Tenth, none of these symptoms in 40 positive and 53 negative cases. The conditions of the bowels are shown in the following table:

Constipation: Positive cases, 48%; negative cases, 49%.
Diarrhea: Positive cases, 2%; negative cases, 4%.
Normal bowels: Positive cases, 50%; negative cases, 47%.

This study, then, does not indicate that any symptom or class of symptoms is particularly characteristic of movable kidney. The only symptom peculiar to positive cases, viz., a sensation of a lump in the abdomen, was too rare to possess much significance. It should be said that these histories were not obtained by asking "leading questions" after the kidney had been discovered; they were merely the symptoms described to the assistants in taking the histories in the usual routine way.

The condition of the abdominal wall was investigated in 57 of the positive cases. It was lax in 14. Separation of the recti muscles was present in 12, and was occasionally so marked that a large mass of intestine and in one case even the artificially distended stomach protruded. It was not always associated with movable kidney, however, being found in 7 of the negative cases, often well-marked. Hernia was noted 21 times in these 57 positive cases. The umbilical was the commonest form—in 17 cases of such a slight degree as to make its classification as a true hernia doubtful. Two were inguinal, both well-marked and right-sided.

The liver extended below the costal border in 30 of the positive cases. In but two of these was the inferior border also lower than normal. None gave the typical picture of "movable liver," with the extreme right border markedly prolapsed and freely movable. The spleen was palpable in 7 of the positive cases. In but one, a case of secondary syphilis, was there anything in the past or present condition of the patient to account for the position of the organ otherwise than as a ptosis of the viscus.

The stomach was investigated with fairly satisfactory results in 50 cases, 36 of which showed no abnormality in the gastric area. The greater curvature was below the umbilicus in 14. In 3 of these the depression of the organ was well marked, while in two, one a cancer of the stomach, there was dilatation. Four out of 6 cases in which the contents were examined chemically showed decrease or absence of hydrochloric acid and two showed normal acidity.

The pelvis was examined in too few instances and the results were too fragmentary to be of great value, vaginal examination being made but 38 times. Eleven of the 18 positive cases

examined had uterine displacements, while they were present in but 6 of the 20 negative cases.

Albuminuria was present in 8 out of 30 of the cases in which movable kidney was present and in but 3 out of 31 in which it was absent. It has been claimed that after palpation in cases of movable kidney some blood will always be found in the urine.¹⁰ Although many of these patients were freely palpated by several examiners, gross hematuria did not result in any known instance. Microscopical examination of the sediment was not made in enough cases to be of any significance. The hemoglobin was estimated in 64 cases by the Tallqvist method, with the following results:

Above 75% in 21 positive cases and 18 negative cases.
Between 50 and 75% in 8 positive cases and 14 negative cases.
Below 50% in 2 positive cases and 1 negative case.

Thus the association of anemia with movable kidney was not a marked feature.

In none of these cases was there any evidence of hydronephrosis, gangrene, malignant disease, severe hemorrhage or other serious complications. Six cases gave histories of periodical attacks of abdominal pain suggesting strangulation or Dietl's crises. Four of the six showed movable kidney. In 3 of these 4 there did not seem to be any reason to think that the kidney was responsible rather than one of the other numerous and more common causes of abdominal colic. One, in fact, was probably appendicitis, one gave a history of "gravel," and one showed evidences of pelvic inflammation. The fourth case had been subject for four years to acute attacks of severe, incapacitating pain, beginning in the right lower abdomen, extending to the hypogastrium and relieved in a few hours by vomiting. The greater curvature of the stomach was two inches below the umbilicus, and hydrochloric acid was reduced. The right kidney was low in the abdomen, freely movable and not fully returnable to its normal position. A swathe gave complete relief for three weeks, after which she was lost sight of. This was the only case in which there was fair reason for attributing the pain to the movable kidney.

Treatment, in the sense of operative or mechanical fixation or support, was considered unnecessary in 87 of the 112 positive cases. Such patients were not informed of the presence of the anomaly. In one case where this was inadvertently done symptoms promptly appeared, the patient complaining at her next visit of "jumping sensations" in the lumbar region. Two women were advised to wear different corsets. Twenty-five were advised to wear swathes. These included some where the symptoms could hardly be attributed to the kidney, the treatment being adopted rather for enteroptosis or to support lax abdominal walls. Either a somewhat elaborate bandage or a simple binder of cotton flannel was used. Surgical treatment was not advised in a single instance.

The immediate results can be stated in but five cases. Three of these showed marked improvement, one obtained no relief, and one, a

cancer of the stomach, improved temporarily. None of the cases were observed long enough to show the ultimate results.

Some practical inferences, however, may be drawn. If over two-fifths of the women of certain classes have movable kidney one should be very cautious in attributing to such a common anomaly such indefinite symptoms as backache, dyspepsia or neurasthenia — symptoms which, in these cases at least, were as common where no such condition could be demonstrated. When a movable kidney is found it should be borne in mind in treating the case, but unless there is reasonable ground for attributing to it the symptoms complained of, it is best not to use any appliance for its support and not to direct the patient's attention to its existence. The frequency and innocuousness of the lesion, as shown by this and similar studies, would appear to refute the extreme surgical view according to which a movable kidney should be operated on with the object of preventing serious complications. The mortality of the operation, according to Keen,¹¹ may be as high as 2 or 3%. Of 137 operated cases collected by Watson,¹² there were 5 deaths, 4 of which were not the result of operation. Surely the mortality of movable kidney itself, direct or indirect, is nothing like this. Considering the great frequency of the lesion, complications are rare, especially the more serious ones. Of hydronephrosis and pyonephrosis, but 15 cases were admitted to the surgical wards of the hospital in three years out of a total of 11,435 admissions, including cases arising from all causes.¹⁵ Cancer is too rare to need serious consideration, and its etiological connection with movable kidney is at least doubtful. The acute abdominal crises due to vascular or ureteral obstruction from twists or kinks of the pedicle are rarely fatal. The same may be said of the renal hemorrhages occasionally seen. The cases of the latter condition, collected by Eshner,¹³ appear to have been usually independent of renal mobility, and often recovered after operation, even where nothing had been done other than inspection of the organ.

Two women in this series had been previously operated on for movable kidney. In one a nephrorraphy was done, followed, as the organ was not retained in position, by a nephrectomy. Later she was advised to wear a swathe to support the other kidney. She was markedly neurotic, and stated that the symptoms had not been relieved. During the past year she has been in the hospital at least twice, once to be operated on for appendicitis and once for probable peritonitis. The second patient stated that a sinus had persisted for a year after operation, and that the original symptoms were not relieved. As the notes on this case have unfortunately been misplaced, her statements cannot be verified by reference to the original records. A third case seen in the same clinic since the material for this study was collected had been at the Long Island Hospital for floating kidney, major hysteria, kleptomania and retroversion of the uterus.

Both kidneys were sutured through lumbar incisions without marked benefit. Her chief complaint now is pain in the back. She is extremely neurotic and has a well-marked albuminuria. There is severe hyperesthesia of the abdomen and lumbar regions. Neither kidney can be felt. Thus in none of these three cases was the operation, although in all mechanically successful, attended with marked relief of symptoms, and one at least was injured to the extent of being obliged to take care of a sinus for a year.

Nephrorraphy undoubtedly has its place. Where any of the serious complications, such as hydronephrosis or pyonephrosis or severe crises, are present there can be no hesitation. It is justifiable where there are disabling symptoms that cannot be relieved by simpler means, or even where the patient prefers the risk of operation to the discomfort of a bandage. It should be remembered, however, that the temporary use of the bandage may tide a patient over a period of poor health or debility, during which the symptoms have arisen, and that afterwards, when the patient has returned to a normal state of health or has gained flesh, the kidney may cease to cause trouble. In all cases, however, but particularly where the symptoms are predominantly nervous, one should not advise operation unless he can attribute the symptoms with reasonable certainty to the lesion, and in the words of Fischer,¹⁴ "das ist leicht gesagt aber schwer gethan."

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DISEASES OF HOUSE OFFICERS IN HOSPITALS.¹

BY WILLIAM R. F. EMERSON, M.D., BOSTON.

THE appointment of house officers at the Boston City Hospital is made by competitive examination in which physical as well as medical and personal qualifications are considered. The result is a fairly able-bodied set of men of similar habits and training, well suited to show, both in their general condition and in their physical ailments, the comparative effects of severe and confining work on the three main services of the hospital, namely, medical, surgical and pathological.

The records for the past ten years from July 1, 1893, to July 1, 1903, include two years and one month before the present South Department for contagious diseases was established. During

this time two months' contagious service in Wards A and E were a part of each house officer's duty, one month as junior and later one month as house physician or as house surgeon.

Until July, 1896, the appointments were for eighteen months, with no vacation. At this time the service was increased to eighteen months and two weeks, thus allowing a vacation of two weeks before the last six months. At this time also the first pathological house officer was appointed, and the service has so continued unchanged, with two men on duty, one as junior for six months and the other as senior for the same time. In 1898 the medical and surgical services were increased to two years.

The work medical is chiefly records, laboratory and the repeated physical examinations of non-infectious (so-called) fever patients. The work surgical is records, surgical dressings, often septic, and operations; the work pathological is with cultures, especially from the contagious department, the examination of pathological tissues and the making of autopsies.

The following table presents a list of the diseases that have occurred during the house services:

TABLE A.

Diseases of House Officers.

July 1, 1893, to July 1, 1895. During this time each house officer served two months in the contagious service. There was no pathological service.

| | Medical. | Surgical. |
|-----------------------------|----------|-----------|
| Influenza | 3 | .. |
| Tonsillitis | 1 | .. |
| Diphtheria | 2 | 5 |
| Scarlet fever | 3 | 2 |
| Measles | 1 | .. |
| Typhoid fever | .. | 1 |
| Gastro-duodenitis | .. | 2 |
| Acute gastritis | 1 | .. |
| Appendicitis | 1 | .. |
| Furunculosis | .. | 1 |

Sept. 1, 1895, to July 1, 1903:

| | Medical. | Surgical. | Path. From July, 1896. |
|--|----------|-----------|------------------------------|
| Phthisis pulmonalis | .. | 1 | 2 |
| Pneumonia | 1 | .. | .. |
| Influenza | 4 | 3 | .. |
| Tonsillitis | 12 | 8 | 3 |
| Typhoid fever | .. | 1 | .. |
| Febriculae | 5 | .. | .. |
| Scarlet fever | 1 | .. | 1 |
| Diphtheria | .. | 1 | .. |
| Vaccinia | .. | 1 | .. |
| Gastro-enteritis | 2 | 1 | .. |
| Gastro-duodenitis | 2 | .. | .. |
| Acute gastritis | 1 | .. | .. |
| Acute articular rheumatism | 1 | .. | .. |
| Acute otitis media | 2 | 1 | .. |
| Furunculosis | 1 | 4 | .. |
| Septic hand | .. | 1 | 1 |
| Septic thumb | .. | 2 | 1 |
| Septic arm | .. | 2 | 1 |
| Teno-synovitis | .. | 2 | .. |
| Acute sinusitis (antrum high- more) | .. | 1 | .. |
| Gas poisoning | .. | 2 | .. |
| Appendicitis | 1 | 2 | 1 |

The above table does not include a certain

¹ Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital

number of mild cases, not entered on the records, in which house officers were cared for in their own quarters without being off duty.

The first part of the table shows practically no difference, medical and surgical, when both served on the contagious service.

The small number of entries during this time is accounted for by the fact that there were but two men on each service, therefore a man did not go off duty unless actually obliged to do so, as he would thus leave but one man to do the work. Later with three men on duty, to leave the service for a few days would cause injustice neither to the patients nor to his fellow house officers.

The second part of the table shows a greater number of naso-pharyngeal affections and of affections attended by fever on the medical side, and of local septic infections on the two other services. The proportion of naso-pharyngeal affections and of affections attended by fever, medical as compared with surgical, is two to one.

FEBRICULÆ.

These affections have occurred on the medical exclusively, often of not sufficient severity as to require admission to the service. The following record illustrates these cases:

On Oct. 27, 1899, Dr. A. began to have malaise, slight headache and fever. These symptoms continued five days, increasing somewhat in severity. He kept about work until the fifth day, when his temperature was found to be 104. Upon being put to bed and sponge baths given, his temperature dropped to 100. A four-hourly chart was kept and baths given when his temperature was 102.5 or higher. Six baths in all were required. His temperature subsided by lysis, and was normal on the thirteenth day.

During his illness there were no localized symptoms excepting those attending the fever, namely, slight headache, malaise and loss of appetite. The bowels were somewhat constipated. Urine normal. There was no herpes. The Widal test for typhoid fever was made with five negative results. The blood showed nothing abnormal. The highest leucocyte count was 4,300.

In August of the same year Dr. B. was off duty for ten days with similar symptoms and no physical signs. At the same time Dr. B.'s junior was also affected. The two temperatures ran within one-half a degree of each other daily. The highest in each instance was 103, and the course of each fever was eleven days.

In one of these febriculae the attack was ushered in by a chill of moderate severity; in another there was slight irritation of the throat, but cultures showed no special organism.

All the cases recorded occurred between the months of August and December, the time of the greatest prevalence of typhoid fever.

The successive illnesses of house officers on the same service within eight months' time of pneumonia, cervical adenitis, several attacks of tonsillitis and of febriculae, suggested as a pos-

sible cause the presence of a patent sewer trap in the room occupied by these men successively. The trap was removed, and in the two years following no more cases have occurred.

The repetition of these febriculae attacks on the medical side has not been satisfactorily accounted for. Attenuated typhoid fever bacilli as the cause is excluded by the Widal reaction. An infection by a paratyphoid bacillus is a possible supposition. Tests for such organisms should be made in subsequent cases.

It has been suggested that a toxine may be the cause, or some bacterium, as the pneumococcus, in the blood.

TYPHOID FEVER.

It is worthy of note that of the two cases occurring one was in the South Department and the other on the surgical service, while on the medical service, where the wards are nearly filled with such patients during the autumn months, there has been no case of typhoid fever.

TONSILLITIS.

This occurred 13 times medical, 8 surgical and 3 pathological. Half of the 24 cases occurred in January, February and March, 4 cases in each of these months. Tonsillitis did not occur more frequently soon after a return from a vacation, nor near the end of a man's service. The organisms, when reported, were streptococci in all cases, usually in practically pure culture after the first or second examinations.

PHTHISIS PULMONALIS.

There is little evidence that primary infection with tubercle bacilli took place after any one of the three men had come to the hospital.

Dr. X. has a stepfather affected with phthisis. He has a history of overwork, and of being under weight before going on duty, where after two months' service in the out-patient department he had pneumonia, and a few tubercle bacilli were found with the diplococci of pneumonia. Later very slight signs were found in one apex. He went to Saranac Lake for one year, and has returned to his service without subsequent symptoms.

Dr. Y. has one sister affected and one brother died of phthisis. He has a history of at least four exacerbations before entering the pathological service, where after nine months' work he had a sudden hemorrhage, and active signs were found in his left apex. He apparently recovered health, went to the Philippines with the army. An exacerbation, with rapid extension of the process, took place. He is now at Saranac Lake.

Dr. Z. had a chronic tubercular process. However, in spite of his known affection, he was admitted to the army, where he died after some years spent in its service.

LOCAL SEPTIC INFECTION.

This occurred almost exclusively on the surgical and pathological services, apparently due

to the condition of the skin rather than to any other cause. Local inflammatory processes such as dermatitis or fissured hands furnished favorable points for the invasion of organisms. In one case a prick from a needle while sewing up a case of general peritonitis caused a local infection and a septic arm. Free incisions were made. Streptococci were found persisting a month later.

In another instance an infection of streptococci occurred in a dermatitis following a sunburn of the arm. The infection was of so severe a character that the house officer was off duty three months.

The use of rubber gloves, both at surgical operations and in handling septic pathological material, has been found to lessen the number of infections. This has been demonstrated most clearly in the pathological laboratory, where hair-follicle infection was almost constant before the use of gloves.

There has been no evidence of an immunity from such infections occurring. With certain organisms, notably the aureus, repeated re-infections have been the rule.

FURUNCULOSIS.

Five cases surgical and one medical. The medical case was a single furuncle with no recurrence. In the four other cases recurrence was frequent for weeks, seriously interfering with work and with the general health.

SOUTH DEPARTMENT.

There have been seventy house officers in the South Department for Contagious Diseases, each serving three months in the diphtheria and three months in scarlet fever wards. A large number of substitutes have served for varying lengths of time.

The contagious cases among house officers from Aug. 31, 1895, to July 1, 1903, were as follows:

TABLE B.

| Year. | Diphtheria. | Scarlet Fever. | Measles. | Mumps. | Varicella. |
|---|-------------|----------------|----------|--------|------------|
| 1895 Aug. to Dec. (inclusive) | 1 | .. | .. | .. | .. |
| 1896 | 2 | 2 | .. | .. | .. |
| 1897 | 2 | .. | 1 | .. | .. |
| 1898 | 2 | 1 | .. | 1 | 1 |
| 1899 | 4 | 2 | .. | 1 | .. |
| 1900 | 4 | 1 | .. | 1 | .. |
| 1901 | 5 | 1 | .. | .. | .. |
| 1902 | 6 | 2 | .. | .. | .. |
| 1903 | 4 | 1 | .. | .. | .. |

Other diseases occurring were:

| | |
|---------------------------------|----|
| Follicular tonsilitis | 5 |
| Cervical adenitis | 1 |
| Gastro-enteritis | 1 |
| Facial erysipelas | 1 |
| Septicemia | 1* |
| Septic finger | 2 |
| Nervous exhaustion | 1 |
| Influenza | 1 |
| Typhoid fever | 1* |

* Died December, 1901.

There have been no deaths from any contagious disease during this time. One house officer died of septicemia following a streptococcus infection after a burn. One died of typhoid fever after being transferred to the main hospital.

One house officer had measles, mumps and varicella during his six months' service. Three had both diphtheria and scarlet fever, one had diphtheria twice, one had diphtheria and mumps.

Two house officers immunized themselves by injections every month of 1,000 units of antitoxine, one doing this after having diphtheria during the first two months of his service. He had no reinfection. The other did not have diphtheria.

The objection to such immunization is the danger of urticaria or arthralgia following the use of antitoxine; therefore Dr. McCollom has preferred the early use of antitoxine on the first appearance of a sore throat.

Table B shows an increase in the number of diphtheria cases coincident with an increase in the number of house officers appointed in 1899.

The average duration of diphtheria was fifteen days, that of scarlet fever forty-three days.

In 1894, of 12 men, serving four months each in the contagious wards on two successive services, 8 had either diphtheria or scarlet fever. One of the remaining 4 had typhoid fever.

At one time in the South Department of 6 men on service 5 were sick with either diphtheria or scarlet fever.

Five cases of diphtheria occurred in February, 5 in July, 3 each in January, August, October and November, a less number in the remaining months and none in September.

In a contagious service of six months a house officer's chance of having diphtheria is one in two, of having scarlet fever one in seven.

The following comparative table is made from the time-book of the house officers for the past seven years, and includes the South Department:

TABLE C.

Average Number Times Sick per House Officer.

| YEAR. | Medical. | Sur-gical. | Patho-logical. | Contag-ious. |
|----------------|----------|------------|----------------|--------------|
| 1896 | .3 | .7 | 1.0 | 1.5 |
| 1897 | .3 | .7 | 1.5 | 1.2 |
| 1898 | .7 | .2 | .5 | 1.5 |
| 1899 | 1.1 | .4 | 1.0 | 1.5 |
| 1900 | 1.0 | .3 | 1.5 | 1.3 |
| 1901 | .7 | .8 | .5 | 1.2 |
| 1902 | .5 | .5 | .0 | 1.5 |

Average Number Days off Duty per House Officer.

| YEAR. | Medical. | Sur-gical. | Patho-logical. | Contag-ious. |
|----------------|----------|------------|----------------|--------------|
| 1896 | 4.0 | 7.0 | 10.0 | |
| 1897 | 2.0 | 5.0 | 72.0 | |
| 1898 | 9.0 | 1.0 | 45.0 | |
| 1899 | 21.0 | 4.0 | 82.0 | |
| 1900 | 18.0 | 6.0 | 18.0 | |
| 1901 | 15.0 | 10.0 | 1.0 | |
| 1902 | 6.0 | 12.0 | .0 | |

Average for seven years per house officer, 18.

*Average Number Times Sick per House Officer
Yearly for Past Seven Years.*

| Medical. | Surgical. | Pathological. | Contagious. |
|----------|-----------|---------------|-------------|
| .7 | .5 | .8 | 1.4 |

*Average Number Days Off Duty per House Officer
Yearly for Past Seven Years.*

| Medical. | Surgical. | Pathological. | Contagious. |
|----------|-----------|---------------|-------------|
| 10.7 | 6.0 | 32.0 | 18.0 |

This table, although taken from a different source, shows practically the same results as Table A.

A case of phthisis and of septic reinfection on the pathological service explains its proportionately large number of days off duty.

EXERCISE.

Much interest has been shown, both by the visiting staff and by the hospital authorities, that the house officers, who are so much confined to the wards, and who have a large amount of night work to do (except the pathological service), should have means of obtaining proper exercise on the hospital grounds.

However, little has been accomplished of practical value until the year 1899, when two excellent tennis courts were built; and a year later the trustees, aided by generous contributions from the visiting staff, installed two squash tennis courts and equipped them with adequate electric lighting. Shower baths were also supplied. This has offered an excellent opportunity for obtaining sufficient exercise, practically in the open air, with means for a proper bath and rubdown afterwards.

The relation of systematic exercise and the condition of the men at the end of their services in the main hospital, as stated by at least two men of each delegation for the past seven years, is shown by the following statement:

By systematic exercise is meant the obtaining of exercise at least three times a week sufficient in amount to cause free perspiration and followed by a rubdown.

Medical. — Number of men taking systematic exercise, 13. Condition at end of service: good, 12; fair, 1.

Number of men taking occasional or practically no exercise, 29. Condition at end of service: fair, 16; stale, 13.

Surgical. — Number of men taking systematic exercise, 1. Condition at end of service: good.

Number of men taking occasional or practically no exercise, 41. Condition at end of service: good, 6; fair, 12; stale, 23.

Pathological. — Number of men taking systematic exercise, 6. Condition at end of service: good, 6.

Number of men taking occasional or practically no exercise, 2. Condition at end of service, fair.

The other six men were out of doors afternoons and were in fair physical condition.

By "good" is meant general health excellent, weight normal, and fit to repeat service.

By "fair" is meant tired, but able to do his work well.

By "stale" is meant under weight, appetite poor, having nervous disturbances.

Answer to first conditions were: "Felt fine, never better in my life."

Answer to second conditions were: "Pretty tired, but did my work."

Answers to third conditions were: "I was done." "Fagged out." "Didn't get into good condition for months."

Since the establishment of proper means of exercise and baths, of 18 men serving medical, 9 have taken systematic exercise, and their condition at the end of their service was "good." Of the 18 men preceding them only one took systematic exercise, and but 4 reported their condition as "good."

CONCLUSIONS.

The number of cases has been too few and the time too short to warrant any definite conclusions, especially as regards pathological house officers. The records of medical and surgical services, 60 men each, and contagious, 70 men, would indicate that the danger of house officers having pneumonia, phthisis or typhoid fever is very small, one only of these cases occurring medical, and then in an individual of low resistance.

That naso-pharyngeal and febricular affections occur medical in the ratio of 12 to 1 either surgical or pathological.

That local septic infection is the most frequent disease surgical and pathological.

That the danger of infection in the examination of moist cultures and sputum is very slight, as evidenced by no infection occurring in the staining of thousands of smears for the Klebs-Loeffler and tubercle bacillus and the making of the Widal test with the pure culture of typhoid bacilli.

That there is little evidence in the ten years' records that a house officer's general condition is a marked factor in the question of infection by a contagious disease.

That in a six months' service the chance of diphtheritic infection, including mild cases, is one in two, of scarlet fever infection one in seven.

As regards the influence of improved living quarters and facilities for proper exercise upon the health of house officers, Table C shows a marked decrease in the average times sick yearly per house officer medical, where 50% of the men have taken systematic exercise, from 1.1 in 1899, the year following the increase of service to two years, to .5 in 1902, and in the days off duty for sickness from 21 to 6. The decrease is more marked pathological. On the surgical service, where there has been practically no systematic exercise, the averages are nearly the same.

The generally improved physical condition of house officers is a matter of comment.

It should be urged upon house officers that the sense of fatigue occurs most often in the hospital as the result of nervous tension and indoor

air rather than of muscular exhaustion, and is therefore relieved by proper exercise and baths and the reasons offered for insufficient time for systematic exercise are plausible rather than real.

UNCLEAN MILK, BOVINE TUBERCULOSIS AND THE TUBERCULIN TEST—THEIR RELATION TO THE PUBLIC HEALTH.*

BY E. R. LARNED, M.D., CHICAGO, ILL.,

Professor of Physiology and Physiological Chemistry, Dearborn Medical College.

(Concluded from No. 21, p 567.)

FROM the drop of milk remaining in the tube after the inoculations were made, direct smears upon cover slips were prepared which showed, upon examination under moderately high power, many germs, both micrococci and bacilli. Although careful search for tubercle bacilli was made in every sample of milk examined, they were found in very few cases only. Right here, it may be well to remark that, contrary to the books, it is no easy matter to demonstrate tubercle bacilli in milk even when we are well satisfied that the milk is infected. Gehrman has reported that thorough search failed to reveal the germs in milk from cows of the herd belonging to the Hospital for Insane at Kankakee, Ill., proven to be tubercular and where culture experiments were successful in cultivating the germs from the milk samples. When I state that all of my samples were taken from popular dairies which supply a large clientele, I think that you will agree that such milk is unfit for food. Bacteria are always present in milk unless it is drawn from the udder under sterile precautions, and milk can be contaminated in various ways, viz., from the udder direct, by the hands of the milker, dirty vessels, hay dust or by the water which is sometimes added by the thrifty milkman. "The transplantation of diseases to new fields is characterized by their aggravation. Microbes, like other vegetables, grow best in virgin soil." From contamination with diseased matters, from affected persons and premises, milk may be the means of carrying and spreading many of the most destructive diseases of man and domesticated animals, such as diphtheria, typhoid, scarlatina, cholera, anthrax, foot and mouth disease, glanders and tuberculosis, and the published results of several investigations have shown that the recognized dangers attending the consumption of raw milk exist in butter and cheese. Bovine tuberculosis is communicable to horses, cattle, sheep, swine, dogs, cats, guinea pigs and rabbits. That the diseases above mentioned may be communicated from lower animals to man and from men to lower animals has been conclusively demonstrated so many times that the bare statement of the fact seems almost superfluous, but there are those, whose statements have weight in some quarters, who will still deny these statements.

While, as it seems to me, nothing has been more clearly shown than the practical identity of human and bovine tuberculosis, the infectiousness of milk from tubercular cows, and the efficacy of the tuberculin test as a diagnostic agent, it has remained for Koch³⁹ to deny the existence of proofs of the infectiousness to humans of milk from tubercular cows, and the infectiousness of human sputum to cattle, etc.

Arrayed against such reactionary statements as this, is the immense amount of published matter from careful, painstaking scientists filling the medical press and accessible to every one — examples of which are incorporated into this article. The science of our forefathers was founded upon empiricism — upon experience alone — and the argument from which there was no appeal, was, "I find, from experience." Then came a new era, wherein science was based upon the laws of chemistry and the demonstrations of physiology. Vague and uncertain methods were changed to clear and positive knowledge and the argument of experience was overthrown by the evidence of the microscope and the test tube. Cipollina⁴⁰ reports that a monkey fed with bovine tubercle bacilli cultures contracted tuberculosis with no primary lesions apparent in the gastro-intestinal tract. On the other hand, inoculation of a calf with human bacilli resulted negatively. Although these tests are so limited, yet he thinks that they suggest that Koch's assertions in regard to bovine and human tuberculosis have led to researches which have established that the bovine bacillus is more virulent for both man and animals than the human tubercle bacillus. So in this case, we know that bovine tuberculosis can be transmitted to other animals and vice versa, by the facts produced by the laboratory work of many observers.

The committee on Animal Diseases of the American Public Health Association which met in Buffalo, N. Y., in 1901, presented a report, "The Relation of Bovine Tuberculosis to the Public Health," which was clearly opposed to Koch's principal assertion that the case was not proven and cites⁴¹ twelve cases of human infection with bovine tuberculosis. Many experiments are now in progress in various parts of the world which will bring additional evidence to bear upon the question. In this connection it is reassuring to find that the British Congress on Tuberculosis not only did not accept the doctrine, but declared that "medical officers of health should continue to use all the powers at their disposal and relax no effort to prevent the spread of tuberculosis by milk and meats." In this conclusion I most emphatically concur. As long ago as 1877, before the bacillus of tuberculosis was described, Birch-Hirschfeld called attention to raw cow's milk giving rise to diseases in children corresponding to certain forms of scrofula.⁴² In the *British Medical Journal* Rowland has called attention to milk, butter and cheese as carriers of typhoid fever and cholera. Steyer and Konel⁴³ have reported several cases of typhoid fever which were traced to

* Read at annual meeting of the Illinois State Medical Society, Chicago, Ill., May 1, 1903.

butter as a source. It has been repeatedly shown that when the bacilli of hog cholera are placed in sweet milk they will appear in butter and buttermilk in numbers large enough to destroy experiment animals when inoculated with a very small portion of either. It has also been shown many times that when certain bacteria have made their way into milk or butter they remain alive and virulent for a considerable length of time.

Lafar⁴⁴ found tubercle bacilli alive and virulent after they had been in butter one hundred and twenty days. Laser⁴⁵ found tubercle bacilli, cholera and typhoid germs in a like condition after a week's stay in butter. Moore and Dawson⁴⁶ showed that tubercle bacilli remained virulent in butter for more than ninety days and a guinea pig inoculated with a piece of butter the size of a pea died of tuberculosis ninety-seven days after its infection. Although the number of reported cases of acute infectious diseases in which the contagion was introduced through *butter* is not large, it is enough to show the possibilities, and in view of this evidence, a careful inquiry into the character and management of milk used for this common article of food is of vital importance, and by sterilizing milk in the dairies and creameries one of the channels of infection would be closed.

Ostertag⁴⁷ has shown that there is much tuberculosis among swine in certain parts of Germany where they are fed upon material from the creameries. And in certain parts of this country the more enterprising breeders refuse to feed their cattle upon the skimmed milk of the creameries and the slime of the separators unless it has been sterilized by heat. Huesinger has reported anthrax in man produced by drinking the milk of a cow affected by this disease. Nocard has found anthrax bacilli in the udder of a cow examined immediately after death. Klein has stated that in milk cows afflicted with diphtheria the lesions are sometimes located in the milk ducts and then the bacilli are carried directly into the milk. West⁴⁸ reported that two children of a man named Bridges died of tuberculosis due to drinking the milk of a cow which was found, when killed, to be the subject of extensive udder tuberculosis. Five more of the Bridges children were suffering from pulmonary tuberculosis. The Royal Commission on Tuberculosis⁴⁹ reported experiments in which swine, guinea pigs and rabbits were fed upon uncooked milk and that tuberculosis was thus caused in a very large per cent of the subjects used. Investigations reported from Massachusetts⁴⁹ show that milk from tubercular cows may contain the germs of disease even when there is *no* lesion of the udder.

Taylor observed⁵⁰ several cases of scarlatina which occurred in the home of a milkman whose wife milked the cows — the milk being supplied to twelve families in the city. In six of these families cases of scarlatina occurred in rapid succession at a time when the disease was not epidemic and without any communication having

taken place between those that became infected and the person who brought the milk. Sternberg⁵¹ says that a common mode of tubercular infection, especially in children, is probably by way of the intestinal glands from the indigestion of milk from tubercular cattle, and that such infection will occur has been proven by experimentation upon the lower animals. Von Hessling has published observations concerning the development of moulds in milk which showed that the milk could be so permeated with the germs as to poison the hot coffee to which it was added in small quantities. Wende⁵² reports the occurrence of fifty-six cases of scarlatina in children of twenty-seven families upon the route of one milk dealer two of whose family were suffering from the fever. Eyre⁵³ reports an examination of milk in an epidemic of diphtheria among the inmates of a large school receiving its milk supply from one source and shows that the typical diphtheria germs were found in the milk. Kauthack and Sloden⁵⁴ reported a series of observations of the milk from sixteen dairies wherein the milk from nine caused tuberculosis in guinea pigs inoculated with it. Hertwig and Jacob,⁵⁵ Bollinger⁵⁶ and Schneider⁵⁷ have all demonstrated the infectiousness of milk from cows suffering from the foot and mouth disease (*Aphthæ epizootica*), in a series of experiments upon themselves and others. Dinwiddie,⁵⁸ in reporting a long series of experiments as to the relative virulence of human and bovine tuberculosis, finds that, for cattle, bovine tuberculosis seems to be more virulent. For pigs there seems to be no difference, both producing infection. Sheep were highly susceptible to infection from human tuberculosis and the disease was similar to the naturally acquired tuberculosis of cattle. Still,⁵⁹ reporting 769 autopsies of children, stated that intestinal tuberculosis existed in 52% of the cases he examined and that 71% of the tubercular cases were under the age of four years and that 43% of the 71% were in children younger than two years of age, the primary lesion in every case being in the digestive tract. Nicolas and Lesieur⁶⁰ reported the results they obtained by causing young fish to eat sputum known to contain tubercle bacilli. After seven months the fish were killed and bacilli found in every organ of their bodies. The muscular portions were fed to guinea pigs and in the nodules and abscesses which formed in the bodies of the pigs the tubercle bacilli were readily demonstrated. Brush⁶¹ stated that the annual loss in New York due to deaths from tuberculosis exceeded the whole cost of the government. In this matter of tuberculosis being contracted by human beings from infected milk, I may say that the whole subject of tuberculosis is of such proportions and the menace to public health from this fearful disease of such magnitude that I doubt if more than a few of us realize the actual conditions as they now exist.

That tuberculosis is not decreasing can be readily seen from the following quotations from

the mortality statistics of the Chicago Department of Health.⁶² Of the total mortality in 1851 4½% was due to pulmonary tuberculosis, and in 1896 it had risen to 10%, or more than twice as many. The death-rate per 1,000 has increased from 12 in 1851 to 14¼ in 1896. The total number of deaths from tuberculosis of all kinds in 1879 was 977 and had increased to 2,667 in 1896. Of course, during this period the population had increased very rapidly, but the annual death-rate from tuberculosis had also increased from 11.34% of the total mortality to 11.46 of total mortality — and again, while the annual death rate from all causes had dropped from 17.52 per 1,000 of population in 1879 to 14.36 in 1896, the mortality rate of tuberculosis in all forms had actually increased as above shown. The general verdict of the Tuberculosis Congress at Berlin⁶³ is that “tuberculosis is not hereditary; that the remedy lies in prevention more than cure; and the more healthy the surroundings the more rare the disease.” The movement inaugurated by the Congress of Berlin has been carried on by many American cities, and recently, in Chicago, was founded the Illinois Society for the Prevention of Tuberculosis.⁶⁴ The fight will not be directly against the bacillus of tuberculosis but the physical conditions of the race. Improvement in sanitary arrangements — relief from overcrowding, and abundant and pure water supply for cattle and swine as well as man, will do more to eliminate this dread disease than tons of antiseptics and serums. In the early stages of tuberculosis of cattle the symptoms are not always plain. A short, dry cough is present and sometimes very noticeable after active exertion. The animal becomes poor, the coat rough, and the eyes sunken. Sometimes tenderness and pain are evinced when the side of the chest is touched and the normal sound of the lungs is changed. In cows, nymphomania frequently accompanies tuberculosis. Medical treatment is useless; the diseased animal should be slaughtered and the stables thoroughly cleansed and disinfected.

Grange⁶⁵ states that he has met many cases which have convinced him most emphatically that tuberculosis can invade an animal most extensively and yet the disease cannot be diagnosed by physical examination. He mentions this to impress the value and importance of tuberculin as a test. The description of this remarkable substance was first given to the public about ten years ago, at which time it was thought to be a curative agent for tuberculosis. It did not, however, do what was expected and was abandoned as a cure. Tuberculin is now recognized by competent critics the world over as the most safe, reliable, and practical mode of diagnosing tuberculosis in early and late stages which is in possession of mankind.⁶⁶ The application of the tuberculin test has proved so accurate in diagnosing the disease that the United States Veterinary Association in September, 1896,⁶⁶ adopted, among others, the following resolutions:

(1) Tuberculosis in cattle and man is identical. (2) Germs of tuberculosis appear in the milk of tubercular cows. (3) Tuberculin furnishes incomparably the best means of recognizing tuberculosis in living animals, and *properly* administered, is harmless to healthy animals and is exceedingly accurate. A series of tests were made in Berlin⁶⁷ to ascertain whether, in the absence of symptoms or any external sign, tuberculin could be trusted. The result proved that it was accurate even in animals seemingly perfectly sound. It has been objected that tuberculin decreased the flow of milk in the animals treated, but any temporary decrease is offset by a compensatory increase, and in most cases there is no change.⁶⁸

Tuberculin is a solution in glycerine and water of the products of the growth of the tubercle bacilli upon artificial media and the contents of their cells.⁶⁹ The fluid upon which the bacilli are allowed to grow is an extract made with distilled water from perfectly fresh meat. One pound of meat is used to a liter of water, to which is added 1% of peptone, ¼ of 1% of salt and 7% of glycerine. This solution is heated to boiling, filtered and placed in sterilized flasks and subjected to fractional sterilization. The inoculation of the media is accomplished by taking up on the end of a platinum wire a small mass of tubercle bacilli growing on agar and obtained originally from an animal that has died of tuberculosis, and transferring it to the sterile flasks and causing it to float on the surface of the liquid. The inoculated flasks are then placed in the incubator and kept at a constant temperature of about 98° F. After about a week or ten days the growth can be seen spreading in all directions and finally the surface of the liquid will be covered with a layer of tubercle bacilli. When this is noted the flasks are carefully shaken so as to cause most of the growth upon the surface to sink to the bottom of the flask. From a small particle left upon the surface a new growth is developed which should be shaken down as the first was and a third growth allowed to form. This process requires six weeks to two months or more and the contents of the flasks are then in condition for the preparation of the tuberculin. When the cultures have grown sufficiently the flasks and their contents are taken from the incubator and at once placed in the sterilizing oven and kept at a temperature of 125° C. until they begin to boil. In this way the germs are killed and the material may then be filtered without any danger to the workers. After the sterilization, the contents of the flasks are once more boiled and filtered. This filtrate is then evaporated and concentrated to any desired volume, as a rule ½ of the original quantity. Instead of sending out this concentrated tuberculin, it is diluted to such a strength that 2 cc. is a suitable dose for an animal of 1,000 pounds weight; and to accomplish this, there is added to the concentrated solution glycerine equal to 25% of the original culture liquid — this is then diluted with ¼ of 1% carbolic acid so that the

volume of the tuberculin is usually equal to one fourth more than the original quantity. In practice, it has been found that healthy animals do not give reactions with large doses of tuberculin and that tubercular cattle do not show a higher reaction with large doses than with small doses of tuberculin. As will be readily seen from this description of the manner of preparing tuberculin, there is not the slightest possible danger of infecting animals or men with tuberculosis by the use of tuberculin. Again, there is no danger of injuring healthy animals even with quite large doses of tuberculin, as it is apparently very readily eliminated in the faeces and urine. When the tuberculin is to be used upon dairy cattle, a test of the same herd should be made at least once every six months.⁶⁸ The regulations prescribed by the Bureau of Animal Industry for the use of tuberculin in testing cattle are as follows:⁷¹

"To those who have large herds or lack time this shortened course is recommended:

(1) Begin to take the temperature at 8 A.M. and continue every two hours until 10 P.M. (2) Make the injection at 10 P.M. (3) Take the temperature next morning at 6 or 8 o'clock and every two hours thereafter until 6 or 8 P.M. (4) Each adult animal should receive 2 c.c. of the tuberculin as it is sent from the laboratory. Yearlings and two-year-olds should receive 1 to 1½ cc. according to size. Bulls and very large animals may receive 3 cc."

The injection is made beneath the skin of the neck or shoulders and, to guard against complaint and to eliminate possible sources of error, the hair should be closely clipped from the site of the injection and the skin scrubbed with hot water and soap and a 5% alcoholic solution of carbolic acid before the injection is made. The animal should not be turned out, but fed and watered in the stable and the time of watering and feeding noted. There is usually no marked swelling at the seat of injection, but there is, now and then, uneasiness, trembling and the passage of softened dung. There may be also slight acceleration of the pulse and of the breathing. If the animal is diseased, from six to eight hours after the injection is made the temperature begins to rise from the normal, which in cattle varies from 101° to 102° F., and should continue to rise until 105° to 107° has been reached. A rise of 2° above the normal is to be regarded as good evidence that the animal is tubercular and for any rise less than this, a repetition of the injection after three to six weeks is highly desirable. Dairy herds once found free from disease should not be herded with new animals that have not been tested and found sound.

In conclusion, it would seem that the administration of tuberculin should always be conducted under experienced direction. It is an invaluable test, and by its use it is certainly possible to reduce very materially tuberculosis among cattle and, maybe, to eventually exterminate it. So, let us insist that the public be provided with pure, healthful milk of the same

high standard of quality, cleanliness and uniformity demanded by discriminating people in other food products.

In closing, I desire to acknowledge the assistance rendered by the references in the appended list and from which I have liberally quoted.

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New Instrument.

A TABLE FOR OPERATIONS UPON THE KIDNEY THROUGH THE LUMBAR INCISION.¹

BY JOHN H. CUNNINGHAM, JR., M.D., BOSTON.

To reach the kidney through the lumbar incision, the patient is placed on one side and canted slightly forward so as to expose the region to be attacked.

Two forces will aid the operator in exposing and delivering the kidney into the loin. The first, and perhaps the most important, is a force directed toward increasing the space between the crest of the ilium and the lower border of the ribs. The second is a force applied from in front at the proper height and level to exert pressure upon the anterior surface of the kidney, and carry it backward and upward against the field of operation.

These two forces are important in kidney operations through the lumbar incision because of the anatomical situation of the organs. In brief, the kidneys are situated in the posterior part of the abdomen, imbedded in areolar tissue. They are post-peritoneal, not firmly fixed, but held in position by the peritoneum, areolar tissue, perirenal fascia and the renal vessels. They lie on a level with the bodies of the last dorsal and first two or three lumbar vertebrae, the right a little lower than the left.

¹ Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

From a posterior aspect, the kidneys are under cover of the eleventh and twelfth ribs and the lower border of the diaphragm. About one-fifth of the left and a little more of the right kidney extends below the twelfth rib and the lower border of the ligamentum arcuatum internum of the diaphragm, as it stretches across from the last rib to the transverse processes of the first and second lumbar vertebræ.

Thus a *direct* avenue to the kidney, without cutting away parts of the last two ribs, or without the risk of opening the pleural cavity, is impossible.

The kidney must therefore be attacked through the space between the lower border of the ribs and ligamentum arcuatum internum and the crest of the ilium.

The width of this space is about two fingers' breadth in the male and a little more in the female. Normally, about the lower fifth of the kidney occupies the upper part of this space, but when the organ is freely movable or enlarged it may occupy a greater area.

To increase the width of this space, the patient is usually placed on one side over sandbags or an Edebohl air cushion. Either of these, being placed just above the crest of the ilium, acts as a fulcrum, partially uncovering the kidney and widening the space by lifting the lower border of the ribs upward.

The position, however, is an unsteady one, and usually requires two assistants other than those engaged in the operation.

With the patient in the desired position there is a tendency for the kidney in question to fall forward and toward a median line. Therefore the second force must be applied, that is, pressure from in front on the anterior surface of the kidney, so that the organ is forced upward and backward against the field of operation.

The objections to doing kidney operations upon the Edebohl air cushion or upon sandbags are that too much help is required to maintain the position; that the force exerted upon the anterior surface of the kidney must be manual, and is, therefore, often misdirected and seldom constant; that the full limits of the space are seldom attained, and that the increased number of assistants required to maintain the position multiplies the opportunities for faulty asepsis.

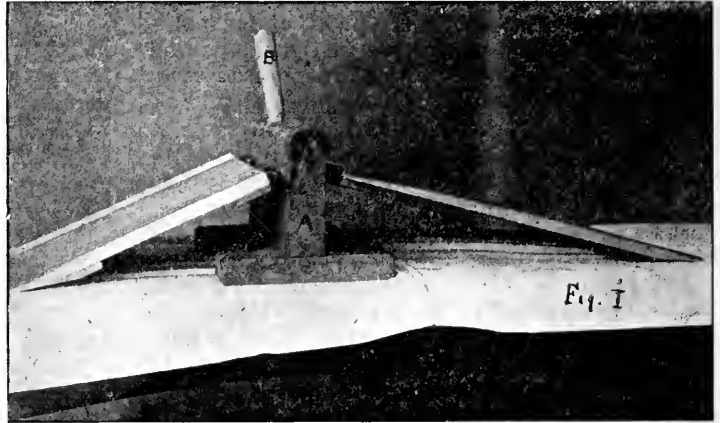
With the view of avoiding the objections to which the methods at present in use are open, as stated above, the writer has devised a table to hold the patient in the desired position and at the same time exert the two necessary forces, thereby doing away with assistants other than those directly connected with the operation.

The table is practically a double inclined plane. It consist of an upright base, 10 inches high by 20 inches wide, and is $2\frac{1}{2}$ inches thick except at the top, where it is a little less, as the edges are

rounded. On top of the upright there are two series of three holes, each series 2, 3 and 5 inches respectively from either end. (A, Fig. 1.)

The holes are bored at an angle of 30° and are 3 inches deep by $1\frac{1}{4}$ inches wide, and into any one of these may be fitted a stake of wood, which rises 7 inches above the surface. (B, Fig. 1.)

There are two inclines, which are fastened to either side of the upright by hooks and rings at a distance of either 3 or 5 inches from the top.



(C, Fig. 1.) The larger incline is 25 inches long by 20 inches wide, and the smaller 18 inches long by 20 inches wide.

The apparatus may be put on any table.

The stake is placed in one of the holes of either series, according to the side to be operated upon. Unless the patient be corpulent it is best placed in one of the holes nearest the center.

In the majority of cases the inclines should be fastened to the upper rings; but there are occasional cases where the patient is so large that the inclines must be suspended from the lower rings in order to open the space to its full extent.

One folded sheet placed on the upright and another partially opened and made to extend from the upright over the stake and inclines will be sufficient padding.

Having arranged the stake, inclines and padding, the patient is placed upon the table so that the upright is just above the iliac crest and the abdomen snug against the stake. That the upright be just above the iliac crest and the patient close against the stake is all-important, because in this lies the success of obtaining the action of the two forces before mentioned.

The legs, which are on the long incline, should be flexed. This forces the patient still more firmly against the stake, increasing the pressure upon the kidney, and forcing it upward and backward against the field of operation. It also makes the position steadier. (Figs. 2 and 3.)

If the patient is properly placed upon the table, the space is opened to its full extent, and the tissues in the field of operation are on the stretch.

After the incision is carried down to the perirenal fascia the kidney and its surrounding tissue tend to bulge into the wound, and the excursion

of the organ is found considerably lessened. After the perirenal fascia is opened, a movable kidney without adhesions is forced out of the wound on to the loin with no other aid than the weight of the patient's body against the stake.



If, as occasionally occurs, the organ is adherent to the surrounding parts, it does not present outside the wound without aid; but is, however, more easily delivered on to the loin because of the properly directed force from in front.

There is no tendency for the kidney to fall back into the wound after being once delivered unless the patient be rolled away from the stake, when it will quickly disappear deep below the surface. It will reappear, however, by allowing the patient to fall back upon the stake.

In most lumbar renal operations it is very desirable to be able to deliver the kidney through the outer wound and to keep it on the loin during some, at least, of the succeeding steps. The present device facilitates inspection and palpation, economizes assistance and simplifies what is at best a somewhat difficult operation.

No post-operative discomfort or lameness of the part has been observed in the limited number of cases in which the table has been employed.

The table affords certain minor points of ad-

vantage. In operations upon both kidneys, as, for example, double decapsulation, the patient may be placed face downward with the front of the abdomen resting upon the upright, so padded as to open the lumbar spaces of both sides and force the kidneys back equally well, if not better, than sandbags or the Edebohl air cushion. Also, it does not sink into the whole upper part of the abdomen and press upon the diaphragm as does these other two means. Thus the excursion of the diaphragm is not interfered with and the patient's breathing is therefore more easy.

In gall-bladder operations, and also in laminectomy, the table may prove of considerable service; in the former by affording a means of getting under the ribs, and in the latter by maintaining a firm position and making more prominent the area to be attacked.

Clinical Department.

A CASE OF POST-TYPHOIDAL MYOSITIS OF THE RECTUS ABDOMINIS.¹

BY DAVID D. SCANNELL, M.D., BOSTON,

Third Assistant Visiting Surgeon, Boston City Hospital; Assistant in Anatomy, Harvard University.

THIS case, which is reported through the courtesy of Drs. M. F. Gavin and J. B. Blake of the Boston City Hospital, is, so far as I can discover, unique in the records of the subject up to the present time. It is unquestion-

ably worthy of being placed on record, not so much, perhaps, for its singularity as for its importance in making one more addition to the already large list of differential possibilities in abdominal diagnosis.

REPORT OF THE CASE.

D. C., male, aged nine, Italian, entered the Boston City Hospital May 20, 1901, and was assigned to the medical side with a diagnosis of typhoid fever. (Inasmuch as the main interest of the case lies in its surgical aspect, the medical history will be only briefly considered.)

There was an indefinite history of headache, malaise, loss of appetite, abdominal pain and slight diarrhea for nine days prior to entrance. On physical examination the diagnosis of typhoid fever was readily made, the positive Widal and low white count confirming the clinical opinion. The patient was thought to be entering on the second week of the disease.

The boy's illness was a severe one, being attended in the first week of his stay in the hospital by seven hemorrhages, all of moderate severity. Nine days after entrance there appeared an eruption on his abdomen, legs and but-

¹ Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

tocks, passing through the stages of papules, vesicles, pustules and crusts, and occurring in crops. Diagnosis of varicella was made.

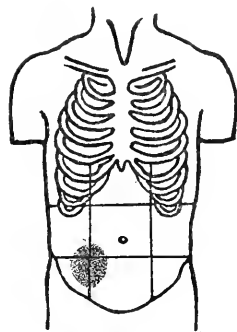
Twenty-seven days from the time of admission another complication in the form of furunculosis occurred, appearing mainly on the anterior abdominal wall, upper thighs and buttocks. Cultures from these showed staphylococcus pyogenes aureus and streptococcus pyogenes; no bacillus typhosus.

Twelve days later there developed a right ischio-rectal inflammation with considerable induration, for which the patient was transferred to the surgical side. Five days later an incision was made and a small amount of pus evacuated. Culture showed mixed infection; no bacillus typhosus. The local inflammation rapidly subsided, and, on July 22, a little over two months from the time of entrance, the boy was discharged well.

Five days later the patient was brought back to the hospital, his interval history having been as follows: On the day after discharge profuse diarrhea, with a small amount of blood in the stools; slight general pain in the abdomen, most marked in umbilical and hypogastric regions; on the day following, several chills and slightly increased hypogastric and right iliac pain; no fever, nausea or vomiting. From this time until his entrance to the hospital there was a steady increase in the local pain; occasional chills and constant fever; occasional nausea and vomiting; slight constipation. It should be noted that during this entire time the boy had been confined to bed; there was no account of heavy straining or sudden forcible movements such as might come from unusual exercise.

Physical examination on entrance: Temperature, 100.2°; pulse, 134 (fair volume and tension); boy looked sick and anxious; tongue coated; dorsal decubitus with thighs flexed on abdomen; chest negative; front of chest and abdomen presented many small crusted areas from previous furuncles.

Abdomen slightly distended; involuntary spasm more or less general but especially marked in lower right abdomen and hypogastrium; tympanitic except in this same area, where it was dull to percussion. Exact palpation because of the spasm and excessive tenderness was impossible, but there was to be felt, notwithstanding, a fairly definite mass occupying area figured in diagram. Movements of the diaphragm and extension of the thighs caused increased local pain. In some respects the sensation on palpating suggested a full bladder, somewhat deviated to the right. No rectal examination was made.



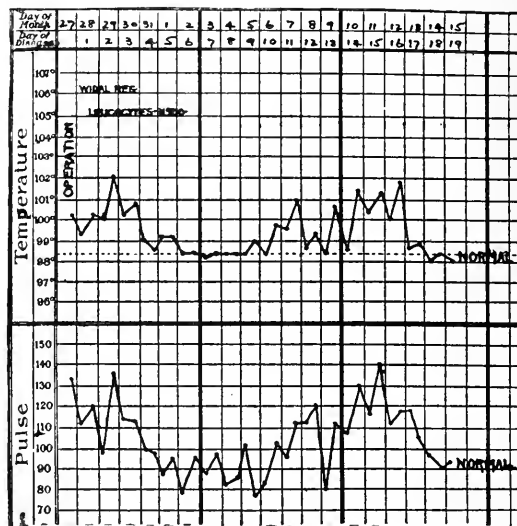
During the making of the physical examination the patient vomited several times; vomitus not significant. Widal negative; urine normal.

Entrance treatment (in the form of a high turpentine enema) effected no change in the abdominal condition, nor in the subjective symptoms of the patient. The diagnosis of acute perforative appendicitis, with abscess formation, seemed a reasonable one, and, in view of the boy's apparently septic condition, immediate operative interference was decided on.

Under ether, with the abdominal muscles relaxed, the question of a full bladder again strongly suggested itself; catheterization resulted in nothing; muscle-splitting incision by Dr. Blake over McBurney's point. The peritoneum showed no injection and the appendix was found to be normal. Exploration of the intra-abdominal surface of the anterior belly wall revealed an ovoidal, indurated, non-fluctuant, extra-peritoneal thickening of the right rectus muscle in its lower third, extending from just below the umbilicus to just above the symphysis pubis. The upper limit of induration was fairly sharply defined by the semilunar fold of Douglas. In the immediate neighborhood of this swelling of the rectus there was apparently a slight involvement of the transversalis and internal oblique muscles. The appendix was removed

and the wound closed with layer sutures. No steps were taken at the time to make a second incision into the indurated mass for the purpose of making a histological and bacteriological examination. It is a source of regret that this was not done.

July 29 (second day after operation). No improvement in any respect, the abdominal condition remaining as at time of entrance. Reference to the chart is of interest.



Aug. 2 (sixth day). Operation wound healing perfectly. Despite the drop in pulse and temperature, the spasm, induration and tenderness still persist in lower right abdomen.

Aug. 6 (tenth day). Induration slightly diminished; spasm and tenderness unchanged, however; general condition excellent; wound firmly healed.

Aug. 9 to 12 inclusive (thirteenth to sixteenth day). During this period almost a complete duplication of the clinical picture as presented at the time of admission: acute abdominal pain, involuntary spasm, dullness to percussion and palpable mass in right lower quadrant. There is no obvious cause elsewhere in the patient for the marked rise in temperature and pulse.

From this time on there was a progressive diminution in the parietal induration, until finally by August 20 (twenty-four days after the operation) it had completely disappeared; there was a coincident disappearance of symptoms; on August 23 (twenty-seventh day) the boy was discharged well and has remained so since.

Myositis as a complication or sequela of typhoid fever is a fairly well recognized condition, although its occurrence must be regarded as rare. Reference to the various works on the practice of medicine and surgery throws almost no light on the subject, the great majority omitting even its mention, and the few giving it only a passing comment. Investigation of miscellaneous literature shows an entire absence of recorded cases of involvement of the rectus abdominis. As a fair index of the rarity of post-typhoidal myositis, it is of interest to note that Osler,² in a relatively recent compilation of a large number of cases of typhoid fever (829 in all), mentions the occurrence of the condition either as a complication or a sequela only once; in this instance the calf muscles were affected. This must be taken to represent a fairly universal medical experience.

² Johns Hopkins Hospital Reports: Studies in Typhoid Fever Nos. I, II, III.

Correlatively with this carefully observed series of cases, we have the extensive surgical observations of Keen,³ who in over 900 carefully annotated cases has not found the condition occurring once. It would be difficult to find two more significant series, representing in combination nearly 1,800 cases of typhoidal infection.

The report of this particular case does not require any incidental consideration of post-typhoidal lesions occurring by predilection in the rectus abdominis, such as, for example, waxy or granular degenerative changes or hematoma, a condition not uncommon and usually preceded by some form of degeneration.

Reports of Societies.

AMERICAN NEUROLOGICAL ASSOCIATION.

TWENTY-NINTH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 12, 13 AND 14, 1903.

(Concluded from No. 19, p. 521.)

SECOND DAY, WEDNESDAY, MAY 13.

CENTRAL NEUROFIBROMATOSIS.

THIS was a contribution to the study of tumors of the medullo-ponto-cerebellar angle, by Drs. J. FRAENKEL and J. R. HUNT of New York. Five cases were reported at length, showing a common origin of the tumor from cranial nerve trunks. The writers concluded that the pathological structure of the growths is of a kindred nature — neurofibromatosis pure, or in various stages of metamorphosis and transformation. The locality is almost identical — the angle formed by the junction of pons medulla and cerebellum. Their symptomatology, because of this localization, is in the essential features analogous.

The certainty of localization, the essentially benign nature of the growths, their loose attachment to the meninges and nerve trunks, distinguish this group of intra-cranial tumors as a most favorable one for surgical intervention.

In view of all this, they find justification for the suggestion to assign a separate place to this syndrome in the group of intra-cranial tumors. The susceptibility of the cranial nerves to neurofibromatosis varies considerably. With the exception of the olfactory and optic, because of genetic peculiarities, any of the cranial nerves may be the seat of neurofibromatosis.

In general, the sensory nerves are more susceptible and the acoustic pre-eminently so. Primary tumors of the cerebellum or brain stem will often at some stage of the disease simulate closely the syndrome in question. Indeed many of the cases of this type are recorded in literature as cerebellar tumors, pontine tumors, etc.

From a differential diagnostic standpoint particular stress was laid on the appearance of cranial nerve symptoms before the development of symptoms of intra-cranial pressure. Tinnitus,

progressive deafness, facial ties, neuralgias and other symptoms referable to the fifth nerve were mentioned as instances in point.

Dr. MILLS said he had several similar cases. In two or three instances he had seen operations done for tumors in this locality which were unsuccessful. He thought it was possible to have a growth of a different nature from that described, though the symptoms might be very similar. A very important feature was that the early symptoms were neural.

Dr. SACHS agreed with Dr. Mills and referred to a case of sarcoma of the cerebellum in the ponto-cerebellar angle that he reported several years ago. In tumors occurring in this region, most of the symptoms are unquestionably due to pressure upon the cerebellum. He considered the operation for the removal of growths located in this special angle a very serious one. The angle is barely accessible without serious impairment of important functions.

Dr. LANGDON spoke of a case bearing on the question of diagnosis between neurofibroma and sarcoma. Deafness was the only prominent symptom for several years. The subsequent history indicated a slowly developing growth occupying the medullo-ponto-cerebellar angle. There was complete deafness with slight facial sensory and motor symptoms. A year before death, fourth, fifth and sixth nerve symptoms were well developed. At the autopsy eight small tumors were found, some in the pia, but most of them in the dura. He thought the long duration of the symptoms (seven years) might furnish a point in the differential diagnosis between a sarcomatous growth and neurofibromatosis.

Dr. PATRICK said it was extremely difficult to determine the nature of the growth from the symptoms.

PROGRESSIVELY DEVELOPING HEMIPLEGIA, LATER BECOMING TRIPLEGIA.

This was the report of a case by Drs. CHARLES K. MILLS and WILLIAM G. SPILLER of Philadelphia.

Hemiplegia gradually developed on the right side, the lower extremity being more markedly and probably earlier affected than the upper, the case therefore belonging to the clinical type of unilateral progressive ascending paralysis. After several years the left lower extremity also became paralyzed, but not to the same extent as the right. The reflexes were all markedly exaggerated, the Babinski response being present. Sensory symptoms were absent. Microscopical examinations showed intense and long-standing degeneration of the right crossed and the left direct pyramidal tracts, the degeneration extending into the pons but not into the left cerebral peduncle; also comparatively recent degeneration of the left crossed and the right direct pyramidal tracts traced by the method of Marchi into the lower part of the right internal capsule. No lesions, degenerative or focal, were found elsewhere; the case therefore was one of

³Surgical Complications and Sequels of Typhoid Fever.

uncomplicated primary degeneration of the motor tracts, much greater and older in the right crossed and left direct pyramidal tracts. The case was regarded as a corroboration of the clinical type described by Mills in the *Journal of Nervous and Mental Disease*, April, 1900.

CHRONIC PROGRESSIVE HEMIPLEGIA.

DR. HUGH T. PATRICK of Chicago reported the case of a girl eighteen years of age, who had been perfectly well and normal in every way until her fourteenth year, when the right hand and foot began to grow clumsy and weak. This disability had gradually increased until the present. The entire right side is now parietic, with distinct diminution of muscular volume but no localized atrophy. Although the general appearance and action of the involved extremities suggested flaccidity, the deep reflexes were all greatly exaggerated and Babinski's sign well marked. It seemed easy to exclude all well known diseases, but he was inclined to think that the case might belong to a new clinical type recently described by Mills under the name "Ascending Unilateral paralysis." Concerning this type, however, he had occasion to examine repeatedly one of the two cases published by Mills, and was satisfied that the case was an example not of a new disease, but of unilateral paralysis agitans. This patient would be presented to the Association later, and the symptoms of paralysis agitans demonstrated. Two additional cases of one-sided paralysis agitans without tremor were briefly reported.

PROGRESSIVELY DEVELOPING HEMIPLEGIA.

This was the report of a case and exhibition of the brain by Dr. G. M. HAMMOND of New York. The patient gradually developed hemiplegia on the right side beginning in the leg, extending to the arm, and finally affecting the face, taking four months for the total extension of the paralysis. Later, paralysis began in the left leg and finally embraced the left arm, but not the face. The autopsy disclosed extensive degeneration in the white matter of both hemispheres, more extensive on the left side. This could be traced downward in both motor tracts.

The last three papers were discussed together.

DR. H. M. THOMAS of Baltimore referred to a case recently under observation of a boy in whom there was marked mental change. The autopsy showed degeneration of both pyramidal tracts without any observable lesion.

DR. W. HIRSCH of New York spoke of two patients with progressive hemiplegia, in whom distinct mental symptoms of general paresis developed at the end of two years. Secondary degeneration of the pyramidal tracts in parietics is well known.

DR. STARR, in discussing Dr. Mills' paper, cited the case of a woman presenting at first the symptoms of spastic paralysis in the right leg. Gradually the right arm became involved, but the face escaped. The only diagnosis possible was unilateral sclerosis. About a year later

the left side was similarly affected, in addition to atrophy in the muscles of the arm and leg. Soon after, bulbar symptoms developed rapidly, and death took place eighteen months after the onset, with all the signs of well-marked amyotrophic lateral sclerosis. It seemed to him, that in Dr. Mills' case, the differential diagnosis of amyotrophic lateral sclerosis should not be overlooked. He thought these cases should be classified into a large general group exclusively limited to the motor tract of the nervous system.

DR. DANA spoke of a case which seemed to belong to the type described by Dr. Mills. The condition appeared somewhat like a unilateral type of multiple sclerosis. A man forty-five years of age gradually developed descending right hemiplegia associated with the usual accompaniments of spasticity. The diagnosis rested between a sclerotic area in one cerebral hemisphere, or some type of paralysis agitans. A man with unilateral paralysis agitans without tremor at present under observation, at first impressed him as being a case of hemiplegia due to some degeneration of the motor tract. Subsequently he developed the characteristic symptoms of paralysis agitans.

DR. COLLINS reported the case of a man who became gradually hemiplegic on the left side. About a year later he began to have emotional symptoms, such as involuntary laughter without adequate cause. Subsequently, a right hemiplegia developed. The emotional symptoms are now conspicuous, and he thought the lesion therefore involved the thalamus.

DR. SACHS had seen a patient with progressive hemiplegia who gradually became completely paralyzed and demented, and finally succumbed to the disease.

DR. PATRICK then showed a patient (the one referred to in his paper) with unilateral paralysis agitans without tremor, in whom the condition had existed for five years. Tremor could be developed in the affected upper extremity when the patient made an effort to forcibly grasp an object with the opposite hand.

DR. MILLS admitted that there were several things in Dr. Patrick's case which pointed toward the diagnosis of unilateral paralysis agitans, but he did not feel thoroughly convinced that this is the correct diagnosis. He said that in his original paper he had stated that among the affections from which it was to be differentiated was unilateral amyotrophic sclerosis. The patient was under observation from 1897 to 1903. The only systemic disease found on microscopical examination was the pyramidal degeneration described by Dr. Spiller. He considered the case referred to by Dr. Collins as one of disseminated sclerosis with bulbar symptoms. He thought the discussion had shown the disease to be much more common than was supposed.

DR. HAMMOND said that his case showed a different type of disease from the one described by Dr. Mills and Dr. Spiller. He thought it would take more than a close observer to tell the

difference at the bedside before a post-mortem examination had been made.

FLACCID PARALYSIS FOLLOWING CEREBROSPINAL MENINGITIS.

DR. WM. N. BULLARD of Boston read a paper with this title and stated that the ordinary forms of paralysis following cerebrospinal meningitis as described in the textbooks are spastic. There is, however, also a flaccid form which usually appears as paraplegia. This closely resembles in its later stages the conditions which are found in the later stages of anterior poliomyelitis. In the earlier stages it is characterized by the persistence of pain and tenderness to a much greater degree than occurs in poliomyelitis, and also by a tendency to accompanying spastic contracture. He thought it very probable that some of the epidemics which have been described as anterior poliomyelitis were really due to cerebrospinal meningitis, the existence of which in the epidemic form is not uncommon, while the evidence for the existence of true epidemics of anterior poliomyelitis, usually a sporadic affection, is not yet absolute. Several cases of this form of paralysis were reported.

DR. J. J. THOMAS of Boston had seen many of these cases. He thought they were cases of cerebrospinal meningitis. During the acute stage of poliomyelitis it was often difficult to make a diagnosis. He had also noted the presence of tenderness, the early formation of contractures, and the tendency of the paralysis to be bilateral.

DR. HENRY UPSON of Cleveland referred to a case of spinal meningitis with multiple neuritis which he reported several years ago. There was diffuse tenderness over the legs. The autopsy revealed both conditions in a marked degree.

DR. KNAPP thought the previous history would enable us to make a distinction between cerebrospinal meningitis and anterior poliomyelitis. In cerebrospinal meningitis the symptoms might be so slight and so little characteristic as to be easily mistaken for the initial fever and malaise of anterior poliomyelitis.

DR. J. J. PUTNAM doubted whether it was always possible to make a differential diagnosis or to decide that cerebrospinal meningitis is present. He thought it important to limit the differentiation and to recognize the two types, but it should be noted that the two stood in a certain sort of relationship to each other. He believed what was ordinarily called anterior poliomyelitis occurs in epidemics. He referred to twenty-eight cases occurring in the vicinity of Boston and seen by him.

DR. E. D. FISHER of New York said there was no difficulty in making a differential diagnosis between cerebrospinal meningitis and poliomyelitis, except during an epidemic when both conditions were found.

DR. PATRICK thought the examination of the cerebrospinal fluid was of value in making the diagnosis.

A CASE OF ALEXIA.

DR. PHILIP ZENNER of Cincinnati reported the case of a man sixty-three years of age. Forty years ago he had a venereal sore, but without any constitutional manifestations. Eighteen years ago he had acute articular rheumatism. For several years he has had some dyspnea on exertion. The alexia came on in April, 1902, during an attack of dyspnea. It is not improbable that the attack came on during sleep. The only other speech disturbance which he has observed is occasional difficulty of finding a word, or using a wrong word. In addition to the aphasic manifestations and occasional dyspnea, he complained of irregular heart action, precordial pain, and disturbed sleep. The heart was enlarged and the sounds muffled. The urine contained some albumen but was otherwise normal. There was no motor paralysis nor ataxia. The cutaneous sensations, hearing, taste, and smell, pupils, optic disks, and knee jerks were normal. The ankle jerks were absent. There is a right hemianopsia. Central vision is normal. He often repeats himself in conversation, forgets occurrences of the day, and vacillates in his actions, but in general, he manages his business and his own affairs. He fully understands everything said to him, and expresses himself clearly and fluently. He is altogether unable to read, but he can tell single letters, though not always with ease, and often incorrectly. He recognizes capital letters much better than small letters. He can read only so far as he is able to spell the words. Whenever he succeeds in spelling the word correctly he recognizes it at once. During the time he was under observation there was no change in his condition. As to the seat of the lesion, the hemianopsia pointed clearly to the occipital lobe. The relation of the angular gyrus, now generally accepted as the visual speech center, to the lesion can be less definitely outlined. Its destruction would, doubtless, cause more extensive aphasic manifestations than existed in this case. The lesion probably encroaches upon this area and severs its relations with the lower visual centers.

DR. SMITH BAKER of Utica said there was a very easy fatigue of accommodation in such cases, and that might possibly give a clue to the difficulty experienced by the patient in recognizing certain figures which differ in form from certain other figures.

DR. LANGDON believed that the lesion was distinctly limited to a visual type of aphasia. He referred to a case of pure alexia he had seen, in which the man was unable to read after a few moments what he had written.

DR. KNAPP mentioned the case of an active, intelligent woman of middle age, who awoke one morning with considerable dizziness. A valvular lesion of the heart was present. There was well-marked alexia with right hemiplegia, and slowness in recognizing objects by sight, although the visual fields were normal. She was able to

write. She recognized her room and household perfectly well, and also the neighborhood in which she had lived for many years, but everything seemed reversed. The house seemed to be on the opposite side of the street, and the relations of the house seemed exactly reversed.

THE PRINCIPLES UNDERLYING PRACTICE IN MENTAL THERAPEUTICS AND LEGAL REGULATION OF ITS PRACTICE.

This was the title of a paper by DR. RICHARD DEWEY of Wauwatosa. He concluded that the practice of mental therapeutics is an important part of the practice of medicine as a whole, and should be taught systematically and so regulated as to prevent fraudulent practices or imposition.

DR. BAKER believed that the time is coming when we shall be forced to give more attention to the mental side of the human constitution in our attempt to restore people to health. He thought such method should play an important part in all the sources of what we now call purely nervous affections, because upon last analysis they prove to be neuro-psychical.

DR. ZENNER said there was nothing of more value than psychic treatment, and that such treatment often produces transitory relief of organic disease. In a great many therapeutic measures the relief comes through the mind.

DR. LANGDON did not think it possible to approach a solution of the problem until we have a better curriculum in the medical schools.

(To be continued.)

Recent Literature.

Protozoa and Disease. By J. JACKSON CLARKE, M.B. (Lond.), Author of "Surgical Pathology and Principles," etc. New York: Wm. Wood & Co. 1903.

In this book it is the author's intent to set forth the important facts which have been definitely established concerning the protozoa as parasites, and in this way to introduce to the medical profession the rôle played by the protozoa in disease. The author proposes in the second part to collect the work that has been done, with reference to protozoa, on those diseases which until recently were considered of doubtful or unknown etiology.

The opening chapter, which consists of general considerations concerning "the unicellular organisms and the cell," is marred by the presentation of the endogenous formation of leucocytes from the giant cells of the bone marrow as an established fact from which to draw an analogy. This interpretation given by Denys to the presence of leucocytes in the giant cells of the marrow has not been generally accepted. The greater number of observers working on the bone marrow have regarded the giant cells in question as phagocytic, and this view is supported by the degeneration of the ingested leu-

cocytes. The use for purposes of analogy of such a questionable process as the endogenous origin of the leucocytes is, of course, unfortunate.

No attempt is made to classify the protozoa, but the various groups and the more important species are set forth in a manner both pleasing and instructive. Although sufficiently elementary to serve the purpose of the beginner, the book contains a store of information which should excite the interest of every student of medicine. Of especial interest is the account of *Plasmodiophora brassicæ*, an organism causing the tumor masses found on the roots of cabbages, a disease commonly known as "stump root." An account is also given of *Ameba coli* and its relation to dysentery and liver abscess. Human malaria is discussed in a special chapter introducing the class of parasitic organisms known as Sporozoa. The life cycle of the malaria organism is illustrated by a diagram, so that its various stages are readily followed.

Among the Sporozoa, the Hemosporidia and the Neosporidia concern medicine more especially. The essential facts concerning the life history of *Pyrosoma bigeminum*, the organisms of Texas fever, are discussed. The subclass "Neosporidia" includes the Myxosporidia (the psorosperme of fishes); the Microsporidia — exemplified by the organism of pébrine, a disease of silkworms; and the Sarcosporidia, organisms found in the muscles of various animals.

Of the Flagellates, the *Trypanosoma* which infest the blood in the tsé-tsé fly disease of Africa, in the disease known as surra in South Asia and in mal de caderas of South America, — all diseases affecting domestic animals, — are of especial interest. *Trypanosoma* have also been found in the human blood in certain obscure tropical fevers.

A short chapter is given over to the diseases which affect the protozoa themselves. Although certain portions of the book are somewhat speculative, it, as a whole, is of value in that it presents the protozoa together with the pathological processes which they bring about. Not only are organisms described, but a chapter is given up to technique and specific directions given for the study of the various types.

How to Succeed in the Practice of Medicine. By JOSEPH McDOWELL MATHEWS, M.D., LL.D. Louisville: John P. Morton & Co.

A book on such a subject as this is always interesting reading, but we are inclined to think may hardly serve as a guide to the physician beginning practice. The author, as a teacher in medicine, tells us in the preface that he has often talked to students about the "business side" of the medical profession. The book is a reduction of these thoughts to words. As a narrative of the methods which have led to the author's success we may commend the volume. Its suggestions are many and for the most part useful, but we suspect that success in practice cannot be furthered by the experience of another. It is after all peculiarly a personal matter.

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PUBLIC HEALTH PROBLEMS.

IN two recent sanitary papers¹ the author of one of the most practical and useful publications yet issued in this country ("Municipal Sanitation") shows his ability to deal with the philosophical as well as the utilitarian side of the subject.

In "Dirt, Disease and the Health Officer" Dr. Chapin assumes the position, which is undoubtedly correct, that many health officials have blindly expended their strength in attacking mere filth without understanding the true specific causes and conditions under which such filth may prove an injury to the public health. The popular mind is very apt to take very much for granted in the matter of disease prevention, and to believe that such diseases generally have a spontaneous origin in filth. Such was the origin of many of the strict plumbing laws now in existence. A plumber appeared before a legislative committee bringing with him an array of defective pipes and traps, and the astonished committee, without further consideration, recommended a stringent law. The question whether such defects had been a fruitful source of disease, and whether actual proofs of cases of illness from such causes could be cited, was not even asked by the committee.

So, too, with the modern practice of embalming. It is the living, breathing, human being sick with infectious diseases who is a public danger, not the dead corpse sealed in its coffin, and the duty of the health officer is much more concerned with the former than the latter. It is a question

whether the law in the one instance and the custom in the other have not largely sprung from the financial interests of certain classes than from the demands of public health.

Dr. Chapin in this brief paper strives to bring out the true principles on which practical sanitary work should be founded. The following quotations show the author's trend of thought:

When our honored and lamented Reid went to Havana and discovered that yellow fever was transmitted by the bite of a mosquito, and Gorgas, by the most brilliant sanitary experiment ever made, put an end to this disease in its very stronghold, they drove the last nail in the coffin of the filth theory of disease. . . . The majority of even intelligent people to-day believe that Havana was made healthy by municipal engineering, while it was really accompanied by scientific effort specifically directed against certain infections.

An entirely disproportionate amount of time and money is devoted to plumbing regulation and the abatement of minor nuisances which have no relation to public health. Popular misconception as to the relation of dirt and disease is illustrated by the advertising cartoons of "Spotless Town," which is supposed to be so clean that the poor old doctor is dying of starvation. But we can rest assured that however spick and span may be the streets, and however the policeman's badge may be polished, so long as there is found the bore so careless with his expectoration, and the doctor who cannot tell a case of sapolio from one of diphtheria, the latter disease, as well as tuberculosis, will continue to claim their victims.

Again he says:

I would plead with health officers for a more rational perspective in directing their efforts and to devote more attention to the isolation of infectious diseases, medical inspection, disinfection, vaccination and the control of milk supplies and less to the abatement of nuisances; and in the latter, more attention to those nuisances which clearly and directly menace health, and less attention, or none at all, to those which do not.

These may be deemed radical statements, but they are the opinions of a practical health officer after years of experience and careful observation.

In "Preventive Medicine and Natural Selection" the author takes up the question whether active health measures do not interfere with natural selection so far as human beings are concerned. Darwin says: "There is reason to believe that vaccination has preserved thousands who from a weak constitution would formerly have succumbed to smallpox. . . . It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race."² The assumption here is wrong at the outset, since observation shows that smallpox attacks and kills both the weak and the robust

¹ "Dirt, Disease and the Health Officer." "Preventive Medicine and Natural Selection," by Charles V. Chapin, M.D., Superintendent of Health. Providence, R. I. 1900.

² The Descent of Man. Part I, Chap. 5.

without discrimination. Dr. Chapin says upon this question:

The practical point which I am here venturing to consider is whether we are warranted in abandoning our fight against these diseases, and permitting natural selection to have again a free field.

Several reasons are then given for continuing the vigorous campaign against infectious diseases:

The infectious diseases have been held by some to be an important factor in eliminating the feeble, the poorly nourished and the constitutionally defective. While it is true that such may more readily succumb when attacked by disease, there is no evidence that they are any more susceptible to most of the communicable diseases than are the most robust. The selective action of these diseases cannot therefore be so important a factor in maintaining race stamina as is sometimes assumed.

In conclusion, it appears that natural selection in the relation of man to infection is working for the ultimate good of the race; and while public health measures are in some respects antagonistic to this process, in others they favor it. Furthermore, the immediate results of preventive measures are so marked, and the chances of overcoming these diseases in the future by other means than the immunity due to selection, is so great, that we find no warrant in the principles of organic evolution for abandoning our present warfare.

THE TITLE OF SURGEON.

THE high place which surgery as a branch of medicine has taken in the popular mind is sufficiently evident. The reasons for this are not far to seek. In many respects it is the most exact branch of medicine. It permits the demonstration of immediate results. It has less to do with our somewhat discredited drugs than other lines of practice. All these things, together with the appeal to the popular imagination, not leaving out of account the extraordinary advances made in surgical theory and practice during the last few years, place surgery and the surgeon in a somewhat distinct category. The sharp distinction between medicine and surgery, which has been growing rather than decreasing as specialism has progressed, is likely in the near future to give place to a closer relationship between the two fundamental branches of medicine. This is sufficiently shown by the work of our best and most progressive surgeons, who are more and more investigating problems which have a medical as well as a surgical bearing, and possibly are less intent upon the operative side of their calling. Such a recognition of the interrelations of medicine and surgery is altogether to be encouraged, and no doubt will bear fruit in the immediate future.

In the meantime it is interesting and entertaining to observe the extraordinary hold which the mere name surgeon has upon the professional mind. To be a surgeon is apparently still the chief ambition of the ordinary medical student. If the attainment of his ambition is impossible, he enters upon the more humdrum life of the medical practitioner with lingering regret. That the name surgeon carries with it much authority is shown by the curious fact that this title is apparently retained wherever possible in work which is not distinctively surgical. Men concerned with diseases of the eye, for instance, apparently wish to be known as ophthalmic surgeons rather than as ophthalmologists, and are often so designated in their hospital positions. The ophthalmologist clearly deals with many cases which have no relation whatsoever to surgery; in fact, his surgical practice must be but a small part of his general work. Nevertheless, he wishes to be known as a surgeon. Writers of textbooks on ophthalmology are extremely apt, in describing the most ordinary tests, to speak of the person performing these tests as a surgeon. Turning to the army, we see the same tendency prevailing. Although, and this is coming to be more and more the case, a very great proportion of the work of the army medical officer is medical rather than surgical, he still is known as surgeon.

In general, we find this tendency running through the whole profession. If there is the slightest excuse for dubbing a man surgeon, this title is chosen in preference to the time-honored one of physician. We have no fault to find with this attitude of mind. It merely seems to us desirable that in the arrangement of medical titles the word surgeon should be more strictly applied, and the word physician looked upon as a term of equal dignity and desirability. No doubt time will adjust this somewhat anomalous condition, and the physician, when he has attained in the popular mind to the degree of accomplishment which is already the surgeon's, will invest his title with an equal popularity.

A TIMELY REBUKE.

It is reported from London that the Hon. Stephen Coleridge, well known for his activity in the antivivisection movement, has recently lost a suit in which he was defendant before Baron Alverstone, Lord Chief Justice of England. The circumstances were that Mr. Coleridge in a public address read a statement fur-

nished him by two women, in which Dr. Bayliss, professor of physiology at London University College, was charged with deliberate cruelty in the conduct of a certain physiological experiment. As is generally known, vivisection is permitted by the English law under certain restrictions and limitations, and Dr. Bayliss was one of those licensed to perform experiments. He naturally resented the imputations made by Mr. Coleridge, and began proceedings for libel and slander, with the result that the defendant was adjudged guilty and a verdict, with damages amounting to £2,000, rendered in Dr. Bayliss' favor.

Such a decision coming from such a source cannot fail to have a most salutary influence. The vilification of scientific men by the adherents of the cause of antivivisection has apparently been growing year by year, with but small regard to the facts. English experimenters have been exposed to much defamation, possibly more than men working in similar lines in this country, but so far as we know legal action has not hitherto been taken. It is fortunate for the cause of fairness and decency that so prominent a man socially, and so conspicuous an advocate of the cause of antivivisection, should be brought to account for his malicious utterances. How deep an impression this legal rebuff may have upon the rank and file of the antivivisection agitators it is, of course, impossible to say, but we suspect that in England at least there will hereafter be a certain hesitation in the promulgation of unverified statements which reflect upon the character of highly respected men. It will be difficult also, in this instance, for the defendant to pose as a martyr to the cause, or to elicit popular sympathy on any pretext whatever. Many of the attacks made upon the medical profession in relation to vivisection are too manifestly absurd and wide of the truth to excite any deep resentment, but it is well to have it understood that even such statements may not be made with impunity, and without incurring legal reproof. Freedom of speech has long since reached its limit in this matter.

MEDICAL NOTES.

PNEUMONIA IN CHICAGO. — According to the Bulletin of the Chicago Health Department, it is announced that for the first fortnight of the month of November 135 deaths from pneumonia have been reported and 82 from consumption, showing an excess of the former disease. Such

a prevalence of this common and frequently fatal affection is worthy of careful study. As a possible prophylactic measure the Bulletin urges a return to a simpler life.

GIFT TO STAMFORD, CONN., HOSPITAL. — It has been announced that the gift of \$10,000, made anonymously a year ago to the Stamford, Conn., Hospital, was from Robert M. Bruce, a resident of Greenwich. Some time ago Mr. Bruce also gave to the town of Greenwich an isolation hospital.

A RULING IN FAVOR OF CHRISTIAN SCIENCE. — According to a report from Columbus, Ohio, it is stated that the supreme court has rendered a decision which apparently permits the practice of Christian Science in Ohio. The decision turns upon a case tried some time ago in which a family was acquitted of the charge of manslaughter in the lower court in having refused medical aid to a child. The state carried the case to the supreme court on exceptions, which were overruled. Such decisions we must regard as unfortunate and detrimental to the well-being of the community.

LECTURE UNDER AUSPICES OF THE HENRY PHIPPS INSTITUTE. — Dr. William Osler, on the evening of Dec. 3, will deliver a lecture on "The Home in Relation to the Tuberculosis Problem," in Philadelphia, under the auspices of the Henry Phipps Institute for the study, treatment and prevention of tuberculosis. This is one of a series of lectures to be given on tuberculosis in the course of the winter by men eminent in this branch of medicine.

THE SENN PRIZE ESSAY FOR 1904. — The Committee on the Senn Medal begs leave to call attention to the following conditions governing the competition for this medal for 1904:

A gold medal of suitable design is to be conferred on the member of the American Medical Association who shall present the best essay on some surgical subject. The award will be made under the following conditions: (a) The name of the author of each competing essay must be enclosed in a sealed envelope bearing a suitable motto or device, the essay itself bearing the same motto or device. (b) All successful essays become the property of the Association. (c) The medal shall be conferred and honorable mention made of the two other essays considered worthy of this distinction, at a general meeting of the Association. (d) The competition is to be confined to those who, at the time of entering the competition, as well as at the time of conferring the medal, shall be members of the American Medical Association. (e) The competition for the medal will be closed on and no essays received after March 1, 1904. Communications may be addressed to any member of the committee, which con-

sists of the following: Dr. James H. Dunn, Chairman, Minneapolis; Dr. M. L. Harris, 100 State Street, Chicago; Dr. Floyd McRae, Atlanta, Ga.

IMPROVEMENT OF VITAL STATISTICS. — At the recent meeting of the American Public Health Association held at Washington the committee on vital statistics reported that effective co-operation had been instituted between that Association, the Conference of State Boards of Health, the American Medical Association, the United States Census Bureau and the United States Public Health and Marine Hospital Service for the improvement of the vital statistics of this country. Among the objects sought are the extension of adequate methods of registration, the use of uniform and comparable tables and rates in bulletins and reports, and the improvement of the international classification of causes of death. A pamphlet on "Statistical Treatment of Causes of Death" has been issued by the United States Census Bureau, requests for which should be addressed to Mr. W. A. King, Chief Statistician for Vital Statistics, Census Bureau.

It has special reference to the difficulties encountered in compiling deaths returned from several causes, and asks for the co-operation of the profession in framing a thoroughly satisfactory method of procedure in such cases.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 24, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 52, scarlatina 35, typhoid fever 22, measles 98, smallpox 0.

CASES OF ANTHRAX. — Owing to the occurrence of cases of anthrax in Lynn, Mass., and Boston, suspicion has been directed to several bundles of skins, recently imported. Both the Lynn and Boston boards of health are investigating the matter.

WOMEN NURSES IN INSANE HOSPITALS. — At the tenth semi-annual conference of the State Board of Insanity, recently held in this city, a subject under discussion was the question of women nurses in wards for insane men. The discussion was an active one, with a general consensus of opinion that women might advantageously be employed in such work more than has hitherto been done. Particularly in the sick wards and in the care of old men women have been found desirable.

A CENTENARIAN. — Patrick Scanlon of Wendell, Mass., died Nov. 21, at the reputed age of one hundred and three years. He was born in Ireland, March 15, 1800.

DEDICATION OF MT. SINAI HOSPITAL. — Exercises in dedication of the new Mt. Sinai Hospital were held Nov. 22, at the new building, 17 Staniford Street, Boston. An out-patient department, as well as wards for house patients, will be maintained. The services of the hospital will not be limited to members of the Jewish race.

WARREN TRIENNIAL PRIZE. — The Warren Triennial Prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of a premium, on some subject in Physiology, Surgery, or Pathological Anatomy, the arbitrators being the physicians and surgeons of the Massachusetts General Hospital.

The subject for competition for the year 1904 is on some special subject in physiology, surgery, or pathology.

Dissertations must be legibly written, and must be suitably bound, so as to be easily handled. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying dissertation.

Any clue given by the dissertation, or any action on the part of the writer which reveals his name before the award of the prize, will disqualify him from receiving the same.

The amount of the prize for the year 1904 will be \$500.

In case no dissertation is considered sufficiently meritorious, no award will be made. Dissertations will be received until April 14th, 1904.

A high value will be placed on original work.

NEW YORK.

DONATIONS TO MONTEFIORE HOME. — At the annual meeting and election of officers of the Montefiore Home and Hospital for Chronic Invalids, which was held on Nov. 1, it was announced that two gifts, aggregating \$75,000, had been made to the institution. One was an endowment fund of \$50,000, presented by S. R. Guggenheim, and the other a fund of \$25,000, to be known as "The Betty Loeb Memorial Fund," instituted and endowed by James Loeb in memory of his mother. A report was also

presented giving the details of the construction of an annex to the hospital which is now in course of erection. This is a four-story building of brick and stone which will cost about \$30,000 and is to be used for emergency and isolation purposes.

HEBREW SHELTERING GUARDIAN SOCIETY.—At the annual meeting of the Hebrew Sheltering Guardian Society, held at the home of the society on the Hudson at One Hundred and Fiftieth Street on Nov. 15, it was announced that gifts amounting to \$117,500 had been received. It is proposed, as soon as sufficient funds have been raised, to purchase a large plot of ground in Bronx Borough and erect on it some fifty or sixty cottages, each to accommodate twenty children. The general plan of the institution, as reorganized, will be that of Dr. Barnado's in London, and the children will receive manual and technical training. Among the improvements which have been made in connection with the present home are the establishment in the neighborhood of a reception house, where new inmates are kept under supervision for a time to prevent the introduction of contagious diseases among the other children, and of a building especially for the care of the infants.

A CENTENARIAN.—Mrs. Marie Pigruum Harrison, a native of England, died in Brooklyn on Nov. 14 at the age of one hundred years. Her husband, who was an actor, and died about twenty years ago, was for a considerable time a member of P. T. Barnum's company at the old Ann Street Museum, New York, and Mrs. Harrison had a unique collection of shoes and articles of clothing once worn by Tom Thumb, Commodore Nutt and other famous dwarfs, with whom she was a great favorite.

Miscellany.

IN MEMORIAM—GEORGE HAVEN, M.D.

At a meeting of the Obstetrical Society of Boston, held Nov. 17, 1903, the following resolutions were unanimously adopted:

Resolved, That we, the Obstetrical Society of Boston, do hereby express our sense of the great loss that the profession as well as our society has sustained by the death of our esteemed colleague and fellow member, Dr. George Haven.

"By the brilliancy of his professional career, his devotion to his patients, his unflinching tact and courtesy, he made a name and place for himself that sufficiently attests his value to his professional friends and to the community.

"*Resolved*, That the secretary be directed to

forward a copy of these resolutions to his family and to the BOSTON MEDICAL AND SURGICAL JOURNAL."

MALCOLM STORER, M.D., Secretary.

Correspondence.

THE AMERICAN SOCIETY OF CLINICAL SURGERY.

Boston, Nov. 17, 1903.

MR. EDITOR: My New England conscience prompts me that I promised to write out for the JOURNAL some sort of report of the meetings of the American Society of Clinical Surgery, held Friday and Saturday, Nov. 13 and 14, in Baltimore and Philadelphia.

The experiment, so far, has proved a success beyond our expectations. Twenty-one men, out of the total membership of thirty-six, gathered at the Johns Hopkins Hospital on Friday. They represented the schools and hospitals of Baltimore, Philadelphia, New York, Boston and Cleveland. The Johns Hopkins Hospital entertained us delightfully with clinics and luncheon. After the organization of the society had been perfected, we spent an hour in Dr. Halsted's surgical clinic where he demonstrated important cases and his method of teaching. At 11 o'clock Dr. Finney showed some interesting results of plastic operations upon the nose and demonstrated his now well-known operation of pyloroplasty. At half-past twelve Dr. Harvey Cushing demonstrated his method of teaching operative surgery to small classes of students, working upon dogs as actual subjects. The procedures were extremely interesting. After a delightful luncheon, given us by the hospital, we listened to Dr. Bloodgood's capital demonstration of his method of teaching surgical pathology, saw Dr. Cushing's exhibition of patients upon whom he had operated for the removal of the Gasserian ganglion and for drainage of hydrocephalus, and to Dr. Young's explanation of his methods in prostatotomy and sundry other genito-urinary surgical conditions.

On Friday evening, at half-past six, the society left on a special car for Philadelphia, where it spent the night. Saturday was passed in Philadelphia. Perhaps the most interesting number for that day was Dr. G. G. Davis' exhibition of methods in the teaching of applied anatomy. Dr. Davis is an accomplished surgeon as well as a thorough anatomist and his collection of anatomical preparations, illustrating surgical lesions, is unique; this exhibition was given in the old Medical Hall of the University of Pennsylvania, at 10 o'clock in the morning. At 11 o'clock we adjourned to the University Hospital, where Dr. Edward Martin gave a series of brief demonstrations illustrating the effect of head positions upon the epiglottis during anesthetization, a mechanical intestinal suture and the value of percussion and auscultation in the diagnosis of fractures. Dr. Charles H. Frazier followed with a demonstration of the practice and results of operations upon the Gasserian ganglion and some further interesting observations upon the technique of intracranial operations. After luncheon at the Rittenhouse Club the society proceeded to the always delightful old Pennsylvania Hospital, where Dr. R. G. LeConte and Dr. John H. Gibbon did the honors. Short demonstrations of results in the treatment of acute osteomyelitis and of perforating gastric ulcer were followed by a pilgrimage to the ancient galleries, wards and library of the hospital. This ended the first series of meetings of the society, an experience which we all look back upon as most valuable and delightful.

You see how impossible it would be formally to report such a program. The society is small, for a large gathering would defeat our purposes. Even the name is still *sub judice*—several members feeling that some such title as Society of Surgical Research would be more appropriate; but that the organization is well set upon its legs and likely to continue is probably established.

Sincerely yours,

J. G. MUMFORD, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 14, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . | 3,785,156 | 1,248 | 328 | 23.32 | 19.79 | 3.44 | 4.40 | .72 | |
| Chicago . . | 1,885,000 | 484 | 116 | 24.79 | 14.05 | 5.37 | 4.95 | 2.88 | |
| Philadelphia . | 1,378,527 | 376 | 99 | 23.13 | 10.64 | 7.98 | — | 1.86 | |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 190 | 41 | 23.68 | 14.21 | 2.63 | 2.63 | 2.63 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 120 | — | 22.50 | 23.33 | 7.50 | .83 | 4.16 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 59 | 15 | 25.50 | 17.00 | 3.40 | 6.80 | 1.70 | |
| Boston . . | 603,163 | 192 | 43 | 40.63 | 32.30 | 4.17 | 4.17 | 4.17 | |
| Worcester . . | 132,044 | 33 | 11 | 3.03 | 24.24 | — | — | — | |
| Fall River . . | 115,549 | 31 | 10 | 35.48 | 16.13 | — | 16.13 | 3.23 | |
| Lowell . . | 101,959 | 29 | 10 | 10.34 | 20.69 | 3.45 | — | — | |
| Cambridge . . | 98,639 | 21 | 9 | 23.81 | 14.28 | 9.52 | 4.76 | — | |
| Lynn . . | 72,497 | 17 | 5 | 5.88 | 11.76 | — | — | — | |
| Lawrence . . | 69,766 | 23 | 8 | 21.74 | 4.35 | 8.70 | — | — | |
| Springfield . . | 69,389 | 26 | 1 | 23.10 | 11.55 | 7.70 | — | 7.70 | |
| Somerville . . | 68,110 | — | — | — | — | — | — | — | |
| New Bedford . | 67,198 | 32 | 14 | 25.00 | 12.50 | — | 6.25 | 3.12 | |
| Holyoke . . | 49,286 | — | — | — | — | — | — | — | |
| Brookton . . | 44,873 | 12 | 3 | 25.00 | — | 8.33 | — | — | |
| Haverhill . . | 42,104 | 10 | 4 | 10.00 | 20.00 | — | — | — | |
| Newton . . | 37,794 | 14 | 5 | 14.28 | 7.14 | — | — | — | |
| Salem . . | 36,876 | 11 | 1 | 27.27 | — | — | — | — | |
| Malden . . | 36,286 | 11 | 1 | — | 18.18 | — | — | — | |
| Chelsea . . | 35,876 | 7 | 0 | — | 14.30 | — | — | — | |
| Fitchburg . . | 35,069 | 3 | — | — | 33.33 | — | — | — | |
| Taunton . . | 33,656 | 9 | 2 | 11.11 | 22.22 | 11.11 | — | — | |
| Everett . . | 28,620 | 6 | 4 | 16.67 | — | — | 16.67 | — | |
| North Adams . | 27,862 | 6 | — | 16.67 | — | — | — | — | |
| Gloucester . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . | 26,042 | 7 | 2 | 14.30 | — | — | 14.30 | — | |
| Waltham . . | 25,198 | 7 | — | — | 14.30 | — | — | — | |
| Brookline . . | 22,608 | 4 | 1 | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 8 | 1 | 25.00 | 25.00 | — | — | 12.50 | |
| Chicopee . . | 21,031 | 6 | 2 | 66.67 | 16.67 | — | — | — | |
| Medford . . | 20,962 | 4 | — | — | 25.00 | — | — | — | |
| Northampton . | 19,883 | 4 | 1 | — | 25.00 | — | — | — | |
| Beverly . . | 15,302 | 4 | 1 | — | 50.00 | — | — | — | |
| Clinton . . | 15,161 | 4 | — | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 7 | 0 | 28.60 | — | — | — | — | |
| Woburn . . | 14,300 | 3 | — | 33.33 | — | — | — | — | |
| Hyde Park . . | 14,175 | 5 | 1 | 20.00 | — | — | 20.00 | — | |
| Adams . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . | 13,609 | 5 | 0 | 20.00 | 40.00 | — | — | — | |
| Melrose . . | 13,600 | 2 | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 1 | — | — | — | — | — | — | |
| Milford . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . | 12,722 | 1 | 1 | — | — | — | — | — | |
| Framingham . . | 12,534 | 2 | — | — | — | — | — | — | |
| Peabody . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 3 | 2 | 66.67 | — | — | — | — | |
| Southbridge . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 3 | 1 | 33.33 | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,050; under five years of age, 743; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 693, acute lung diseases 512, consumption 334, scarlet fever 12, whooping cough 15, cerebrospinal meningitis 8, smallpox 6, erysipelas 8, puerperal fever 12, measles 14, typhoid fever 56, diarrheal diseases 104, diphtheria and croup 123.

From whooping cough, New York 5, Chicago 4, Philadelphia 2, Baltimore 1, Providence 1, Salem 1, Chicopee 1. From erysipelas, New York 1, Chicago 2, Philadelphia 1, Providence 1, Boston 2, Salem 1. From smallpox, Philadelphia 1, Pittsburg 5. From measles, New York 9, Chicago 1, Providence 1, Boston 3. From scarlet fever, New York 5, Chicago 2, Philadelphia 2, Baltimore 1, Lowell 1, Cambridge 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Oct. 31, the death-rate was 16.3. Deaths reported, 4,718; acute diseases of the respiratory organs (London) 260, whooping cough 41, diphtheria 61, measles 74, smallpox 4, scarlet fever 40.

The death-rate ranged from 4.7 in Hornsey to 29.9 in Warrington, London 15.8, West Ham 18.9, Brighton 10.8, Southampton 9.9, Plymouth 16.3, Bristol 13.5, Birmingham 18.3, Leicester 15.2, Nottingham 17.2, Liverpool 19.3, Bolton 11.4, Manchester 17.4, Salford 20.0, Bradford 14.7, Leeds 18.7, Hull 16.3, Cardiff 15.7, Rhondda 13.9, Merthyr Tydfil 18.2, Middlesbrough 19.8, Tynemouth, 19.9.

METEOROLOGICAL RECORD.

For the week ending Nov. 14, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | Weather. | | Rainfall in inches. |
|---------|-------------|--------------|----------|----------|--------------------|-----------|-------------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| | | | | | | | | | | | | | | |
| S. . 8 | 30.17 | 43 | 52 | 34 | 38 | 57 | 48 | W | W | 20 | 8 | O. | C. | 0 |
| M. . 9 | 30.18 | 52 | 64 | 40 | 60 | 42 | 51 | W | W | 8 | 9 | C. | C. | 0 |
| T. . 10 | 29.96 | 52 | 60 | 44 | 69 | 59 | 64 | S | W | 12 | 7 | C. | C. | 0 |
| W. . 11 | 29.96 | 48 | 52 | 43 | 77 | 83 | 80 | N | E | 8 | 9 | C. | C. | 0 |
| T. . 12 | 29.91 | 51 | 59 | 43 | 85 | 40 | 62 | W | W | 12 | 10 | O. | C. | 0 |
| F. . 13 | 30.00 | 52 | 61 | 42 | 61 | 41 | 51 | S | W | 12 | 9 | F. | O. | 0 |
| S. . 14 | 30.05 | 44 | 49 | 40 | 44 | 48 | 46 | N | W | 6 | 10 | O. | C. | 0 |
| AS | 30.03 | | 57 | 41 | | 57 | | | | | | | | T |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. AS—Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOV. 19, 1903.

WILLIAMS, L. L., assistant surgeon-general. To proceed to New York, N. Y., for special temporary duty; and as inspector of the Purveying Depot. Nov. 14, 1903.

CARMICHAEL, D. A., surgeon. Bureau letter of Oct. 5, granting Surgeon Carmichael leave of absence for thirty days from Oct. 16, amended so as to read twenty-four days from Oct. 16. Nov. 14, 1903.

WASDIN, EUGENE, surgeon. Granted leave of absence for one month from Dec. 7. Nov. 13, 1903.

MAGRUDER, G. M., surgeon. Granted leave of absence for two days from Nov. 17. Nov. 14, 1903.

ROSENAU, M. J., passed assistant surgeon. Relieved from duty at Vera Cruz, Mexico, and directed to rejoin his station in Washington. D. C. Nov. 16, 1903.

PARKER, H. B., passed assistant surgeon. Relieved from duty at Vera Cruz, Mexico, and directed to return to the Bureau at Washington, D. C. Nov. 16, 1903.

LUMSDEN, L. L., passed assistant surgeon. Granted leave of absence for ten days from Nov. 15. Nov. 14, 1903.

RAMUS, CARL, assistant surgeon. Granted leave of absence, on account of sickness, for nine days from Oct. 28. Nov. 14, 1903.

STANSFIELD, H. A., assistant surgeon. To report to Director of the Hygienic Laboratory for duty. Nov. 16, 1903.

GOLDBERGER, JOSEPH, assistant surgeon. To proceed to Laredo, Texas, for special temporary duty. Nov. 17, 1903.

BERRY, T. D., assistant surgeon. To proceed to Cleveland, Ohio, and assume temporary command of the service at that port during absence of medical officer in command; upon completion of which to rejoin his station. Nov. 13, 1903.

BOGGESE, J. S., assistant surgeon. Granted leave of absence for one month from Dec. 15. Nov. 16, 1903.

APPOINTMENT.

Francis Asbury Ashford, of the District of Columbia, commissioned (recess) as assistant surgeon in the Public Health and Marine Hospital Service. Oct. 29, 1903.

RECENT DEATHS.

ALLEN HAZEN, M.D., of New York, died in Jericho Centre, Vermont, on Nov. 17, after an operation for appendicitis. He was thirty-six years of age and was graduated from the College of Physicians and Surgeons, New York, in 1895. He served as an interne in the City Hospital on Blackwell's Island, and for the past five years had been on the board of medical examiners of the Mutual Life Insurance Company.

SAMUEL TALMAGE, M.D., of Brooklyn, N. Y., died on Nov. 20, aged seventy-two years. He was graduated from the Medical Department of the University of the City of New York in 1870.

HERBERT A. STARKEY, M.D., of Sloatsburg, N. Y., died suddenly on Nov. 21. He was the son of Dr. David Starkey of Philadelphia, and was formerly surgeon for the Pullman Car Company at Pullman, Ill.

Original Articles.

HYPERNEPHROMA.*

BY PAUL THORNDIKE, M.D., AND JOHN H. CUNNINGHAM, JR., M.D.,
BOSTON.

At the present time pathologists are forced to classify a certain class of renal tumors from a genetic as well as from a simply morphological point of view. The first steps in this direction resulted from the work of Grawitz (1883), who described a group of tumors (which had up to that time been classed most usually as renal lipomata) as *strumæ lipomatodes aberatæ renis*, and claimed for them a suprarenal origin. In the years immediately following, and in fact up to the present time, other writers have claimed a renal origin for these tumors, some asserting that they arise from the epithelium of renal tubules, while others claim the endothelium of the perivascular lymph spaces as their starting point. It has, however, seemed clear to all that these growths cannot be collected into any one morphological group, and are by no means to be classified simply as sarcomata, carcinomata or adenomata. They have, during the last few years, received the name of hypernephroma, the term signifying any tumor having its origin from adrenal cells, whether the growth be adenoma, carcinoma or sarcoma in type. This term seems a peculiarly fortunate one at this stage of our knowledge, as it definitely indicates the adrenal and not the renal origin of the growths in question, and yet makes no claim for any purely histological basis of classification, and commits us to no one of the many points of view still held by histologists regarding such growths. At the present time the proofs of the existence of this class of growths and of the propriety of using this name for them are about as follows:

(1) The situation of the growth just beneath the kidney capsule — the most common seat of aberrant suprarenal tissue.

(2) The similarity of malignant tumors of the adrenal gland and these malignant growths of aberrant suprarenal origin.

(3) The absence of any transition structure between the growth and the renal tissues surrounding it.

(4) The tendency of the tumor to extend along and to involve venous rather than lymphatic channels.

(5) The resemblance of the tumor cells to those of the suprarenal cortex.

(6) The presence of fat drops and glycogen in the protoplasm of the cells — substances which are by no means universally or even commonly found in the adrenal tissues, and yet which are always present in tumors of this gland so far as they are known.

(7) The property of the nucleolus of staining differently from the nucleus, a fact rarely if ever observed in cells of renal adenomata.

(8) The presence of giant cells like those in

the small hyperplastic growths of the suprarenal gland of which we have a knowledge.

(9) The existence of an abundant capillary network as seen in the suprarenal cortex.

(10) The presence of lecithin in amounts closely approximating those characteristic of suprarenal tissue.

The proper classification of hypernephromata will doubtless depend upon a combination of histological and genetic methods, and recent work upon glycogen and lecithin indicates that some progress will be made along chemical lines. It also seems proper to tabulate what few clinical facts we can already offer from the cases already described by Grawitz and his followers since 1883. These facts are briefly as follows:

(1) The tumor occurs most frequently in the adult male.

(2) It is usually large and has a nodular surface.

(3) It is entirely within the kidney substance or it is partially subcapsular.

(4) The function of the kidney which contains it is interfered with either by destruction of renal substance or by its compression from the tumor mass, or by both these factors acting together.

(5) The tumor grows rapidly, is usually malignant, but may probably be benign in some instances.

(6) It usually involves the renal vein and sometimes the vena cava, and metastases are formed along the blood current, especially in the lungs, liver and bones, but do not involve the lymphatic channels.

Of the three cases which are here described, one occurred on the service of Dr. F. S. Watson, to whose kindness the writers are indebted for its use in this paper. They are also indebted to Dr. W. F. Whitney of the Harvard Medical School, and to Drs. F. B. Mallory and E. E. Southard of the Pathological Department of the Boston City Hospital, for assistance in the preparation of the material for illustrations.

CASE I. Man, forty-eight years old, entered the service of Dr. Paul Thorndike, Jan. 21, 1903. Family history good, except for one sister, who had a cervical adenitis. Thirty-five years ago patient had typhoid, and, four years ago, lead poisoning. Eight years ago had an attack of pain in the right kidney, and thinks he passed a small calculus at that time. Three years ago he began to notice blood in his urine. Bleeding was almost constant for six months, but occasionally disappeared for one or two days, and coincident with the disappearance of the hematuria he usually developed considerable pain in his right lumbar region, which was relieved by the reappearance of the blood in the urine. At the end of this six months he had more bleeding than usual for one week, and then the blood disappeared and the urine became clear. During the next six months he had attacks of hematuria occurring every one or two weeks and lasting about twenty-four hours. Between these attacks he had considerable pain of a dull, aching character in the right kidney region. This renal pain was relieved by the reappearance of hematuria, coincident with which the patient developed a pain referred to the corona glandis. He thinks that he passed clotted blood occasionally. At this time he was beginning to lose strength, gave up his work, but as the hematuria subsided temporarily, no operation was performed. He continued his mild attacks of hematuria until May, 1901, when he had a severe attack lasting one week,

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This hematuria continued periodically until two months before entrance to the hospital, at which time the blood disappeared entirely from the urine. One week before entrance he again began to pass blood, and noticed a long clot of small diameter just before entering the hospital. At this time the tumor was discovered and the patient advised to come to the hospital for operation. During the three years he lost about fifty pounds in weight and failed considerably in strength.

Physical examination at time of entrance. — Large, well-developed man, emaciated and anemic. Pulses equal, regular and of fair volume and tension; rate, 100. Temperature, 99.6. Heart area normal, action regular, sounds not strong, but clear. Soft systolic murmur at apex not transmitted. Lungs normal. Extremities and reflexes normal. Abdomen symmetrical, full, lax and tympanitic, except in the right hypochondrium, where there is dullness continuous with that of the liver, the upper border of which begins at the fourth intercostal space and extends 9 cm. below the costal margin in the mammary line. Palpation reveals a hard, nodular, slightly tender mass which does not pulsate, but descends with deep inspiration. The lower border is ovoid in shape, with the convexity downward. Urine at entrance bloody, alkaline, specific gravity 1.026; urea, 30 gm.; albumin, a very slight trace. Much normal and abnormal blood and a few large, squamous epithelial cells. White count: 6,500. Hemoglobin, 60%.

The blood in the urine disappeared the day after entrance. Twenty-four hours' amount for the three days following entrance varied between 14 and 21 ounces. Temperature gradually climbed to 101.2 without apparent cause or change in the patient's condition. Urea remained at 30 gm. Operation on the fourth day after entrance; Dr. Paul Thorndike. Incision was six inches long, beginning just below the costal margin in the mammary line and extending downward over the tumor mass. Tumor was found covered with a network of large dilated vessels. Tumor region packed off from the general cavity and the peritoneum over the mass divided and clamped. The tumor, which was firmly bound by adhesions to the surrounding tissues, was freed and delivered. The mass continued down along the renal vessels and ureter. These were clamped *en masse* and the tumor removed. The ureter, which was much thickened by infiltrated new growth, was isolated and tied four inches from its upper end. The vessels were transfixed and tied with silk, but all the tumor could not be removed from them. The patient's condition became very poor, requiring considerable stimulation. The wound was closed with deep silk-worm-gut sutures, except for two inches at its lower end, which was left open for the removal of gauze packing left in place to control the remaining hemorrhage. Duration of operation, thirty minutes. Subcutaneous injections, 1,000 c.c. salt solution. Packing removed on the third and fifth days. Daily dressings were made on account of some sloughing from the depths of the wound. The wound, with the exception of the sinus down to the stump of the pedicle, was healed by first intention and stitches were removed on the eighth day. Sinus persisted, but the patient improved rapidly, and was up on the seventeenth day and discharged on the thirtieth day after operation. At that time he had gained much in weight and general appearance. Sinus still persisted. From the time of operation the twenty-fours' amount of urine increased steadily, without the use of diuretics, and up to the time of discharge varied from 40 to 50 ounces. Urea remained about 30 gm. The specific gravity fell, and during the last week of his hospital stay was about 1.017. Nine months after operation patient was well, doing a fair day's work, and stated that he had gained over forty pounds in weight. A very small sinus still persisted.

Pathological report. — The mass retains roughly the general outline of the kidney. It measures 16 cm. by 14 cm. by 12 cm., and weighs 1,500 gm. The surface is everywhere nodular and covered by the kidney capsule. The larger of these nodules is about one-fifth of the whole mass and is near the upper pole of the organ. The capsule, which is much thickened by dense, white, fibrous tissue, strips with difficulty, and is so generally adherent as to bring away tissue with it. On section the kidney

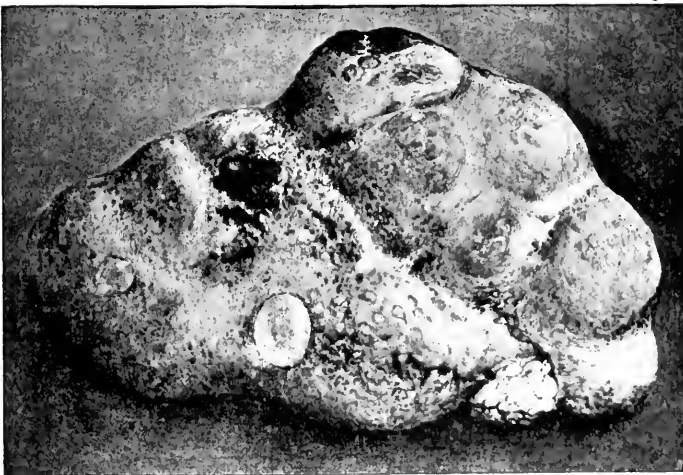
cortex is evident only in a few places, it being mostly replaced by nodules of various sizes, discrete and confluent, dark red or yellowish in color, with a yellowish white trabeculation, and firm to the touch. The area of the pyramids is occupied by a mass of pale yellow elastic tissue which is distinctly trabeculated and limited in outline, and contains many small areas of hemorrhage and a few areas of degeneration. The pelvis is enlarged and brilliantly injected. The calices are not distinct, but are occupied by bulging tissues due to the pressure of the tumor mass. Scattered over the inner surface of the pelvis are a few yellowish green areas of necrosis about the size of peas. Histological diagnosis: hypernephroma.

CASE II. Woman, fifty-two years of age, entered the medical side of the Boston City Hospital April 14, 1903, on the service of Dr. George G. Sears. Her father died of yellow fever, her mother of intestinal obstruction. She has one sister and one brother living and well, and one child now living and well at the age of twenty-six years. She has never suffered from uterine disorders, and passed her climacteric at forty-six years of age. She has always been well, and has had no illnesses during her adult life. On Dec. 15, 1902, she stumbled and fell, striking the lower part of her back. She felt lame for a few days, but was about and received no treatment for the injury. On Jan. 15, 1903, she began to have an indefinite attack of nausea, which lasted several days. She did not vomit and had no fever. She was up and about, but did not eat so much as usual. Feb. 1, 1903, she suddenly had a severe attack of sharp pain in the right side, which radiated toward the bladder. She immediately passed much bloody urine, followed by a continuance of a dull, aching pain in the right lumbar region. She passed considerable bloody urine several times during that night, and this hematuria continued for twenty-four hours. With the disappearance of the hematuria the pain in the back passed away. During the following six weeks the patient had several attacks of pain in the right lumbar region, radiating toward the bladder, but had no further attacks of hematuria. She lost twenty-five pounds in weight, and failed considerably in strength. A slight frequency and pain on urination caused her to consult Dr. C. M. Green, who recommended her admission to the hospital.

Physical examination. — A well-developed, fairly well-nourished woman, nervous temperament, with dark skin. Eyes and mouth negative. Pulses equal, regular, of good volume and tension. Heart area normal, action regular, sounds clear, with a soft systolic murmur at the apex transmitted into the axilla. Lungs negative. Abdomen symmetrical, full, lax and tympanitic, except in the right hypochondrium, where there was dullness, continuous with liver dullness, which extended to the level of the umbilicus in the mammary line. The lower border of the dull area was easily felt, was smooth and convex downward and descended with deep inspiration. There was no pulsation or tenderness over this area. The upper border of the liver dullness was at the sixth rib, and the left lobe of the liver did not appear enlarged. Neither spleen nor left kidney could be felt. Vaginal examination negative. Urine was pale, strongly acid, 1.016, a trace of albumin, much pus, and many squamous and neck-of-bladder cells; no blood. Blood: white count, 6,200; reds, 2,770,000. Hemoglobin, 25%. Patient was put to bed and received general tonic treatment. Many examinations for tubercle bacilli in the urine were negative, and differential blood counts showed nothing but moderate anemia. The patient improved only slightly under tonic treatment, and the general conditions remained the same. Although the tumor mass in the hypochondrium did not give acute symptoms, an exploratory operation was advised and finally accepted. The patient was transferred to the service of Dr. F. S. Watson, May 25, 1903. Operation, May 27, 1903; Dr. F. S. Watson. Incision seven inches long, beginning just below ribs, was extended downward over the tumor mass. Wound was later enlarged by an incision four inches long at right angles to the center of the first incision, outward between the ribs and the iliac crest. The peritoneum covering the kidney was filled with a network of dilated vessels. It was divided over the full length of the tumor, the bleeding points secured, and the cut edges sewed to the cut edges of the parietal peritoneum along the edge of the

wound, thus shutting off the general peritoneal cavity and forming a pocket in which the tumor lay. It was firmly bound by adhesions at its upper pole. These were broken, the pedicle was clamped, and the vessels tied separately. There was much thickened tissue along their course, but as the kidney could not be delivered through the wound its character was uncertain. The ureter was much dilated, very friable, and broke several times while being tied. About eight inches of it was removed, but the remaining portion of it seemed undoubtedly affected. The patient's condition was poor and would not allow of further procedure. The wound was closed with deep silk-worm-gut sutures without drainage. During the operation the patient required stimulation by strychnine and 2,000 cc. of salt solution subcutaneously. Time of operation, one hour and twenty minutes.

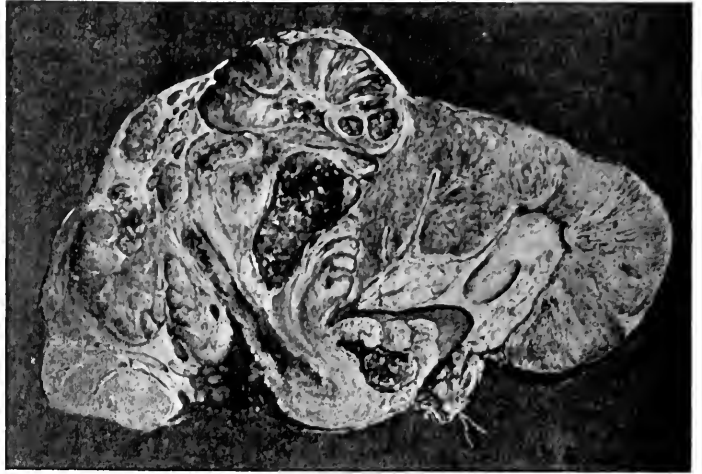
During the first forty-eight hours after operation the patient's condition was poor, but gradually improved. For the first twenty-four hours after operation the amount of urine was only 13 ounces. This gradually increased, and four days later reached 35 ounces without the use of diuretics. The urea at this time was 1.3%, and there was no macroscopic and but little microscopic blood. Six days after operation there was evidence of acute supuration in the center of the wound, and about 2 drachms of pus were evacuated. The patient's general condition steadily improved, and the wound, except for a sinus, which led down to the renal pedicle, healed by first intention, and the stitches were removed on the eighth day. Patient up on the twenty-eighth day. Urine remained constant in amount at 35 ounces, and the urea averaged 1.5%. There was at all times a slight trace of albumen with a specific gravity of about 1.012, and a few hyaline casts and small round cells. After getting up the patient gained rapidly in weight and strength, but a small sinus persisted in the wound in spite of frequent dressings. She was discharged seven weeks after operation. Sinus healed at the end of the sixth week. Her general condition at this time was excellent, and she felt as well as at any time during the past ten years. Urea at this time was 1.9%.



CASE II. By courtesy of Dr. F. S. Watson. Two-thirds actual size. Note the general reniform shape and nodular surface.

Pathological report. — (See plates I and II.) The mass retains the general outline of the kidney. It measures 12 by 9 by 8 cm. The external surface is generally nodular, with many points of injection from adhesions.

The nodules vary in size from 3 to 6 cm. in diameter, and compose practically the whole upper half of the kidney. The capsule is thickened and firmly adherent over the nodular area. On section the whole upper half of the organ is occupied by a new growth, except for a small bit of renal tissue at the very tip. There is one large calyx in the lower half from which pyramidal tissue radiates. This area presents small, yellowish discrete nodules a



SECTION OF TUMOR, CASE II. Note encapsulation; stroma causing nodular appearance; areas of hemorrhage and necrosis; destruction of and encroachment upon renal tissue.

few mm. in diameter scattered through it, and the cortex is poorly defined. The tumor mass, which occupies the whole upper half of the kidney, extends from just beneath the capsule into the pelvis of the kidney. It possesses a distinct capsule of its own. The tumor is generally yellowish in color, with areas of hemorrhage scattered through it. There is an irregular trabeculation of a firm lighter-colored tissue making many small compartments of yellowish or reddish yellow tissue. Some of these areas have degenerated and are soft, but for the most part the growth is firm and elastic. Histological diagnosis: hypernephroma.

CASE III. Man, fifty-two years old, entered the service of Dr. Paul Thorndike, Boston City Hospital, on Jan. 17, 1903. Father died of tumor of the abdomen, about which patient knows nothing. Mother died of cancer of the breast. Two brothers living and well. Patient has always been well. Habits always good. Present illness dates back fifteen weeks, at which time he began to have a dull aching pain across the lower back. Pain was constant and did not radiate. One week later the urine became bloody for forty-eight hours, during which time he passed a good deal of blood and several clots. These clots occasionally stopped the flow of urine and caused considerable pain, referred to the corona glandis. At the end of forty-eight hours the urine again became clear and remained so for three days, at the end of which time he had another attack of hematuria lasting thirty-six hours. Urine then remained clear for eight days and again became bloody for twenty-four hours. After this third attack the urine remained clear for fifteen days, when the present attack began; but this present attack had already existed for four days when the patient entered the hospital. During

these attacks of hematuria there was frequency of urination (every ten or twenty minutes), and the passage of clots often stopped the stream of urine momentarily and caused considerable pain, referred to the corona glandis.

Between the attacks there was no frequency of urination, and there was no difficulty in starting the stream, the caliber and force of which were unchanged. The pain in the back usually disappeared with the onset of an attack of hematuria. Patient has never passed any stones or gravel and has none of the usual symptoms of vesical calculus. Has lost ten pounds in weight and considerable in strength during the past four months.

Physical examination shows a well-developed and nourished man with a dark but anemic skin, and a nervous temperament. Eyes, mouth, neck and thorax normal. Pulses equal, regular and of good volume and tension. Abdomen full, symmetrical, soft, tympanitic, not tender. Nothing abnormal found. Neither kidney could be felt; no tenderness nor spasm on deep palpation on either side. Urine at entrance was bloody, neutral, 1,008; albumen, a large trace; no sugar; urea, 2.02%. Much normal and abnormal blood and a few large squamous cells. White count, 12,000. Soft rubber catheter, 18 French, could be easily passed into the bladder, and bladder washed clear from blood, which showed that if the bleeding was from the bladder it was slight. The bladder capacity was about 11 ounces. The stone searcher revealed no stone and was followed by no increase of hemorrhage. The hematuria continued for four days after entrance, and he passed many clots, which were worm-like in shape, of small caliber, and varying in length from 1 to 5 cm., and were believed to be ureteral casts. During these four days of hematuria the twenty-four hours' amount of urine varied between 20 and 30 ounces, and was voided in small amounts about every hour. During the twenty-four hours after the disappearance of blood from the urine the patient experienced no lumbar pain, and the amount of urine jumped to 44 ounces and the urea 3.3. During the next twenty-four hours the urine again dropped back to 26 ounces and the pain returned to the back, but no blood appeared in the urine.

At this time the cystoscope showed a normal bladder wall with no areas of hemorrhage, no evidence of new growth, and no foreign body in the bladder. From the left ureteral orifice there projected a worm-like piece of blood clot about 2 cm. in length. The right ureteral orifice ejaculated a normal-colored urine at the usual rate. About six hours after the cystoscopy the urine became bloody, and contained an ureteral cast about 5 cm. long. Bleeding continued for about ten hours, and then ceased. The following twenty-four hours' amount was 20 ounces. Another cystoscopic examination five days after the first showed the same general features. There was no urine being ejaculated from the left ureteral orifice, and the right ureteral orifice was normal in appearance and ejaculated a clear urine. At this examination a segregator was introduced into the bladder and no urine obtained from the left side. That obtained from the right side was only tinged with blood, which was probably due to the previous examination.

Operation, Dr. Paul Thorndike. Left lumbar incision. Kidney found moderately adherent to the surrounding fat, from which it was separated and delivered into the wound. It was not enlarged, but presented several small nodules on its surface. One of these was cut across and a diagnosis of new growth was made. The pedicle of the kidney was clamped and the vessels tied separately and *en masse*, and the organ removed. External wound closed with interrupted chronic gut sutures, except for an opening at the lower end of the wound, through which an iodoform wick was carried down to the stump of the renal pedicle. Time of operation, thirty-five minutes. Salt solution 1,000 c.c. subcutaneously immediately after operation. Wick removed two days later. No further blood in the urine. Urea twenty-four hours after operation was 2.9%. Twenty-four hours' amount of urine, from 20 to 37 ounces. Patient felt from the first that he was going to die, made no effort to rally, took his nourishment badly or not at all, gradually grew weaker, and died a week after operation. No obvious reason for death could be discovered.

Pathological report.—(See Plate III.) Gross specimen retains the general, normal shape of the kidney. The mass measures 12 by 6 by 5 cm. and weighs 142 gm. The surface is smooth and brownish in color. In the upper pole is a conical elevation 1 cm. above the surface

and 3 cm. in diameter. It is covered with kidney capsule and is firm to the feel. The capsule strips easily, leaving a smooth surface everywhere except over this elevated area, where it is closely adherent, and when torn away leaves a firm, white, fibrous tissue beneath. On section the cortex is distinct and is slightly thicker than normal. In the upper pole, in the region occupied by a new growth, it is destroyed.

The pyramids are distinct, but those in the upper pole are destroyed by an area of new growth. This area is



CASE III. Four-fifths actual size. Note sub-capsular site; definite encapsulation; areas of hemorrhage and degeneration.

5 cm. in diameter, almost spherical in shape, generally yellow in color, and is definitely encapsulated by fibrous tissue 3 mm. in thickness. Throughout this area runs a thick stroma with areas of hemorrhages varying from .5 to 1 cm. in diameter, and with other smaller areas of necrosis scattered through it. The pelvis of the kidney is somewhat enlarged, and has thinned walls. Histological diagnosis: hypernephroma.

Since Grawitz' articles in 1883 and 1884, numbers of these and similar cases have been reported by French and German writers, but most of them have served as examples illustrating points in a varied controversy of a histological character, and although many of the cases have been reported with great care and detail, the literature of the subject up to date remains distinctly histological in character, and no efforts have apparently been made to indicate and formulate a clinical picture which may perhaps prove of diagnostic value. It seems proper, therefore, to make a brief résumé of such symptoms in this paper, and to base it upon the histories of reported cases as well as upon the three instances included in these pages. The symptoms which at once call themselves to our attention in these

cases are, recurrent attacks of hemorrhage associated with frequency of urination, and often profuse enough to lead to the passage of clots, which in their journey down to the bladder sometimes get caught, stop the stream of urine (often for hours or days, as shown by diminishing amount of urine) and cause pretty severe pain, usually referred to the corona glandis. Between these periods of hemorrhage are periods characterized by no frequency of urination, but by a diminished amount of urine and urea, and

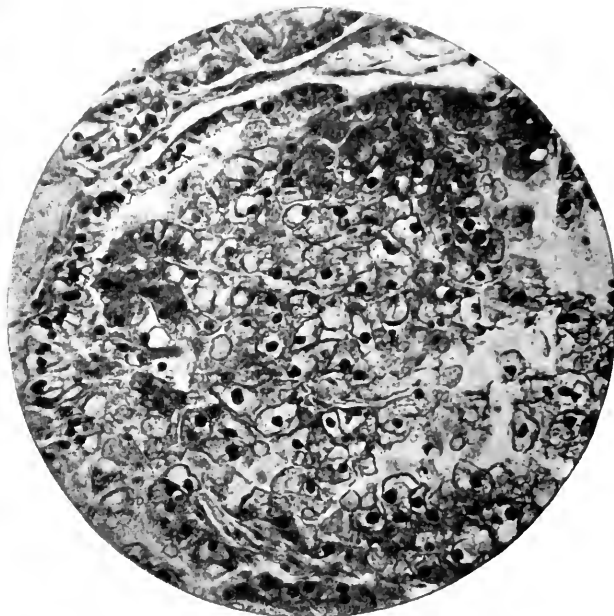
a marked pain in the back, persisting continuously and disappearing only with the onset of a new attack of hematuria. This condition is in marked contrast to the pain in cases of renal calculus. Calculus pain is, of course, coincident with the blood which the irritation of the calculus causes. This alternation of periods of hemorrhage and frequency with periods of no hemorrhage and no frequency, but of marked pain in the back, have seemed both distinct and constant enough to merit mention and emphasis; and these alternating periods had a beautiful illustration by the cystoscopic views obtained in Case III, where the clot obstructing the mouth of the left ureter could be readily seen, coincident with the sudden cessation of hematuria, marked drop in the twenty-four hours' amount of urine, marked diminution in the amount of urea and a return of the lumbar pain. Then a few hours later there was an equally sudden return of the hematuria and the passage of a ureteral cast of blood clot.



Stained with methylene blue and eosin. X 25 diam. Note thin capsule with lymphoid cell infiltration below; wide vascular spaces; general tubular or adenomatous appearance; areas of degeneration above (pale staining).



Stained with methylene blue and eosin. X 50 diam. Note vascular stalks; tubular appearance emphasized by lighter spaces (in part due to cell degeneration) lying outside well-nourished cells immediately facing capillaries.



Stained with methylene blue and eosin. X 200 diam. Note oval or polygonal shape of cells; preservation of their rim of cytoplasm; deeply staining nuclei sometimes lying upon cytoplasm threads; the perinuclear, lightly staining spaces, often filling the whole cell, and somewhat characteristic of hypernephroma.

The accompanying plates illustrate beautifully characteristic points of both the gross and microscopic pathology of these growths. These points, already mentioned in the text, are briefly as follows:

- (1) An affected kidney may not be much increased in size, but is generally very large.
- (2) The general outline of the organ is usually retained, and the surface is almost always nodular, although occasionally there is no external evidence of the growth.
- (3) The new growth is either encapsulated within the kidney substance or just below the kidney capsule.

(4) On section the tumor tissue is generally yellowish, with a firm and distinct stroma, which gives the growth a nodular appearance. Some of these nodules usually show areas of hemorrhage and degeneration.

(5) The kidney tissue is either destroyed or pressed upon and distorted by the new growth.

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For a complete bibliography of articles written on this subject up to 1898, the reader is referred to the above article by Kelly.

PAPILLARY ADENOCYSTOMA OF THE THYROID AND ACCESSORY THYROID GLANDS.*

BY HARRY C. LOW, M.D., BOSTON,

From the Pathological Laboratory of the Boston City Hospital.

THE papillary tumors of the neck are of great importance to the surgeon, on account of their tendency to rapid local recurrence. Their histological development and their point of origin have been the source of much discussion. The six cases reported here are interesting in showing a true papillary adenocystomatous growth originating in the thyroid tissue from three different sources, namely, the thyroid gland itself, lobules of thyroid tissue directly connected with the gland, and accessory thyroids entirely separate from the thyroid itself.

The name accessory thyroid is used to designate those small isolated masses of true thyroid tissue which often occur in the neck near the thyroid gland. They are apparently similar to the accessory spleens found in the neighborhood of that organ.

These bits of thyroid tissue are liable to occur, as the diagram shows, either running up from the isthmus, representing persistent bits of the pyramid of Lalouette, or as the remains of extensions from the inferior or superior horns, or just posterior to the lateral lobes, lying alongside the pharynx and esophagus. Occasionally they may occur at the root of the tongue, within the larynx or even further from the main gland. In the examination of five hundred cases Gruber³ found that the occurrence of accessory thyroids was approximately as follows — the superior was present in one out of twelve individuals, the inferior in one out of ten, and the posterior in one out of five. The accessory thyroids are histologically like the thyroid gland, and are not to be

confused with the parathyroids, which are of very different structure. We must also distinguish the true congenital accessory thyroids from lobules of thyroid tissue, which may be the seat of encapsulated tumors analogous to the pedunculated tumors of the ovary. Berry¹ thinks that most of the so-called tumors of an accessory thyroid have, in reality, developed in the thyroid gland itself, and are connected with the main organ by a more or less well-defined pedicle. The anatomical studies of Paltauf⁴ and Gruber³ seem to support this view.

The accessory thyroids have been recognized as possible points of origin for all the different varieties of tumors, which may affect the thyroid gland itself, at least since Schlütter⁵ in 1857

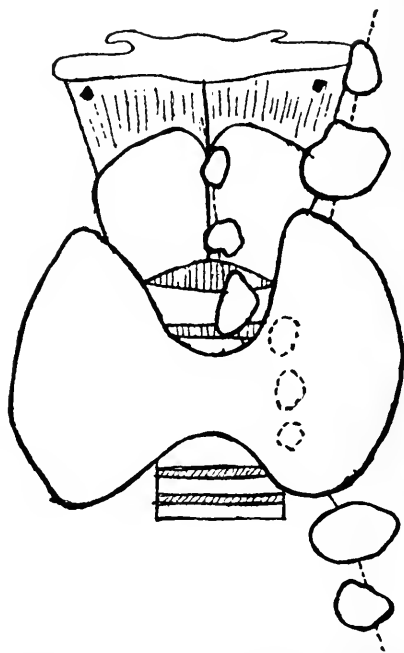


FIG. 1 (after Berry). Larynx, trachea and thyroid gland, showing (on the left side only) the most common position in which the accessory thyroids are found.

wrote "De Struma Cystica Accessoria." Virchow,⁶ Schnitzler,⁷ Braun,⁸ Hinterstoisser,⁹ Madelung² and others have also reported cases of tumors of the accessory thyroids.

The thyroid tissue may be the seat of neoplasms, which differ widely in histological structure. Hinterstoisser¹⁰ recognized 17 kinds of malignant goiter in 50 cases. We must distinguish those cystic goiters, resulting from softening or hemorrhage in a simple adenoma, followed by secondary papillary ingrowths from the cyst wall, which only occupy a small part of the cyst cavity, from the true papillary adenocystoma of the thyroid. Some of the forms of fetal adenomata, which show only a very slight tendency to papillary formation in small areas, cannot be considered as truly belonging to this type of tumor.

Although I have reported this first case before,¹¹ it is included here to show the relation of this series of cases to the thyroid gland.

* Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

CASE I. S. 01,340, female, forty-nine years old. Admitted to hospital May 28, 1901. Patient had much trouble from sore throat about twenty-five years ago, and since then her neck has remained swollen. Year after year the tumor gradually grew in size, but more rapidly in the last two years, until it now occupies the whole front of the neck. During the last seven years she has had more or less discomfort at night, with stiffness of neck, and has had some palpitation, no headache or dizziness, no loss of weight, no difficulty in breathing or swallowing.

Operation by Dr. F. B. Lund. After peeling back the skin and platysma, and ligating the superior and inferior thyroid arteries on the right, the capsule of the cyst, which was covered with numerous large veins, was incised and the tumor quickly and easily enucleated. It formed nearly the whole right lobe of the thyroid. The patient made a rapid recovery.

Pathological report. The specimen, which has been cut in halves, consists of a tumor mass weighing 680 grams. It measures 11 x 12 x 9 cm. It is covered with a firm fibrous capsule. There is no apparent point of attachment. On section a moderate amount of thin, colorless fluid escapes. There are a great many cystic spaces separated with white fibrous walls. These spaces in many places contain clear fluid. The cut surface is divided by broader fibrous bands into rounded areas, which are subdivided by thin fibrous walls. A greater part of these small alveoli are filled with soft yellowish material, which stands above the surface like small plugs. In the center the cysts are large and filled with fluid. The papillary structure is very evident.

Microscopical examination. The capsule is formed of dense fibrous tissue. The growth consists entirely of large and small cystic spaces filled with papillary ingrowths and occasional small areas of simple adenomatous structure.



FIG. 2. Typical papillary growth in Case I. Cells mostly like those of normal thyroid. Occasional colloid follicles. In the center are seen some of the large cylindrical cells developing next to the low cuboidal epithelium.

These cystic spaces are only separated from one another by a very thin wall, and intercommunicate to form larger, irregularly lobulated spaces, much more than is evident in the cross section. Most of these spaces and follicles

are empty, having been filled with clear mucoid fluid. Very rarely there is seen a follicle lined with flat, poorly developed epithelium, and containing eosin-staining homogeneous material, which is colloid.

The cystic spaces, the papillary ingrowths and the simple follicles are all lined with a single layer of epithelium. This is in most places normal, healthy looking thyroid epithelium of the cuboidal type. There are however, numerous places throughout the growth where the lining of the papillae suddenly changes in type, and next to the cuboidal epithelium we see a profuse growth of cylindrical epithelial cells (see Fig. 3). Instead of the smaller cell, with its round nucleus, we find a cell three times the size, rich in protoplasm, and containing a single large oval vesicular nucleus, in which there are numerous chromatin granules. There are some small follicles, showing the same size of epithelium, and between them occasionally there is a small solid group of large epithelial cells. Mitotic figures are not numerous in these cells. The illustrations of this tumor show both these types of growth.

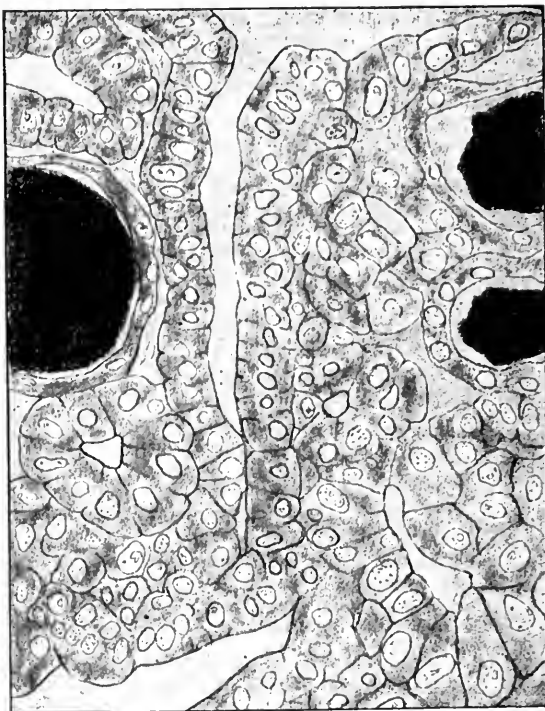


FIG. 3. Part of Fig. 2 more highly magnified. Characteristic proliferating cells of Case I, having large vesicular nuclei and much cytoplasm. Some colloid follicles distended and lined with the very low epithelium typical of the "colloid goiter," and other smaller follicles lined with normal cuboidal epithelium.

There is very little stroma throughout the growth, and it shows only in places slight hyaline and myxomatous degenerations, though it is often considerably distended with fluid to form edematous tissue in large areas of the tumor. The blood vessels are fairly numerous and their walls show very little change.

The second case is similar to the first, but not nearly as extensive.

CASE II. S. 02,309, female, forty years old. In the hospital in May, 1902. Eighteen years ago noticed slight swelling in her neck, which has increased very slowly, but has caused no especial inconvenience until the last six weeks. At this time she had a sudden attack of suffocation. For an hour she had great difficulty in breathing. No trouble since. No exophthalmos, nor tachycardia.

Some hard nodules could be felt in the region of the isthmus, and in the right lobe were other hard nodules.

Both lobes seemed to be enlarged to twice their normal size. Operation by Dr. J. C. Munro. Ether at first produced marked strangulation, so chloroform was used, with the patient in erect posture. Upper and outer portion of right lobe was partly freed and the apex left behind. Isthmus firmly attached to the trachea, which was found to be pinched to a narrow triangle by the gland, and after freeing it, respiration improved much. Upper portion of left lobe was not removed.

The specimen removed consists of three portions of grayish-red tissue of rather soft, gelatinous consistency, measuring respectively (1) $7 \times 5 \times 4$ cm.; (2) $5 \times 4 \times 2$ cm.; (3) $6 \times 3 \times 2$ cm. On section grayish nodules are revealed, averaging from 1 to 3 cm. in diameter and being somewhat more firm than the rest of the tissue.

Microscopical examination. There are various nodules separated from one another and the surrounding glandular tissue by broad connective-tissue septa. The follicles of the thyroid gland are apparently normal, moderately dilated and filled with colloid. Most of the nodules consist of an adenomatous growth. The follicles vary in size, some being filled with colloid, many having little or no central spaces, and being lined with rich epithelial cells, having large oval vesicular nuclei. There are in places small collections of these cells forming an apparently true adenocarcinomatous growth.

One of the larger nodules, separated from the rest by a wall of fibrous tissue, is almost completely filled with closely packed papillary ingrowths and a few single follicles. These papillae branch very complexly, and are covered by a single layer of high epithelial cells. There is an occasional follicle containing colloid. The stroma of the capsule and papillary masses is infiltrated with plasma and round cells. This part of the tumor shows a similar and nearly as complex papillary growth as was seen in the first case.

In the third and fourth cases the tumors probably developed either from a lobule of thyroid tissue, or having developed in the gland itself have become pedunculated as they increased in size and pushed out from the gland. At least in these two cases the growths were in direct connection with the main organ.

CASE III. S. 02,359, male, forty-six years old. Admitted to hospital in June, 1902. Tumor has been growing gradually for nine months. It has caused no subjective symptoms.

On the right side of the neck, just opposite the cricoid cartilage, between the anterior edge of the sterno-mastoid muscle and the median line, is a swelling one inch in diameter. It moves distinctly with deglutition. Operation by Dr. H. W. Cushing. A dense, firm tumor very adherent to the thyroid gland was exposed. With considerable difficulty it was separated from the gland. The specimen consists of a mass measuring $3.5 \times 3.5 \times 2$ cm. It is firm, nodular, and deep red on the surface. On cross section it is yellowish gray, soft, granular, and pulpy. There are many fibrous bands throughout the growth.

Microscopical examination. The growth consists of many large and small cyst spaces separated with broad bands of connective tissue. These spaces are filled with very numerous, irregular papillary ingrowths, and occasional scattered follicles containing colloid. The epithelial cells of the growth form a single layer covering the papillae and lining the cyst spaces and follicles, but they are mostly two to four times as high as the normal thyroid epithelium, are richer in protoplasm and have large oval nuclei. Some places, however, are covered with low cuboidal epithelial cells. At the border the growth seems to be invading the thyroid tissue, which a short distance away appears normal. There are many small alveoli filled with the papillary tumor growth, pushing out into the surrounding tissue. These alveoli have a considerable connective tissue wall, from which there are bands radiating into the adjacent thyroid tissue. There is some infiltration of round and plasma cells into this stroma and in places it shows extensive hyaline degeneration. Throughout the growth there are all kinds

of epithelial cells forming a gradual transition between the lowest cuboidal and high columnar cell.

The character of the extensive papillary growth in this case is shown in the illustration, which also well represents the structure of the small papillary development in the previous case. The facts that the growth in this third case began as a small nodule at one side of the thyroid gland, and that at operation it was found to be very adherent to the thyroid, make it possible that it may have developed from an accessory thyroid, and later, through some chronic inflammatory process, have become adherent to the main organ; or that it originated in a bit of thyroid tissue that formed a small lobulation of the thyroid. The latter hypothesis seems the most probable.

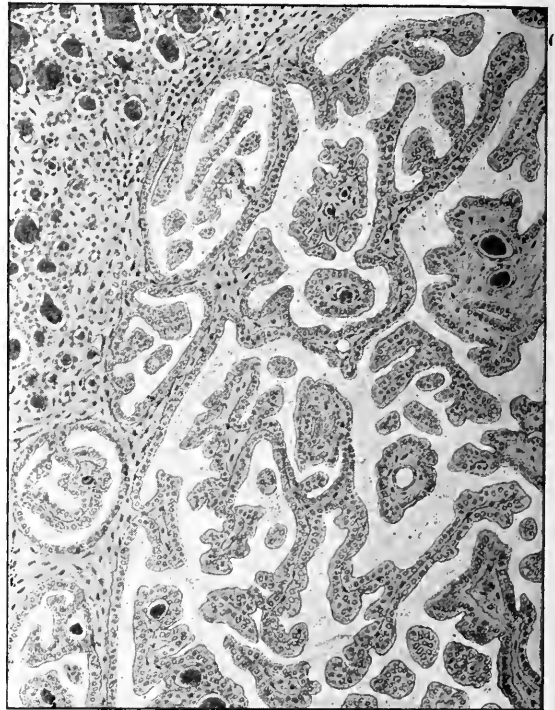


FIG. 4. Case III, showing part of large cystic space filled with papillary growth and scattered colloid follicles, surrounded by much connective tissue infiltrated with round and plasma cells. There are also smaller spaces filled with papillary growth in the border of the tumor.

CASE IV. S. 02,246, female, thirty years old. Admitted to the hospital in April, 1902. For several years a tumor has been slowly growing in the front of the neck, just to the outer side of the right lobe of the thyroid gland. It is freely movable, and about one inch long and one-half an inch wide. Operation by Dr. J. C. Munro. Tumor enucleated except for a narrow pedicle at the inner portion, which was ligated with catgut. A cyst about one inch in diameter developed at the inner lower angle of the right lobe of the thyroid close to the isthmus.

The specimen removed was a mass of soft red tissue, the size and shape of a pecan nut. Surface dark red, dotted with small black areas, size of a millet seed. Cut section is pale gray, soft and moist. Bands of fibrous tissue run in various directions, but otherwise the cut surface is for the most part homogeneous. There are several areas of soft, granular, yellowish white material.

Microscopical examination. There is a definite connective tissue capsule surrounding the growth. The periph-

ery is a simple adenoma with a small amount of stroma, in which are numerous small blood vessels. The adenomatous structure shows various types: a few moderately large follicles containing colloid, many smaller follicles with small lumen and no colloid. Between these are all gradations. These spaces are all lined with a single layer

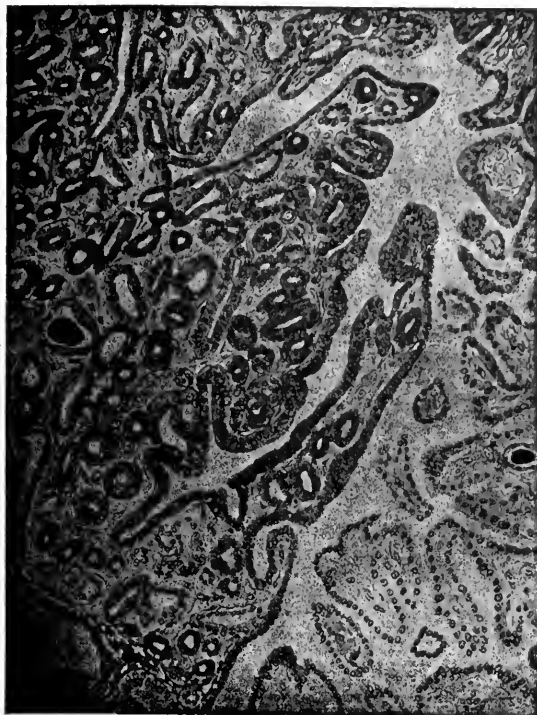


FIG. 5. Case IV, showing the simple adenomatous structure of the periphery, with its small follicles and irregular spaces, and a part of the papillary growths of the center.

of columnar epithelium, which is slightly higher than the ordinary epithelium of the thyroid. Throughout this edematous portion there are long slits or spaces, with a similar epithelial lining, which divide the tissue up into irregular lobes. Near the center these spaces become larger and more irregular, the simple edematous structure becomes less evident and in a major part of the tumor we find an extensive papillary development. The cells covering these papillary masses are very similar to those of the rest of the growth, being only a little larger. They do not show as many variations as were present in the first case reported. There is no stroma in the papillary portion. It contains numerous vessels distended with blood, and is in places edematous. In some of the spaces extensive hemorrhage has taken place. The cyst removed from the right lobe of the thyroid shows several spaces lined with cuboidal epithelium. This was in no way connected with the rest of the tumor.

This tumor, being freely movable and to one side of the thyroid, was found at operation to be connected by a narrow pedicle to the main organ, and has probably developed from lobule of the thyroid gland.

The other two cases are tumors arising entirely separate from the thyroid gland, both of which show a papillary growth almost exactly like that of the first case and occasional colloid follicles.

CASE V. S. 02.680, female, eighteen years old. Admitted to hospital Oct. 10, 1902. First noticed a small lump on the right side of her neck two years ago. This increased in size and became tender and painful. About

a year ago it was operated on. Shortly after the wound closed the tumor began to grow again. At present it is tender and painful. On the neck, just behind and below the right ear, is a tumor about the size of an English walnut, which is firm but slightly fluctuant. It is not adherent to the skin, though firmly connected with the deeper structures. Operation by Dr. Paul Thorndike. As the tumor was thought to contain fluid a small incision was made over the mass. On deeper incision considerable hemorrhage occurred. The swelling was found to be a very vascular new growth, with no evidence of suppuration. A very vascular tumor with a definite capsule was then readily freed from the surrounding tissues.

The pathological examination states that it is a firm, oval tumor, measuring $5 \times 3.5 \times 2.5$ cm. There is a distinct capsule closely associated with muscle at one side. On section it is gray with a few small yellowish areas, and one large red area. It is granular and pulpy.

The patient returned to the hospital two weeks later on account of pain in the swelling of her neck. The record says that there is considerable fullness in the right side of her neck, extending from almost the median line to back of the sterno-mastoid muscle. On palpation a smooth elastic mass is felt, made up of several nodules. It does not seem to be in any way connected with the thyroid, trachea or skin. Thyroid gland is apparently not enlarged. Several enlarged glands are felt in the left neck. A further operation attended by considerable hemorrhage resulted in the removal of two very vascular encapsulated tumors. They each measured $4 \times 3.5 \times 2$ cm., and were similar in structure to the one previously removed.

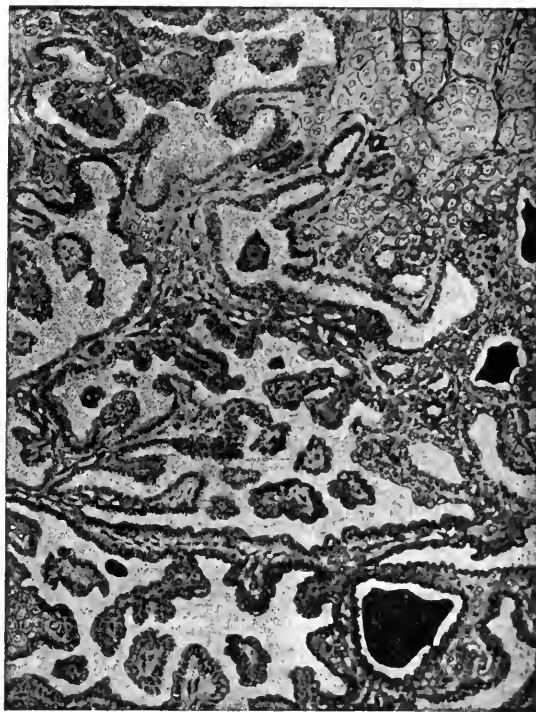


FIG. 6. Case V. Rich papillary growth in numerous small spaces. Cells rapidly multiplying. Many colloid follicles. In upper right corner is part of one of the small areas stimulating carcinoma.

Microscopic examination. The tumor is made up of small irregular spaces lined with a single layer of columnar epithelium. Owing to the fact that these spaces are encroached upon by very numerous and intricately branched papillary ingrowths from the walls, they vary infinitely in size and shape. The spaces are either empty or partly filled with mucoid material, and many of the smaller ones contain colloid. In very many places there is considerable proliferation of the epithelial cells between the spaces. These cells are quite large and have large

vesicular nuclei, which occasionally show evidences of mitoses. In some places the lumina of the follicles have become small and are filled with proliferating epithelium, and the growth resembles a true carcinoma with very little stroma (see Fig. 6). The tumor is rich in blood vessels, and shows no evidence of degeneration. Some of the papillary growths in the larger cyst spaces are distended with edema.

Although none of the nodules removed in this case showed lymphoid tissue, it seems probable that at least some of the growth developed by extension to the adjacent lymph nodes, as is evident in the following case. It is rather hard to believe that there were several separate accessory thyroids as points of origin. Gruber³ in his anatomical notes states that only once in twenty times where the accessory thyroids were found present was there more than one, and he did not in any case find more than two present, these being on opposite sides.

CASE VI. S. 99,470, male, fifty-eight years. Admitted to hospital in August, 1899, in the service of Dr. Paul Thorndike. Two years before noticed a small swelling in the right neck, which has rapidly increased in the last ten months. Larynx and trachea are pushed about half an inch to the left side. Entire side of neck is now occupied by four definite and distinct tumor masses. The most prominent is an irregular ovoid mass below the angle of the jaw. Next largest is below and towards the median line and less movable. Two other smaller ones are just above the anterior third of the clavicle. In the left neck is an indefinite tumor the size of a cherry. The skin is not adherent to these growths. The general enlargement of the axillary, epitrochlear and inguinal lymph nodes justified the clinical diagnosis of Hodgkin's disease or malignant lymphoma.

At operation an ovoid nodular mass of fairly firm consistency, measuring 9 x 5 x 3 cm., was removed. There were certain nodules that had a firmer consistency than the rest of the mass. The cut surface was dark red, somewhat soft and granular. The patient failed rapidly during the operation, which was stopped, and he died in a very short time.

At post-mortem examination the right side of the larynx showed a shallow depression from pressure of the growth. On the right side of the trachea and closely adherent to it is an enlarged gland extending from the cricoid 6 cm. downwards. The trachea is not distorted. Below this and anterior to the trachea, not closely adherent to it, and not invading the surrounding tissues, are two other glands, one measuring 3 x 2.5 x 2 cm. and the other slightly smaller. They are symmetrically enlarged, firm and non-fluctuating. On section the surface is pinkish gray, granular and very friable, and the soft material is easily scraped off with a knife. There are two more glands about the size of the others beneath the sutured wound. One is firm and the other hemorrhagic and pulpy. The examination of the viscera shows nothing of unusual interest. The inguinal lymph nodes are the seat of an acute inflammatory process.

The microscopical examination of the new growth removed at operation and at autopsy shows that the tumor is made up of several very large cystic spaces surrounded by thick vascular connective tissue bands, in which there is considerable infiltration of lymphoid and plasma cells. These spaces are completely filled with a very intricately developed papillary growth. There is a moderate amount of stroma. The lining of the spaces is made up mostly of high columnar epithelium, but in places there is a low, flat epithelial layer. Very rarely there is seen in a section a few small round spaces surrounded by a thin layer of protoplasm. In one section was seen a group of 8 or 10 of these spaces lined with a definite cuboidal epithelium, and apparently filled with colloid. In the surrounding connective tissue capsule there are small spaces with papillary ingrowths and other alveoli filled with large epithelial cells.

Some of the lymph nodes removed at the autopsy are invaded by a new growth of similar nature consisting of cysts filled with a delicate branching papillary growth. The cysts and papillae are lined with cylindrical epithelial cells, which have large oval nuclei and finely reticulated cytoplasm. This growth is almost exactly like that in the third case.

There is no doubt that these six tumors have developed either from the thyroid gland or from bits of thyroid tissue. In every one of them true thyroid follicles containing colloid were present, and the growth was made up of cells varying gradually from the typical cuboidal cells of the thyroid to a true cylinder epithelium. The only other tissues in the neck from which such a histological structure could be expected to develop are the remains of branchial ducts, and in that case the epithelium would probably be ciliated and at least would not show the character of the thyroid epithelium.

Gutmann,¹² Koch,¹³ Volkmann,¹⁴ Bruns,¹⁵ Berger¹⁶ and others have reported cases that were supposed to be developed from branchial ducts, and some of them showed tendency to papillary formation. Berger and Bruns think that most of them are developed from thyroid tissues, and Gutmann, in writing on the development of the so-called carcinoma of the branchial duct, says it develops from the accessory thyroids, and calls it a struma carcinomatosa accessoria.

It hardly seems possible that this type of growth could develop from the salivary glands. Nasse¹⁷ collects fifty-eight tumors of the parotid gland, mostly endothelioma, angiosarcoma, alveolar sarcoma and mixed tumors. Four were adenoma, but the cells were typical of the parotid and portions of the salivary gland were seen within the capsule of the tumor.

I have found reported in literature only nine other cases which can possibly be called true papillary adenocystoma of the thyroid or accessory thyroid glands. Wölfler¹⁸ in 1883 first described this type of tumor in the thyroid gland. The first case that he reported was operated on by Billroth in 1873, by Wölfler in 1878, 1881 and 1900, and two years ago Smoler¹⁹ wrote the clinical history of the case during the preceding twenty-seven years. It was treated by iodine injections for several years and when first extirpated it was a cyst of the left lobe of the thyroid, one-third of which was filled with papillary ingrowths. It is possible that previous aspiration and hemorrhage had destroyed a much more extensive papillary growth, which may have been originally present. There were recurrences with great papillary proliferation but no metastases. It showed all the three types that he thinks are present in these tumors; namely, normal thyroid tissue, papillary cystadenoma and malignant adenoma, *i. e.*, adenocarcinoma. The chief part was papillary; the epithelial proliferation was in the stroma.

Wölfler's¹⁸ second case was a tumor the size of a man's fist, showing papillary formation in the central part. The periphery was made up of solid cell masses, long cell strands, and some adenomatous structure. There was no recurrence

in this case, as it was probably wholly removed.

Zahn^{20, 21} reports two cases; one, in a dog, is uncertain, as the thyroid of the dog normally shows some papillary structure. The other, in a man, fifty-five years old, was of four years' duration and attained the size of an apple. It developed just between the angle of the jaw and the left sterno-mastoid muscle. He describes it with three other cases as developing from a branchial duct, but it undoubtedly originated from a bit of thyroid tissue. Plauth²³ and Smoler both agree with this idea. Both lobes of the thyroid were very much enlarged, causing considerable dyspnea. The adjacent lymph nodes were not affected. The structure was a true papillary adenocystoma.

Jores²² reports an accessory thyroid tumor of four years' growth, in a man twenty-eight years old. There were four small nodules, two on each side of the sterno-mastoid muscle. They consisted in the periphery of very cellular spaces filled with cylindrical epithelium, separated by a hyaline degenerated stroma. The whole center was made up of rich papillary vegetations covered with cylindrical epithelial cells. There were some follicles containing colloid.

Plauth²³ reports a case in a farmer seventy-two years old, which in three years' duration reached the size of a walnut. The small growth under the chin was treated with iodine injections, and in 1894 was extirpated. It was thought at first to be benign, but on further examination was called a sarcoma or at least a malignant growth. The cyst wall was probably not wholly removed, and it refilled with blood in two months. In January, July and December of 1895 there were further operations for other small nodules. The several nodules removed were each surrounded by capsules of connective tissue infiltrated with round cells. Cross section showed papillary ingrowths into the large cysts and in the walls numerous small cysts filled with papillary vegetations. So he considers it a multilocular cyst, the large cysts being formed by the confluence of the smaller ones and distended by hemorrhage. He thinks this tumor has developed from thyroid tissue and Smoler also includes it in that class, though he says one cannot state positively that the starting point was not in a branchial duct.

Kapsammer²⁴ reports a case of true papillary adenocystoma, probably originating from an accessory thyroid, as the main gland was found to be normal. His illustrations show a growth almost exactly like that in the third case reported in this article. It occurred in a man fifty-eight years old, was of six years' duration and beginning as a small node at the inner end of the clavicle became as large as three men's fists.

Ehrhardt²⁵ says he has seen two cases of tumors of the thyroid in which the whole growth has become a conduit of intercommunicating cysts filled with papillæ. He called them cysto-carcinoma papilliferum. Both developed in cases of goiter of long standing, and attained large

size. They were malignant adenomata showing some papillary structure. One of these cases recurred and showed invasion of the lymph nodes.

Günzler²⁶ reported recently a case of papillary cystadenoma of the thyroid with metastases in the glands. It is the case of a man twenty-nine years old, who had noticed for two years in his left neck close to the anterior border of the sterno-mastoid muscle a tumor about the size of a goose's egg. Two months after the operation other tumor masses were removed posterior to the sterno-mastoid. These were lymph nodes showing a similar papillary growth. No recurrence had taken place in the following nine months. He calls it a tumor of the thyroid itself, but its situation suggests an accessory thyroid as the point of origin.

Of these nine cases, the first one of Wölfler, and those of Zahn, Plauth and Kapsammer, Jores and Günzler represent perfectly typical papillary adenocystomata, similar to five of the cases reported here.

The cases of Ehrhardt are apparently the same type as our fourth case in which the adenomatous growth is more prominent. The second case of Wölfler is much like a specimen sent me by Mr. James Berry and is really not an adenocystoma. It is true it has a central space or spaces filled with papillary growth, but the structure is more that of an alveolar carcinoma than the adenocarcinoma of this type of tumor. Smoler does not include it in this group. Though it does not fully conform to the type, in showing the three kinds of tissue that Wölfler recognizes as typical of the papillary adenocystoma of the thyroid, I have seen fit to consider it here, as it may represent some stage in the development of these papillary growths.

Several cases have been reported that must be considered doubtful. Pollard's²⁷ case probably belongs to this group, though he thinks that the papillary ingrowths developed secondarily in the cystic cavity. The cyst was the size of an orange, and the several villous growths only projected in from its lower part. There was, however, another nodule consisting of smaller spaces filled with a branching stroma covered with a single layer of epithelium, and there were occasional follicles containing colloid. Very likely this was a true papillary adenocystoma and in the larger cyst the papillary growth had been destroyed by previous aspiration and hemorrhage, as may have been true in Wölfler's case.

Other cases have been observed and only partially reported by Hinterstoisser,⁹ Carranza,²⁸ Cornil,²⁹ Sulzer,³⁰ Barker,³¹ Berry¹ and Jackson Clarke.³² The cases of Hinterstoisser, Barker and Clarke very probably belong in this group but cannot be positively included.

Thus there are on record only 9 cases which can be included in this class: 4 of the thyroid and 5 of an accessory thyroid. The 6 cases reported here make 15 in all. Even considering the rarity of this type of tumor in thyroid tissue and the few cases here collected, there are several points which

we can point out quite clearly as characteristic of all these cases. The slow development and long duration is noticeable in all the cases; those of only two or three years' growth were invariably very small nodules. In none of the cases was there any cachexia. The great rarity of metastases and the tendency to rapid recurrence is very evident.

The question of how in the thyroid, an organ in which during development and post-fetal life there is no cylinder epithelium, a cylinder cell adenocarcinoma develops, is only explained by the supposition that there is a metaplasia of the cuboidal into the cylinder cells. The different kinds of cells shown by these tumors represent all gradations between these two types.

The papillary development in these tumors probably is due to the same conditions as occur in similar tumors of the kidney and ovary. According to Ziegler³³ we may consider the papillary cystic growths in general as tubules or spaces sacculated outwards, leaving thin bands extending into the central space.

Ribbert,³⁴ however, offers the clearest explanation of the development of papillary growths by showing that this is the only way in which an extensive proliferation of an epithelium can be spread over a large surface so as to receive sufficient blood supply.

Thus we have here a rapid multiplication of the epithelial cells, which receive better nourishment if they do not pile up in several layers, and so this single epithelial layer is folded in and the capillary vessels and surrounding stroma follow these folds to bring nourishment.

After studying these tissues microscopically it seems most probable that Wölfler is right in saying that this hypothesis, that the proliferation of the epithelium takes place first, and the stroma follows it into the papillæ, is true in the papillary adenocystoma of the thyroid. Ehrhardt says he is unable to confirm this view, and that he must conceive the origin of the papillæ as the performance of the stroma. In most of these cases, however, the proliferation of the epithelium is the chief and primary part of the growth and the stroma is very poorly developed.

In the fourth case (Fig. 5) we have a growth which perhaps may be said to be becoming papillary, showing as it does all the gradations, from the simple round follicles of the adenoma to the long slits, and the very irregular cystic spaces. The structure of this tumor would suggest that the papillary development was here the result of a rapid proliferation of the epithelium, together with some distension of the follicular spaces with serous fluid; this taking place within a firm capsule necessarily causes the lining membrane of epithelium to be infolded in order to increase the surface which the single layer of cells may cover and still be well supplied with blood vessels. It is true that in all of our cases these conditions were present, and that there is only in places more than a single layer of epithelial cells lining the cyst spaces. If the cells, while rapidly increasing in number, do not pile up in several

layers, the surface must be increased to accommodate them and this may possibly explain the development of this system of spaces filled completely by the infolding of the lining membrane, which offers the greatest increase in area possible.

In Figure 4 we see how this infolding is taking place in the small spaces. Their walls may later break down, if there is not too much stroma, adding to the size of the larger spaces. In Figure 6 we have a case where there are many small spaces instead of one large one, and if our hypothesis is correct, this may be due to the greater amount of stroma which is extremely well supplied with blood vessels and has not become destroyed.

The tendency to cyst formation is much increased by this papillary development. The stroma of these tumors is not often the seat of hyaline degeneration; but it is sometimes myxomatous, though not as commonly as in similar growths of the ovary.

It is an open question whether to consider these papillary adenocystomata as typical malignant growths or not. Hansemann³⁵ only recognizes these growths in the ovary, kidney and testicle, and classes them as malignant.

The malignant tumors of the thyroid are not yet well classified, and between the types of benign and malignant adenoma we find manifold transitions. It is not uncommon in literature to see cases of "Benign metastasis forming goiter" or "Metastasis from normal thyroid." Honsell³⁶ has collected eleven similar cases. The papillary adenoma of the thyroid belongs between the benign adenoma and the adenocarcinoma. Pratt³⁷ classes it among the benign growths, calling it mildly malignant. If we compare it with the true carcinoma and sarcoma of the thyroid it is surely mildly malignant. In 94 autopsies collected by Ehrhardt in which there was either carcinoma or sarcoma of the thyroid, there were only 14 cases in which there were no metastases.

There seems, however, to be no histological reason, except their thick capsule, why these papillary growths should not be very malignant. Wölfler¹⁹ expressed much surprise that in the twenty-seven years' duration of his case there had been no metastases. Only three of the cases, however, show metastases: those of Günzler and Ehrhardt, and the last case reported in this article. It may be true that the recurrence in the fifth case reported here and that of Jores, which is similar, were not separate nodules in one or several accessory thyroids but were lymph metastases. As there was no lymphoid tissue present in any of the nodules we cannot say positively that they were metastases. The metastases in this group of tumors were invasions through the lymph channels, and not the blood infections which are by far the most common in malignant thyroid growths. Thus we have a relatively benign tumor which occasionally at some future time may become dangerous, though never leading to cachexia.

The papillary adenocystomata show a certain malignancy, in that they tend to recur easily and

very rapidly if they are extirpated and there is even a small bit left behind. Similarly this class of tumors in the ovary, if ruptured within the peritoneal cavity, is liable to scatter the bits of tissue which will lead to a number of new growths on the peritoneum. In operation these tumors should be thoroughly and completely removed, if possible without incising the capsule surrounding the growth. Every precaution should be taken to prevent scattering in the wound bits of tissue which may become the germs of recurrence. Generally the operation is difficult, as the vessels and deep structures of the neck may be involved, and it may be impossible to remove all the new growth. In those cases in which the operation was incomplete, almost every time there has been recurrence. In many cases where a complete enucleation of the growth was supposed to have been done, there has been no recurrence.

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INTESTINAL PARASITES IN APPENDICITIS.¹

BY J. C. HUBBARD, M.D., BOSTON,

Assistant in Surgery, Harvard Medical School; Third Assistant Visiting Surgeon, Boston City Hospital; Assistant Surgeon to Out patients Free Hospital for Women.

CASE I. C. V. C., entered the Boston City Hospital in the service of Dr. Bolles, who permits me to report the case, on Dec. 28, 1902. She was born in Boston and still lived there. She was nine years old. The family history and the previous history were both of no importance. The present illness began five days earlier with a chill, vomiting and abdominal pain, cramp-like in character, localized about the umbilicus. For the previous two days the pain had been less severe but has become localized in the right inguinal region. The physical examination in brief was as follows: Well developed and nourished. Pulse 124. Temperature normal. Apathetic. Facies slightly peritoneal. Heart and lungs normal. Abdomen symmetrical, slightly distended. An area of dullness near the right anterior spine and in the right flank. All the abdominal muscles in a state of spasm. Tenderness slight in the epigastrium and marked in the right lower quadrant but not general.

An immediate operation was decided on and under ether a muscle-splitting incision was made at McBurney's point. As soon as the peritoneal cavity was opened several ounces of creamy pus welled up. Pus wiped away and the pus cavity found not well walled off from the general abdominal cavity. The mesentery of the appendix, which was easily found, was tied off with chromicized gut. The appendix was tied off at its base and cut away. The stump was touched with carbolic acid. The peritoneal cavity was then washed out with many bottles of salt solution. The pus was found to come from the peritoneal cavity generally. Wicks were placed in various directions and the wound was partially closed. The appendix was red, swollen, gangrenous and perforated at one point. It contained two small worms identified by the pathologist as pin worms. The bacteriologist reported staphylococcus pyogenes aureus and bacillus subtilis in the pus.

At the close of the operation the patient was moribund, but rallied under stimulation and lived till the evening of the next day.

CASE II. C. H. B., entered the Boston City Hospital March 5, 1903. He entered the service of Dr. Bolles, but came under my care. He was sixteen years old, a painter by occupation. The family and previous histories were unimportant except that he had never been troubled by indigestion. March 1 had an attack of abdominal pain and took some medicine to cause vomiting. The next day he went to the Boston Dispensary complaining of constipation, colic pain and tenesmus. The examination was negative except for general tenderness over the abdomen. March 3 the condition was the same. Temperature 97 and pulse 120. March 4 about the house all the day till afternoon, when he went to bed feeling worse. Restless and delirious through the night. Abdominal pain more intense. March 5 seen by Dr. Colburn, to whom I am indebted for a large part of the history, and was sent to the hospital immediately. Pulse 130 and temperature 95. On his arrival at the hospital his condition was very critical. There was general cyanosis. The extremities were cold and the abdomen distended. There was general spasm of the abdominal muscles. He was suffering evidently from general peritonitis and although the boy was moribund it seemed best to give him even a forlorn chance, so under very light anesthesia incisions were made quickly through the abdominal wall in several places. As soon as the peritoneal cavity was opened a large amount of purulent material of the consistency of pea soup gushed out. Drainage tubes and gauze wicks were rapidly put in place and an intravenous injection of salt solution given. The patient lived several hours and then died in spite of stimulation. At a partial post-mortem examination a dead lumbricoid worm was found free in the general peritoneal cavity and another half way through a perforation in the appendix.

¹ Read before the Boston Obstetrical Society, Nov. 17, 1903.

While cases of appendicitis are occasionally reported where pin worms (*oxyuris vermicularis*) are found in the appendix, those with lumbricoid worms (*ascaris lumbricoides*) are less numerous. The interest in these cases centers about the etiological importance of the parasites, whether they have any direct influence on the inflammation of the appendix or whether their presence is simply a coincidence. They may have the same relationship to appendicitis as any foreign body. A foreign body lying in the appendix may cause appendicular colic due to the muscular contractions in the appendix in the attempts to expel it, or an actual inflammation may be brought about in the following manner: the foreign body irritates the mucous membrane which becoming swollen throws out an increased amount of secretion. As this cannot escape from the appendix, the lumen being blocked by the swelling of the mucous membrane about the foreign body, it distends the organ. The circulation is thus altered and an opportunity offered for the entrance into its walls of any bacteria, with a resulting inflammation. In such cases the inflammation is due to the presence in the appendix of something foreign to the normal contents, a fecal concretion, a worm, etc., and is in no way dependent on the characteristics of that particular form of foreign body. Does the inflammation of the appendix containing an intestinal parasite have any direct relation to that parasite because it is a worm and not a mass of hardened feces and because it has certain definite characteristics and manner of life? While the question is still open for some of the intestinal worms, for others it seems to have been fairly well settled both by the clinician and the pathologist.

Clinically the importance of intestinal worms has been shown by Metchnikoff,¹ who reports the histories of four cases of appendicitis. Most of the four had several recurring attacks of apparently typical appendicitis. Metchnikoff, finding in the stools of the patients either the eggs of intestinal worms or the worms themselves, gave to his cases vermifuge medicines. The cases all recovered, there were no more recurrences and when the series was reported the patients had been free from any suggestive symptoms for some length of time. He feels so strongly the importance of these worms as an etiological actor in appendicitis that he advises the examination of the stools in doubtful cases of appendicitis and as a routine practice in children, that the worms may be destroyed in time to prevent an attack.

The parasites most commonly found in cases of appendicitis and general peritonitis are *trichocephalus dispar*, *ascaris lumbricoides* and *oxyuris vermicularis*. While the first form of worm is not as common as the other two it was found in 23 soldiers out of 59 who were returned from the Philippines to the United States government hospital for the insane and examined for intestinal parasites.²

The proof of the definite relationship of cause and effect between *trichocephalus dispar* and appendicitis has been shown by the work of Askanazy.³ He published in 1896 an article on the source of the food supply for this worm. Examining the worms microscopically, he found in them a substance which reacted to the test for iron and which originated he felt sure in the hemoglobin of the host. To get this food the worm must necessarily suck the blood of the host. He noticed that often at autopsy a worm was so firmly adherent to the mucous membrane that attempts to dislodge it resulted in either tearing the mucous membrane or breaking the worm. Hardened specimens showed that a greater or less part of the worm disappeared into the mucous membrane. Microscopic examination of sections showed that the worm had bored its way into the mucous membrane and had not simply entered a pre-existing opening. These wounds of the mucous membrane then may allow the entrance of bacteria. Girard⁴ has demonstrated this very prettily. The case was that of a child of eight years who developed symptoms of peritonitis, the localizing signs being on the left side. The peritoneal cavity was opened, allowing the discharge of a sero-purulent fluid. The appendix appeared normal, but was removed as a precautionary measure. It was hardened and then cut into sections. By this two *trichocephali* were found. Girard describes the sections as follows: "The appendix is absolutely healthy in appearance. There is no trace of either old or recent inflammation anywhere except at the point where the extremity of the *trichocephalus* has penetrated into the mucosa. At this point there is a zone of inflammation. A large number of mono and polynuclear leucocytes are seen, some among them showing destruction of nuclei. In the midst of cellular detritus are bacteria, streptococci and colon bacilli. The inflammation around the *trichocephalus* is then due to the introduction of the intestinal microbes by means of the nematode." In this case an active inflammation was set up about the parasite due directly to it as a living worm leading its own individual life. It follows therefore that a *trichocephalus* may furnish the primary and direct cause for an attack of appendicitis.

The proof that *ascaris lumbricoides* ever causes an inflammation of the appendix as a result of its life struggle is less clear than in the case of *trichocephalus*. *Ascaris* is known to often force its way into narrow channels like the appendix and gall duct. When it clogs the lumen of the appendix it acts as I have already shown as a foreign body. I believe that it may do more than this, as it is not an inactive mass. It is very easy to conceive that by its struggles it may perforate a diseased appendix which if it contained a lifeless foreign body would have remained intact. This worm may thus change a comparatively simple case of appendicitis into a very complicated one. The question whether

¹ Bull. Acad. d. Med., Paris, 1901, 3 s, xlv, 301.

² Med. Record, Aug. 8, 1903.

³ Deutsch. Arch. f. klin. Med., Bd. lvii, S. 104.

⁴ Annals de l'Institut. Pasteur, 1901, xv, 440.

it can perforate a healthy intestine is still under discussion, though a case recently reported⁵ seems to show that it may. Askanazy attempted to show the same relationship true between ascaris and appendicitis as between trichocephalus and appendicitis. He found in the intestinal epithelium of the ascaris a substance which reacted to the test for iron as did that in the trichocephalus. He felt, therefore, that this iron came from the blood of the host and that it was fair to assume that the ascaris obtained it by sucking. To suck the blood the mucous membrane must necessarily be wounded and entrance given to bacteria.

When we come to oxyuris vermicularis the proof of its etiological value as a cause of appendicitis other than through its presence as a foreign body is lacking. The pin worm is generally considered an inhabitant of the rectum and lower bowel. That this is not true is shown by the frequency of its occurrence in the appendix in a series of 200 autopsies done by Still⁶ on children under twelve years of age. He found pin worms in the intestine in 38 cases, in 25 of which they were in the appendix. In 6 they were in the appendix and nowhere else in the large intestine or cecum. Sometimes they were in the extreme tip of the appendix, as in the case of a boy who died of pleurisy and pericarditis. Before death he complained of pain in the right iliac fossa. At the autopsy the appendix was found thickened and in a condition of catarrhal inflammation. In the distal 2½ inches 111 worms were found. No others were found anywhere in the intestine. Some have thought that oxyuris might wound the mucous membrane of the appendix by its wriggling and thus by furnishing a place of entrance to bacteria cause an attack of appendicitis. This theory as far as I know has not been substantiated by any definite proof and remains therefore simply as an attempt to carry the relation that exists between the other two parasites and appendicitis to oxyuris vermicularis.

Conclusions. — An intestinal parasite causes appendicitis through its presence as a foreign body; and by its struggles may bring about a perforation and peritonitis where otherwise none would have occurred.

Trichocephalus dispar has been proved to cause an inflammation of the appendix by injuring the mucous membrane while sucking the blood of the host.

Ascaris lumbricoides has been found with a material similar to that in trichocephalus in its intestinal epithelium and therefore is supposed to attach itself to the mucosa of the host and

thus start the processes which result in appendicitis.

Oxyuris vermicularis. No proof has been found that this worm causes an appendicitis except in its rôle of foreign body.

Clinical Department.

A CASE OF SARCOMA OF THE LOWER JAW.¹

BY F. B. LUND, M.D., BOSTON.

The accompanying case is reported in order to illustrate the slight amount of deformity which results from subperiosteal excision of the body of the lower jaw, from the lateral incisor tooth to the angle. The patient, a young girl of thirteen, was operated upon on the 16th of July, 1903, for a sarcoma of the lower jaw, which began in the medulla, had caused a fusiform swelling of the lower jaw, had forced its way upward through the alveolar process and grown up into the mouth

¹ Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.



Case of Sarcoma of the Lower Jaw.

⁵ Ager; J. Am. Med. Assoc. Feb. 28, 1903.

⁶ Brit. Med. J. 1899, Vol. i, 898.



Case of Sarcoma of the Lower Jaw.

as a papillary growth which had been considered an epulis. The anterior molars and rear bicuspids had been pushed inward and loosened by the growth. The patient was etherized, and the portion of the tumor projecting into the mouth removed with scissors, and examined by the microscope, proving to be a giant-celled sarcoma. An external incision was then made along the body and angle of the jaw, the facial artery divided, the periosteum peeled from the entire body of the jaw and the jaw divided by a saw and cutting forceps just anterior to the socket of the canine tooth in front and at a point on the ramus of the jaw level with the alveolar process behind; the submaxillary gland was removed; the lingual and hypoglossal nerves were exposed during the operation and the latter, having been partially divided, was sutured with fine silk; all suspicious bits of tissue were cut away, divided muscles and deep tissues sewn with catgut, and the skin incisions with a subcutaneous horsehair suture; the mucous membrane was sewn inside the mouth with catgut. The patient made an excellent recovery from the operation, but the wound suppurated, un-

doubtedly owing to the infection from the mouth, and had to be drained. It finally healed well, however, and the periosteum has evidently replaced the lost bone to a very considerable extent, as a firm, bony bar can be felt in the place of the bone which was removed. The photograph shows that the deformity on front view is very slight; the scar on lateral view is rather deep and conspicuous, but will fade out considerably in time, after which the deformity on side will be much less marked.

CHRONIC CYANOSIS FROM ACETANILID POISONING.

BY J. N. HALL, M.D., AND H. R. MCGRAW, M.D.,
DENVER, COL.

IN view of the cases of "Chronic Cyanotic Polycythemia" reported by Hall in *American Medicine*, June 27, and of Chronic Cyanosis with Polycythemia and Enlarged Spleen," by Osler, in the August number of the *American Journal of the Medical Sciences*, these cases of cyanosis of drug origin are of especial interest. Dr. Osler has informed me that he has recently seen such a case from the use of bromoseltzer, well known to contain acetanilid, which was mistaken for the newly described disease.

The patient was a professional man from a western state, fifty years of age. He stated that he had had bleeding piles for thirty years, during which time three ischio-rectal abscesses had been opened. He had been generally constipated. Although decidedly sallow at times he has had no real jaundice.

He stated that his present trouble dated from the use of large doses of acetanilid for headache, begun six months or more ago. It is probably safe to estimate that he had taken 30 to 40 gr. daily for this period. There was no history of alcoholism. His weight had fallen from 160 to 140 pounds. He felt weak, and suffered from dyspnea, and from palpitation on exertion. Digestion was poor, with occasional vomiting of mucus. His face was slaty in color, and much darker than the cyanosis of advanced emphysema. The mucous membranes were similarly discolored, and the skin of the body to a lesser extent. There was no increased pigmentation over the joints and bony prominences, as in Addison's disease. The color lessened upon pressure, but immediately returned. The temperature rose to about 102° daily. The physical examination was negative so far as the chest and abdomen were concerned. Pulse moderately increased in frequency, and of fair quality. The pupils were somewhat contracted. Several bleeding hemorrhoids and a blind rectal fistula were found by Dr. Sherman T. Brown.

The blood was very dark, with 3,038,000 reds and 18,000 whites. Moderate poikilocytosis existed. The increase in the whites was in the polymorphonuclear leucocytes, doubtless explained by the rectal trouble. The reds were pale, and had a "brittle" appearance. The test with Fleischl's hemoglobinometer gave 30% of coloring matter, though this was chiefly methemoglobin, probably. No spectroscopic examination was made.

The urine had a specific gravity of 1.022, no sugar nor albumen. Its color was dark, and the patient stated

that it was always darker when he used much acetanilid than at other times, evidently from excess of coloring matter from the destruction of blood cells. Its odor was strong. No pathological sediment was found excepting a few bacteria at a single examination.

Iron, arsenic and strychnine were ordered, with nutritious diet and rest. The acetanilid was stopped. The operation upon the hemorrhoids, which the patient desired immediately, was forbidden until the blood condition became more favorable.

The improvement was continuous and rapid, doubtless helped as much by the cessation of use of the drug as by the other treatment. The fever subsided within two weeks. We believe it to have been due chiefly to the rectal condition, although doubtless the damage to the heat-regulating mechanism by the antipyretic played a part in the production of the fever. On the fourteenth day the hemoglobinometer registered 70, on the twenty-seventh day increasing to 93. The red cells numbered 5,600,000, and were of normal appearance. On the next day Dr. Leonard Freeman operated upon the hemorrhoids and the fistula. The patient went home entirely well a fortnight later, and has remained well since.

Reports of Societies.

CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

EIGHTEENTH ANNUAL MEETING, HELD AT BALTIMORE,
MD., OCT. 23 AND 24, 1903.

FIRST DAY, MORNING SESSION.

THE Conference met in the hall of the Medical and Chirurgical Faculty of Maryland, and was called to order by the first vice-president, DR. JOHN GUITERAS, Havana, Cuba, in the absence of the president.

An address of welcome on behalf of the Faculty of the University of Maryland was delivered by DR. JOHN F. CORDELL, who in referring to the early medical history of Maryland stated that the Medical and Chirurgical Faculty, organized in 1802, was the first to give its formal endorsement of vaccination. As a matter of equal importance, he mentioned that papers were written in 1807 by John Crawford advocating and favoring the animalcular theory of disease. These papers were published in a non-medical journal, for the reason that no editor of a medical journal at that time would accept them. Crawford was erratic, but considered far ahead of his time. He was the first in any English-speaking country, so far as the speaker knew, to advocate the germ theory of disease. Crawford antedated Lister at least fifty years, as a perusal of Crawford's writings would show.

DR. WM. H. WELCH of Baltimore followed with an address of welcome on behalf of the State Board of Health of Maryland. He said, among other things, there was another name which should be mentioned in connection with the medical history of Maryland — John K. Mitchell, father of Weir Mitchell, whose book on the "Cryptogamic Origin of Malarial Fever" was really a classic. He thought Mitchell's name should be coupled with that of Henle, who forecasted the doctrine of contagium vivum.

The first vice-president responded briefly to these addresses of welcome.

THE ETIOLOGY AND PREVENTION OF INFANTILE DIARRHEA.

DR. JOHN H. MASON KNOX of Baltimore read a paper on this subject. He said no single organism was considered to be the cause of infantile diarrhea until the experimental work of Duval and Basset. Following Shiga's work in 1898 the organism was found to have wide distribution. From year to year the organism had been found to be more general.

Reference was made to the investigations of Flexner in the Philippines in relation to dysentery among soldiers and the Shiga bacillus as a cause of it. Subsequent investigations made by bacteriologists in Germany, China, Constantinople, etc., disclosed the existence and prevalence of this bacillus in epidemic dysentery, so that its pathogenicity was now well established.

At the suggestion of Flexner, the speaker and others undertook a series of investigations at the Wilson Sanitarium, and of 53 cases carefully examined, the Shiga organism was found in 42 in greater or less numbers. Careful clinical examination, however, showed definitely that no one type of the disease could be associated with this organism; that all types of intestinal diseases, common among children in summer, were caused by the same organism. Laboratory investigation had shown two or three types of organism very closely related. Thus far the great majority of cases in babies had been the acid Harris type. At the Wilson Sanitarium the speaker and his colleagues had a series of upwards of 40 cases of infantile diarrhea which were found to have been produced by the same organism, and conference with those who had charge of the cases clinically led him to believe that the conclusions of the clinicians were the same as theirs. It was found that not only during the summer, but in the winter, sporadic cases of infantile diarrhea were associated with this organism. Wolfstein had reported 37 sporadic cases of infantile diarrhea as having occurred in winter, and Basset four cases as having been seen in the Johns Hopkins Dispensary, due to this organism.

Shiga, by the serum treatment, had reduced the former mortality of this affection from 20 to 30% to 10 and even 7%. Of 25 cases treated by injections of serum at the Wilson Sanitarium, some betterment was noticed after the injection in the cases that were seen early, but the improvement was not brilliant or startling. In eight cases the serum had a beneficial action. In connection with the serum there were changes made in diet, and medication was used, so that the results obtained were confusing in their interpretation. In cases of long standing, associated with an inflammatory condition of the intestinal tract, in which there was probably ulceration, blood in the stools, etc., the serum was of no avail. Although the serum treatment was not very beneficial, it was harmless, as no dele-

terious effect was observed in any of the cases. He emphasized the importance of supplying the children of our large cities with pure milk and uncontaminated water.

ARE THE LABORATORY METHODS OF DIAGNOSIS IN INFANTILE DIARRHEA APPLICABLE IN PUBLIC HEALTH WORK?

MR. EDWIN G. SCHORER of Baltimore in a paper on this subject, in referring to methods of diagnosis, said that with the establishment of the etiology of infantile diarrhea, a great step in advance had been made, yet under the present conditions they were not available for or applicable to public health work. This last statement might, however, be limited, inasmuch as a bacteriological diagnosis would undoubtedly be of value in the limited number of persistent cases of diarrhea, and in those in which the antidyenteric serum was to be given. For this purpose the mailing case of Dr. Parks was to be recommended. The fact that, at the present time, the methods were not available for general diagnostic purposes, ought not to discourage any one from complying with any request boards of health might make. Much was still to be learned in regard to the dysentery organism and infantile diarrhea, a good share of which could be furnished by statistics obtained and facts learned from local boards of health.

DR. WILLIAM H. WELCH of Baltimore referred to a point of historical interest; namely, that these scientific investigations in regard to the causal relation of the Shiga bacillus to infantile diarrhea received its initiative and support from the Rockefeller Institute of Medical Research. If one did not see for a moment how the discovery was to be utilized practically, it did not lessen the scientific interest in this great addition to our knowledge.

It was a surprise to him that Dr. Knox had found the organism, which had been proven to be the cause of a prevalent group of cases of dysentery, to be the cause of summer diarrheas of children. One did not think of the ordinary summer diarrhea of children as belonging to the same group of cases as adult dysentery. The organism, Dr. Welch said, must be found in other localities than Maryland in order to demonstrate that it had any causal relation to summer diarrhea of children. Some bacteriologists had found the Shiga bacillus in 90%, others in 60 to 70% of the cases of infantile diarrhea. These various percentages in finding the bacillus might be due to variations in skill or a more careful selection of cases on the part of the observers.

The serum treatment of this disease, according to Flexner, was disappointing. The best results had been obtained in the treatment of adult dysenteries. Instances had been reported by Holt, Thayer and others in private practice where the serum seemed to have had a marvelous effect. The evidence showed, however, that conditions in hospital and dispensary practice were unfavorable for obtaining satisfactory results with serum.

DR. HENRY M. BRACKEN, Minneapolis, Minn., referred to the milk question, saying in the larger cities it was difficult to get a pure milk supply. What was generally known as certified milk was one of the best articles of artificial diet for children. At present much attention was being paid in some cities to securing a pure milk supply by excluding tuberculous cows from dairies. Even this would not insure a pure milk supply by any means. The testing of dairy herds for tuberculosis might be satisfactory to the dairymen and seemingly protect the people, but there were more infants that died every year from impure milk than from tuberculous milk. More attention should be given to the sanitary aspects of the dairy than to the diseased animal. Certified milk and pasteurized milk were as satisfactory articles of diet as could be obtained at the present time.

DR. JOHN N. HURTY, Indianapolis, Ind., cited an instance showing that typhoid fever and dysentery (epidemic) could be conveyed by flies as well as by polluted water.

DR. CHARLES O. PROBST, Columbus, Ohio, considered it very important to disinfect the stools in cases of infantile diarrhea, although Dr. Knox had not referred to it.

He understood Dr. Knox to say that the Shiga bacillus inhabited the healthy intestinal canal, and that under certain conditions of environment it might take on pathogenic properties. He asked whether this was so or not.

DR. GARDNER T. SWARTS, Providence, R. I., understood that the Shiga organism was easily killed in the presence of other bacteria, as the colon bacillus, which was a common inhabitant of the intestinal canal. If the Shiga organism was so easily killed in the presence of other bacteria, why did it prevail so extensively?

DR. S. R. TOWN, Omaha, Neb., concurred in the remarks of Dr. Hurty relative to intestinal disorders being contracted and disseminated by polluted water supplies. He cited an epidemic of diarrhea which occurred in Chicago in the winter, years ago, which was caused apparently by the discharge of a large quantity of surface material into Lake Michigan, producing a large death-rate. The Chicago Board of Health prevented the development of a large number of cases of diarrhea, and typhoid fever secondarily, by shutting off the taps at the public schools, and exclaiming "Boil the water!"

DR. JOHN N. HURTY cited a similar epidemic which occurred in Michigan City, Ind. There were no less than 3,000 cases of diarrhea from polluted water.

DR. HENRY D. HOLTON, Brattleboro, Vermont, thought that infantile diarrheas were considered gastro-intestinal diseases, and that dysentery simply applied to bloody flux, which was not common in infants, but was sometimes seen. He quoted an old practitioner as saying that typhoid fever was the result of drinking low ground water.

MR. FRANK WELLS, Lansing, Mich., said the Michigan State Board of Health had published

a leaflet on the subject of infantile diarrhea as the result of a report made by Prof. Victor C. Vaughan. This leaflet, which had been given wide circulation, advised that all cow's milk given to infants shall be pasteurized. The leaflet was furnished to all of the teachers of public schools in Michigan. It was the duty of boards of health, he thought, to furnish such information to the people.

DR. HENRY MITCHELL, Asbury Park, N. J., urged repeated inspections of cases of diarrhea in children and adults, as in cases of typhoid fever. The New Jersey legislature had given the State Board of Health authority to make such inspections. A law had also been enacted that no milk should be sold from premises on which there was an impure water supply. He pointed out how this law could be so interpreted as not to be effectual in its administration.

DR. KNOX, in closing the discussion, emphasized the importance of good milk and pure water for children as well as adults. Common house flies were carriers of disease; they were a source of contamination in many instances. Proofs of this were abundant.

Replying to DR. PROBST, he said the disinfection of stools in cases of infantile diarrhea was as essential as in typhoid fever.

In speaking of dysentery, it was not to be confounded with bloody flux, as intimated by Dr. Holton. He used the term "dysentery" to include those cases in which the Shiga bacillus was found to be present.

He could not answer satisfactorily the question of Dr. Probst relative to the Shiga organism inhabiting the healthy intestinal canal, but hoped Professor Welch would do so.

DR. WELCH said the Shiga organism was not present in normal stools. If it were, it was in such small numbers that it required the most painstaking investigation to find it.

MR. SCHORER cited an instance explaining why the colon bacillus killed the Shiga organism. The organism of dysentery was found in the mucous coat of the intestine, while the colon bacillus might be found in any part of the fecal matter.

(To be continued.)

AMERICAN NEUROLOGICAL ASSOCIATION.

TWENTY-NINTH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 12, 13 AND 14, 1903.

(Concluded from No. 22, p. 602.)

THIRD DAY—THURSDAY, MAY 14.

THE NEURASTHENIC NEURALGIAS.

THIS was the title of a paper by DR. FRANK K. HALLOCK of Cromwell and was based on a study of forty-five cases, with the following conclusions:

Clinically two varieties exist: one is non-objective, the pain existing with very slight or no concomitant physical symptoms; the other

is objective, the pain being accompanied by localized symptoms, sensory, motor, vasomotor, secretory, trophic. The non-objective neuralgias may be subdivided into a paresthetic type (distinct from the paresthesia of hysteria, etc.), a spontaneous form with or without an appreciable cause, and a habit form due to an antecedent neuritis. The term "neurasthenic" should, perhaps, be limited to the neuralgias which are non-objective, that is without marked concomitant physical signs. It is often very difficult to distinguish between a neuritis of the sensory nerves and a neuralgia with pronounced local symptoms. The motor disturbance, direct or indirect, is generally more marked in genuine neuritis. Another diagnostic point is the fact that decided variations in the general physical state, as well as psychical influences, produce fluctuations in the pain relatively greater in neuralgia than in neuritis. The pathology of neurasthenic neuralgia is necessarily obscure. The extent to which excitability of the sensory nerves is of central or peripheral origin is hard to determine. Cases with marked local symptoms can best be explained by the supposition of a mild grade of peri-neuritis rather than a neuritis, interstitial or parenchymatous. The pathology of the non-objective neuralgias, if it is to be interpreted *peripherally* and not centrally, is most likely of the nature of chemical stimuli due to localized nutritional and metabolic defects. The neuralgia being considered merely a symptom, the prognosis depends chiefly upon the general physical rallying power plus the type of individual. The treatment consists largely in the regulation of the patient's life, and attending to the underlying neurasthenic state. In the management of the local condition the first requisite is rest, partial or complete, according to the severity of the attack. Later, localized applications of massage, hydrotherapy, electricity, dry hot air, etc., are of varying utility in different cases. Inasmuch as the neuralgia is apt to be obstinate and of prolonged duration it is advisable to teach the patient how to bear pain in the most philosophic manner. Hypnotic suggestion is of great value in certain cases.

DR. BAKER had been accustomed to look upon these cases, especially the non-objective variety of neurasthenic, as being best explained in a general way by nerve starvation and by adding to that the newer concept of nerve poison.

DR. LANGDON considered the differential diagnosis in cases of neurasthenic neuralgia as of very great importance. In his experience, any sensation that can be called a true neuralgia is a comparatively rare symptom in neurasthenia. Pain, and even tenderness of the nerve trunks, often occur in neurasthenia, but such cases belonged to the paresthesias, and some other cause than neurasthenia should be looked for.

DR. LEONARD WEBER of New York believed it necessary in every case of chronic neuralgia to investigate as to previous syphilitic infection. In his opinion, no disease was more likely to be associated with neurasthenia in the course of

years than old syphilis, in which neurasthenic neuralgias might occur. As a rule, surgical intervention is not followed by good results.

DR. ANGELL thought it very easy for nervous patients to exaggerate unintentionally the significance of symptoms, especially regarding pain. He agreed with Dr. Langdon that many pain cases are cases of paresthesia.

MODERN THEORIES OF THE EMOTIONS AND THEIR BEARING ON MENTAL DERANGEMENTS.

This was the title of a paper by DR. HENRY UPSON of Cleveland. He concluded that in different forms of sensation the emotional element varies. The special senses and tactile sensibility set up intellectual mental conditions. The pain sense and visceral sensibility have a slight localizing value and an emotional content that varies from moderate pleasure or discomfort to the more marked and definite emotional states; either of these elements may be present without the other, especially in the case of visceral sensibility, which often fills the emotional field of consciousness without percepts of localizing value. The modern view of the emotions as perceptions of altered visceral conditions, at some times due to psychic causes, at others dependent on physical disease of the viscera, functional or organic, is derived in part from medical observations and in turn illumines the field of psychiatry. The viscera constitute the instrument played upon by psychic stimuli, and the brain centers are receiving stations for resulting sensations, present in consciousness as emotions. Certain relations between disease and resulting emotions were briefly considered.

DR. H. T. PERSHING of Denver had recently given attention to this subject with special reference to the treatment of emotional disturbances in neurasthenia and hysteria. It was obvious that the first thing to do is to remove the idea exciting an undesirable emotion. In many cases he found great advantage in teaching the patient to voluntarily suppress the motor reaction peculiar to the depressed emotion, and to voluntarily imitate the reaction of the opposite emotion. He thought many emotional disturbances were due to physical causes.

DR. KNAPP said that in patients who have exhausted themselves in struggling against an insistent idea, it was better to suggest to them to let the whole thing go, and to endeavor to divert the patient's attention, and let the idea come on unrestrained.

DR. BAKER thought it should be a matter of routine to inquire whether the patient has been subjected to shock within recent months, or whether he is under prolonged intense emotional excitement of any kind. The result of the latter condition is direct interference with nutrition.

DR. EDWARD B. ANGELL of Rochester said it was much wiser to get at the obstruction indirectly rather than directly, as it was impossible to argue with a person's morbid notion without emphasizing it.

PARALYSIS AGITANS COMPLICATED WITH DELUSIONAL MANIA.

This was the report of a case by DR. JOHN PUNTON of Kansas City. A man sixty-one years of age, with good family history, was well until four years ago, when he suffered from an attack of grippe from which he recovered a few weeks later. About two years ago he gradually became very nervous, and there was marked muscular rigidity and a fine tremor. He also assumed the attitude and gait common to paralysis agitans, together with the characteristic fancies. These symptoms, together with vasomotor disturbances, continued to develop and grow worse in spite of treatment, which caused him to become quite despondent, and later he presented all the symptoms of true melancholia. Subsequently there was acute mania with mental exaltation, delusions and hallucinations. In April, 1901, he was admitted to the hospital with the typical picture of paralysis agitans complicated with delusional mania. At the end of eighteen weeks he recovered his mental health, but the paralysis agitans had not improved.

GENERAL PARALYSIS WITH FOCAL SYMPTOMS AND ATROPHY.

This was the report of a case by DR. ADOLF MEYER of New York. In a man forty-two years of age, difficulty in the use of the left arm developed slowly, together with inefficiency in work, which finally passed into slight expansiveness, characteristic for general paralysis. Under observation, the difficulty was found to be an anesthesia of the left arm of central origin, leading to deficient use when the eyes were closed, occasional slow twitchings of the left arm and the gradual development of rigidity and spreading of the sensory and motor symptoms over the whole left side; also production of left hemianopsia and increasing dementia. The diagnosis of atypical general paralysis was corroborated by the autopsy, which showed atrophy of especially the posterior part of the right hemisphere without focal lesion, but marked narrowing of the cortex and distention of the ventricles, and contralateral gliosis of the whole left part of the cerebellum, with partial degeneration of the cortex; the histological process was typically that of general paralysis, which was much less marked in the left hemisphere. There was a probability of syphilitic infection nineteen years before the onset. Technically the case showed the decided advantages of injection of the brain with 10% formalin before removal at the autopsy.

GENERAL PARALYSIS WITH FOCAL SYMPTOMS.

DR. A. HOCH of Waverly reported two cases. CASE I. In the course of a year at first repeated convulsive seizures; later, attacks of twitching on the right side; then sudden aphasia with palsy of the right side. Under observation euphoria and general dullness; motor aphasia, paresis and ataxia of right arm, with frequent

twitching. Later, involvement of whole right side. Death in convulsions. Autopsy:—Lesions of general paralysis with much greater involvement of left side; the left hemisphere weighed 112 gm. less than the right.

CASE 2. Complained of headache, stupid feeling and inability to express himself; at times irritable. A year later, apoplecticiform attack. Following this, persistent paraphasia with difficulty to understand written and spoken language. Appreciation of defect. Hemianopsia. Argyll-Robertson pupil on the right side. General euphoria and irritability. Death in convulsions. Autopsy revealed the usual lesions of general paralysis with more pronounced changes in the left hemisphere, which weighed 120 gm. less than the right.

The last two papers were discussed together. DR. BULLARD asked Dr. Meyer whether he had found astereognosis or not. He said it was unusual to find cerebellar trouble in such cases in which the hemisphere of the opposite side is affected. In the reports of autopsies of feeble-minded, this seems to be the ordinary occurrence (in which one hemisphere is more especially affected), to have the opposite cerebellar hemisphere likewise affected.

DR. MEYER replied that he did not speak of astereognosis on account of the presence of anesthesia. He was inclined to utilize the case in corroboration of his view that the anterior central convolution is the essential motor region, plus, of course, some immediate sensory activity, but that the parts behind the Rolandic fissure are essentially reception stations also of influence in the work.

DOUBLE OPTIC NEURITIS WITHOUT ASSIGNABLE CAUSE.

DR. HOWELL PERSHING of Denver reported a case of this character in which the course was acute, and when the neuritis began to subside, it subsided rapidly in one eye while it advanced in the other. The patient was otherwise in perfect mental and physical health.

DR. PATRICK had seen a case of typical choked disk due to simple chlorosis, the patient making a complete recovery under treatment for the chlorosis.

DR. H. K. MITCHELL of Philadelphia mentioned the case of a girl seventeen years of age who made a perfect recovery from a pronounced double optic neuritis with apparent meningeal symptoms.

DR. BULLARD expressed the opinion that in many of these cases there might be a certain amount of hydrocephalus.

DEVELOPMENT OF THE NEURO-FIBRILS IN THE NERVE CELL.

DR. STEWART PATON of Baltimore exhibited microscopical specimens illustrating the development of the neuro-fibrils in the nerve cells. He explained that they make their appearance in the nerve cell of the embryo, first in the apical processes, and about the time of birth can be

stained in the cell bodies in the larger cells of the cerebral cortex. They develop later than do the Nissl bodies. He also demonstrated their degeneration in pathological processes.

DR. E. W. TAYLOR said that the work of Dr. Paton was new in this country. He thought it a matter of very great importance as to whether we can attribute any definite significance to the alteration found in the neuro-fibrils.

ELECTION OF OFFICERS.

The following-named gentlemen were elected for the ensuing year: President, DR. FRANK R. FRY of St. Louis; Vice-Presidents, DR. HUGH T. PATRICK of Chicago and DR. WILLIAM G. SPILLER of Philadelphia; Council, DR. CHARLES L. DANA of New York and DR. J. J. PUTNAM of Boston; Secretary and Treasurer, DR. G. M. HAMMOND of New York.

Recent Literature.

The Latin Grammar of Pharmacy and Medicine.

By D. H. ROBINSON, Ph.D., with an Introduction by L. E. SAYRE, Ph.M. Fourth edition, with elaborate Vocabularies, thoroughly revised by HANNAH OLIVER, A.M. Philadelphia: P. Blakiston's Son & Co. 1903.

This small book is intended for the use of students in pharmacy and medicine, who have not received a sufficiently classical education to be familiar with the necessary Latin terminology. As such it has proved useful in the hands of the writers, who are also teachers. We confess to a hope that ultimately English terms may be so widely used that such an aid will not be necessary. In the meantime we can commend this Latin Grammar to elementary students.

Modern Microscopy. A Handbook for Beginners

and Students, combining: I. The Microscope and Instructions for its Use, by M. I. CROSS. II. Microscopic Objects: How Prepared and Mounted, by MARTIN J. COLE. Third edition, entirely revised and enlarged, to which is added III. Microtomes; Their Choice and Use. pp. xvi, 292. Illustrated. Chicago: W. T. Keener & Co. 1903.

This small handbook discusses matters relating to microscopy, which we are inclined to think even experienced users of the microscope do not know. Particularly does this remark apply to the chapter on optical construction. Information is also given regarding the fixing and staining of sections, and a certain number of methods are detailed. A chapter is added on the subject of microtomes, which should prove useful to those concerned in fitting out laboratories. We note in passing that a 2% to 4% solution of formaldehyde is recommended as a fixative, but not infrequently a 5% to 10% solution of the commercial "formal" is preferable. The book is well printed and amply illustrated.

THE BOSTON

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SCIENTIFIC STUDY OF OLD AGE.

It has been suggested that if infancy and its diseases is worthy of special and detailed study, old age should likewise receive far more attention at the hands of scientific men than it has hitherto been accorded. Whether with our increasing differentiation we shall come to have professorships on senility is open to question, but we have long been convinced that, in general, the subject has been neglected and that the interest of medical men is far less active concerning the disorders which afflict the aged than in those prevalent in the young and middle-aged. The reasons for this are apparent. The worth of the individual to the community grows less in the declining years of life; younger men assume the responsibilities, and the inevitableness of the final outcome, born of experience, is so deeply rooted in the human mind, that the afflictions of age are looked upon as, in a measure, physiological and therefore unavoidable. A worthy book on the diseases of the aged remains to be written.

There have, however, never been lacking certain men who have refused to accept the popular verdict of the physiological length of life, and urged the possibility of its continuance long beyond the usually allotted time. The elixir of life will, no doubt, continue to be sought, not only by the visionaries, but also by the sober-minded man of science. With Brown-Séquard's attempts to restore the vigor of youth still in mind, we find a new champion of the cause in the person of Elie Metchnikoff, widely known for his original and somewhat radical work on leucocytes, and now professor at the Pasteur Institute in Paris. He has found opportunity to write a book,¹ some-

what popular in character, on "The Nature of Man," in which he discusses in much detail the disharmonies of human life, the ever-present fear of death and a possible way out of the difficulties of our existence through a scientific study of old age, in which the leucocyte plays a conspicuous part. The book is a wholly serious attempt at a solution of the mysteries of life and death, in which science is set up as the high priestess of our faith. Where philosophical and religious systems have failed to bring peace, Metchnikoff thinks science may step in, and by dispelling the fear of death, adjusting disharmonies and postponing death for fifty or more years may bring the solution which he believes has hitherto been sought in vain.

When the scientific man wanders from his chosen field and discusses final problems, his speculations, though usually not weighty, are entertaining and often suggestive. This is certainly true of the book before us; we doubt if the arguments will disturb the peace of mind of the philosopher, or exalt the standing of science, but they are highly original and suggestive of the path which future study may take.

About half the book is taken up with a discussion of our origin from lower forms, and the resulting disharmonies in our organization as exemplified in the digestive system, the reproductive apparatus and in the instinct of self-preservation. In general, he finds from this analysis that these disharmonies with our surroundings are the source of all our troubles. The attempts made by religious and philosophical systems to diminish these ills are discussed in two chapters, with the conclusion that they have both miserably failed. Our final recourse must, therefore, be to science, and from science Metchnikoff apparently gains a fleeting satisfaction, although he admits that the world at large remains to be educated in the lessons it has to teach. Old age demands scientific study, if we are to arrive at conclusions of value, and in a most entertaining fashion Metchnikoff gives the results of his researches and speculations on the significance and causes of growing old, and of possible means of prevention of conditions ordinarily regarded as inevitable. Put into scientific language, he finds that: "In senile atrophy the same condition is always present, the atrophy of the higher and specific cells of a tissue and their replacement by connective tissue." For this the phagocytes are ultimately responsible. "I am," he says, "justified in asserting that senile decay is mainly due to the destruction of the higher elements of the organism by macro-

¹ "The Nature of Man. Studies in Optimistic Philosophy." English translation. G. P. Putnam's Sons.

phags" [large phagocytes]. Whitening of the hair is an example of the phagocytic activity of leucocytes, which take up the pigment. From this and similar arguments it is maintained that the leucocyte is largely responsible for the signs of age, the high types of cells finally yielding to the inroads of the leucocytes as the resistance of the organism is gradually weakened. The following sentence, which we quote, shows the degree of respect which Metchnikoff maintains toward the leucocyte: "The phagocytes are endowed with a sensitiveness of their own, and by means of a sense of smell or taste are able to recognize the nature of their surroundings. According to the impression made upon this sense, they approach the object which arouses it, exhibit indifference to it or withdraw from its vicinity." It behooves us therefore, in our fight against old age, "to strengthen the higher elements and to weaken the aggressive capacities of the phagocytes." May this not be accomplished by a serum obtained from macerations of human organs, injected in the usual way? Metchnikoff thinks this not impossible, though manifest difficulties lie in the way of obtaining satisfactory organs for experimental purposes. Finally, when life has been prolonged far beyond the hundred-year mark, it is hoped that an instinct for death may replace the instinct for life, and so the cycle of man's life be made complete, ending in a normal old age and a positive desire for death. It is the function of science to bring this consummation, repudiating personal immortality, and regarding man as "a kind of miscarriage of an ape, endowed with profound intelligence and capable of great progress."

This, in general, is Metchnikoff's solution of the puzzle. It has the merit of originality, of a somewhat uncertain scientific basis and of being the product of the serious thought of a man eminent in science. It will not appeal to the philosopher; it will strike no sympathetic chord in the mind of the theologian; it will not, we suspect, be forthwith accepted by his brother scientists, but the book, nevertheless, will be read widely; it will excite discussion and may do something toward stimulating investigation into the pathology of old age.

REGENERATION OF THE SPINAL CORD.

In our issue of June 26, 1902, we took occasion to discuss the validity of the evidence in a case reported by Drs. Stewart and Harte of Philadelphia of suture of the spinal cord. Another

case somewhat similar in character has recently been reported by Dr. C. Harvey Rodi of Calumet, Mich., to which allusion is made in the *Journal of the American Medical Association* for Nov. 21. We have not the original article at hand, but from the brief account given by our contemporary it appears that, following an injury, the cord was said to be entirely severed, save for a filament about the size of a pin connecting the two parts, which were separated about an inch. An operation of some sort was done, and, according to the statement, the following day sensation began to return in the lower extremities. Thereafter rapid improvement took place, and at the end of a year the patient was able to get about on crutches.

Commenting on this case, our contemporary remarks that "the little band of spinal tissue seemed to have acted like the catgut connection which has sometimes been made in widely divided nerve suture." It also argued that there must have been considerable restoration of structure to account for the restoration of function. As we before said, evidence that the spinal cord is capable of such regeneration as the foregoing maintains must be absolutely convincing before it can be accepted, in the light of our knowledge of the regeneration of the central nerve tissue. The statements made by our contemporary on the basis of the article to which we have alluded seem quite incomprehensible. The possibility of incorrect observation must be absolutely excluded before we can be justified in claiming such an extraordinary regeneration of nerve tissue as this case evidently implies. Naturally such observations are of the very greatest importance surgically if they can be completely substantiated.

A MULTIPLICITY OF CONGRESSES AND EXHIBITS ON TUBERCULOSIS.

We beg to call the attention of our readers to a letter on another page of this issue from Dr. S. A. Knopf regarding the multiple congresses and exhibits, national, international and local, concerning tuberculosis, which are projected for the years 1904 and 1905. One "international" congress is announced to meet in St. Louis in October, 1904; another "international" congress is called to meet in Washington in April, 1905; there will be a postponed meeting of the previously established triennial Congr s International de la Tuberculose at Paris, Sept. 26-Oct. 1, 1905.

Independently of these "congresses," it is

proposed to hold two "Tuberculosis Exhibitions," one in Baltimore in January, 1904, and one in St. Louis during the Louisiana Purchase Exhibition.

The mere statement of such a situation suggests directly the desirability of its correction. Dr. Knopf offers a proposition for a basis of action.

MEDICAL NOTES.

EPIDEMIC OF TYPHOID AT BUTLER, PA. — Typhoid fever, to a most exceptional extent, is prevalent in Butler, Pa. Upwards of a thousand cases have occurred, with a considerable number of deaths, and new cases are continuing to appear. The source of the epidemic has apparently been shown to be the water supply used in the town, which has been polluted by previous cases of typhoid fever in the vicinity. Nurses and financial aid are being provided for the town, which has been practically demoralized by the extent of the epidemic.

SLEEPING SICKNESS. — Progress is apparently being made in the etiology of the so-called sleeping sickness of South Africa. Recent experiments in Uganda, conducted by Lieutenant-Colonel Bruce, in conjunction with Dr. Nabarro and Captain Grieg, apparently establish the fact that a parasite belonging to the sporozoa is constantly found in the cerebrospinal fluid of patients suffering from the disease, and that monkeys inoculated with this cerebrospinal fluid, or with blood containing a similar parasite, present all the symptoms of the disease. Secondly, it has been shown that the disease is endemic in regions where the tsetse fly is prevalent. Present indications, therefore, point to the fact that the disease is due to trypanosomes introduced through the agency of the tsetse fly.

MEMORIAL HOSPITAL, RICHMOND, VA. — A pamphlet descriptive of this hospital, opened last August, indicates that Richmond has therein a remarkably well-arranged and thoroughly equipped institution. The medical and surgical staff is elected from the faculty of the Medical College of Virginia.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Dec. 2, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 39, typhoid fever 19, measles 143, smallpox 0.

BOSTON MORTALITY REPORT. — The number of deaths reported to the Board of Health for the week ending Nov. 28 was 188, as against 210 the corresponding week last year, showing a decrease of 22 deaths, and making the death-rate for the week 16.25. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 52 cases, 3 deaths; scarlatina, 13 cases, 1 death; typhoid fever, 13 cases, 4 deaths; measles, 124 cases, 1 death; tuberculosis, 22 cases, 30 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 32; whooping cough, 1; heart disease, 32; bronchitis, 5; marasmus, 5. There were 6 deaths from violent causes. The number of children who died under one year was 32; under five years, 51; persons over sixty years, 40; deaths in public institutions, 51.

ANNIVERSARY OF NURSES' ALUMNÆ ASSOCIATION. — The thirtieth anniversary of the Alumnæ Association of the Boston City and Massachusetts General Hospital Training Schools was held on the evening of Nov. 24 at the Massachusetts General Hospital. Addresses were made by Miss Linda Richards and Dr. Richard C. Cabot.

A BROWN UNIVERSITY MEDICAL SCHOOL. — It is vaguely rumored that Brown University of Providence is to take over the College of Physicians and Surgeons of Boston as a university department of medicine. It is suggested also that Mr. Rockefeller, whose interest in Brown is well known, may be financially responsible for this contemplated move.

HOSPITAL FOR ARLINGTON, MASS. — Owing to the fact that land originally given as a site for a hospital in Arlington has been considered unsuitable for this purpose, the Supreme Judicial Court has allowed the trustees of the property the right to sell. Another site has been selected, and the proposed hospital will now be pushed to completion.

INDUSTRIAL SCHOOL FOR CRIPPLED AND DEFORMED CHILDREN. — According to the last report of this institution, it is stated that the new building, which has been in process of construction, is nearing completion, but that funds will be needed for its equipment. The present building on Newbury Street has long been inadequate for the needs of this growing work.

TYPHOID FEVER AT WILLIAMS COLLEGE. — After careful investigation it appears that the recent outbreak of typhoid fever at Williams College was due to infected cream. The cases have

been attributed to cream obtained from a single can, which had been contaminated by infected water accidentally introduced into it from a receptacle in which the can had been placed to cool.

SECOND JURY DISAGREEMENT IN VACCINATION CASES. — For the second time a jury in the Norfolk Superior Court has returned a disagreement in a case involving a question of vaccination. The case, which has excited considerable interest, was one in which the town of Hyde Park, Mass., was sued for \$10,000 in each of two cases for action of the school committee, which refused to allow attendance of two children at school during the recent smallpox epidemic, although they were said to have proper medical certificates regarding their unfitness for vaccination.

NEW YORK

PUBLIC BATHS. — Plans have been filed with the Building Department for two new permanent public baths, to be erected for the city at a cost of \$115,000 each. They are to be of two stories and constructed of brick, with limestone decorative trimmings, and will be located, one in East 11th Street and the other in West 60th Street.

ENDOWMENT OF HOSPITAL BEDS. — New York Lodge No. 1, Benevolent and Protective Order of Elks, has arranged to endow in perpetuity, at an expense of \$15,000, two beds in the Post-Graduate Hospital. The money is to be paid in installments within a period of eighteen months, and the hospital agrees to place the beds in a private room.

BEQUEST TO HOSPITAL. — W. B. Leeds of New York, president of the Rock Island Railroad, has given the sum of \$10,000 to the public hospital in Richmond, Ind., where he formerly resided.

OPENING OF ST. VINCENT'S HOSPITAL. — St. Vincent's Hospital at West New Brighton, Staten Island, borough of Richmond, a branch of St. Vincent's Hospital in Manhattan, was formally opened by Archbishop Farley on Nov. 25. The premises include the spacious mansion and grounds formerly the country seat of W. F. Garner, who, with his wife and other members of his family, was drowned on his yacht, the *Mohawk*, off Stapleton, twenty-seven years ago. The hospital accommodates about two hundred patients, and will inaugurate the first ambulance service ever maintained on Staten Island. On Nov. 23 the medical staff of St. Vincent's, Manhattan, gave a reception to the archbishop at the hospital.

and afterwards entertained him at a dinner at Delmonico's.

Obituary.

GEORGE J. ENGELMANN, M.D.

By the death of Dr. George J. Engelmann, which occurred Nov. 16, at Nashua, N. H., the medical profession loses a conspicuous member. The immediate cause of his death was pneumonia. Dr. Engelmann was born July 2, 1847, in St. Louis. His father was a man distinguished in science, and particularly in botany. Dr. Engelmann was graduated at Washington University in 1867, and later was given the degree of master of arts by the same institution. He received his medical education in European universities, and in the war of 1870 and 1871 was surgeon in the German army. Returning to this country, he began the practice of his profession in his native city in 1873, where he remained until he came to Boston in 1895.

During the greater part of his professional life Dr. Engelmann devoted himself to the subject of gynecology, upon which he wrote many articles, and became widely known for his work in this department of medicine. He was professor of gynecology at the Missouri Medical College until 1894. He was the founder of the St. Louis Obstetrical Society, president of the Boston Obstetrical Society, president of the Southern Surgical and Gynecological Society in 1890, one of the charter members of the American Gynecological Society and the president of the same in 1900, honorary president of the gynecological section of the International Medical Congress in 1884, honorary president of the International Congress of Obstetrics and Gynecology at Brussels in 1892, Amsterdam in 1899 and Rome in 1902; a trustee of the Missouri Botanical Gardens, St. Louis, from 1880 to 1894; and a fellow in the Washington Academy of Sciences.

In addition to his strictly professional activity he was a wide traveler and a student both of ethnology and archeology. He presented to the Peabody Archeological Museum of Cambridge a valuable collection of flints and pottery which he had collected, and the Smithsonian Institution of Washington also received from him various collections. One of his last published articles, which excited a very considerable degree of comment and discussion, was on the subject of sterility. Dr. Engelmann was a ready writer, fluent talker and a man of wide general information.

Miscellany.

AN ENGLISH OPINION OF FOOTBALL.

PROF. JOHN F. ATKINSON of London, who recently came to this country on a professional visit to Canada, saw the Yale-Harvard football

game on his way back to New York. He made the criticism that American players appeared to show too much the feeling that they were in the sport for nothing else but to win, rather than for the sport itself. "That," he said, "is a good spirit, but when you carry it to the length that you do in your American game of football, the training that the players must receive to be fit for such a game is very likely, I think, to be a disadvantage to them in after life. In England we develop our university athletes with the idea of giving them a foundation for continued physical training, that they will not give up when they finish their training." Dr. Atkinson is president of the Footballers' Hospital and Institute of London, which outside of the football season is open to other athletes, including cricketers and oarsmen. He expressed the opinion that professional football ought to have more of a vogue in America than it does, and stated that the great majority of those applying for treatment at the Footballers' Hospital (sometimes as many as twenty-five a day) were members of the hundreds of English professional teams. He finds, however, that the injuries received by these players are comparatively much slighter in character than injuries among American players.

DIABETIC INTRAOCULAR LIPEMIA.

DR. W. HALE WHITE of Guy's Hospital reports in the *Lancet*, Oct. 10, 1903, a case of diabetic intraocular lipemia, in which the blood was examined during life. The ophthalmoscopic appearances are shown in an appended chromolithograph. The arteries and veins contain blood of a similar color, a deep cream, which in the larger vessels passes into a pale salmon color. The vessels appear a little larger than usual, the whole retina is pale. The description accords with that given by Heyl in 1880 in the *Transactions of the American Ophthalmological Society*.

Most recorded cases of diabetic lipemia have been fatal, and it has been suggested that the lipemia is the cause of the coma. This view is not generally accepted, and numerous fatal cases of coma without lipemia are on record. In Dr. White's case as the patient's condition improved the lipemia disappeared. No relation could be established in this case between the lipemia and the diet.

Correspondence.

AMERICAN AND INTERNATIONAL CONGRESSES ON TUBERCULOSIS AND TUBERCULOSIS EXHIBITS FOR THE YEARS 1904 AND 1905.

NEW YORK, Nov. 27, 1903.

MR. EDITOR: During the past few months I have been the recipient of a large number of inquiries concerning the various tuberculosis congresses (American and international) which have been projected for the years 1904

and 1905. The multiplicity of these various congresses and the similarity of their names leads naturally to great confusion. It would be really too great a task to undertake to answer in full and individually all the letters with which I have been honored. I therefore ask you to grant me the space to give the desired information in your esteemed paper, so that all the readers of the *JOURNAL* who may be interested will have a clear idea of the various congresses, their officers and time and place of meeting.

It is announced that a congress on tuberculosis is to be held in St. Louis on Oct. 3, 4, and 5, 1904, under the name of "International Congress on Tuberculosis." Upon careful inquiries I learned the following facts about this congress: Mr. Francis, the President of the St. Louis Exhibition, has been approached by the officers of the "American Congress on Tuberculosis," which was founded some years ago by Clark Bell, Esq., a lawyer of the city of New York, to sanction the holding of an international congress on tuberculosis in connection with the Louisiana Purchase Exposition. From a letter received from Dr. E. J. Barriek of Toronto, Canada, the now president of this American congress, I learned that Mr. Francis has appointed the above-mentioned Mr. Clark Bell Chairman of the Committee on Organization. Mr. Clark Bell is also the Treasurer and Chairman of the Executive Committee of the "American Congress on Tuberculosis," season 1903-1904; a Mr. Samuel Bell Thomas of 290 Broadway, New York, is the Secretary of the latter. The officers of the International Congress are not yet elected. I was desirous to learn the names of other medical men interested in this congress, and Dr. Barriek very kindly wrote me, on Nov. 16, that he had asked Mr. Bell to furnish me the desired additional information, but nothing has thus far been received.

The other international tuberculosis congress announced is the one to meet in Washington, D. C., April 4, 5 and 6, 1905. It is to be held under the auspices of "The American Congress on Tuberculosis for the Prevention of Consumption." The following is a list of the officers of this latter organization: Honorary President, Dr. Henry D. Holton, Brattleboro, Vt.; Member Executive Council, Dr. Charles O. Probst, Columbus, Ohio; President, Dr. Daniel Lewis, New York; First Vice-President, Dr. E. A. Egan, Springfield, Ill.; Second Vice-President, Dr. Frank Paschal, San Antonio, Texas; Fourth Vice-President, Dr. Irving A. Watson, Concord, N. H.; Fifth Vice-President, Dr. Charles Wood Fassett, St. Joseph, Mo.; Secretary, Dr. George Brown, Atlanta, Ga.; Treasurer, Dr. P. H. Bryce, Toronto, Canada.

Before going any further I should like to call the attention of your readers to the difference in name of the two American congresses. The one is "American Congress on Tuberculosis," the other "The American Congress on Tuberculosis for the Prevention of Consumption."

The congress which was to meet under the name of "Congrès International de la Tuberculose" at Paris from Sept. 26 to Oct. 1, 1904, has been recently postponed to the year 1905. The President of this congress is Professor Brouardel, Honorable Dean of the Faculty of Medicine of Paris. The General Secretary is Dr. M. Letulle, Professor Agrégé of the Faculty of Medicine, residing at 7 Rue Magdebourg, Paris. This congress will be divided in two sections, the medical and the social:

I. In the medical section the following subjects will be discussed: (1) New methods for the treatment of lupus. (2) New methods for the early diagnosis of tuberculosis. (3) Comparative studies on the different forms of tuberculosis.

II. In the social section: (1) Etiological factors in tuberculosis. (2) Value of different means for the treatment of tuberculosis. (3) The voluntary insurance and the mutual societies in the combat against tuberculosis.

The congress will furthermore form a technical section under the name of "Museum of the Congress."

There will be held during the coming year independently of the above-mentioned congresses two tuberculosis exhibitions, one in Baltimore, Md., and the other in St. Louis, Mo. The Baltimore "Tuberculosis Exhibition" will be held in January, 1904, under the combined auspices of the Tuberculosis Commission, the State Board of Health and the Maryland Public Health Association. Details are in charge of Dr. W. S. Thayer, President of

the Commission; Mr. John M. Glenn, Secretary; Dr. John S. Fulton, Secretary of the State Board of Health; and Dr. Marshall L. Price. Dr. Henry B. Jacobs has been selected Chairman, and 250 prominent professional men and laymen have been asked to act as an advisory committee. A series of lectures will be given, the object of which will be to present the extent and effects of the disease in a striking manner. The pathologic, hygienic, sanatorium and sociological aspects of the tuberculosis problem will be practically demonstrated by specimens, charts, literature, instruments, photographs and plans. All communication concerning the exhibition should be addressed to Dr. Marshall Langton Price, 10 South Street, Baltimore, Md.

The other tuberculosis exhibition will be held in St. Louis, in connection with the Exhibition of Social Economy and under the Sub-section of Hygiene, of which Dr. J. N. Hurty of Indianapolis is Superintendent. To avoid multiplicity of exhibits, Dr. Hurty has put himself in communication with the General Secretary of the International Bureau for the Prevention of Consumption at Berlin, Professor Pannwitz, so that the exhibits which the European countries contemplate sending shall also come under his direction.

All indications point toward success of both exhibits, and it is to be hoped that they will fulfill their high purpose and at the same time be a credit to American physicians and hygienists. Considering the various congresses, I do not hesitate to express a feeling of deep anxiety. The first one mentioned, which for reason of brevity I will call "The Bell Congress," because it owes its inception to Mr. Clark Bell, has, to my knowledge, not the support of our best-known men in the field of clinical medicine, hygiene, tuberculosis pathology or tuberculo-therapeutics. The second congress in point of time, which again for sake of brevity and clearness I may call "The Lewis-Brown Congress" (names of the president and secretary), while it has many distinguished men of various state and provincial boards of health among the members, has, like the Bell Congress, thus far not among them the men we are wont to look up to as leaders in movements of this kind. No such men as Biggs, Billings, Bowditch, Flick, Jacobi, Janeway, Klebs, Osler, Otis, Trudeau, Tyson, are connected with this congress.

What are our confrères across the water to think if they hear of two American congresses on tuberculosis, and each having an international one under its auspices? The European authorities found it best, instead of having a triennial congress, to allow one more year to intervene. This will make the congress in Washington and the one in Paris convene in the same year (1905).

I hope this letter, which I address to the medical profession in America, will result in a satisfactory solution of this very complicated problem. If President Francis of the St. Louis Exposition desires that a tuberculosis congress shall be held in St. Louis, let him call to his aid some of the men whose names I have mentioned as leaders in our profession. They will counsel with him on the advisability of such a congress, and if it is decided that one should be held, Mr. Francis can be assured that the best men of Europe and America will come to St. Louis to contribute to its success.

The officers and members of the Lewis-Brown Congress must realize that they cannot expect to have their international meeting in Washington successful, when, six months later, there will be an international congress in Paris. I hope that there will be enough patriotism and national pride for all interested to realize that two American congresses on tuberculosis is an anomaly, and that, if the St. Louis Congress is to be a success, it must be in the hands of medical men well and favorably known in this country and abroad.

As a solution of the problem I beg leave to suggest the following: During the tuberculosis exhibition in Baltimore next January, all interested should meet on a certain date on this neutral ground for the purpose of coming to an agreement about a single representative national or international tuberculosis congress to be held in America. There too should be formed a national committee on tuberculosis which will be in touch with the international tuberculosis congress which will convene in Paris in 1905

S. A. KNOFF, M.D.

RECORD OF MORTALITY FOR THE WEEK ENDING SATURDAY, NOV. 21, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|--------------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,227 | 329 | 21.43 | 21.93 | 3.58 | 3.00 | 1.05 | |
| Chicago . . . | 1,885,000 | 467 | 108 | 19.29 | 14.84 | 3.18 | 3.18 | 1.50 | |
| Philadelphia . . . | 1,378,527 | 409 | 84 | 20.05 | 14.42 | 3.17 | — | 2.68 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 179 | 58 | 27.37 | 15.64 | 2.79 | 3.91 | 1.67 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 129 | — | 24.80 | 22.48 | 3.87 | 2.32 | 7.75 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 53 | 12 | 28.30 | 18.87 | 3.77 | 7.54 | 1.89 | |
| Boston . . . | 603,163 | 169 | 42 | 18.93 | 14.79 | 4.14 | 1.18 | 1.77 | |
| Worcester . . . | 132,044 | 24 | 8 | — | 8.33 | — | — | — | |
| Fall River . . . | 115,549 | 28 | 14 | 25.00 | 28.57 | 10.71 | — | 10.71 | |
| Lowell . . . | 101,959 | 20 | 6 | 5.00 | 15.00 | — | — | — | |
| Cambridge . . . | 98,639 | 24 | 10 | 20.03 | 20.83 | 16.67 | 4.16 | — | |
| Lynn . . . | 72,497 | 14 | 3 | 7.14 | 7.14 | — | — | — | |
| Lawrence . . . | 69,766 | 14 | 3 | 35.70 | 7.14 | — | 7.14 | — | |
| Springfield . . . | 69,339 | 11 | 3 | 9.09 | 18.18 | — | — | 9.09 | |
| Somerville . . . | 68,110 | 10 | — | 20.00 | — | 10.00 | — | — | |
| New Bedford . . . | 67,198 | 14 | 7 | 28.56 | 14.28 | 7.14 | 21.42 | — | |
| Holyoke . . . | 49,286 | 9 | 4 | 55.55 | 11.11 | — | 33.33 | 11.11 | |
| Brockton . . . | 44,873 | 6 | 1 | — | — | — | — | — | |
| Haverhill . . . | 42,104 | 7 | 1 | 14.30 | 28.60 | — | 14.30 | — | |
| Newton . . . | 37,794 | 7 | 1 | 28.60 | — | 14.30 | — | 14.30 | |
| Salem . . . | 36,876 | 14 | 3 | 14.28 | — | — | — | 14.28 | |
| Malden . . . | 36,286 | 12 | 1 | 25.00 | 25.00 | — | — | 8.33 | |
| Chelsea . . . | 35,876 | 7 | 1 | 57.20 | — | — | — | — | |
| Fitchburg . . . | 35,069 | 11 | 2 | — | 9.09 | — | — | — | |
| Taunton . . . | 33,656 | 11 | 2 | — | 9.09 | — | — | — | |
| Everett . . . | 28,620 | 8 | — | — | — | — | — | — | |
| North Adams . . . | 27,862 | 7 | 3 | 28.60 | — | 14.30 | — | — | |
| Gloucester . . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 2 | — | 50.00 | — | 56.00 | — | — | |
| Waltham . . . | 25,198 | 5 | 2 | 40.00 | — | 20.00 | — | — | |
| Brookline . . . | 22,608 | 2 | — | 50.00 | — | — | — | — | |
| Pittsfield . . . | 22,589 | 5 | 1 | — | 40.00 | — | — | — | |
| Chicopee . . . | 21,031 | 9 | 3 | 22.22 | — | — | 11.11 | — | |
| Medford . . . | 20,962 | 2 | — | — | — | — | — | — | |
| Northampton . . . | 19,883 | 2 | 0 | — | — | — | — | — | |
| Beverly . . . | 15,302 | 3 | — | 66.67 | — | — | — | — | |
| Clinton . . . | 15,161 | 1 | 1 | — | — | — | — | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . . | 14,478 | 6 | 0 | — | 16.67 | — | — | — | |
| Woburn . . . | 14,300 | 8 | 4 | 37.50 | 12.50 | — | 12.50 | — | |
| Hyde Park . . . | 14,175 | 3 | 0 | 33.33 | — | — | — | — | |
| Adams . . . | 13,745 | 5 | 2 | 80.00 | — | — | 20.00 | 20.00 | |
| Attleboro . . . | 13,677 | 1 | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 4 | 0 | 25.00 | 50.00 | — | — | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . . | 13,418 | 1 | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 1 | — | — | — | — | — | — | |
| Framingham . . . | 12,534 | 3 | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 1 | 1 | — | — | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 3 | 1 | — | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 2,958; under five years of age, 723; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 626; acute lung diseases 529; consumption 302; scarlet fever 19; whooping cough 6; cerebrospinal meningitis 6; smallpox 13; erysipelas 9; puerperal fever 3; measles 21; typhoid fever 56; diarrheal diseases 83; diphtheria and croup 105.


From whooping cough, New York 2, Philadelphia 1, Pittsburg 2, Boston 1. From erysipelas, New York 1, Chicago 4, Philadelphia 1, Baltimore 1, Holyoke 1, Adams 1. From smallpox, Philadelphia 7, Pittsburg 6. From scarlet fever, New York 8, Chicago 2, Philadelphia 4, Baltimore 2, Pittsburg 1, Malden 1, North Adams 1.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Nov. 7 the death-rate was 16.2. Deaths reported, 4,691; acute diseases of the respiratory organs (London) 271; whooping cough 54, diphtheria 55, measles 55, smallpox - scarlet fever 41.

The death-rate ranged from 5.7 in Kings Norton to 22.8 in Warrington, London 16.1, West Ham 16.8, Brighton 11.6, Southampton 11.4, Plymouth 18.6, Bristol 13.7, Birmingham 18.3, Leicester 11.8, Nottingham 16.5, Liverpool 19.5, Bolton 17.1, Manchester 20.5, Salford 22.3, Bradford 18.6, Leeds 20.1, Hull 13.4, Cardiff 13.0, Rhondda 15.7, Merthyr Tydfil 18.2, Hornsey 8.0.

METEOROLOGICAL RECORD.

For the week ending Nov. 21, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|--|---------------------------|--------------|----------------------|------------------------|-------------|------------------------|-----|------------------------|----|------------------------|----|---------------------|
| | | Daily mean. | Maximum. Minimum. | 8.00 A.M. 8.00 P.M. | Daily mean. | 8.00 A.M. 8.00 P.M. | | 8.00 A.M. 8.00 P.M. | | 8.00 A.M. 8.00 P.M. | | |
| S. 15 | 30.08 | 40 | 45 34 | 64 | 60 | 62 | W | 12 | 10 | C. | C. | 0 |
| M. 16 | 30.06 | 41 | 46 36 | 66 | 96 | 81 | S | 3 | 10 | O. | R. | .49 |
| T. 17 | 29.82 | 40 | 45 35 | 95 | 92 | 94 | N | 5 | 6 | R. | R. | .47 |
| W. 18 | 30.00 | 36 | 43 28 | 80 | 54 | 67 | N W | 6 | 14 | O. | O. | .03 |
| T. 19 | 30.33 | 33 | 40 26 | 66 | 55 | 60 | W | 11 | 9 | C. | C. | 0 |
| F. 20 | 30.64 | 30 | 36 25 | 58 | 53 | 56 | W | N | 9 | C. | C. | 0 |
| S. 21 | 30.66 | 30 | 36 23 | 67 | 62 | 64 | N W | E | 9 | C. | C. | 0 |
|  | 30.23 | | 42 30 | | | 69 | | | | | | .99 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOV. 26, 1903.

SAWTELLE, H. W., surgeon. Granted leave of absence for two days from Nov. 27. Nov. 25, 1903.

GASSAWAY, J. M., surgeon. Department letter granting Surgeon Gassaway leave of absence for one month, amended so that said leave shall be for 28 days from Oct. 13. Nov. 13, 1903.

STONER, G. W., surgeon. Leave of absence for five days from Nov. 24, 1903, under paragraph 189 of the regulations.

WICKES, H. W., past assistant surgeon. Granted leave of absence for five days from Nov. 28. Nov. 23, 1903.

CLARK, T., past assistant surgeon. To proceed to St. John, N. B., and assume temporary charge of service during absence of Assistant Surgeon W. C. Billings. Nov. 24, 1903.

LUMSDEN, L. L., past assistant surgeon. Upon expiration of leave of absence to remain at New Orleans, La., and await assignment. Nov. 20, 1903.

BILLINGS, W. C., assistant surgeon. To proceed to Washington, D.C., and report to chairman of examining board to determine his fitness for promotion to the grade of past assistant surgeon. Nov. 24, 1903.

KERR, J. W., assistant surgeon. To proceed to Washington, D.C., and report to chairman of examining board to determine his fitness for promotion to the grade of past assistant surgeon. Nov. 24, 1903.

ROBINSON, D. J., assistant surgeon. To report to chairman of examining board, Port Townsend, Washington, to determine his fitness for promotion to grade of passed assistant surgeon. Nov. 24, 1903.

CORPUT, G. M., assistant surgeon. To proceed to Washington, D.C., and report to chairman of examining board to determine his fitness for promotion to the grade of passed assistant surgeon. Nov. 24, 1903.

CURRIE, D. H., assistant surgeon. To proceed to San Francisco, Cal., quarantine, and assume temporary charge of service during absence of Passed Assistant Surgeon H. S. Cumming. Nov. 24, 1903.

MANNING, H. A., assistant surgeon. Relieved from duty at Stapleton, N. Y., and directed to proceed to Honolulu, T. H., and report to chief quarantine officer for duty. Nov. 23, 1903.

MAGUIRE, E. S., pharmacist. Department letter granting Pharmacist Maguire leave of absence for thirty days from Dec. 5, 1903, amended so that said leave shall be from Dec. 1. Nov. 21, 1903.

BOARDS CONVENED.

Board convened to meet at Washington, D. C., Dec. 7, 1903, for examination of Assistant Surgeons W. C. Billings, J. W. Kerr, and G. M. Corput, to determine their fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Assistant Surgeon General L. L. Williams, chairman, Assistant Surgeon General W. J. Pettus, Assistant Surgeon General G. T. Vaughan, recorder.

Board convened to meet at Port Townsend, Washington, Dec. 14, 1903, for examination of Assistant Surgeon D. E. Robinson, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Passed Assistant Surgeon J. H. Oakley, chairman, Passed Assistant Surgeon H. S. Cumming, Passed Assistant Surgeon M. H. Foster, recorder.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING NOV. 28, 1903.

E. O. HUNTINGTON, surgeon. Sick leave extended three months.

A. M. FAUNTLEROY, assistant surgeon. When discharged from treatment, ordered to the "Scorpion."

J. F. URIE, surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the "Missouri."

W. R. DuBOISE, medical inspector. Ordered to duty as assistant to the Bureau of Medicine and Surgery, Navy Department.

C. T. GRAYSON, acting assistant surgeon. Detached from the Naval Proving Ground, Indian Head, Md., and ordered to the Naval Hospital, Washington.

SOCIETY NOTICES.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. — The thirtieth annual meeting of the Western Surgical and Gynecological Association will be held in Denver, Colo., Dec. 28 and 29, 1903.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION. — The thirtieth annual meeting of the Mississippi Valley Medical Association will be held at Cincinnati, Ohio, Oct. 11, 12, 13, 1904.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. — The sixteenth meeting will be held at the New Piedmont Hotel, Atlanta, Ga., Dec. 15, 16 and 17, 1903.

RECENT DEATHS.

HORACE CARR WHITE, M.D., M.M.S.S., died in East Somerville, November 26, 1903, aged sixty-seven years. Dr. White was born in Bowdoin, Me., and was graduated from the medical department of Bowdoin College in 1859. He practised for a time in Lisbon Falls, Me., and in 1861 entered the Union Army as assistant surgeon in the Eighth Maine Regiment. In 1874 he established himself in Somerville, and has since been prominently identified with the Somerville Hospital and medical matters in that community. He was a member of many medical and non-professional societies.

BOOKS AND PAMPHLETS RECEIVED.

Infectious Diseases. Their Etiology, Diagnosis, and Treatment. By G. H. Roger, Professor Extraordinary in the Faculty of Medicine of Paris. Translated by M. S. Gabriel, M.D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1903.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden. Authorized American Edition. Translated under the direction of Boardman Reed, M.D. Part IV. The Acid Auto-intoxications. By Prof. Dr. Carl von Noorden and Dr. Mohr. New York: E. B. Treat & Co. 1903.

Report of the Commissioner of Education for the year 1902. Vol. I. Washington, D. C. 1903.

The After-Treatment of Operations. A Manual for Practitioners and House Surgeons. By P. Lockhart Mummery, F.R.C.S. (Eng.), B.A., M.B., B.C. (Cantab.). Illustrated. New York: William Wood & Co. 1903.

The Antiseptic and Germicidal Properties of Glycerin. By M. J. Rosenau. Bulletin No. 16. Hygienic Laboratory, Treasury Dept., Washington. Sept., 1903.

Some Remarks on the Maternal Circulation in Pregnancy. By H. O. Nicholson, M.D., M.R.C.P. (Edinb.), of Edinburgh. Reprint. 1903.

Some Recent Advances in Medical Therapeutics. By Thomas E. Satterthwaite, M.D., of New York. Reprint. 1903.

The Purin Bodies of Food Stuffs and the Role of Uric Acid in Health and Disease. By I. Walker Hall, M.D. Second Edition (Revised). London: Sherratt & Hughes. 1903.

The Practice of Obstetrics. Designed for the Use of Students and Practitioners of Medicine. By J. Clifton Edgar. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Spotted Fever (Tick Fever) of the Rocky Mountains. A New Disease. By John F. Anderson. Hygienic Laboratory Bulletin No. 14. M. J. Rosenau, Director. Treasury Department, Washington. 1903.

Original Articles.

GENERAL PERITONITIS COMPLICATING SCARLET FEVER.*

BY JOHN H. MCCOLLOM, M.D., AND JOHN BAPT BLAKE, M.D., BOSTON.

GENERAL peritonitis due to streptococcus infection as a complication of scarlet fever is extremely rare. That this condition may exist and not be recognized is possible, for the patient in a given case may be so delirious as to prevent a diagnosis being made, or the prostration due to the attack of scarlet fever may mask the characteristic symptoms to such an extent as to render a diagnosis impossible. When we take into account the comparative frequency of endocarditis, pericarditis and pleuritis, it would seem to prove that this complication is possibly more frequent than is generally supposed. In a clinical experience of over 8,000 cases of scarlet fever there has been a limited number of patients whose symptoms would cause one to think of the possible occurrence of this complication, but the speedy subsidence of all symptoms and the ultimate recovery of the patients would seem to prove that peritonitis could not have existed. In two instances, however, out of the 8,000 cases peritonitis did actually occur, as is shown by the following clinical reports. In these cases the attacks of scarlet fever were not specially severe, and there was no cause for anxiety until the occurrence of the abdominal symptoms. It was not reasonable to suppose that scarlet fever *per se* was the cause of the condition, but that it was due to streptococcus infection. The great difference in the severity of attacks of scarlet fever is due not to the poison of scarlet fever itself, but to streptococcus infection. This has been proved many times by means of cultures. If streptococci are found in cultures from the nose and throat the prognosis is graver than when this organism is not found. A careful study of the literature of scarlet fever proves that general peritonitis as a complication in this disease is extremely rare.

Frankel, in *American Medicine*, Vol. 2, No. 29, reports three cases of necrotic ulceration of esophagus and stomach following scarlet fever. General peritonitis is not mentioned.

In Gould's "Year Book" no cases are reported in the last four volumes.

In the "Reference Handbook of Medical Science," Vol. 7, page 313, this statement is made: "Peritonitis occurs most rarely, and is usually purulent."

Osler, in his "Practice of Medicine," does not allude to peritonitis as a complication of scarlet fever.

Wood and Fitz, in "Practice of Medicine," make a slight allusion to this condition.

In the "American Text Book of Diseases of Children" it is stated that general peritonitis may occur as a complication of the various exanthemata. Page 580.

In Holt's work, "Diseases of Infancy and Childhood," the following passage occurs: "Of acute infectious diseases peritonitis is most frequently seen with pneumonia and scarlet fever." Page 416.

In the "Cyclopædia of Diseases of Children," Keating, general peritonitis is not mentioned.

In Oppenheim's "Medical Diseases of Children" he says that general peritonitis may be traced to the acute infectious diseases. Page 203.

In Allbutt's "System of Medicine," Vol. 2, page 150, tables of complications are given not mentioning general peritonitis, but says that other complications occur in less than 1% of cases.

Bauer, in "Ziemssen's Cyclopædia of Practice of Medicine," Vol. 2, page 282, and Wardell, in Reynolds' "System of Medicine," say that scarlet fever is sometimes a cause of general peritonitis.

In Pepper's "System of Medicine," Vol. 2, it is mentioned that general peritonitis may follow scarlet fever.

Somerset, in the *New York Medical Journal*, Vol. 72, page 981, in a study of 2,500 cases of scarlet fever and complications, does not allude to general peritonitis.

It will be seen that although some of the authors above quoted allude to the possible existence of general peritonitis in the course of scarlet fever, they do not report any specific cases, and perhaps do not lay sufficient stress upon the possibility of its occurrence. For this reason the two following cases are reported in detail. Both present several symptoms in common, but they differ in course of the disease, the treatment and the result. It is possible that mild peritoneal involvement may be found on careful examination to be more common than is at present believed; but if the following cases are typical of their class, another serious element is added to the already too long list of scarlatinal complications and sequelæ:

CASE 1. J. E., five years of age, entered the South Department of the Boston City Hospital on April 10, 1900, suffering from diphtheria. Both parents were consumptive; the child had had measles in the previous summer, and had been sick with a "sore throat" for five days before entrance. Two days after entrance the skin flushed, and on the following day the diagnosis of scarlet fever was obvious. There was some nasal discharge. Twenty-three days after entrance he vomited and complained of pain in the abdomen, but nothing could be found on physical examination. The urine became slightly albuminous and the tenderness and rigidity of the abdomen continued, as did the vomiting. Ten days later the umbilicus began to protrude, the area around it being reddened, swollen and painful; the abdomen was distended and dull in the flanks. Forty-three days after entrance, the child was tapped in the middle line of the abdomen, and twenty-one ounces of pus withdrawn, a culture from which showed streptococcus pyogenes; on the following day the umbilicus ruptured and fluid leaked from it for several days. On May 31 the child was aspirated in the seventh space, left posterior axillary line, and a few drachms of pus withdrawn from the thorax; on this day the right ear was noted to be discharging slightly. Two weeks later, while steadily improving, his friends insisted upon taking him home, and as he had finished desquamating he was discharged against advice, signs of fluid being still present in the chest and abdomen. Four months later

* Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

he was shown at a meeting of the Boston City Hospital Clinical Club, apparently well.

CASE II. W. S., thirty-one years of age, was admitted to the South Department April 22, 1903. His family history was good; he had had measles, pertussis and varicella during childhood, and rheumatism later. He had been sick for six days before entrance, the onset being accompanied by sore throat and vomiting. He had a brilliant scarlet fever eruption, and also a systolic murmur at the apex, which was in the fifth space outside the nipple line. The abdomen was negative. He progressed without complications, his general condition being good, until thirteen days after entrance, when a slight trace of albumen was found in the urine, and he was slightly nauseated. On the following day there was pain in the abdomen, but no spasm or tenderness. Early on May 9, four days after the appearance of the albumen, he complained of great abdominal tenderness and passed no urine at all. Distension, rigidity and muscular spasm rapidly developed. The legs were drawn up and the face became pinched. He was seen by Dr. Abner Post at 6 P.M., who recommended laparotomy, which was performed by Dr. J. B. Blake about two hours later. Under ether the abdomen was opened in the median line below the umbilicus. There was free discharge of thin pus, followed by a curd-like substance. The intestines were red and congested. The appendix, gall bladder and other abdominal organs were negative. The peritoneal cavity was flushed with several quarts of hot saline solution and drained with seven gauze wicks. No obstruction of the intestines was found, though they were everywhere distended with gas. The patient rallied, and for a few hours seemed a trifle better. The suppression of urine continued, however, in spite of salt infusion and enemata; the vomiting increased the pulse became weaker, and he died twenty-five hours after the operation. Culture from the pus showed streptococcus. The urine, two days before operation, was smoky, contained a trace of albumen, and a sediment of normal and abnormal blood, blood casts, epithelial and refracting casts, a small amount of pus and some round cells. At the time of operation the urine contained 1% albumen.

The autopsy was performed on the following day. The undertaker had already partially embalmed the body, punctured the intestines and stomach in numerous places, and filled the abdominal cavity with an acrid fluid containing formalin. This changed the peritoneal appearances decidedly. No retroperitoneal focus of pus was found. There was an easily separated fibrin layer on the diaphragm, spleen and liver, and a similar layer found lining both pleuræ.

There were small cauliflower masses of fresh red deposit on a chronic thickening of the edge of the mitral valve curtain, with small amounts of fibrin clinging to it.

The capsules of the kidneys were under some tension and yielded a slight hernia of the substance on section. The left kidney was only one-third the size of the right. There were two complete ureters from each kidney to the bladder and four distinct openings into the bladder. This is a very unusual condition, and is, according to Gould, the eleventh case on record. (A. H. Gould, *Am. Journal Med. Sciences*, March, 1903.)

The anatomical diagnosis was:

- Acute fibrino-purulent peritonitis (cause unknown).
- Acute bilateral fibrinous pleuritis.
- Acute vegetative mitral endocarditis.
- Acute nephritis.
- Acute splenic tumor.
- Acute bronchitis.
- Celiotomy.
- General arterio-sclerosis.
- Chronic mitral endocarditis.
- Bilateral double ureter.
- Chronic adhesive pleuritis.

These two cases present in common a series of complications, a late development of the peritoneal symptoms and an absence of local purulent foci. The family history of the child suggests a tubercular peritonitis, but the culture

from the pus showed streptococcus. The child's temperature began to rise and fluctuate several days before abdominal symptoms were noted; part of this rise may have been due to an involvement of the middle ear, but at least a part of it was probably due to the beginning peritoneal infection, which was gradual and comparatively painless in its onset. In the other case, the onset was very acute, suggesting sudden intestinal obstruction and rendering an operation imperative, in spite of the almost complete suppression of urine.

We had, therefore, in both cases, a peritonitis occurring late in the course of scarlatina, due to streptococcus, and independent of any local inciting cause; it was apparently only a part of a very widely distributed general infection involving other serous cavities, as well as excretory organs, special sense organs, and a part of the circulatory system. It seems fair to assume, therefore, that the peritoneum was infected through the blood, as was also the pleura. This is of course a difficult thing to prove. Cultures taken from the blood in the fatal case might have thrown some light upon it. There is no good reason, however, for doubting that infections of the peritoneum through the blood may occur. There is no more obvious explanation in this case and much that would be consistent with it.

TREATMENT.

If the signs of peritoneal infection are slight in degree and extent, palliative measures alone, such as enemata, turpentine stupes, rectal feeding, will suffice. If, however, the pulse steadily rises, and pain, tenderness and spasm increase, the indication for drainage is imperative. The condition of the kidneys is the most definite contra-indication to operation, and whenever possible cocaine should be substituted for ether. The operation should consist of a rapid celiotomy, thorough irrigation with hot salt solution and drainage. Unless there are definite local symptoms, the incision should be in the middle line. To favor drainage, hot, moist dressings, frequently changed, are desirable. Salt solution under the breasts and by rectum, and water by mouth if the patient is not vomiting, are all definitely indicated. Stimulation should be free, but alcohol may be contra-indicated by the nephritis. Caffein, strychnia and digitalis may be used energetically.

The prognosis is always grave, and a successful outcome like that in the first case may not often be anticipated.

WAS HE INSANE? A STUDY IN MENTAL DIAGNOSIS.¹

BY C. A. DREW, M.D., BRIDGEWATER, MASS.

Medical Director Massachusetts State Asylum for Insane Criminals.

H. J. B., a Hebrew, thirty-five years old, born in England, was admitted to the State Asylum for Insane Criminals, Jan. 22, 1902, from the

¹Read before the Plymouth District Medical Society, April 15, 1903.

State Prison in Charlestown, where he had been serving a five to nine years' sentence from March 26, 1897, having been convicted as a "common and notorious thief." The medical certificate on which his commitment was based reads as follows:

CHARLESTOWN, JAN. 17, 1902.

HIS EXCELLENCY W. MURRAY CRANE, ETC.: We have examined H. J. B., thirty-five years of age, committed March 26, 1879, as a common and notorious thief, sentence of from five to nine years, and would respectfully report.

When B. was first committed he worked in the harness shop. He began to agitate the men and was placed in Cherry Hill, where he began to write to all the authorities and to lawyers, telling of the illegal actions of the officers of the prison and wishing to begin actions in law against some of them. He claims to have been admitted to the bar in Dakota. He was arrested in London, Brussels and New York as well as Boston. Perhaps there is no inmate of the prison who has given more trouble to all concerned than he.

At our first examination he began telling in legal terms how unjustly he had been treated before his trial and claimed that from the first he was a victim of persecution and conspiracy; that his sins were sins of omission (neglecting to say his prayer often) only, and not commission. He related how many people would be defendants in cases he would bring against his persecutors. He also showed some wood and iron that had been placed in his food. The examination lasted over two hours.

At the second examination he recognized us and began to say that we were engaging in a conspiracy to pronounce him insane in order that his enemies might get possession of his property. He rehearsed nearly all that he said at the former visit and taking his oath that he was an innocent man. That in all of the former arrests in London, Brussels, New York and elsewhere he had been exonerated, and that the so-called obtaining money under false pretences was proven to be legitimate business. He asked us to examine two bottles of medicine that had been given to him from the prison dispensary and then demanded that we should make a thorough analysis of them both, but at once claimed that we should use neither what he showed us at the former visit nor the request for examination of the medicine at this visit as evidence of delusions on his part. He quoted law to prove that if we did not at once take steps to inform the proper authorities that he was unjustly held, improperly treated and a victim of an outrageous conspiracy, we were guilty of concealing evidence and would be defendants in suits which he would bring against us. At times he would stop his conversation and examine if any people were listening to him; at another time he would get up from his chair, go to the door, and ask for the deputy just to see if he were trying to overhear our talk, although we had told him that the deputy had returned to the yard. He is very suspicious of almost everybody that comes in contact with him. We were with him over four hours at the second examination, although we were convinced at our first that B. is a litigious paranoiac. The little legal knowledge that he has is the nucleus about which are formed all his ideas of his relations to his fellowmen and their conduct to him. He has employed no less than six lawyers since he has been an inmate of the prison and has discharged them all because he became convinced that each one had been influenced by the warden and he has told about others he had employed and discharged.

We feel that his proper place is at the asylum for insane criminals.

It may be remarked that this certificate is long and strong. It seems to establish delusions of persecution — one of the most characteristic symptoms of that form of mental alienation called paranoia. We learn that this prisoner has been under observation nearly five years, that he began to agitate other prisoners and was

placed in Cherry Hill soon after his sentence in 1897. It may be explained that Cherry Hill is a building with large, well-lighted and well-ventilated rooms for the isolation of incorrigible prisoners. We learn further that the prisoner was very insistent in his efforts to bring suits at law against the prison officials and others, and from other sources we learn that in the opinion of certain friends he had a mania for bringing suits at law even before his last arrest and sentence. Those conversant with psychiatric literature will recall that under the names of "querulous insanity," "quarreling insanity," or "litigious insanity" the majority of Continental writers as well as prominent alienists of England and America have written concerning these people with a so-called "mania" for quarreling. The majority of medical writers have considered certain of these people insane, even when no clearly defined delusions could be demonstrated, and have generally classed them as paranoiacs,² although Krafft-Ebing seems inclined to put them under the heading of "moral insanity" and Berkeley considers the litigationists better classed with the ethical imbecilities. So far then as this propensity for litigation has weight, — and we shall wish to refer to this phase of the question again, — it substantiates the diagnosis of the committing physicians, for it is counted competent supporting evidence of mental degeneration by the majority, at least, of recognized authorities in mental medicine. The extreme suspiciousness of the subject is another strong pillar supporting the diagnosis, because extreme suspiciousness is a common and prominent characteristic of most all paranoiacs.

Passing the leading symptoms in review, we have a strongly litigious propensity and apparent delusions of persecution, conspiracy and poisoning, with extreme suspiciousness, — the common accompaniment of such delusions, — truly a strong syndrome on which to base a diagnosis of litigious paranoia. If the suspicions of poisoning and ideas of persecution could be established beyond peradventure as delusions, in the medical sense, and if it could be shown that the man had at some time been frank, truthful and honest, insanity would be established beyond a reasonable doubt, although we might then have doubt as to the form of insanity. But the whole evidence tends to show that the man was never truthful, frank or honest, and it is almost self-evident that a man's natural temperament, character and education must be considered before we can determine whether he reacts in a physiological or pathological manner to his environment.

On admission, physical examination of H. B. was negative, except that the pupils were seemingly myotic, — reacting very slowly to both light and accommodation, — while the patella reflex was very slight. These variations from the average were not greater than is occasionally found in individuals in whom there is no suspicion of organic disease of the central nervous

system; and, as frequent subsequent examinations failed to disclose other neural anomalies of significance, the conclusion seemed justifiable that the apparent myosis and diminished knee-jerk were normal to the individual. It ought to be noted, however, that the opposite condition, — a dilated pupil and exaggerated patella reflex, — is more common in patients of a neurotic organization, to which class H. B. clearly belonged, and that a spastic myosis is about the most common eye symptom in paresis. The mental examination was continued for from one to two hours at a time for several consecutive days and the first impression was strong that we were talking with a victim of early paresis. Paretic, paranoiac or moral imbecile seemed to be the diagnostic question.

Our patient manifested quite enough egotism for a paranoiac. He was perfectly coherent and had a good command of English, but his memory seemed poor, in that his long story would differ in some essentials from day to day and there would be many inconsistencies in his statements of alleged facts. "Oh, I do not claim to be a lightning calculator," he would say, when his attention was called to the fact that his dates were badly awry. It is written in our case records that "His story is very disconnected, either because of a disturbed brain or because he is lying so rapidly that he cannot maintain the proper sequence of events. Any discrepancy brought to his notice he immediately cleverly explains, but in a way to vary his original stories considerably. The good nature and optimism which he shows, the ease with which he speaks of large amounts of money and extensive commercial interests, his good-natured egotism, the many discrepancies in his stories, the readiness with which he explains, though not always satisfactorily, together with some suspicious physical signs, the contraction and slight mobility of both pupils and almost absent knee-jerk, give rise to a strong suspicion of paresis."

This is not at all like the typical paranoiac if we use the term in the restricted sense of the "original nonomania" of Sohmer and the "primary nonomania" of Spitzka and Kellogg. The paranoiac's memory is commonly good, often preternaturally good. Morbid introspection has seemingly fixed every event of his life in self-consciousness and so exaggerated its importance that each personal experience for a series of years is faithfully reproduced as to dates and consistently as to sequence of events.

With the paretic the symptom-complex is strikingly different. Here we have an organic disease of the brain, a chronic meningitis with atrophy and softening of the brain cortex, the product of "civilization and syphilization," as Krafft-Ebing has tersely put it. A good-natured dementia is the leading characteristic. Grandiose accounts of his experiences — apparent mendacity — is the rule; petty acts of dishonesty are very common. A jolly good fellow and a spendthrift, a lover of good wine and bad women,

in the early stages, frequently a petty criminal later on, almost surely bedridden in four years, with far advanced motor and sensory palsy, he yet insists that he is "all right," that he has lots of money, hosts of friends, many wives, perhaps, and that he never felt better in his life.

The imbecile is of another kind, for his troubles are many and his chief mission seems to be to make trouble for others. That particular imbecile called the moral imbecile — because the moral sense is most conspicuous by its absence — has been well called first cousin to the paranoiac. It is doubtless true that a bad heredity — an unstable nervous organization, a vice of constitution — is the soil from which both have grown, yet there are important differences.

H. B.'s previous history as related by himself was so long that he was asked to give it to us in writing, hoping to get an abridged edition. The written autobiographic statement was "toned down" a good deal from his verbal statement, and I can only include enough to illustrate the nature of his statement and the writer's coherence of thought.

FEB. 5, 1902.

GENTLEMEN: In accordance with my arrangement with you, I herewith send you a brief statement relative to certain transactions and facts related to you verbally. I am the son of M. B., of London, England. My father was owner of the city of London Printing Works at one time, also owner of the Rotary Ticket Printing Machine (patent). My father was a promoter, financier and private banker in London and has successfully floated many large companies. I was informed that my father had purchased and brought out the International Cable Company, the Bermuda Cable Company, the Quartz Hill Gold Mining Company, the Parcherry Mining Company, the Wala Wynad Mining Company, the Santa Rosalia Mining Company, the Washington and Seattle Breweries Company, the Iowa Pacific Railway Company, and many other large companies too numerous to mention, but which will be more particularly set forth by my relatives and others. . . . I am a lawyer, studied law in London, England. Educated in Dublin and London. Was manager for M. Barn & Co., Law and Mercantile Agency, New York. Was manager and president at one time of the Joseph Jackson Company, incorporated, at 258 Washington St., Boston. Was manager for the Rollins Harlow Company at 1 Beacon St., Boston. I was in partnership with Frederick H. Jackson, Real Estate Broker, 23 Court St., Boston, Mass. I am informed that the said Frederick H. Jackson is a man of means. I have lived at Wellington, Mass., and kept two horses and carriages and owned my own furniture there. I lived at 321 W. 14th St., New York city, and owned furniture there and valuable paintings. I am perfectly willing to make any statements written or verbally as to the above facts and you have my full permission to write to the parties above referred to.

(Signed)

H. J. B.

This rather incredible story written with care, without the embarrassing factor of a cross examination, was not made wholly of imaginary "mind stuff" as are the roseate ideas of the general paralytic. He was the son of a once wealthy Hebrew whose name and address he correctly gave. He was petted and very much indulged as a youth, as will be shown by other evidence. The proportion of truth and falsehood in the history, as a whole, could be fairly

judged from his mother's letters, which have an intrinsic value of their own besides throwing a flood of light on our patient's peculiar mentality. It will be admitted that the absurd statements of the parietic and the persecutory and expansive ideas of the paranoiac are sincere beliefs, due in the one case to active brain disease, and in the other class to a slowly progressive psychological degeneration. On the other hand, many sane people delight in "drawing the long bow" and the talent for weaving a thread of truth into a fabric of falsehood so cleverly that the single thread will first catch the eye of the casual observer is a characteristic accomplishment of the moral imbecile, and the habitual liar whose sanity is not usually questioned. When cornered by a cross examination, H. J. B. would admit that some of these many companies successfully "floated" by his father were "brought out" on paper only, and I would here observe that nothing more clearly marks the difference between the absurd fancies of the parietic or the systematized delusions of the paranoiac and the "fish stories" of the imbecile, than the efforts of the latter to support each falsehood with two more of a little different shade. A series of letters, remarkable in some ways, were received from patient's mother. These letters, to my mind, are of sufficient psychological interest to be read in full, but in a reasonable time limit I can only quote here and there. In her first letter, dated Feb. 7, 1902, she writes:

Your letter to my husband was handed to me. I do not know as I shall give it to him, as he is at present suffering from acute heart trouble. In the meantime I shall be perfectly explicit with you, although I am not filling up your enclosed form. My son is of ill-balanced mental and physical organization, neurotic, hysterical, of strong passions, weak moral force (in fact of no moral fiber), no sense of duty, a victim of an exaggerated form of intellect which causes him to see and judge matters as a horse's eye sees an object. He is clever and artful and in him the disease would be moral insanity. A sister and brother of mine are in the asylum. Our unfortunate son was not properly brought up. His father showed him an extravagant example and would not have him taught bodily work. He was indulged in every whim, as his father is a man with no sense of responsibility.

A second letter, dated Feb. 28, '02, gives added information of interest and further illustrates the mother's mental organization. She writes:

Anything you ask shall be answered per return mail. . . . My son's affliction did not spring *ab initio* from any involvement of neural processes, although through hardship injury may have subsequently occurred. I assure you that instead of his conceptional faculties being impaired, to my mind they are vivified. Strange to relate, more like a fairy tale, every word he related, as you have written, respecting his father and himself is truth, but in the abstract. In detail, they would admit of a very different construction to what he would have you understand. He has not drawn on his imagination for the events of which he made you acquainted, but he is either mendacious or misled as to the results. You asked me at what period I noticed a change in my son's demeanor. He was always obstinate and ungovernable and when at a very youthful age he consorted with bad companions of both sexes, then the influence of a mother was quite overthrown. Mind, he seemed to be possessed of great ability and great industry and huge capacity to work in what occupation suited him. Here we get great force

misapplied producing *crime*, as it invariably does. His defects are congenital and the law of heredity in this instance is painfully substantiated. His, notwithstanding his great capacity, is a low order of human intellectuality. Two senses fail him to balance the overwhelming forces of his nature: *Sense of danger, of the law of results and sense of responsibility*. Admitting this, then where can the poor human vessel look for ballast. In palliation and extreme grief for the strait he has fallen in and the awful result of the "sins of the fathers," etc., in pity bear in mind that he had an over-indulgent father, who had not the capacity to control him or to show him a good enough example to restrain him. I was adjudged a hard mother because I wanted to spare the child and not the rod. As this tended to break the peace and disturb the rest of the household I was bade to desist. Hence the result. . . . They tell me that I am a pessimist, that unhappy being whom everybody wants to avoid for the sake of the bliss of living temporarily in a fool's paradise. It may be true. Can I help it? . . . Have I not been deprived of the power to enjoy? I am resigned, for an Almighty power animates me to throw myself into the breach and save those that would otherwise be lost. I have brought up ten children credibly (except the eldest). All my daughters are exceptional honors to me. My husband's businesses have failed and we are in financial straits. I am at the helm and dare say will steer through all right with Divine help.

On March 28 the mother writes again:

As you see him now so he has always been, hounding me for money to gratify his whims to squander it. On the other hand, from his writings, etc., he is not a fit subject to be in a lunatic asylum. In justice I must say this, because people are at large who are not so logical or constructive as he is. If people with an *idée fixe* were always confined, the world would be one huge lunatic asylum. Although he is morally obtuse, and although in the world, not of the world, merciless, ungrateful, unnatural and unprincipled, without the slightest force of natural instinct, morally a monster, still he is not what many thousands would pronounce insane. We know he is the victim of an obscure brain disease. Many times puzzled, I often think it is malformation of the brain, with strong passions, and no moral force to govern all. . . . He was always litigious. Of course there is policy and method in this, for when a swindler is discovered he relies on his clever lawyer to find a technical point for him to elude conviction and consequences. This is all to me something too shocking from my point of view and really my brain seems to be giving way. I feel as if I had been smelling nitrate of amyl. I am an old woman and shall be getting brain lesion with it all, no doubt paralysis. My nerves and muscles all ache. I am fast losing power of volition. What shall I do?

While physicians may smile at the mother's analysis of the case, I think members of this society will agree that her observations were keenly intelligent and her deductions not very wide of the mark. If one wished to write a thesis on the relationship between genius and insanity to prove Dryden's oft-quoted clause, "Great wits are sure to madness near allied," the forceful and pathetic letters of this highly-gifted Jewish mother would serve as strongly presumptive evidence. The mother writes again on April 10:

It is not that Harry is so litigiously mad. He is revengeful, it is true, and craving for notoriety. What he really is, is a blackmailer — a past master in the art of insinuation and blackmailing. When he goes to New York he will commence the blackmailing profession over again and get himself run in again. No, Mr. Drew, I will not undertake the onus of accepting the charge of him. . . . It would be better for me to go to the devil than to bring the devil upon me. . . . I wonder if you read

his one part deceitful letter, the other part as impudent, arrogant and overbearing as ever.

Apparently the mother's high tension organization had been taxed almost too far by the son's importuning letters, covertly threatening if she did not send more money to publish his grievances in the newspapers, using his own notorious record as a weapon to extort money from his family through their natural fear of a sensational publicity which would certainly injure the other children and further stain a respected family name. Twelve days later she writes again and now, the mother instinct being again dominant, she argues in defence of her son that he may not be returned to prison, even though she cannot have him sent to an asylum in England, as had been proposed. Both explanation and argument are so creditable to the mother's heart and intelligence, and so interesting from a psychological viewpoint, that I venture to quote further from a letter dated April 22:

While I thank you for your goodness in endeavoring to get Harry sent here to an asylum in London, I dare not bid him to be brought over. Did I do so it would at once break up the home and scatter its inmates. My daughters are working might and main at honorable professions to help me to get a living for themselves. One of them is engaged to an influential man here. My husband has only to receive a shock—he will die. Therefore they object to my bringing over sure trouble. They affirm that Harry would not rest in an asylum here, but would insist and succeed in making himself heard to air his grievances. The newspapers would ring with the unusual news, the members of my immediate family, where they were previously respected, would be surely shunned, no doubt their professional engagements canceled, my husband killed, myself paralyzed by despair, and all for what? To save the feelings of one unworthy refractory being. How can I contemplate the commission of such a crime? I dare not do it. Dr. Drew, that man cannot be sane. Nor is he. It may be true that were he to speak in his lucid, able and logical way to even experts in insanity they would not detect the flaw but declare that only a man in possession of his senses could so ably argue and manipulate documents and seize on technical points of law to get in the thin edge of the wedge to let himself out.

They might not agree that his is an obscure form of dementia, a case, to dive deeply, clearly and concisely into it, where the objective mind is more or less clouded or impeded whilst the subjective mind is permitted a force and liberty which would not belong to it were he in a condition of complete sanity. With his avowed declaration to fight law and power, to go to New York to black-mail Chapin, regardless of consequences, even any medical man decided to maintain that he is as lucid and logical and clever as any other man on the same plane, if not even more so, must at the same time admit that there is a departure from the normal balance and recognize his mental irresponsibility. The man has gone mad. His subjective mind is sole and supreme in the display of its functions. Thus—what is it we perceive? Why—a recollection of one rooted experience, one grim resolve, the *idée fixe* of the monomaniac, which will possess and play the tyrant with his mind, cause him to pursue his suicidal purpose to the bitter end, always regardless of consequences, as unreasonably and fatally as the moth flies in the flame.

The contents of these letters is my best excuse for the lengthy quotation. The son's style in writing is strikingly like his mother's. The following, to his wife, was written on one of those days when he was apparently on good terms with

her, but he was a master of blandishments to obtain money or gain a fancied vantage:

MARCH 12, 1902.

MY OWN DARLING WIFE: Just a few lines to tell you I received a letter from my mother on Monday and it was enclosed to Dr. Drew. I understand my mother's *meaning* and everything is satisfactory. When you come to see me on the 26th of March I will give you a draft for some money and I will explain things fully to you what to do. I shall draw on a certain person at sight and the money is to be paid to you and you alone, as you are my wife and I cannot trust strangers. I shall not call upon you to pay any one else but Mr. Fishacher, yourself and myself. I have received some very satisfactory letters from New York and Boston. I cannot write it. Everything is going *well*. Cheer up, little wife. God is helping us. I have had some blank drafts sent to me and I shall have a letter all ready for you and draft on the 26th of March positively. Write to me at once and tell me all the news. Write to my mother again and tell her not to write to Dr. Drew again. Be careful what you and Mr. Fishacher say to Dr. Drew. I shall explain all when I see you. I have some startling and good news for you. I dreamed last night of you all and of Queenie playing the piano and Clarence. All you, my three darlings, were kissing me and loving me. I am lonely at times without you, dear. You said that our children would write to me last Sunday. I have not received any letter yet. Write often to me and cheerful letters, as it is good for me. I am taking fresh air as you wished. Your poor husband is battling against the breakers, but he will come into port and although tossed and wounded on the ocean of life sees the lighthouse not far off. Our ship will soon sight land, my wife. Cheer up. God bless and guard you all. Your loving husband,

(Signed) H. J. B.

P. S.—Goodnight, love, and kisses . . . Be sure and be here on the 26th of March. Write me you are coming, love. . .

The following, to his mother, was dated March 28, 1902:

MARCH 28, 1902.

MY OWN BELOVED MOTHER: Your letter duly received enclosed again. I again ask you to write to me direct to Mr. H. J. B., State Farm, Bridgewater. It is not necessary to put word "asylum." Now let us come to some common-sense talk. I agree with you it is bad to be robbed by lawyers. Recapitulation, recrimination and transportation seems to be your peculiar mania and writing chronic lovely incriminating epistles about insanity in my family and such untruths and foolishness, and giving Dr. Drew and the State Board of Lunacy the power to hold me indefinitely. You are trying to burv me alive and turning the key on me with double padlocks. Clever muddlers! I had arranged everything well. Mr. Fishacher and my wife came on the 26th of March and in the presence of Dr. Drew my lawful wife said the words, "Dr. Drew, I have come for my lawful husband; his sentence has expired, and I, his lawful wife, am here to take him into my custody." Dr. Drew replied, "I regret, but I must have an order from the State Board of Lunacy." Now the State Board of Lunacy is a tool of Dr. Drew's and it is simply a seesaw formula game, exposed in the newspapers before, robbing me and burying me alive in a living tomb. However, Mr. Fishacher has arranged with the Commissioners to give me a ticket of leave and the State Board of Lunacy must let me go if my wife, who is my lawful legal guardian, takes me in her custody. Everything is arranged and poor Gertrude is on deck ready. We shall not make a demand until the \$250 is here. Send the draft to Gertrude at once. Do not muddle matters, for God's sake. I shall follow out your idea in many ways. Remit to my wife, Gertrude B., at once. I am satisfied she is faithful and loving. She lay in my arms all day and is pining to get me back with her and the children. Do not delay a moment. Leave all to me. Mr. Fishacher and Gertrude and myself will arrange everything. On receipt of the money, wife will get me a suit of clothes, some

shirts and pay my fare and I shall come out right. The reason why I want the money at once in my wife's hands is because when she sees the Board of Lunacy with Mr. Fishacher she will state that she has money to take care of me and that I will not be a charge on the state, and Mr. Fishacher has got the ticket of leave ready from the commissioners and police. Remit to Gertrude at once. Do not muddle me into my coffin, as that will be the next step — my coffin. You have all muddled me into a madhouse and the next will be death. Stop muddling. You have a dangerous pen, writing about insanity. The insanity dodge adopted by lawyers is good in some cases, but not in all. Use tact and judgment. Stop this ghastly work of thwarting my able efforts for release. Remit and you will soon get a cable from me when I am free. Gertrude must have money in hand to state she is able to take me. Do you understand or are you obtuse? When you wanted money I sent it to you. I need help now from a lunatic asylum. I know, my own beloved mother, you mean well, but it is a case of life and liberty and I must speak plain. Be sure and remit at once. Instead of your coming over, my wife will do your work for you and take me. Send her the money. I can be out now in an hour, but she must have cash to say I am all ready and not a burden to the state, etc. I am now at your pleasure, waiting in the madhouse for funds for help from you. Cable remitting. May God bless you and keep you and guide you! I shall find lots of work to do and will be a good faithful father to my darling children and a good husband, and a faithful son to father and you. I long to kiss you both again. Good bye.

Your own loving son,

(Signed)

H. J. B.

P. S. — Remit cable. Remit to Gertrude, she is faithful and true. I have found it out. Remit. Waiting. Help! I shriek a sane man from the madhouse. Help! Help! Remit cable.

(To be continued.)

A NEW METHOD OF CLOSING THE ABDOMEN AFTER LAPAROTOMY.*

BY FRANK A. HIGGINS, M.D., BOSTON.

ACCORDING to our present customs the ideal closure of the abdominal wall after laparotomy would seem to be attained by a method of careful approximation and suture of each individual layer by fine, absorbable and perfectly sterilizable suture material, which could be inserted without the necessity of tying knots, and without the necessity of perforating the skin by sutures. The ideal method of closure would also obliterate all so-called dead spaces and be able to prevent all fluid accumulations within the layers.

Skin sutures, knots, permanent suture material of all kinds, absorbable sutures which cannot always be perfectly sterilized, and dead spaces allowing fluid accumulation within the layers of the abdominal wall are the chief difficulties, aside from septic material introduced at the operation, which interfere with obtaining perfect results, and are the questions which confront one in attempting to decide the best way in which to perform the work.

Many methods have been proposed and used for the closure of the abdominal wound — so many, in fact, that it would seem almost impossible to devise another possessing merit. This is very likely so, but still it is not probable that the last word has been said on this any more than

on any other subject connected with surgery. New methods will undoubtedly be evolved in the future, and very probably new materials for suture superior to anything we know of at present. With some of the present methods of suture of the abdominal wall the results, both temporary and permanent, are almost ideal in many of the cases. It seems evident, then, that any further advance must be directed towards the improvement of the technic and to the devotion of more careful attention to details.

There are practically only two methods of abdominal suture, the mass or through-and-through suture and the layer or tire suture, all others being essentially modifications of one or the other of these two. Each method has its advocates, but the superiority of the layer method in most cases is becoming generally evident to surgeons and writers. It is not my intention to review or discuss at length the question of the different methods of closure of the abdominal wall after operation, or to argue for or against any particular method, any more than may be necessary to point out and demonstrate the feasibility and advantages of the modification which I suggest.

The layer suture is generally regarded as the nearest approach which we can attain to the natural conditions existing before operation. This, with some combination of the mass suture, probably offers the strongest barrier possible to hernia and to infection through accumulation of fluid within the walls, and this modification has been adopted as a satisfactory compromise by a number of surgeons. The tier suture is chiefly objected to because of the danger of the so-called dead spaces and the time necessary for its use. The extra time is not usually an important factor, as the anesthetic may generally be omitted as soon as the peritoneal suture is begun, and the whole wound is commonly closed before the patient makes any disturbing efforts to move. In the comparatively few cases in which the shock is a vital element then technic has to be abandoned and every attention given to rapidity, and the mass suture becomes necessary.

The second objection raised against the layer suture is that it leaves at least two dead spaces, and under these circumstances a wound is likely to become filled with blood. The longer the wound, the greater this danger. That there is greater liability of infection taking place when dead spaces are present is also generally admitted. These objections are undoubtedly important ones.

Of course if any source for septic infection has been introduced or left in the abdominal wall, the exercise of pressure by the mass suture will not eliminate it. Yet the abscess in the abdominal wall generally arises from the infection of fluid accumulations of blood and lymph, by the less virulent forms of bacteria from the skin. If these fluid accumulations are prevented, the bacteria, present only in limited quantities, do not find the most favorable soil for development and are usually eliminated without giving rise to trouble.

* Contributed to the fourteenth series of Medical and Surgical Reports of the Boston City Hospital.

Permanent suture material in the abdominal wall seems in general to be undesirable because so many cases have occurred in which it has caused irritation and eventually required removal. Probably the constant strain and tension on the abdominal wall and the frequent contraction of the abdominal muscles have more or less to do with the irritation caused by permanent foreign material in this particular part of the body.

Sutures of absorbable animal material such as catgut, of the sterilization of which we can never be perfectly sure, are never used by many men, but the choice for the present at least must lie between this and non-absorbable sutures. I have always used fine catgut, and have never had bad results which could be attributed directly to it, and therefore I shall probably continue its use until some more favorable absorbable suture is developed.

The objections to sutures passed through the skin are well known. They arise from the cutting and irritation which they cause and from the presence of the skin micrococci. If the sutures are passed from within outwards and the metal guard I propose is used, these difficulties become practically nil.

Knots, which are often of considerable size, to be secure against untying, seem to me to be occasionally a source of irritation in the abdominal wall. This occurs especially in thin patients and at the lower end of the incision where the fascial suture is tied and the knot becomes practically subcutaneous. Occasionally as late as two or three weeks after operation a wound will open a little at this point without suppuration after primary union has apparently taken place. This is not a serious condition, but it is annoying, and is often rather slow in healing. I know of no way of accounting for it except on the theory that the knot in the fascial suture, which is just beneath the skin in these cases, causes irritation. The method recently proposed of suturing the fascia with a removable silkworm gut suture might obviate this difficulty. I have not used this method, because this suture must be removed within two weeks, and it seems desirable to me to have a suture in the fascia which will remain about three weeks.

There are three important considerations to be kept constantly in mind in every operation, abdominal or otherwise. These are, first, the preservation of the life of the patient; second, the securing of results tending to the improvement of the patient's condition; and, third, the after results and the appearance of the patient.

With the first two conditions this paper is not concerned. Under the third arise several conditions which we may consider. The frequency of ventral hernia has been greatly diminished by the layer suture, by the avoidance of drainage, and by the securing of aseptic healing of the wound. Hernia may occur also as a direct result of fluid accumulation within the abdominal wall, causing fistulous openings and ending in secondary suppuration. The importance of the prevention of fluid accumulations in the abdomi-

nal wall has been repeatedly pointed out. It has been authoritatively stated that "nothing is more conducive to primary healing of wounds than the absolute avoidance of all oozing or accumulations of blood, which may become infected and give rise to suppuration after the wound is closed."

A judicious combination of the mass and tier suture methods of closing the abdominal wall undoubtedly overcomes the most serious disadvantages of either method used alone. The through-and-through suture itself, as used at present, has never proved very satisfactory as I have seen it used by others or in my own work. Trouble frequently arises from the fact that these sutures have to be tied tightly in order to bring the layers and the skin together. After the first few days these stitches begin to cause considerable redness around the sutures where they penetrate the skin; and where they cross the wound they cut through the skin and not infrequently give rise to suppuration and to stitch abscesses. Further infection ensues unless at this time the irritating sutures are cut and removed, and then a weak corrosive dressing is necessary to check the inflammation just starting up. These through-and-through sutures of silkworm gut, which are almost sure to cut through the skin more or less as described, give rise to additional scars on the abdomen, which later are often seen as welts from one-quarter to one-half inch in length running at right angles to the direction of the wound. The early removal of these through-and-through sutures is apt to end in some separation of the edges of the wound, entailing delayed union and a wider scar.

Some surgeons deny that the appearance of the wound after healing is of any importance, and do not take into consideration at all the looks of the resulting scar. If the functional result is good that is all that is necessary, claiming that whatever the appearance of the scar may be, it does not matter to the patient. I believe that this is true to a certain extent with a certain number of patients. With other patients I have found that the idea of having any abdominal scar is very objectionable, and of such importance does it appear to them that they will not consent to have any abdominal operation performed except under urgent indications. I have known operations put off for this reason only, even when there has been actual pelvic pain. It is also true that many patients do not inquire or think about these things in connection with an operation. I have also heard patients criticise the work done at certain hospitals and by certain surgeons because some friend who had been operated upon by another man had a narrower and shorter scar. This may be a comparatively small matter which the older surgeon with a widely established reputation does not need to consider in his work. Very likely also he does not have to answer the questions that are propounded to the younger man, and, moreover, his results are more likely to be taken without question than are those of the young surgeon.

Very small incidents are often known to exert great influence, in matters of much importance, for the good or for the detriment of a man. Especially is this apt to be true at the beginning of a man's career. I believe that at all times the abdomen after operation should be left in as good a condition as possible with regard to both strength and looks, and that in the long run, other things being equal, the man who does this and who pays careful attention to details will be the more successful and obtain the best results.

The question then arises: how can the factors which prevent the rapid and uncomplicated healing of the abdominal wound best be prevented? In the writer's opinion, by the use of the tier suture in combination with the mass suture, by the introduction of mass sutures in such a manner that they cannot irritate and cut through the skin, and by the exercise of suitable counter-pressure along the whole length of the incision in the abdominal wall. Dead spaces have not heretofore been thoroughly overcome by the mass suture unless these sutures are put in much closer than has been customary in the writer's observation. As used, however, they have sufficed for all practical purposes in the great majority of cases.

Some two years ago the writer, who has always believed in the tier suture, became convinced of its disadvantages from the results in some cases of his own, and attempted to overcome the possibility of fluid accumulations in the abdominal walls by a modification of the mass suture. This modification had never been tried elsewhere so far as I am aware; at least, though I have not made an extensive search of the literature, I had never seen it suggested. It consisted in passing several mass sutures of fine catgut—No. 1 chromicized, preferably, because of its strength and lasting qualities—through the various layers of the abdomen, from the peritoneum outward to, but not through, the skin. This constituted a buried mass suture of absorbable material, which included all the structures in the abdominal wall except the skin. The peritoneum and fascia were sutured with running catgut suture before these mass sutures were tied. After these were tied the skin was sutured in the usual way. This method was abandoned, although no trouble whatsoever was experienced from its use in the few cases in which it was tried. The chief reasons why this method of introducing the mass suture was given up were that the knots in the mass sutures came just beneath the surface of the skin, and I feared would in many cases cause sufficient irritation to interfere with union. In addition, I did not like the idea of leaving any more suture material than was absolutely necessary to be absorbed by the tissues in the abdominal

wall. This modification possessed the attractive feature of having absolutely no penetrating sutures in the skin, provided the subcuticular suture was used; but its disadvantages seemed to outweigh its good points.

More recently I have again been devoting considerable attention to the subject of the abdominal suture and the obliteration of dead spaces, which I believe it is unwise to neglect. The mass suture as at present generally used is unsatisfactory, because it cuts through the skin and gives rise to redness, to irritation and to scars. It frequently results in stitch abscesses, and on this account often has to be removed before the union has become firm.

Granted that the mass sutures are necessary, it has always seemed to me that the desideratum

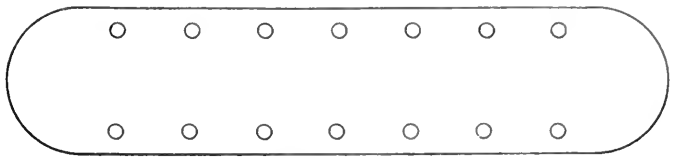


Fig. 1.

is proper and effective counter-pressure against these sutures. The idea of a narrow metal plate with perforations, as shown in Figure 1, first occurred to me. This plate in actual practice was abandoned because it was found that, unless the sutures were put in with considerable care

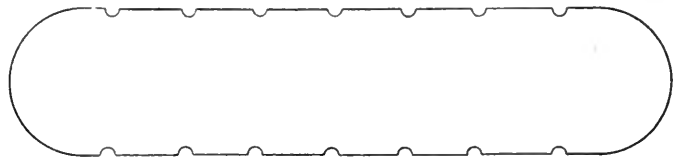


Fig. 2.

and at the expenditure of more time than was desirable, they were not likely to come opposite the perforations in the plate. The same metal plate with serrations in the edges, as shown in Figure 2, was also abandoned for much the same reasons. In using this plate, however, it was found that it did not matter where, along its

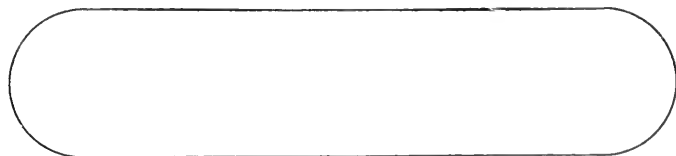


Fig. 3.

edges, the sutures were tied. They held equally well wherever placed, and there was no opportunity for the plate to slip either way. Consequently the metal strip with straight parallel edges, Figure 3, has since been used. The plate is a strip of thin, nickel-plated copper about one-

thirtieth of an inch thick. It is stiff enough not to be bent by the sutures, but is easily bent by the fingers in case it needs to be adjusted to any inequalities in the surface of the abdomen.

I will state briefly the method by which it seems to me best to close the abdominal wound after laparotomy. The mass sutures of silkworm gut are introduced by double-threaded large curved needles. One suture is placed at either end of the wound, and one or more between, depending upon the length of the wound, fewer being needed than without the metal guard. The ends of these mass sutures are clamped and held on either side by heavy clamps which by their weight hold the sutures tight and prevent any danger of the intestine or omentum slipping beneath them. The peritoneum is then closed

dressing is done, and the mass sutures, having performed their function, are cut. They are not removed till the day following. Subsequent dressings are repeated every second or third day, and the subcuticular skin suture is removed in from ten to fourteen days. The mass sutures, having merely perforated the skin for a short time, leave no permanent scar.

The through-and-through sutures should not be tied under more tension than one would use without the metal guard. In this way the circulation is not interfered with, the vitality of the tissues is not lowered, and there is no cutting through of the sutures, at least on the surface. The gauze beneath the metal guard is of advantage in that it relieves the skin from direct pressure of the metal, and that it absorbs the slight

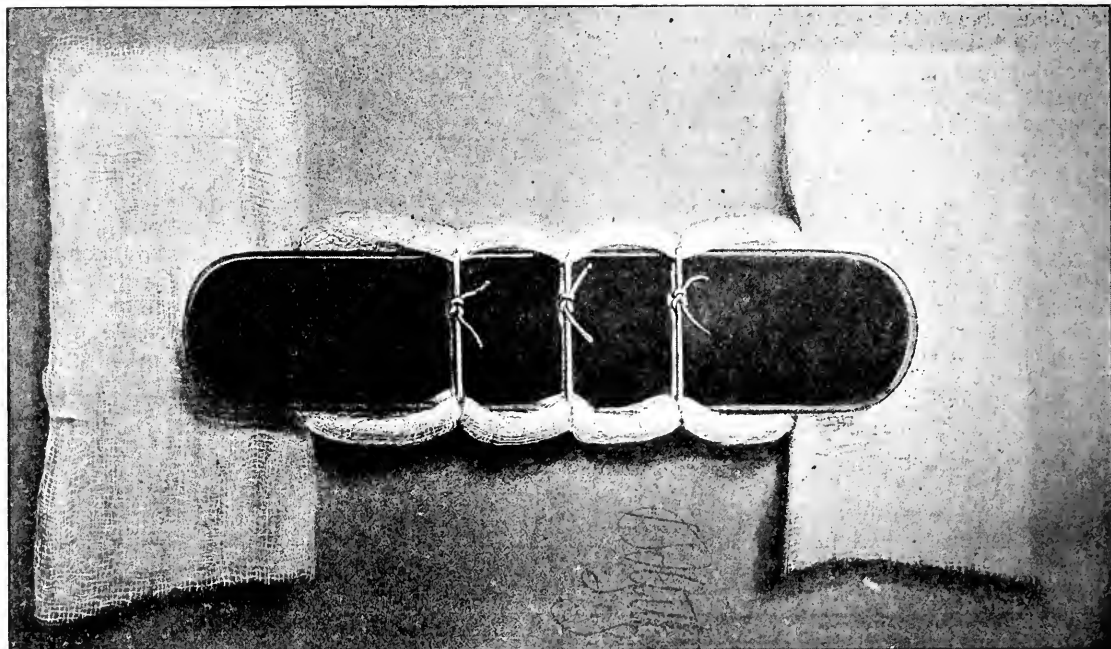


Fig. 4.

by a running suture of fine unchromicized catgut, the fascia by fine twenty-day chromicized gut, and the skin with a subcuticular suture of fine silkworm gut or horse-hair. The mass sutures are finally tied over the metal guard, which is separated from the abdominal wall by a pad of folded sterile gauze. A small pad of gauze wrung out in a weak corrosive solution is inserted under either end of the guard, and is folded over its ends, completely enclosing the wound in an effective and immovable antiseptic dressing. This acts effectually as a barrier to any outside infection, while nothing but sterile gauze comes in contact with the surface of the wound. Figure 4 shows the metal guard in place, with the mass sutures tied and the antiseptic gauze at the top and bottom ready to fold over. The outer dressing need then be only a comparatively small one. Usually on the fifth day after operation the first

amount of blood from the skin and whatever may be expressed by the counter-pressure. In addition, the metal guard holds the dressing absolutely in place without adhesive straps, and consequently no outside source of infection can reach the wound until after its first dressing. At this time the wound should be sufficiently well united to insure it against infection under ordinary conditions.

This modification which I propose, and have now used for a number of months with great improvement in my results, may at first appear unnecessary and cumbersome, but in actual practice it does seem to possess decided advantages. In the first place, it in no way interferes with the perfect and aseptic healing of the wound. It eliminates the chief objections to the layer suture without increasing materially the time needed for closure. It effectually controls all

oozing of blood and serum into the wound, so that it becomes rarely necessary to ligate any of the vessels. The accumulation of all collections of blood within the layers of the abdominal wall is thereby prevented. Stitch and other forms of abscesses become practically eliminated. With its use several advantages in its favor have appeared which were not apparent or expected at its conception. One is that the pressure of the metal guard promotes adhesion between the layers in the abdominal wall, and a distinct non-inflammatory induration may be felt running along on either side parallel with the edges of the wound. This, I believe, tends to the formation of a firmer and stronger cicatrix than any other method yet proposed. It also tends to prevent stretching apart of the edges of the skin, and results in a linear scar.

The writer, in conclusion, would say that he does not so much regard this as a new method of abdominal suture, as he does that it is another step in the technic of the closure of the abdominal wound, and one by which many of the disadvantages of the layer and the mass sutures may be overcome. It requires very little extra time for its application, it promotes union, and it gives additional strength and improved appearance to the abdominal wall. I do not expect its advantages to be appreciated without a trial, but I do believe, from my own experience, that after a fair trial others will be convinced that it has certain advantages in many cases.

Since this paper was begun the writer has been trying, in place of the metal shield, transparent plates of celluloid or pyrolin. With plates of this material, pads of sterile gauze are placed alongside either edge of the wound, but do not press directly upon the surface of the wound itself. Glass plates might be used in the same way.

This method possesses the attractive feature that the outer dressing may be removed daily if desired, and the healing observed without being obliged to disturb or dress the wound. The writer would merely mention this latter device as a suggestion here. He does not intend at the present time to advocate its permanent use without more extended trial.

ALBUMINURIC RETINITIS.¹

BY ALLEN GREENWOOD, M.D., BOSTON,

Ophthalmic Surgeon to the Boston City Hospital.

It is well known that frequently the presence of an optic neuritis will lead to the discovery of a previously unsuspected cerebral tumor, but it is even more frequent that the presence of a characteristic retinitis will lead to a diagnosis of chronic nephritis, in cases where renal disease was previously unsuspected. It is the frequent experience of every oculist to find in patients whose only complaint is a dimness of vision, the ophthalmoscopic picture of albuminuric retinitis, resulting in the diagnosis of a fatal renal disease. Out

of 26 cases I have seen in private practice, in only 5 was there any previous knowledge of kidney disease. It is in relation to the prognosis of such cases, however, that albuminuric retinitis is of the greatest aid; a prognosis, indeed, than which there is scarcely any more certain. By a very brief ophthalmoscopic examination, a diagnosis and prognosis may often be given which seem little short of miraculous to the friends and physician of the patient. That the possibilities of diagnosis are apparent to laymen as well to physicians is evidenced by the experience which probably happens to all oculists of having patients present themselves with the request that their eyes be examined to see if they show anything indicating kidney disease. Physicians certainly appreciate the prognostic importance of this condition, for I have many times been called in consultation in cases of well established chronic nephritis to see if the ophthalmoscope would aid in the prognosis. It is well known that the prognosis as to the length of life in most cases of chronic nephritis without retinal complications is very uncertain, while with them there is a certainty such as is established in but few chronic diseases.

The ophthalmoscopic appearances of albuminuric retinitis are so well known and described in all the modern textbooks that I will only mention them in part and very briefly. In Norris and Oliver seven forms are spoken of as capable of differentiation, viz.:

- (1) Typical albuminuric retinitis.
- (2) Degenerative albuminuric retinitis.
- (3) Hemorrhagic albuminuric retinitis.
- (4) Albuminuric chorio-retinitis.
- (5) Albuminuric neuro-retinitis.
- (6) Albuminuric papillitis.
- (7) Saturnine retinitis.

In actual practice these various forms merge into each other, and often a number may be nearly equally prominent, so as to make it impossible in many cases to name the variety. After having watched several cases from nearly the beginning to the end, one is inclined to consider that many of the so-called forms are but stages in this inflammatory and degenerative disease of the retina, choroid and nerve. In some cases and in some stages one or more of the pathological conditions predominates, hence the different varieties.

Besides the usual signs of neuro-retinitis, the most characteristic alteration indicating albuminuric retinitis is the grouping of white patches about the disc and macula. These are due to fatty degeneration of the retinal elements and exudates, and vary much in size and shape. In the macula region they often run together, forming lines radiating out from the fovea like star points with lines of pigment deposit between. In some cases of albuminuric retinitis they are absent, and there may be only a few hemorrhages or a papillitis to suggest the correct diagnosis, the papillitis in rare cases amounting to a choked disc, so that in every case of retinitis or neuritis

the urine should be examined. The retinitis is almost invariably bilateral sooner or later, though usually more advanced in one eye. It is, I think, generally conceded that the pathological conditions are due to degenerative changes in the blood vessels of the retina, choroid and nerve, resulting in the inflammations, hemorrhages, exudates and degenerations which go to make up the usual ophthalmoscopic picture. These vascular changes are in some cases largely a part of a general arterial degeneration, and in others largely the result of slow uremic poisoning. The latest researches into the microscopical changes show an even greater involvement of the vessels of the choroid than those of the retina, and it has certainly been my experience to find extensive choroidal changes in quite a number of cases. I find that several times lately I have made the diagnosis of albuminuric chorio-retinitis where there has been extensive choroidal change with destruction of the choroid and laying bare of the sclera with the surrounding embankments of pigment.

After seeing a few cases of albuminuric retinitis, I found myself grouping them in two distinct classes based, not on retinal differences, but on the supposed primary pathological conditions which cause the chorio-retinal changes. The cases here reported illustrate this very well. The first group of cases include those where the endarteritis of the chorio-retinal vessels, with its consequent changes in the choroid and retina, is largely a part of a general arterial degeneration of which the chronic interstitial nephritis is also only a part. These cases occur in the old and middle-aged where the whole vascular system has become more or less subject to degenerative changes, from age as well as from impure blood, and the involvement of the chorio-retinal vessels only shows an advanced stage of a degenerative condition, which has existed for some time, and which almost invariably advances to a fatal issue. Death usually results from extensive kidney impairment causing uremia, or else one of the arterioles in the brain more diseased than its fellows, yielding to that increased blood pressure which comes with cardiac hypertrophy, causes a fatal hemorrhage. In these cases the chorio-retinal degeneration is less extensive and often the vascular disease in the choroid and retina causes visible pathological changes before the vascular disease in the kidney has advanced enough to produce a constant albuminuria, as shown in the first and eleventh cases of this group. The prognosis as to length of life is a little better than in the second group.

The second group includes those cases which are more correctly designated as cases of retinitis albuminurica, from the fact that they are directly caused by uremic poisoning of the blood from a distinctly demonstrable acute or chronic lesion of the kidney, usually of a parenchymatous or diffuse type. They occur mostly in youth and early adult life, showing a greater retinal destruction with consequent greater impairment of vision, and the prognosis is extremely bad in all

but those resulting from the acute nephritis of scarlet fever and pregnancy. It is in the prognosis of both classes of cases of chronic nephritis associated with albuminuric retinitis that I wish to interest you particularly.

Regarding the length of life after the discovery of the retinitis, the following may help. Baroness Possaner found the following from the cases taken from 67,000 cases from the Zurich clinic and private practice of Professor Haab:

| | | |
|-------|-------------------------|------------------------|
| Men | from the poorer classes | all died in two years. |
| Women | " " " | 68% " " " |
| Men | " " "better" | 59% " " " |
| Women | " " " | 53% " " " |

The longest period in the poorer class was six years, and in the better class, eleven years.

In a report by Bell at the Ophthalmological section of the American Medical Association, 100 cases collected from the private practice of various ophthalmologists are given, and of these 73% died in one year and 94% in two years.

Rogers collected 419 reported cases which included those of Possaner and Belt, and of these 90% died within two years.

In my private practice in the past twelve years I have seen 26 cases, and am able to report the subsequent condition of all but two. Of the 26 there are six living to-day, but none of these was seen prior to three years ago. Of the 20 who have died only two lived over three years. I shall only give a brief history of the two or three most interesting cases and a synopsis of the others.

GROUP I.

1. Miss E., aged forty-two, called on account of failing vision Dec. 18, 1891.

O. D. V. = 20-70. O. S. V. = 20-20.

O. D. well-marked neuro-retinitis, with numerous flame-like hemorrhages and spots of exudate. There was a large irregular patch of degeneration at the macula involving the choroid, with consequent embankment of pigment.

O. S. Slight neuro-retinitis with a few hemorrhages and spots of exudate about disc. Macula not involved.

Examination of urine showed specific gravity 1.012, and only the most minute trace of albumin. Three casts in 8 slides. Chronic interstitial nephritis. Examination a few days later by an expert chemist, who reported that no albumin or casts were present. A few months later, however, albumin and casts were easily found.

March 17, 1892, O. D. V. = 20-200. O. S. = 20-70 more spots of exudate and degeneration. Patient died August, 1893, from uremic poisoning, a few months after a cerebral hemorrhage, one year and eight months from time of my first seeing her.

2. Mrs. F., Natick, age fifty-five. Seen March 14, 1892. Retinitis with hemorrhages and exudates. No subsequent history obtainable. Urine—chronic interstitial nephritis.

3. Mrs. F., aged seventy. Seen Nov. 3, 1897. Had had a cerebral hemorrhage a few weeks previously with hemiplegia and hemianopsia. Fundi showed neuro-retinitis with flame-like hemorrhages and spots of exudate. Chronic interstitial nephritis. Died March 27, 1900. Lived two years four and one-half months.

4. Mr. C. O. L., age sixty. Seen Jan. 6, 1898. Neuro-retinitis with exudates. Urine—chronic interstitial nephritis. Died Nov. 6, 1899. Lived one year and two months.

5. Mrs. H. W. P., age seventy-three. Seen April 11, 1897. Albuminuric retinitis. Chronic interstitial nephritis. Died comatose Oct. 5, 1899. Lived two years and six months.

6. Mrs. R. H., age sixty-seven. Seen July 12, 1897. Neuro-retinitis, with exudates about the maculae. Urine

— chronic interstitial nephritis. Died Dec. 5, 1897. Lived six months.

7. Mrs. M. B., age fifty-five. Seen July 30, 1897. Simply exudates about macula. Urine—chronic interstitial nephritis. Died March 8, 1900. Lived two years eight and one-half months.

8. Mrs. F., age thirty-five. Seen Jan. 15, 1896. Fundi show chorio-retinitis with a few hemorrhages and spots of exudate and degeneration. Chronic interstitial nephritis. Died March 14, 1900. Lived four years and two months.

9. Mrs. E., age fifty. Seen June 3, 1898. O. U. show a few scattered hemorrhages, and a few spots of exudate about macula, chronic interstitial nephritis. Died of cerebral hemorrhage, Aug. 11, 1900. Lived two years one month eleven days.

10. Mr. L. W., age eighty. Seen April 11, 1896, on which date I removed a cataract. The resulting vision being poor, I examined the fundus, finding albuminuric retinitis. The family physician found advanced chronic interstitial nephritis. The patient died Sept. 28, 1897, living one year and five months.

11. Mrs. W., age fifty. Seen June 12, 1896. Had neuro-retinitis, with abundant hemorrhages and spots of exudate. The family physician reported urine normal to the family, but in a year she developed chronic interstitial nephritis, and died in convulsions one year and six months after I saw her.

12. Mrs. H., age seventy. Seen July 6, 1894. Albuminuric retinitis, complicating incipient cataract. Urine of chronic interstitial nephritis. Died twelve months later.

13. Mr. T., age seventy-five. * Seen Nov. 14, 1897. Fundi showed haziness of disc outlines, and in the region between the discs and maculae were many small round spots of yellowish-white exudate. No hemorrhages or degenerations. The family physician reported $\frac{1}{2}\%$ of albumin and existence of chronic interstitial nephritis. Died Feb. 26, 1898. Lived three and one-half months.

14. Mrs. S., age fifty-six. Seen July 12, 1902. Complained of dim vision and not being able to get glasses to help her. v. o. u. 20-200; incipient cataract o. s. Fundi showed neuro-retinitis with exudates about maculae and one hemorrhage below right disc. Urine shows chronic interstitial nephritis. Died Nov. 12, 1902. Lived four months.

Added to this group are the following cases still living:

15. Mrs. P., age sixty-one. Seen July 26, 1900. Her family physician had discovered albuminuria from chronic interstitial nephritis, and sent her to me for help in prognosis. Neuro-retinitis with spots of exudate. No hemorrhages. Is still living two and one-half years after.

16. Mr. C., age sixty-seven. Seen Feb. 16, 1901. Has incipient cataract and neuro-retinitis, with hemorrhages. Chronic interstitial nephritis. Still living one year and eleven months after.

GROUP II.

1. Susie W., age sixteen. Seen Nov. 15, 1893. Seamstress; came for failing vision. Degenerative chorio-retinitis. No hemorrhages. Vision much reduced. No papillitis. Maculae involved. Chronic diffuse nephritis. Died April 6, 1898, from uremic coma. Lived four years and seven months.

2. Miss G., age twenty-six. Seen Sept. 21, 1894. Watchmaker, came for failing vision. Degenerative chorio-retinitis o. u. Macula involved o. u. No papillitis or hemorrhages. Diffuse nephritis. Died Oct. 22, 1894, in uremic coma. Lived one month.

3. E. L., age sixteen. Seen April 12, 1899. Came for failing vision. Had to leave her work several weeks ago on account of poor eyesight. O. D. V. = fingers at two feet. O. S. V. = 20-100. O. U. the fundi show a large amount of whitish exudate about the disc, covering the edge and burying the blood vessels in places. Throughout the retina were numerous white spots of exudate. In the macula region O. D. there was the star appearance of radiating lines of degeneration with intervening lines of pigment deposits with a heap of pigment in the centre of the macula. No hemorrhages. In O. S. the same condition involving only half of the macula region. Chronic

diffuse nephritis with urine solid on boiling. Died in uremic coma April 19, 1900. Lived one year seven days.

4. Miss P., age twenty-two. Seen July 6, 1893. Worked in watch factory till six months before. O. U. showed chronic retinitis with complete destruction of retina and choroid over large areas including the maculae. Gray atrophy of optic nerves with arteries reduced to mere threads. No perception of light. Had uremic convulsions every day or two, and died in one six weeks later. Chronic diffuse nephritis, urine solid on boiling.

5. J. W. H., age thirty-four. His physician had diagnosed chronic diffuse nephritis. Two and one half years ago feet and legs began to swell. Six months ago his sight began to fail in left eye; right eye blind from injury. Seen May 1, 1901. Left eye showed a neuro-retinitis. The neuritis was so marked that the disc could not be seen. Region about disc and macula occupied by exudate. Few small hemorrhages. His physician informed that death would probably occur inside of a year. Died of uremic poisoning Nov. 29, 1901. Lived about seven months.

6. A. H., age thirty. Came to my office Aug. 27, 1901, for failing sight in both eyes, particularly the right one. Was not aware of any other physical disability. O. D. V. = 20-400. D. S. V. = 20-30. O. U. neuro-retinitis with hemorrhages about discs. Exudates and degenerations about maculae. Urine showed chronic diffuse nephritis with $\frac{1}{2}\%$ albumin. Died in New York, Nov. 19, 1901. Lived about three months.

Added to this group are the following cases still living or unheard from:

7. W. W., age twenty-two. Seen July 20, 1900. Complained of failing vision only. O. U. V. = 20-200. Fundi showed neuro-retinitis with exudates; and degenerations. His physician reported chronic parenchymatous nephritis. Left town soon after and I have been unable to trace him.

8. F., age twenty-six. Seen Aug. 7, 1900. Sent by his physician for help in prognosis, as he had a chronic diffuse nephritis. O. U. had well-marked neuro-retinitis with hemorrhages and exudates. The last report from him was to the effect that he had failed so much that he was obliged to give up all work.

To these should be added cases nine and ten of this group, which were cases of acute nephritis from pregnancy with complete recovery of the eyes and kidneys.

My cases are too few to deduct percentages from, but the following may be noted: Out of the sixteen cases of the first group, of one I have no subsequent history; four died within one year, four within two years and four within three years. Only one lived over three years, death coming in four years and two months. Of the two living neither dates back over two and one-half years.

Out of the ten cases of the second group, of one I have no subsequent history; four died within eight months; one died within two years; one died after four years and seven months; one was known to be alive two and one-half years after first being seen. The two cases occurring from pregnancy have recovered entirely.

From these cases and the many others of different observers, it is plain that the prognosis afforded by the discovery of albuminuric retinitis in cases of chronic kidney diseases is very grave, and that life is but rarely prolonged more than three years. It has been noticed that cases occurring in the better classes live the longest as a result of better hygienic surroundings and care. I feel sure that as we learn more about the body metabolism in such cases, and can give them the best diet and hygienic treatment, we shall

be able to retard the progressive decline, and materially lengthen life. How much capsulotomy may do in these cases will be told in the future. I realize that my clinical grouping of these cases is open to criticism, but I hope, in the near future, by post mortems and microscopical examinations to prove the grouping correct pathologically.

AS TO POPE LEO'S CASE — PLEURO-PNEUMONIA.

BY SAMUEL DELANO, M.D., BOSTON.

Now that Italy has poured a broadside into the diagnosis of the late Pope's case, the time may seem opportune for letting go with some guns of our own. It might be worth while, if merely for general principles' sake, to submit the diagnosis to the test of inherent probability; because general reasoning in a large percentage of cases furnishes so good a guide to follow. It must, however, be conceded that in a given instance this would not coincide with legitimate criticism, because one well-observed fact might show your most careful logic to be a non-sequitur.

Nevertheless it seems highly improbable that fibrinous pneumonia should be at work in an old man of ninety-three, sick some days before medical aid was summoned, lingering on some weeks, while in that time he could be up and dressed and give many audiences; with a temperature ranging irregularly over the lower fever scale, a respiration for much of the time in the neighborhood of 25 and the pulse around 85.

Inadequate as these items might seem, however, we should still have to keep silence, if only on the principle that in medical diagnosis the looker-on does *not* get the best of the game, had not there been a fatal flaw in the autopsy. Here, certainly, allegiance must waver, for, advancing a pathological diagnosis of gray hepatization of the lower lobe, this is made to rest upon the statement in the commentary that "from the cut surface an abundant dirty white fluid without gas oozed out, *showing complete hepatization.*" Of course, as a matter of fact, nothing could be much drier than the cut surface of gray hepatized lung and we thus not only have to do with an absolute inconsistency of statement, but the description fits no stage of pneumonia, — on the contrary comes very much closer to an edema in a compressed lung.

Yet the paramount reason for taking exception to the diagnosis of pneumonia in the Pope's case is that pleuritic effusion in sufficient quantity to aspirate is next to never associated with fibrinous pneumonia. And this furnishes the real object of this communication as well as the moral that the case points. That this is not the prevailing view and that clinical evidence might be put forward to the contrary, I am well aware, but my firm belief is that owing to a confusion of physical signs a great deal of error has crept into our conceptions. The point has obviously an important practical bearing, inasmuch as the prognosis and treatment of effusion and pneumonia are quite

antipodal and because the early detection of fluid is necessary to a wise supervision.

To begin at the end, viz., the autopsy, that great controller of clinical observation, — autopsy findings offer next to no support to the idea of effusion combining with pneumonia; that is to say, personal observation of a goodly number of autopsies and a considerable search of records confirm the principle that pneumonia is not associated with effusion sufficient to influence the physical signs or yield on tapping; a teacupful of fluid there may be, perhaps, but this is no more than the agony or gravity would account for.

This fact if confirmed, would indicate at least that the tendency of pneumonia was not towards the establishing of effusion and it would only remain to determine how far the trend may be influenced by a prolongation of the case or by recovery.

How then account for the impression prevailing that many cases come in as pneumonia and end up with simple effusion or empyema? It goes back to nothing except the perversion and consequent confusion of physical signs. I leave out of account the rational signs which in these cases, especially of empyema, might cut a considerable figure in correcting the error.

The crux of the matter is that pleuritic effusion commencing as such idiopathically may in a certain good percentage of cases be characterized by a bronchial or sniffling respiration that easily passes for the respiration originating in solidified lung. The sophistication is especially apt to be the more successful because it is in very moderate effusions that the most suspicious signs occur, while towards the top of the fluid the sniffling respiration and the voice sounds of like character may be very near the ear. The discrimination may be a delicate task, but into that it is not my purpose to enter. Finally, if the chest fills up we may have a blowing respiration over the whole chest, the sound, however, being fuller and more amphoric than in the case of the smaller amounts.

In my experience empyema is especially apt to include the bronchial element in its signs and that, too, from the outset. I have observed a considerable number of empyemas starting with an all-round bronchial character in the lower back, this mounting higher till extended over the whole chest. The diagnosis of pneumonia was persisted in by a number of observers. Finally, that the chest was full could no longer be denied and operation was invoked. Cases such as these are undoubtedly reported as empyemas following pneumonia, yet there was no distinct demarcation in the physical signs; furthermore, the diagnosis of effusion at the outset was made as well, and it would seem justifiably. In the writer's opinion empyemas, as a matter of fact, are much more often effusion from the start and much more rarely associated with pneumonia than supposed. In the first place, if autopsy shows the marked tendency of pneumonia away from effusion, this fact emphasizes the unreasonableness of linking empyema to pneumonia through the medium of a large serous effusion, to become purulent

secondarily. Again, to trace the empyema back to a pneumonia eventuating in gangrene or abscess, is to follow another improbable route, because such cases are so ill that death steps in ahead of the empyema. Finally, if the cases are carefully studied it will be found that *quoad* pneumonia these empyema cases with bronchial signs are defective in the matter of rational signs, there being often nothing in that province to substantiate a pneumonia diagnosis, while, most important of all, the original physical signs did not correspond with the limits of a lobe.

What happened in the Pope's case seems then to have been this: Examining the patient, his physicians find as they reported bronchial signs over a limited area in the back (designated by ribs, but I have forgotten which) corresponding to the upper part of the lower lobe; as the basis of this a diagnosis of lobar pneumonia is made—in reality the signs with much more probability coincided with the upper limits of an effusion. In a few days convincing themselves that there was fluid, they tap and get a couple of pints. The diagnosis then expands into pleuro-pneumonia—pneumonia plus effusion. At the autopsy some weeks later the lung is reported still in a state of gray hepatization, notwithstanding its fluidity, *mirabile dictu*!

So then it seems within the bounds of probability to say that the Pope had no pneumonia, but only effusion, and let us trust we shall not be making the same mistake in the same way, because the trap is very often set. As to whether the effusion was of simple, tubercular or cancerous origin, we may leave his physicians and Professor Cardiarelli to thrash out.

Clinical Department.

RUPTURE OF THE TENDON OF THE EXTENSOR LONGUS POLLICIS; TENDON TRANSPLANTATION.

BY C. L. SCUDDER, M.D., AND W. E. PAUL, M.D., BOSTON.

UNCOMPLICATED rupture of a long tendon of the hand is rare. The following instance of a complete transverse tear of the left extensor longus pollicis tendon at a short distance from the muscle insertion is recorded both on account of its uniqueness and because the functional loss in this case was difficult to interpret. Moreover, a demonstration is furnished by such a case of the great value to the hand of the extensor longus pollicis muscle. It seems to us from a consideration of the following case that an understanding of the function of the thumb muscles is difficult:

Miss A., fifty-eight years old, a cook, fell in such a way as to strike the back of the left hand on the edge of a stone step. The bruised skin was treated with domestic remedies. There was some tenderness near the proximal end of the first metacarpal bone, and in dressing herself some pain was felt at that place, though there was no marked localized swelling. Three weeks later she was feeling practically well as far as the hand was concerned. One morning in her work, she was kneeling on the floor and rested on her left elbow. No unusual feeling or event was

noted, but after rising from the floor and attempting to take hold of a chair, the left thumb could not be used as before, and the thumb was flexed in the palm.

She was examined the next day and the movements of the thumb were found impaired as follows: extension of the proximal phalanx was practically absent so that the thumb was invariably closed upon by the flexed fingers in grasping movements. Feeble extension of the distal phalanx was readily and repeatedly performed. All movements of the metacarpal bone of the thumb were executed, though extension and abduction were of less range than on the sound side. There was no tenderness near the points of insertion of tendons over the phalanges; and no indication of the site of the rupture existed beyond the assertion of the patient that some tenderness on using the hand existed near the proximal end of the metacarpal bone on the dorsum.

The lesion was regarded as probably a rupture of the extensor brevis pollicis tendon near its insertion, without local signs of rupture at the seat of the tear.

Operation six weeks after the functional loss disclosed a rupture of the extensor longus pollicis tendon near to the lowest point of the muscular insertion, about opposite the proximal end of the metacarpal bone of the thumb. The sheath of the tendon was intact. A careful dissection along the wrist was necessary to find the retracted muscular belly which was some 6 or 7 cm. from the distal end of the torn tendon. Approximation of the ruptured ends was impracticable and the hope of uniting them was abandoned. A transplantation of the extensor longus pollicis tendon was deemed the best solution of the problem; and the tendon of the extensor carpi radialis longior was selected to receive the extensor longus pollicis tendon. This addition to the function of the radialis longior would impair the extension and radial abduction of the wrist but little and offered as good a prospect as any muscle tendon available that useful extension of the thumb might be restored.

The tendon of the radialis longior was partially cut on its radial aspect and split along its length about 3 cm. The distal fragment of the extensor longus pollicis tendon was cut transversely to secure a smooth and appropriate surface for its new attachment. Three fine silk sutures united the tendons thus prepared. Convalescence from the operation was uneventful.

The sequence of events in this case was probably the following: the blow from the stone step partially severed the extensor longus pollicis tendon without external wound. Three weeks later muscular effort completed the rupture of the tendon, with immediate loss of function. The explanation of the findings as to the altered function of the thumb after the complete rupture of the long extensor tendon is difficult if the description of actions of the extensor thumb-muscles given by most authorities is accepted. The first phalanx could not be extended; if the first phalanx, moderately flexed and abducted, was grasped by the observer the terminal phalanx could be flexed and feebly extended at will. The metacarpal bone could be extended, abducted and flexed with nearly normal range. For this patient, therefore, the extensor longus pollicis subserved almost wholly the function of extension of the first phalanx on the metacarpal bone; and the extensor control of the second phalanx was reinforced by other muscles, probably the abductor and short flexor of the thumb. The preservation of the extensor brevis pollicis, with loss of extension of the first phalanx, seems to be at variance with the usual statement of the anatomies (Gray, Quain Poirier and Charpy, Testut.). It is likely

in our patient that the brevis functioned chiefly as an abductor of the thumb. Indeed, Gowers states that the brevis is the true abductor of the thumb, though he adds that it extends the first phalanx. If any anomaly of distribution of tendons existed, it was in no way indicated by the dissection.

In conclusion, this case gives support to the opinion that extensor longus pollicis is the more important of the extensor muscles of the thumb, and perhaps second to no single muscle of the whole hand in functional value. Moreover the extensor brevis pollicis acting alone has very feeble extensor control over the first phalanx.

Eight months after operation the function of the thumb is as follows: extension of the thumb is sufficient to permit all movements of the fingers alone, or grasping movements requiring the opposed thumb. The range of extension of the terminal phalanx is about one-third of normal; and in the proximal phalanx the last third of extreme extension is impossible. Perhaps the limit of improvement has not been reached, as the patient feels sure there is a steady gain in facility of thumb motions. This may mean that the cortical control of the thumb is gradually re-arranging itself to meet the new conditions. The results of the operation seem to be of great benefit to the individual, as the function of the thumb has, for practical uses, been restored.

Reports of Societies.

CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

EIGHTEENTH ANNUAL MEETING, HELD AT BALTIMORE,
MD., OCT. 23 AND 24, 1903.

(Concluded from No. 23, p. 629.)

FIRST DAY, AFTERNOON SESSION.

THE DUTY OF SANITARIANS REGARDING VENEREAL DISEASES.

DR. HENRY D. HOLTON, Brattleboro, Vt., read a paper with this title. He emphasized the duty which should be recognized by sanitarians as resting upon them, of doing something to restrict the venereal diseases, which threatened society as no other communicable diseases did. The vital statistics of New York City in 1900 had a record of 31,145 cases of contagious disease, with 11,368 deaths, of which only 177 were from syphilis. Blascho claimed 150,000 syphilitics for Berlin, and the Committee of Fifteen 200,000 for New York City. To get an approximate idea of its prevalence the Prussian government requested that all physicians should report on April 30, 1900, every case of venereal disease coming under treatment. These reports proved that three quarters of a million people were

afflicted yearly with venereal diseases in that country alone.

He said the foregoing statements would prove that venereal diseases stood next to tuberculosis and alcoholism, if they did not supersede them. They were permeating the very root of the population, as 15 to 20% of adult males were infected with syphilis, and about 80% of them had gonorrhea, tainting those yet unborn, maiming those born with the virus already in their blood, deteriorating the race and devitalizing the individual.

Instruction should be given in high schools and colleges, having reference to the prevention of these diseases.

Dr. Prieto, in a paper read at the International Medical Congress at Madrid, suggested the following regulations to be enacted into laws: (1) The law to declare the infection of any person with any form of venereal disease to be a crime. (2) That such crime against the person be punished by indemnification and imprisonment for a period of two years. (3) Where the offender could not indemnify the injured person by bearing the expenses of treatment and so forth, that the term of imprisonment or transportation be increased. (4) That the brothel-keepers be made to indemnify any person infected on their premises or by any of their licensed women, and in case of insolvency of the brothel-keeper, imprisonment or fine shall be enforced.

DR. HOLTON thought the rules of Prieto stringent enough to control the evil. However, to enforce them would require an enlightened and educated public sentiment of great strength. He would educate the medical profession; educate the public; follow this work by the enactment of wise laws which the educated public sentiment would insist should be thoroughly executed.

This paper was discussed by Drs. John S. Fulton, George R. Dean, G. P. Conn, Frank Wells, E. W. Cooper and Charles O. Probst. The general trend of the discussion was to educate the medical profession and the public in regard to the terrible ravages of venereal diseases and the practicability of limiting their spread by legislative enactment.

DR. PROBST then offered the following preamble and resolution, which were adopted by the Conference:

Whereas, The great prevalence of venereal diseases, which is indirectly the cause of many deaths, is a matter of much concern to the public health; and

Whereas, The communication of these diseases to innocent persons must be largely due to ignorance, be it

Resolved, That a committee of three be appointed by the president to prepare a leaflet that would be acceptable to physicians to give to their patients, setting forth the precautions to be taken by one suffering from a venereal disease to prevent its communication to others, and to make such other suggestions as it may deem proper. Such instructions, when adopted by this Conference, to be recommended to State and Provincial Boards of Health for dissemination among the medical profession, and said committee shall report at the next meeting. (Committee unannounced.)

ANOTHER YEAR'S TEST OF THE MOSQUITO DOCTRINE OF THE TRANSMISSION OF YELLOW FEVER IN HAVANA.

DR. JOHN GUIERAS, Havana, Cuba, said there had not been a case of yellow fever in Havana for the past two years except those that had been imported from other countries, chiefly Mexico. He then detailed the methods employed in combating this disease in Havana, which are familiar to our readers.

REPORT OF COMMITTEE ON PROMOTION OF UNIFORMITY OF REPORTS UPON VITAL STATISTICS.

This report was presented by DR. CRESSY L. WILBUR, Lansing, Mich. In the division of labor between the committee representing this Conference and the committee of the American Public Health Association, American Medical Association and others interested in the improvement of vital statistics, the special task had been selected of examining and reporting in regard to the forms of tables and general manner of presentation of statistical data employed in the annual, biennial, weekly, monthly or other reports of states and cities. In this purpose the United States Census Bureau had co-operated and had collected samples of the forms at present in use in nearly all of the registration offices of this country for the purpose of analysis and study by this committee. It was a difficult task to consider all of the forms in a comparative way, but it seemed desirable to do so before formulating a report as to the absolutely essential tables that were to be recommended for use in the various reports. The committee, therefore, reported progress and requested that additional time be granted for making a final report, which could probably be prepared before the next session of the Conference.

In addition to the work outlined above, the committee had co-operated, on behalf of the Conference, with the committees of the American Public Health Association and of the American Medical Association, the United States Census Bureau, and the Public Health and Marine Hospital Service, in the preliminary work for the co-operative study and improvement of the International Classification of causes of death, a report upon which would be presented at the session of the American Public Health Association, and also for the extension of adequate registration laws.

The report was accepted.

The following proposed national rules to govern the transportation of the dead were adopted by the Conference:

RULE 1. The transportation of bodies dead of small-pox or bubonic plague from one state, territory, district or province to another is absolutely prohibited.

RULE 2. The transportation of bodies dead of Asiatic cholera, yellow fever, typhus fever, diphtheria, membranous croup, scarlet fever (scarlatina, scarlet rash), erysipelas, glanders, anthrax or leprosy, shall not be accepted for transportation unless prepared for shipment by being thoroughly disinfected by (a) arterial and cavity

injection with an approved disinfecting fluid; (b) disinfection and stopping of all orifices with absorbent cotton and (c) washing the body with the disinfectant, all of which must be done by an embalmer holding a certificate as such, issued by the state or provincial board of health or other state or provincial authority provided for by law.

After being disinfected as above, such body shall be enveloped in a layer of dry cotton, not less than one inch thick, completely wrapped in a sheet securely fastened and encased in an air-tight zinc, tin, copper or lead-lined coffin or iron casket, all joints and seams hermetically sealed, and all enclosed in a strong, tight wooden box. Or the body, being prepared for shipment by disinfecting and wrapping as above, may be placed in a strong coffin or casket and said coffin or casket encased in an air-tight zinc, copper, or tin-lined box, all joints and seams hermetically soldered.

For interstate transportation under this rule only embalmers holding a license issued or approved by the state or provincial board of health or other state or provincial authority provided for by law, after examination, shall be recognized as competent to prepare such bodies for shipment.

RULE 3. The bodies of those dead of typhoid fever, puerperal fever, tuberculosis, or measles may be received for transportation when prepared for shipment by arterial and cavity injection with an approved disinfecting fluid, washing the exterior of the body with the same, and enveloping the entire body with a layer of cotton not less than one inch thick, and all wrapped in a sheet securely fastened, and encased in an air-tight metallic coffin or casket, or air-tight metallic box, provided that this shall apply only to bodies which can reach their destination within thirty hours from the time of death. In all other cases such bodies shall be prepared by a licensed embalmer holding a certificate as provided for in Rule 2. When prepared by a licensed embalmer as defined and directed in Rule 2, the air-tight sealing and bandaging in cotton may be dispensed with.

RULE 4. The bodies of those dead from any cause not stated in Rules 2 and 3 may be received for transportation when encased in a sound coffin or casket and enclosed in a strong outside wooden box, provided they can reach their destination within thirty hours from the time of death. If the body cannot reach its destination within thirty hours from the time of death, it must be prepared for shipment by arterial and cavity injection with an approved disinfecting fluid, washing the exterior of the body with the same and enveloping the entire body with a layer of dry cotton not less than one inch thick and all wrapped in a sheet securely fastened, and encased in an air-tight metallic coffin or casket or an air-tight metallic box. But when the body has been prepared for shipment by being thoroughly disinfected by a licensed embalmer, as defined and directed in Rule 2, the air-tight sealing and bandaging with cotton may be dispensed with.

RULE 5. In the shipment of bodies dead from any disease named in Rule 2, such body must not be accompanied by persons or articles which have been exposed to the infection of the disease, unless certified by the health officer as having been properly disinfected.

Before selling tickets, agents should carefully examine the transit permit and note the name of the passenger in charge, and of any others proposing to accompany the body, and see that all necessary precautions have been taken to prevent the spread of the disease. The transit permit in such cases shall specifically state who is authorized by the health authorities to accompany the remains. In all cases where bodies are forwarded under Rule 2, notice must be sent by telegraph by the shipping embalmer to the health officer, or when there is no health officer to other competent authority at destination, advising the date and train on which the body may be expected.

RULE 6. Every dead body must be accompanied by a person in charge, who must be provided with a passage ticket and also present a full first-class ticket marked

"Corpse" for the transportation of the body, and a transit permit showing physician's or coroner's certificate, name of deceased, date and hour of death, age, place of death, cause of death and all other items of the standard certificate of death recommended by the American Public Health Association and adopted by the United States Census Bureau, as far as obtainable, including health officer's or registrar's permit for removal, undertaker's certificate, whether communicable or non-communicable, the point to which the body is to be shipped, and when death is caused by any of the diseases specified in Rule 2 the names of those authorized by the health authorities to accompany the body. The transit permit must be made in duplicate, and the signature of physician or coroner, health officer and undertaker must be on both the original and duplicate copies. The undertaker's certificate and paster of the original shall be detached from the transit permit and securely fastened on the end of the coffin box. All coffin boxes must be provided with at least four handles. The physician's certificate and transit permit shall be handed to the passenger in charge of the corpse. The whole duplicate copy shall be sent to the official in charge of the baggage department of the initial line, and by him to the secretary of the state or provincial board of health of the state or province from which said shipment is made.

RULE 7. When bodies are shipped by express, a transit permit, as described in Rule 6, must be made out in duplicate. The undertaker's certificate and paster of the original shall be detached from the transit permit and securely fastened on the coffin box. The physician's certificate and transit permit shall be attached to and accompany the express way-bill covering the remains and be delivered with the body at the point of destination to the person to whom it is consigned. The whole duplicate copy shall be sent by the forwarding express agent to the secretary of the state or provincial board of health of the state or province from which said shipment was made.

RULE 8. Every disinterred body, dead from any disease or cause, shall be treated as infectious or dangerous to the public health, and shall not be accepted for transportation unless said removal has been approved by the state or provincial health authorities having jurisdiction where such body is disinterred, and the consent of the health authorities of the locality to which the corpse is consigned has been first obtained; and all such disinterred remains, or the coffin or casket containing the same, must be wrapped in a woolen blanket thoroughly saturated with a 1-1000 solution of corrosive sublimate, and enclosed in a hermetically sealed soldered zinc, tin or copper-lined box. But bodies deposited in receiving vaults shall not be treated and considered the same as buried bodies, when originally prepared by a licensed embalmer as defined in Rule 2, and as directed in Rule 2 or 3 (according to the nature of the disease causing death), provided shipment takes place within thirty days from the time of death. The shipment of bodies prepared in the manner herein directed by licensed embalmers from receiving vaults may be made within thirty days from time of death without having to obtain permission from the health authorities of the locality to which the body is consigned. After thirty days the casket or coffin box containing said body must be enclosed in a hermetically soldered box.

RULE 9. All rules and parts of rules conflicting with these rules are hereby repealed.

OFFICERS.

The following officers were elected for the ensuing year: President, Dr. JOHN N. HURTY, Indianapolis, Ind.; Vice-President, Dr. JOHN S. FULTON, Baltimore, Md.; Secretary, Dr. GARDNER T. SWARTS, Providence, R. I.; Treasurer, Dr. JAMES A. EGAN, Springfield, Ill.

Time and place of next meeting were left to the officers of the Conference to decide.

Recent Literature.

Clinical Examination of the Urine and Urinary Diagnosis. A Clinical Guide for the Use of Practitioners and Students of Medicine and Surgery. By J. BERGEN OGDEN, M.D. Illustrated. *Second revised edition.* Philadelphia, New York, London: W. B. Saunders & Co. 1903.

This work falls into two parts. Part I deals with the chemistry and microscopy of the urine. After a brief description of the physical properties of the urine, the separate constituents, both normal and abnormal, are taken up, their properties described and the most approved working methods for their detection and quantitative determination given. This section contains but little which is not found in existing textbooks. At the same time the author is entitled to commendation for the care, accuracy and good judgment shown in his compilation.

In Part II special attention has been paid to the diagnosis and differential diagnosis of disturbances and diseases of the kidneys and urinary passages, the enumeration of the prominent clinical symptoms of each disease and the peculiarities of the urine in certain general diseases of the body. This to our mind is the most valuable part of the book. There is no other work in which the general subject of urinary diagnosis is presented in as satisfactory a manner as it is in this one.

This, the second edition, presents evidences of a careful revision, which brings the text well up to date. The most important changes are in connection with the determination of Urea, Uric Acid and Total Nitrogen, together with a brief mention of the subject of Cryoscopy and the addition of a section of B-Oxybutyric Acid.

We recommend the book, as a whole, as a very good one and one which will be found useful by both student and practitioner.

Practical Points in Nursing. For Nurses in Private Practice. With an Appendix containing Rules for Feeding the Sick; Recipes for Invalid Food and Beverages; Weights and Measures; Dose List; and a full Glossary of Medical Terms and Nursing Treatment. By EMILY A. M. STONEY, late Superintendent of the Training School for Nurses, Carney Hospital, South Boston, Mass. Third edition, thoroughly revised. pp. 458. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

The appended title sufficiently explains the scope of this book on nursing. It is a comprehensive treatise, sufficiently illustrated and excellently arranged for its purpose. We commend the wisdom which has led the writer to lay stress upon nursing in private practice. It is a matter of common observation that well-trained hospital nurses are often quite unable to cope with the exigencies and inconveniences met with in a private house. This book should go far toward rectifying this defect.

Egbert's Hygiene. A Manual of Hygiene and Sanitation. By SENECA EGBERT, M.D., Professor of Hygiene in the Medico-Chirurgical College of Philadelphia. New third edition, enlarged and thoroughly revised, in one 12mo volume of 467 pages, with 86 illustrations. Philadelphia and New York: Lea Brothers & Co.

Any work devoted to the subject of preventive medicine must necessarily require frequent revision in order that the reader may find therein the most recent as well as the most reliable information upon the topics presented. Dr. Egbert has recognized this fact in this third edition of his Manual. The work is well adapted for the purpose of a textbook for the teaching of hygiene in secondary schools and in medical colleges.

The topics treated are the following: Bacteriology, The Air, Ventilation and Heating, Water, Food, Stimulants, Personal Hygiene, School Hygiene, Disinfection, Quarantine, Sewage Removal and Disposal, Military Hygiene, Vital Statistics, The Examination of Air, Water and Food.

The book is up-to-date, convenient in size, trustworthy and practical, and may be recommended as a useful manual for the teaching of hygiene.

Das Schulzimmer. By P. JOHS. MULLER. Vol. I, No. 1. Berlin. 1903.

The most worthless trash, from a scientific point of view, are the so-called medical periodicals which constantly flood the mails, emanating from the multitude of firms engaged in the manufacture of patent medicines, patent foods, apparatus, etc.

It is therefore refreshing to open the pages of a new periodical issued by a manufacturer of school furniture and appliances and find a work devoted to the environment of the pupil while at school, treating of those topics which are essential to his health and comfort while in the schoolroom.

The illustrations are usually well made and the different topics are of a practical character. The principal article in this first number treats of the technical term known among school authorities as the "Distance," that is, the interval or space between a perpendicular line let fall from the edge of the desk, and a line let fall from the front of the seat upon which the scholar sits.

The Principles and Practice of Hydrotherapy. A Guide to the Application of Water in Disease. For Students and Practitioners of Medicine. By SIMON BARUCH, M.D. Second edition, revised and enlarged. Illustrated. New York: William Wood & Co. 1903.

Dr. Baruch stands as the chief apostle of hydrotherapy in this country. He has done much through example and precept to bring into notice this important, rational therapeutic measure. That this book has been widely read is attested

by the fact that a second edition has recently appeared, in which there has been considerable revision, together with the addition of much new matter. In view of the fact that the recognition of the value of water in disease has been accepted, matter formerly required to fortify its claim has been omitted from this edition. A chapter on the principles underlying hydrotherapy in relation to recent physiological views is added, together with a chapter on insanity based upon observations made in large asylums. The appeal is again made for the greater benefits to be derived from methodical hydrotherapy and this volume, like its predecessor, gives much space to the details of treatment. Among general diseases typhoid fever receives greatest attention for sufficiently obvious reasons. We gladly commend this book to our readers, as we did its predecessor. Whatever the value or the uselessness of hypotherapeutic measures may be, it is perfectly evident that in most of our large medical centers the subject has been woefully neglected.

The Medical Record Visiting List or Physicians' Diary for 1904. New revised edition. New York: William Wood & Company.

This visiting list is well and favorably known to the profession. This new edition appears in a form similar to those which have preceded it, but shows certain changes in its contents. Among these are an increase in the amount of matter of use in emergencies, and a list of remedies and their maximum doses. The book fits conveniently into one's pocket, is attractively bound in flexible red leather and is manifestly of much practical use to the practitioner.

Physician's Pocket Account Book. By J. J. Taylor, M.D. Philadelphia: The Medical Council.

This small pocket volume is designed to be a physician's account book. It is so arranged as to permit the greatest degree of accuracy in the smallest possible space. Certain suggestions which may or may not be of use on methods of collecting bills are appended. As we said in commenting on a previous edition, the book should prove of use.

The American Pocket Medical Dictionary. Edited by W. A. NEWMAN DORLAND, M.D. Fourth edition. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Dr. Dorland also presents us with the fourth edition of a pocket medical dictionary, made on the same general plan as regards binding as the larger one. It is a compact little volume, provided with a generous number of useful tables.

The Medical News Visiting List for 1904.

This is the eighteenth year of issue of this excellent Visiting List. It retains all its old good features, and has been again revised and brought up to date. It is issued in four styles: weekly, monthly, perpetual, co-patients. Those who have used this Visiting List before will continue to do so, and there is no better recommendation for its usefulness.

THE BOSTON

Medical and Surgical Journal

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SOME REPORTS UPON FOOD INSPECTION.

In England under the authority of the Acts relating to Food and Drug Inspection, the local authorities are authorized to appoint public analysts for the examination of such articles as are offered for sale. The number of such articles examined in 1901 was 67,481, of which 26,143 were samples of milk. Of these samples of milk, 2,938, or 11.2%, were found to be adulterated. Legal proceedings were instituted in relation to 1,839 of these and there were 1,527 convictions. The number of samples of butter examined was 11,938, of which 1,224 were adulterated. Of cheese there were 1,652 samples examined, of which only 18 were below the mark of purity. Among other articles examined there were 202 samples of condensed milk, 530 of bread, 587 of flour and 1,374 of lard.

During the first few months of work under the Food Law of North Dakota, the chemist reports upon 851 samples. The food commission presents three principles which are laid down in the laws of North Dakota:

(1) Total prohibition of harmful preservatives in food products.

(2) Prohibition of the use of coal tar dyes in all food products and beverages offered for sale.

(3) All food products must be correctly labeled, and no deception must be allowed in the wording of the label which would mislead the purchaser or consumer.

Two chapters in this report relate to the use of preservatives and of saccharin in articles of food, and the names of many firms are published who offer fraudulent articles for sale. Considering the few months since the law was enacted, excellent

results appear to have been accomplished in this state.

In the Seventeenth Annual Report of the Food Commissioner of Ohio, a pamphlet of 100 pages, five pages are devoted to the work of the Commissioner and the remainder to the finances of his department. Sixty pages, or 3-5 of the entire report, are given up to an unnecessarily lengthy statement of the sums paid to a small army of lawyers for conducting cases which the state should have required its own salaried officials to do. The entire amount appropriated for this work by the State was \$40,000, of which \$15,000 was used for legal services.

In the remaining pages we learn that 2,048 samples of food and drugs were examined during the year, of which 698 or 34% were adulterated. Of 777 samples of milk, 144 were adulterated, and of 303 samples of oleomargarine 300, or 99%, were adulterated. Just what is meant by adulterated oleomargarine the Commission does not state. Of 98 samples of whiskey, 66 were adulterated.

In Massachusetts the work of Food and Drug Inspection has been conducted for twenty years by the State Board of Health. In its last report upon this subject, a pamphlet of 48 pages, it appears that 10,470 samples of food and drugs were examined during the year, of which 2,989, or 28.1%, did not conform to the requirements of the law relative to adulteration.

Of the number of samples of milk examined 31.1% were adulterated or below the standard. It does not follow from this statement that so large a percentage was intentionally adulterated. The Massachusetts standard of milk is exceptionally high when compared with that of other states and countries, especially in the winter. A sample of milk taken on Sept. 30, may if examined on that day be found to be considerably above the standard, but if taken on Oct. 1, may be below it. since the law only requires that it shall contain 12% of solids on Sept. 30, but 13% on Oct. 1, and from that time till March 31. The cows do not appear to be aware of this fact, and hence the high percentage of 31.1 below the standard does not represent that percentage of dishonest dealing.

Attention is called to the fact that coloring matter is not largely used in milk, the amount of samples in which it was detected in the past nine years being only 7-10 of 1%. Preservatives were also found in about 4% of samples collected in the past five years. These were mostly obtained in summer.

Comment is also made upon the desirability of some standard for condensed milk. One of its valuable constituents, the fat or cream, varies from as low as 5 to as high as $11\frac{1}{2}\%$, or more, and the price does not necessarily indicate its value.

Of other articles of food, those which were found to be most adulterated were canned goods, 50%, cocoa 40%, flavoring extracts, 80%, honey 34%, and vinegar 66%.

The edition of the report published in 1896, relative to the amount of alcohol in tonics, bitters and other patent medicines having become exhausted by repeated requests for copies by members of the W. C. T. U., the Board has again published the same list with such additions of new articles as have been examined since that date.

The method adopted in England for measuring the relative amount of protection afforded by the Food and Drug Acts in different districts is the ratio of samples examined to the existing population. Under this somewhat arbitrary standard, the figures in these four reports present the following results:

Ratio of samples to the population

In England one sample to 475 persons.

In North Dakota one sample to 375 persons.

In Massachusetts one sample to 270 persons.

In Ohio one sample to 2,030 persons.

With reference to the amount expended in litigation only two of the foregoing reports furnish information. In Ohio \$14,993.09 was expended in 1902 in attorneys' fees for the prosecution of offenders, or an amount much greater than is expended in Massachusetts for the entire work of Food and Drug Inspection.

The amount expended in Massachusetts for attorneys' fees has not exceeded \$500 in the entire twenty years of work, the officials of the Board of Health being instructed to enter complaints in the courts without assistance except when such assistance becomes necessary.

DANVERS INSANE HOSPITAL.

THE annual report of the Danvers Insane Hospital shows a slight increase in the number of patients over preceding years. On Sept. 30, 1903, there were 1,160 patients, a gain of seven during the twelve months. The present hospital population would, however, have exceeded 1,200 had certain patients not been transferred. This hospital, like many others of similar character, is endeavoring to follow the classification

of mental disease made by Kræpelin and popularized in this country through the writings and influence of Hoch and Meyer. This scheme of classification has the merit of being a logically founded system applicable to clinical cases. It would no doubt be well for psychiatry in this country if this classification were universally adopted in hospitals for the insane. The efficiency of the laboratory side of the institution has been advanced during the year under Dr. Barrett's management, the successor of the late Dr. Worcester. The records show that eighty-three autopsies were performed, being sixty-five per cent of all deaths.

As is usual in reports of this character, the needs of the future are dwelt upon, particularly in the way of added buildings. Among other requests, a small appropriation is desired for two plain buildings to serve for the treatment of patients suffering from tuberculosis. The difficulty of treating such patients properly in general wards, the fact that tents have not at this institution proved satisfactory, and the general desirability of separating tuberculous from other patients renders this request most reasonable.

We have previously commented upon the inadequate salaries granted medical men in hospitals for the insane, and the question is again taken up in this report by the Consulting Board of Physicians. Bemoaning the loss of various efficient officers through this cause, the writer of this section of the report makes the following pertinent comments:

Unless the State of Massachusetts proposes to maintain a permanent training school for the superintendents of insane asylums, an intelligence office for the benefit of more liberal communities, she must offer inducements greater than she at present affords. An increase of at least thirty-three per cent for the head of the asylum, and an opportunity for family privacy in the shape of a separate residence on the grounds outside, are no more than proper. In this connection we quote from a letter received by the chairman and written by the superintendent of a New England insane asylum, not, however, a State institution. It refers to our discussion of this same subject in last year's report: "Will you allow me to tell you with how much pleasure I have read your report to the trustees of the Danvers Insane Hospital? It is not alone the wisdom of your remarks on occupation that I desire to commend, but your generous utterance anent salaries and decent accommodations for medical officers will appeal strongly to the judgment and sympathies of all readers of the report, including, I hope, the trustees. Having myself the separate residence and enjoying seemly treatment in other respects, I am the more desirous that my Massachusetts brethren in the State's service shall fare equally well, and it is for this reason that I take the liberty of thanking you for your hearty and valiant championship."

This attitude seems to us eminently fair and reasonable.

MEDICAL NOTES.

ROCK SALT AS A SPECIFIC FOR YELLOW FEVER. — The London *Times* is reprinting certain articles which appeared in its columns one hundred years ago. Under date of Nov. 14, 1803, appears the following somewhat quaint announcement :

An *American Chemist*, at New York, announces a discovery which he positively asserts to be the specific remedy for the yellow fever. It is rock salt, to be chewed by the afflicted patient; and the *saliva* to be swallowed, and afterward molasses to be taken in copious doses; the drink to be pure water. He denies that the infection of the yellow fever is contagious, or that it proceeds from the access of *bile* in the habit. On the contrary, he maintains that the defect of bile is a prevalent cause; and that the infection proceeds principally from the effects of *gas* arising from animal putrefaction; of which *gas* rock salt is asserted to be the neutralizer.

A CANCER RESEARCH FUND. — It is authoritatively stated that the Huntington Fund for cancer research will have its headquarters at the Loomis Laboratory, New York, and be under the supervision of Dr. B. H. Buxton and Mr. S. P. Beebe. This fund provides for work particularly along chemical lines rather than by the pathological and bacteriological means. For this purpose material in large amounts is requisite, and a general appeal has been sent out to surgeons and pathologists to donate such material to this work as comes into their hands.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Dec. 9, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 60, scarlatina 34, typhoid fever 11, measles 136, smallpox 1.

AMERICAN ACADEMY OF DENTAL SCIENCE. — The annual session of the American Academy of Dental Science was held on the evening of Dec. 2 in Boston. Dr. Thomas Fillebrown read a paper on "The Physiology and Art of Vocalism in Speaking and Singing." Officers were elected for the ensuing year.

PROPOSED PUBLIC GYMNASIUM FOR BROOKLINE, MASS. — At a recent town meeting it was voted by a considerable majority to establish a municipal gymnasium. In spite of certain opposition, on the ground of extravagance, it was finally decided, after a spirited discussion,

that a gymnasium was desirable. Dr. Walter Channing was among those who favored its erection.

BABCOCK MEMORIAL WARD. — As a testimonial to the Rev. S. G. Babcock, the Peabody Home for Crippled Children is to have a memorial ward furnished by the citizens of Hyde Park, Mass. Mr. Babcock has devoted much time and energy to promoting the welfare of the institution.

BURNING OF MEDICAL COLLEGE BUILDING AT BURLINGTON, VT. — The medical college building forming a part of the University of Vermont was completely destroyed by fire Dec. 2. The loss is estimated at \$220,000, covered by insurance. The source of the fire remains unknown.

BEQUESTS TO HOSPITALS. — By the wills of John Walter of Melrose and Mrs. Catherine Robertson of Newton the Melrose Hospital Association receives \$250, and the Newton Cottage Hospital \$100, respectively. The latter hospital is also a beneficiary to the extent of about \$9,000, from collections made in Newton on "Hospital Sunday."

NO MEDICAL SCHOOL FOR BROWN UNIVERSITY. — In our issue of Dec. 3 we stated that it had been vaguely rumored that Brown University of Providence was to establish a department of medicine in Boston, with the possible financial support of Mr. Rockefeller. We are glad to correct the impression which this rumor may have conveyed, by saying that we have since learned on unquestioned authority that it is absolutely without foundation, and that Brown University is not contemplating the establishment of a medical school here or elsewhere.

NEW YORK.

ST. JOHN'S GUILD. — The annual meeting of the trustees of St. John's Guild was held on Nov. 17, and among the officers elected were Dr. Abraham Jacobi, as second vice-president, and Dr. John F. Erdmann, as a trustee to serve for five years. The general agent reported that during the past season the floating hospital *Helen C. Juillard* made forty-five trips and carried in all 35,549 persons — 10,135 women, 17,596 children and 7,818 infants. The other boat of the guild was not operated this year, partly because of lack of funds and partly on account of the comparatively little illness among infants and young children and the remarkable coolness of the sum-

mer weather. At the seaside hospital at New Dorp, Staten Island, there were received 499 infants, 562 children and 461 mothers, and the deaths numbered 45. The annual contributions to the guild aggregated \$50,859.

THIRTY-FIFTH ANNIVERSARY OF PRESBYTERIAN HOSPITAL.—The thirty-fifth anniversary of the Presbyterian Hospital was celebrated on Dec. 5. The annual report of the hospital for the year ending Sept. 30 showed that 40,195 persons received medical or surgical service, or an average of 545 a day, a larger number than in any previous year; 68% of the patients were treated gratuitously, and the average cost to the hospital for ward patients was \$2.51 per day. A new home for the nurses on 71st Street, opposite the hospital buildings, is now in course of erection.

SMALLPOX.—In the last monthly bulletin of the State Health Department, issued at Albany on Dec. 5, attention is called to the increased prevalence of smallpox with the advent of winter, and emphasizes the necessity of more general vaccination. Although New York City has escaped the disease thus far this season, its alarming prevalence recently reported in Philadelphia is certainly very menacing.

Obituary.

WILLIAM INGALLS, M.D.

WILLIAM INGALLS died at the Boston City Hospital on Dec. 1, 1903, in his ninety-first year.

He was born and lived, up to the time of entering Harvard College, in his father's house, which was on Tremont Street opposite the Granary Burial Ground. He was of direct English descent. The first of his ancestors who came to this country was Edmund Ingalls of Lincolnshire, England, who died in Lynn in 1684. His father, William Ingalls, was a distinguished surgeon of Boston, graduated from Harvard College in the class of 1790, and died here in 1857. The son, the subject of this short sketch, entered Harvard College in the class of 1835, and at the time of his death was one of the twelve oldest living graduates, four of whom were his classmates, Dr. Charles Bemis of Medford, William F. Frick of Baltimore, Hon. Edward Lander of Washington and Charles H. Parker of Boston.

Dr. Ingalls received his medical education, as was often the custom at that time, in his father's office, and at the Chelsea Marine Hospital, from his brother-in-law, Dr. Charles Harrison Stedman, who was at the time the resident surgeon, and a member of that family of Stedmans which has furnished so many notable practi-

tioners to our profession, among them Dr. Charles Ellery Stedman, a nephew and the closest friend of Dr. Ingalls. He, Dr. Ingalls, began his professional work in Boston, but shortly after his marriage, in 1840, to Miss Julia Davis of Roxbury, he moved to Laurel Hill, La., where he acquired a large general practice, and where he remained for six years. His practice in the South was in a country district, and he used to make his visits on horseback, carrying his medicines and instruments in the saddle bags. Sometimes he was obliged to ride a distance of forty miles before reaching his patient's home. Among those he attended was Gen. Zachary Taylor. During his six years in the South he passed through the experience of at least one severe epidemic of yellow fever, and, escaping the contagion himself, worked with untiring devotion for those who were its victims.

On his return to the North he was appointed surgeon to the Chelsea Marine Hospital, and, later, on relinquishing this office, settled in Winchester, where he soon secured a large general and consulting practice. Here he remained until the outbreak of the Civil War. He had always had the soldier's spirit, and, had he followed his own inclination, would have entered the army rather than the medical profession. But for being dissuaded by his father, he would have already done so at the time of the Mexican War. With the outbreak of the Civil War he at once volunteered his services, and was appointed as surgeon to the 5th Massachusetts Regiment of Volunteers, later as major and surgeon of the 59th Massachusetts, and still later brigade-surgeon to the artillery force commanded by General Tidball. The greater part of the time he was with the army of the Potomac, with which he saw much active service. He was with the army throughout the four years of the war, and was mustered out on June 2, 1865, with the honorable record of having performed every duty demanded of him, invariably, promptly, thoroughly, courageously, and of having displayed marked ability in every post of responsibility that he held.

His powers of endurance were extraordinary, and enabled him to support fatigue and privation as few others could. On one occasion he worked, with the exception of six hours' sleep, taken at odd moments, continuously for five consecutive days and nights, during which the only food he had was one glass of milk in the first twenty-four hours, and for the rest of the time a small bit of hard tack or bacon at long intervals. He was on his feet, and either operating or dressing wounds almost the entire time. "And," he said, when speaking of it, "I was not tired at the end of it." "In fact," he remarked on another occasion, "I never knew what men meant when they said they were tired out, until after I was seventy years old."

It is said that in times of battle it was his custom to be as near the firing line as his duties would permit, and that his interpretation of the limits of his sphere of duty, so far as they related

to the front, was liberal. In consequence of this tendency of his, he barely escaped the fate which overtook so many of the soldiers of the Northern army when the mine was exploded at Petersburg. In answer to a question he said, in his gentle voice, the tone of which seemed to contradict the thought that the joy of battle could ever have dwelt in him: "Well, perhaps we were rather far forward now and then, but I do not think improperly. Derby and I could never see any harm in it, and sometimes we thought that the boys rather liked to have us there, and perhaps found some comfort in our being near at hand."

At the end of the war he again resumed his civil work, this time in Boston, and was actively engaged in it during the ensuing twenty-one or two years, after which he withdrew and lived a retired life in Roxbury for the last twelve years.

He was appointed as one of the visiting surgeons on the staff of the Boston City Hospital in 1870, and held that position for fifteen years, being made consulting surgeon of the hospital when resigning his position on the visiting staff. He was also surgeon to the Children's Hospital when it was first opened, and contributed much toward its subsequent success.

He kept up his interest in many of the modern advances in the profession, and even in the last year or two attended, from time to time, meetings of the medical societies of which he was a member, and also visited the hospital. The last time of his doing so was within a month of his death, when he was present at one of the surgical clinics, where his head of thick white hair and venerable face formed a striking contrast with the youthful appearance of the students about him. He was in fullest sympathy with these young men who were pressing forward upon the threshold of the entrance to the profession, while he, his hand resting on the latch of its door of exit, already opening to let him pass, lingered a moment to look back at the eager beginners, and doubtless gave them his silent blessing and wished them God speed, for such was his wont.

As a surgeon his judgment was deliberate and well balanced. As an operator he was neither bold nor brilliant, but accurate, careful, thorough, effective and very neat. No one surpassed him in the after-care of the patient. He was nearly, if not actually, the first American surgeon to do a nephrolithotomy, extracting a very large calculus from the kidney, the patient living for many years afterward. In a series of two thousand consecutive obstetric cases attended by him, the larger part of which occurred before the introduction here of the aseptic regimen, there was not a single instance of puerperal sepsis, and only three deaths.

He remained free from the infirmities which are usually associated with the last years of so long a life, preserving his erect carriage, firm step, bright pink color in the cheeks, and an unclouded intellect until the end; and as it appeared in him, old age was beautiful.

With the death of William Ingalls the profession loses one of its number who, throughout an unusually long life, exhibited those qualities which have made the name "physician" one of the most honorable of titles, have earned for those who hold it the unquestioning trust, and for such of them as he, the gratitude and love of those who in sickness and suffering have known the beneficence of their touch and the comfort of their helpful presence.

He belonged to a generation of physicians who did not think their duties ended with the treatment of disease, but who were ever ready to take upon their shoulders the burdens of the members of the households of their patients and often became their most trusted friends and wisest counselors. He conceived his professional duties in the same spirit at that which animated the rugged old Scotch hero portrayed by Ian Maclaren in his story, "A Doctor of the Old School," which is the highest tribute to our profession ever paid to it, perhaps, in the English language, and William Ingalls might well have been taken as the model for Weelum Maclure.

There lived in the tender heart of this friend who has just died the gentle spirit which alone makes the gentleman. The virtues which are often upon men's lips only, he lived daily, and as though in recognition of the unfailing consideration he showed for others, death, in summoning him to rest, touched him also gently. The living friend has become a living memory, and as such, for those who knew him, will dwell in that chamber in which are stored the memories most treasured.

No more fitting words could be added to the farewell that is spoken to him here than those which were quoted on the day of his funeral — "Soldier of Christ, well done!"

CYRUS EDSON, M.D.

DR. CYRUS EDSON of New York died from pneumonia at the Roosevelt Hospital on Dec. 3, after a brief illness. He was a son of Franklin Edson, ex-mayor of New York, and was born in Albany, N. Y., on Dec. 8, 1857. He received his academic education at Columbia University, and was graduated with honor from the College of Physicians and Surgeons, New York, in 1881. He was one of the famous Columbia crew which won the Henley cup in 1878, the only time that an American four have ever had that distinction. In 1882 Dr. Edson was appointed Assistant Sanitary Inspector in the New York Health Department, and he was promoted through successive grades until he became Chief Inspector of the Second Division. In 1891 he was appointed President of the Board of Health. Among the other positions held by him were: President of the Board of Pharmacy, Vice-President of the American Society of Public Analysts, Visiting Physician to Charity Hospital and Assistant Surgeon of the 12th Regiment, New York State National Guard.

Miscellaneous.

SURGICAL ADVANCE IN THE UNITED STATES.

DR. FRANK P. FOSTER of New York contributes an article on this subject to the Christmas issue of the *World's Work*. The closing paragraph of the article we reproduce :

It will be seen from this brief sketch that our countrymen have not only given to the world the priceless boon of anesthesia, but have also materially advanced the surgery of almost every part of the human organism. American surgery has not a little to be proud of and stands securely on its own foundations. We are always ready to learn from others, and to that end numbers of our men annually visit European capitals for purposes of special study; but no longer, as in the remote past, do they seek for a general professional education in Edinburgh, London, Paris, Vienna, or Berlin, to mention those cities in the chronological order in which one or another of them was formerly the Mecca of the American medical student and young practitioner. Of course, the time will never come, and never should come, when American surgeons will cease their endeavor to learn all they can from those of other countries; but we feel now, as we have felt for some decades, that we can give quite as much as we are likely to take.

NEW YORK CITY TRAINING SCHOOL FOR NURSES.

THE new buildings of the New York City Training School for Nurses, on Blackwell's Island, were formally opened on Dec. 2. There are now three of these, the central one being the present Nurses' Home, which was originally constructed and for some years used as the city smallpox hospital. They have been named respectively "Schuyler Hall," in honor of Miss Louisa Lee Schuyler, the founder of the State Charities Aid Association, which in 1873 organized the Bellevue Training School for Nurses, the first general school of its kind in this country; "Jones Hall," in honor of Mrs. Cadwalader Jones, who has been chairman of the Advisory Board of the School ever since its establishment in 1875; and "Rice Hall," in honor of Mrs. William B. Rice, for some years a member of the Advisory Board and at present one of the managers of the Bellevue Training School. Jones Hall is a four-story building, 35 by 100 feet, and contains on the first floor a lecture room, a drawing room, and two isolation rooms for cases of contagious illness among the inmates. Each of the other three stories has sleeping rooms for the accommodation of eighteen nurses. On the first floor of Rice Hall, a similar building which is not yet entirely completed, there will be the offices of the school, the chemical and bacteriological laboratories, and a room for the classes in dietetics, while the three upper floors will be devoted to sleeping rooms. A pleasant feature of the opening exercises was the reading of a letter from President Roosevelt to Commissioner of Charities Folks in which he said: "I greatly wish I could be present . . . especially because it has been my good fortune to know and to work with Mrs. Cadwalader Jones, Miss Louisa Lee Schuyler, and Mrs. William B.

Rice, and I should like to testify my regard for them, while congratulating you, and also those associated with you, upon being connected with so admirable a work." Bishop Potter made a short address and Dr. Edward S. Pack, chairman of the Examining Board, spoke of the improved methods in the training of nurses which it is purposed to adopt. Mrs. Cadwalader Jones told of the progress that had been made since the school was opened on Aug. 1, 1875, with sixteen pupils, and warm applause was called forth by a reference she made to a former Commissioner of Charities, the late Thomas S. Brennan, who in 1886 quarantined himself and personally supervised the cleansing and disinfection of the Riverside Smallpox Hospital to turn it into the Nurses' Home.

Correspondence.

A DENIAL FROM BROWN UNIVERSITY.

PRESIDENT'S OFFICE, BROWN UNIVERSITY,
PROVIDENCE, Dec. 8, 1903.

MR. EDITOR: My attention has been called to the fact that some one has reported to you that Brown University is to take over the College of Physicians and Surgeons in Boston as a University Department of Medicine. Kindly allow me to state in your columns that this rumor is entirely baseless. I cannot imagine how it originated — certainly not at Brown University. We have no intention of establishing a medical school, and no officer of the University ever dreamed of any connection with the College of Physicians and Surgeons.

Very truly yours,

W. H. P. FAUNCE.

THE PAUPERIZATION OF MEDICAL SERVICE IN BOSTON.

Nov. 28, 1903.

MR. EDITOR: This is a subject worthy of careful thought, if, in the future, the honorable practice of medicine is to be regarded as a means of getting one's livelihood. One phase of it has been forced upon my attention recently, and not for the first time. Preliminary to narrating an illustrative case, let me state that several years ago, while in attendance at the meeting of the American Medical Association at Milwaukee, I asked the genial Dr. Sam French, a resident, to tell me where their city hospital was situated. "We haven't any," he replied, "the people of Milwaukee are industrious and self-respecting, and would have to be educated to the use of such an institution. They pay for medical service and could not think of getting it otherwise." What a contrast with the Boston of then or now! Is there an honest effort made in all Boston clinics to remind people of this self-respect when they are tempted to evade paying for treatment they can afford to pay for? If so, why should cases like the following occur? About a month ago I was called to see a little boy suffering from hip-disease, being treated at his home by the Children's Hospital. I examined the child and told the parents that with the treatment being given he would get well; that if they wished me to treat the child they would have to pay me and also inform the hospital authorities of their decision. They did both, that is, they agreed to pay me for my services — the father is a member of the fire department) and the mother called at the hospital and informed the doctors in attendance of their decision. A few days after I had commenced to treat the child (I did not do so until after the hospital was notified by the mother) a nurse from the hospital called, inspected my dressing, and remarked to the mother of the child

that she feared the child's leg would become shortened without the hospital traction treatment. A few days after this, a postal came from the hospital, requesting the child to be brought to the hospital and left there for treatment. It seems to me that persons who can afford to pay for treatment outside of clinics should be encouraged to do so, instead of attempts being made to prevent them from doing so as in the above instance.

The poor both worthy and unworthy, should always and in every case be given medical service for the asking, and indeed should be sought, for that their physical condition be made better. This letter does not apply to them; it treats of the efforts made to pauperize medical service — the efforts to prevent from so doing people able and desirous of paying for medical treatment. I feel it a duty to report such cases and trust that public medical opinion will prove corrective.

Respectfully yours,

EDWARD A. TRACY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 28, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Percentage of deaths from | | | | | | |
|-------------------|--------------------------------|-----------------------------|-----------------------------|-------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | Deaths under five years. | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . . | 3,785,156 | 1,283 | 331 | 21.36 | 21.28 | 2.81 | 2.26 | 1.32 | |
| Chicago . . . | 1,885,000 | 512 | 125 | 22.65 | 18.36 | 3.71 | 3.71 | 3.32 | |
| Philadelphia . . | 1,378,527 | 495 | 109 | 20.80 | 12.32 | 2.83 | 1.01 | 1.82 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . . | 533,712 | 177 | 54 | 24.29 | 12.99 | 3.39 | 2.82 | 2.32 | |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . . | 351,745 | 137 | — | 32.85 | 12.41 | 2.92 | 2.19 | 12.28 | |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . . . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . . | 191,230 | 60 | 16 | 16.67 | 18.33 | 5.00 | 1.67 | — | |
| Boston . . . | 603,163 | 188 | 51 | 23.93 | 19.68 | 1.59 | 1.59 | 2.13 | |
| Worcester . . . | 132,044 | 38 | 13 | 15.79 | 13.15 | — | 7.89 | — | |
| Fall River . . . | 115,549 | 38 | 19 | 10.52 | 13.15 | 5.26 | 5.26 | — | |
| Lowell . . . | 101,959 | 28 | 2 | 10.71 | 14.28 | — | — | 7.14 | |
| Cambridge . . . | 98,639 | 22 | 5 | 36.36 | 18.18 | 1.54 | 13.63 | — | |
| Lynn . . . | 72,497 | 22 | 5 | 22.72 | — | 3.09 | — | — | |
| Lawrence . . . | 69,766 | 29 | 11 | 24.14 | 13.79 | 6.89 | 6.89 | 3.45 | |
| Springfield . . . | 69,389 | 26 | 9 | 23.10 | 11.55 | — | — | — | |
| Somerville . . . | 68,110 | 15 | 5 | 6.67 | 20.00 | 6.67 | — | — | |
| New Bedford . . | 67,198 | 25 | 8 | 36.00 | 4.00 | 4.00 | — | 8.00 | |
| Holyoke . . . | 49,286 | — | — | — | — | — | — | — | |
| Brockton . . . | 44,873 | 7 | 1 | 42.90 | — | — | — | — | |
| Haverhill . . . | 42,104 | 13 | 2 | 7.70 | 23.10 | 7.70 | — | — | |
| Newton . . . | 37,794 | 4 | — | 25.00 | — | — | — | — | |
| Salem . . . | 36,876 | 11 | 2 | — | 27.27 | — | — | — | |
| Malden . . . | 36,286 | 13 | 6 | 23.10 | — | 7.70 | — | — | |
| Chelsea . . . | 35,876 | 12 | — | 25.00 | 8.33 | — | — | 8.33 | |
| Fitchburg . . . | 35,069 | — | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | 16 | 5 | 6.25 | 12.50 | — | — | — | |
| Everett . . . | 28,620 | 5 | 1 | 40.00 | — | — | — | — | |
| North Adams . . | 27,862 | 9 | 4 | 44.44 | 22.22 | 11.11 | — | — | |
| Gloucester . . . | 26,121 | 0 | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 8 | 1 | 12.50 | 12.50 | — | — | — | |
| Waltham . . . | 25,198 | 7 | 3 | — | — | — | — | — | |
| Brookline . . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . . | 22,589 | 5 | — | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 5 | 0 | 20.00 | — | — | — | — | |
| Medford . . . | 20,962 | 3 | 1 | — | — | — | — | — | |
| Northampton . . | 19,883 | 6 | 1 | 16.67 | 50.00 | — | — | — | |
| Beverly . . . | 15,302 | 6 | 1 | 33.33 | 16.67 | 16.67 | — | — | |
| Clinton . . . | 15,161 | 2 | 2 | 100.00 | — | 50.00 | 50.00 | — | |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . . . | 14,478 | — | — | — | — | — | — | — | |
| Woburn . . . | 14,300 | 3 | — | 33.33 | — | — | — | — | |
| Hyde Park . . . | 14,175 | 3 | 0 | — | 33.33 | — | — | — | |
| Adams . . . | 13,745 | — | — | — | — | — | — | — | |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 4 | 2 | 25.00 | 25.00 | 25.00 | — | — | |
| Melrose . . . | 13,600 | 2 | — | 50.00 | — | — | — | — | |
| Westfield . . . | 13,418 | 0 | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere . . . | 12,722 | 5 | — | — | 20.00 | — | — | — | |
| Framingham . . . | 12,534 | 1 | 0 | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . . | 11,344 | 3 | 0 | 33.33 | 33.33 | — | — | — | |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . . | 11,077 | 2 | 0 | — | — | — | — | — | |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,250; under five years of age, 795; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 714, acute lung diseases 567, consumption 374, scarlet fever 35, whooping cough 6, cerebrospinal meningitis 8, smallpox 18, erysipelas 6, puerperal fever 5, measles 12, typhoid fever 74, diarrheal diseases 76, diphtheria and croup 100.

From whooping cough, New York 4, Boston 1, Springfield 1. From erysipelas, New York 1, Chicago 2, Pittsburg 2, Boston 1. From smallpox, Philadelphia 11, Pittsburg 7. From cerebrospinal meningitis, New York 3, Baltimore, Boston, Worcester, Brockton and Woburn, 1 each.


In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Nov. 14 the death-rate was 17.9. Deaths reported, 5,169; acute diseases of the respiratory organs (London) 182, whooping cough 51, diphtheria 61, measles 79, smallpox 1, scarlet fever 43.

The death-rate ranged from 6.0 in Hornsey to 32.2 in Warrington, London 16.7, West Ham 16.8, Brighton 10.8, Southampton 15.6, Plymouth 14.0, Bristol 14.6, Birmingham 21.4, Leicester 19.4, Nottingham 22.9, Liverpool 21.4, Bolton 18.3, Manchester 20.1, Salford 25.3, Bradford 22.1, Leeds 23.9, Hull 16.9, Cardiff 12.7, Rhondda 15.3, Merthyr Tydfil 18.9, Kings Norton 7.4.

METEOROLOGICAL RECORD.

For the week ending Nov. 28, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- ometer. | Ther- mometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|-------|-----------------|-------------------|----------|-----------------------|-----------|-----------------------|-------------|----------------------|-----------|--------------|-----------|---------------------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 22 | 30.28 | 32 | 38 | 27 | 69 | 87 | 78 | N E | N W | 1 | 5 | O. .02 |
| M. 23 | 29.88 | 37 | 43 | 31 | 86 | 92 | 79 | S | W | 2 | 9 | F. .05 |
| T. 24 | 29.61 | 36 | 44 | 29 | 68 | 47 | 38 | W | W | 12 | 24 | C. .05 |
| W. 25 | 29.06 | 26 | 32 | 21 | 53 | 43 | 38 | W | W | 18 | 10 | C. .0 |
| T. 26 | 30.06 | 22 | 28 | 17 | 50 | 36 | 43 | N | N | 9 | 6 | C. .0 |
| F. 27 | 30.63 | 21 | 27 | 15 | 79 | 56 | 68 | N W | N | 11 | 15 | F. .0 |
| S. 28 | 29.76 | 26 | 32 | 21 | 50 | 64 | 57 | N | W | 12 | 8 | O. .0 |
| 29 | 29.94 | 35 | 23 | 63 | | | | | | | | .07 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall.  Mean for week.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING NOV. 28, 1903.

A. R. ALFRED, surgeon. Commissioned surgeon, with rank of lieutenant, from Jan. 4, 1903.

E. R. NOYES, pharmacist. Warranted pharmacist from Oct. 20, 1903.

A. G. GRUNWELL, surgeon. Detached from the Naval Hospital, Washington, D. C., and ordered to the "Minneapolis."

D. N. CARPENTER, surgeon. Ordered to the Naval Hospital, Navy Yard, Washington, D. C.

E. R. NOYES, pharmacist. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C.

RECENT DEATHS.

William Ingalls, M.D., M.M.S.S., died in Roxbury, Dec. 1, 1903, aged ninety years.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Memorial Hospital, Richmond, Va. 1903.

Was it Wise for the American Medical Association to Change its Code of Ethics? By D. W. Cothell, M.D., of Baltimore. Reprint. 1903.

A Case of Diabetic Intraocular Lipemia in which the Blood was Examined During Life. By W. Hale White, M.D., F.R.C.P. (Lond.), of London. Reprint. 1903.

The World is Idea. By Herman Gasser, M.D., of Platteville, Wis. Reprint. 1903.

The Medical Record Visiting List or Physicians' Diary for 1904. New Revised Edition. New York: William Wood & Co.

Original Articles.

MALARIA AND MOSQUITOES OF WORCESTER. A YEAR'S OBSERVATIONS ON THE HABITS OF CULEX AND ANOPHELES.¹

BY WILLIAM W. MCKIBBEN, M.D., WORCESTER, MASS.,

*Assistant Resident Physician, South Department,
Boston City Hospital.*

It has been fully demonstrated that the plasmodium malarie, like the smallpox germ, has only two known cycles in its existence—the asexual in man and a further or sexual development in the stomach wall of a certain genus of mosquito, called anopheles. Strikingly similar, but more recent discoveries are that spotted fever of the Bitter Root Valley, Montana, is due to a hematozoön which has as its intermediary host the gray gopher, and is transmitted to man by the bite of the tick; and that yellow fever is caused by a protozoön,—the myxococcidium stegomyia, carried by the brindled mosquito,—stegomyia fasciata. These analogies doubtless soon will result in the discovery of the etiology of other acute infectious diseases, when we cease to look so much for a bacterium as for a protozoön, searching in the skin and in the lymph and serous discharges rather than in the blood. The enormous pathological changes going on in the skin in such a short space of time, would suggest that a protozoön can be found there, not only in smallpox, but also in scarlet fever and measles, multiplying with a rapidity equal to that of the plasmodia malarie in the red blood corpuscles.

It is to the Italians that we are chiefly indebted for our greatly increased knowledge as to the part that the anopheles plays in this life history of the malarial parasite. They in turn owe much to Dr. Theobald Smith for his work in demonstrating, in 1893, the fact that the malaria of cattle, or Texas fever, is carried by the southern cattle tick, and to Ronold Ross for his discovery in 1898 that the culex mosquito is the intermediary host in the malaria of sparrows. Among the names which deserve special mention is that of the French army surgeon, Laveran, who in 1880 discovered the malarial parasite; Dr. A. F. A. King of Washington, who in 1883 suggested the mosquito as being responsible for epidemic malaria; Sternberg, Councilman, Osler, MacCallum and Thayer in this country, and Patrick Manson, Koch and Golgi in Europe. But to the Italians Marchiafava, Bignami, Celli, Grassi and Bastianelli (1899-1900) belongs the honor of demonstrating experimentally the transfer of the parasite of human malaria by the anopheles mosquito. They also transmitted malaria by direct subcutaneous and intravenous inoculation, both in the febrile and apyretic periods, regardless of the stage in which the parasite existed. They caused paroxysms in from one half to three weeks after injecting

even less than one drop of infected blood. And very natural it is that the Italian investigators should show so much interest, because in Italy 2,000,000 cases of malaria are recorded annually, with 15,000 deaths. The Adriatic railroad, 850 miles long, expends each year 1,050,000 francs to fight the disease. In the last twenty years the Italian army has had 322,000 cases. Five million acres of land on the peninsula remain uncultivated on account of malaria. The regions in Italy where the pestilence is most prevalent are those which contribute most largely to permanent immigration.

At the time when the sallow-faced soldiers were returning from Cuba in 1898, Worcester was collecting cheap Italian labor for constructing the Holden dam, and for extending various suburban lines of street railroads, while the Metropolitan water board was planning for the great dam at Clinton. Consequently Worcester represented a center where the Italian immigrants segregated into a large colony. Dr. Theobald Smith in the recent Shattuck lecture said, "It will be seen that I am putting the burden of starting new foci of malaria and of awakening the disease in the spring upon the older, latent or partly immune cases, who are in that stage of immunity which readily produces gametes after a relapse." Consequently the important part that the Italians, fresh from malaria-infected Italy, and the soldiers with these gametes latent in their blood, played in infecting the anopheles, is readily seen. With the source of the infection thus at hand, Worcester needed only the intermediary host.

This was present already in shape of the anopheles mosquito, harmless in the past because uninfected. She, by means of her pharyngeal pump, beautifully adapted for sucking infected blood, was ready in the course of ten days of proper temperature to give a hypodermic injection of sporozoites to the first unfortunate victim or victims she met. Water in which this female could lay her eggs and rapidly propagate her genus was another requisite in the chain; this Worcester furnished in an ideal way, so that the increase in the number of cases in the last five years has become serious and can no longer be ignored. The commercial progress of the second city of Massachusetts is dependent upon the good health of its citizens, particularly of the laboring classes.—Worcester being a great manufacturing center. It is this element in society which suffers greatest from malaria, being segregated into "three deckers" or tenements along the slow-moving grassy streams,—the ideal anopheles breeding places.

The employees of the factories consist principally of north country folk, in the shape of French Canadians, Swedes, Finns and Irish. Not having attained immunity by living in tropical or sub-tropical climates, they are especially susceptible to infection. In these non-immunes malaria manifests itself in almost every conceivable phase, from malarial sciatica to chronic malarial cachexia. The superin-

¹Read before the Worcester Board of Trade, Nov. 21, 1902; Worcester District Medical Society, April 8, 1903; Boston Society of Medical Sciences, June 2, 1903.

tendent of the American Steel & Wire Company is authority for the statement that a conservative estimate shows that 10% of their 3,500 employees at the south works on the Blackstone river in Quinsigamond village were forced to give up work last summer on account of chills and fever; that he was threatened with having to shut down the central works altogether.

An elderly physician with an extensive practice in Quinsigamond village made the assertion that practically everybody in the village has had "the ague." He recalls one of the first cases there ten years ago when malaria was prevalent down the river, increasing in amount in inverse proportion to the distance from Providence. It is an exaggeration to say that every inhabitant of Quinsigamond village has had malaria, but it is a fact that every house visited gave a history of at least two sufferers. In the cellars adult anopheles were invariably found, easily recognizable at first sight by their characteristic resting positions,—their bodies at right angles to the surfaces on which they had alighted.

At the home of a well-to-do coal merchant all three of the servants had "swamp fever," while none of the members of the family suffered. Investigation showed that the servants' quarters were not screened, while the main part of the house was most carefully protected from nightly invasions of anopheles. The family had learned from experience that little pleasure could be derived from sitting on the veranda in the evening, owing to the fierce attacks of mosquitoes after sundown; they had not burned pyrethrum powder, however. Anopheles were found in both the cellar and barn of the house. Not three hundred yards away was Quinsigamond pond, made by damming up the river just above the wire mills; along the edges of the water in the thick grass anopheles larvæ were discovered quite easily. The supervisor of the Quinsigamond schools said that there was scarcely a day went by but that he was called upon to place a shaking lad on the radiator. This same supervisor instigated a meeting of the Worcester Board of Trade where three hundred representative citizens met to listen to a stereopticon talk on mosquitoes. The result was that a continued article on "Mosquitoes" was published in the *Worcester Magazine*; but nothing further came of it. South of Quinsigamond village, at Whitinsville, Mr. Whitin gave 25% as the loss in number from malaria of his French Canadian employees. Dr. Hodge of Clark University, Worcester, made a visit and showed him how easy it was to get rid of the mosquitoes—consequently the malaria—by draining, filling in, introducing fish and "petrolizing;" in other words, in not allowing the existence of any standing water, as all mosquitoes pass their larval stage in water as "wiggletails."

Last October the records of nine of the leading physicians visited gave a total of 2,565 cases of malaria treated from April 1 to October 1. One physician of South Worcester whose practice is largely along the Blackstone river and

Still Water pond treated 560 cases in six months. He made the statement that almost every person in every house on certain streets had a history of periodic chills and fever. Needless to say, he did not have time to verify the diagnosis by blood examination. "At a "mosquito talk" given in a hall on one of the streets along the river fully 50% of the 400 persons present confessed to having had malaria. During the summer months one hundred and twenty-five cases of the severest types of the disease were treated at the City Hospital, filling the medical wards to the exclusion of almost all other diseases, until the epidemic of eleven cases of typhoid, following a certain milk route, came in October. There were twenty-five house cases at Memorial and twenty-five at St. Vincent's Hospitals. The number of cases, including recurrent, treated at the out-patient departments of these three hospitals was too numerous to attempt to collect from the records, so with the several thousand addresses already obtained, a map was made out to show the relationship between the breeding places of the anopheles and the residences of the victims. A map of the city was procured and dots of red ink jotted down to indicate the addresses of the sufferers. A capital "A," bearing more significance than in Hawthorne's "Scarlet Letter," indicated the points along the various streams and bogs where anopheles larvæ or adults were found. This also included some breeding places discovered by Dr. Hodge and his class in biology.

On completion of the map some striking facts presented themselves. It was seen that Worcester was completely surrounded by a malarial band, the center of the city being free except for the area around the below mentioned dumps and a few cases traced to sleeping at the lake, South Worcester, etc. The little red dots on the map rarely represented distances of more than one-eighth mile or two hundred yards from the banks of the Blackstone and Middle rivers, Still Water and Curtis ponds, Beaver and Mill brooks, and Lake Quinsigamond with its tributaries running through North Grafton to Milbury. Inside of the area thus surrounded were two foci of great importance, notably the Southbridge and Shrewsbury street dumping grounds and bogs. The latter borders on the aforementioned Italian colony and doubtless explains the rapidity of the spread of the infection with the coming of the latent cases. Back near the railroad at the corner of the Coliseum fence is a large stagnant pool, one half breeding culex and anopheles larvæ, the other half sterile, owing to a film of grease from the adjacent organic refuse. The tin cans on the surrounding dumps, half full of rain water, contain thousands of culex "wigglers," the adult mosquitoes being thick around the mouths of the cans. Across the street, East Park pond is free, owing to tadpoles, while Bell pond just above on the hill is also free because of its "trained edges," and because it contains hornpout and sun-perch.

Unfortunately hundreds of these little fish, which could well be utilized for stocking other ponds (gold fish costing ten cents a pair) are destroyed by being packed solid in a pipe which furnishes the water for East Park pond below. The number of cases was found to be in proportion to the number of inhabitants and number and proximity of anopheles. Under favorable conditions anopheles females thirsting for warm blood would fly a quarter of a mile, at times not even hesitating to go up a considerable hill. Being of retiring dispositions, they rarely came out of the grass and dark hiding corners by day; in fact, it was well-nigh impossible to get them to bite while it was yet light. This explains the old theory that malaria was due to an indefinite something called "miasm" coming up from a swamp at night. The writer recalls the time when his old family physician down south advised the avoidance of this mist or "bad air" after sunset. We now know that is the time anopheles begin to fly at large. We also know that the marsh gas seen bubbling up out of the bog is really harmless.

so addicted to the drink habit and being such a prolific breeder, she rarely flies more than one hundred yards away from her birthplace, so that every house suffering from swarms of culex will find the "wiggletails" close at hand in standing water, in a flower pot, tub, rain barrel, house drain, street catch-basin, old tin cans containing rain water, paint-pots, gutters, pools, ponds and bogs. Destroy the breeding places and the adults will all go away in search of water in a day or two. Both culex and anopheles were hatched from eggs, larvæ and pupæ. The adult females, watered and fed, were kept alive in bell-jars as long as two months. Without water the adults died within two days but went without food for a week or ten days, becoming greatly emaciated, however. Among the best food-stuffs were milk, bananas, grapes, grass and

Head & Mouth-Parts of Mosquito *Genus Anopheles (female)*

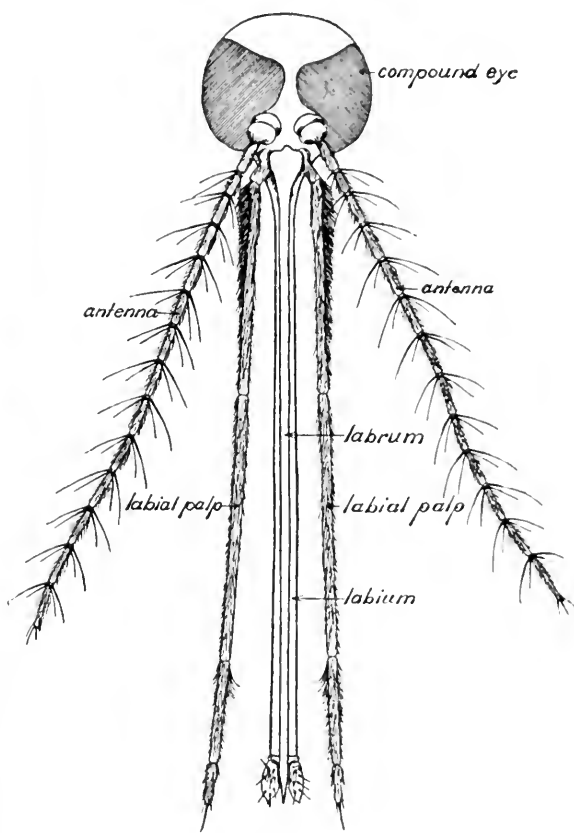
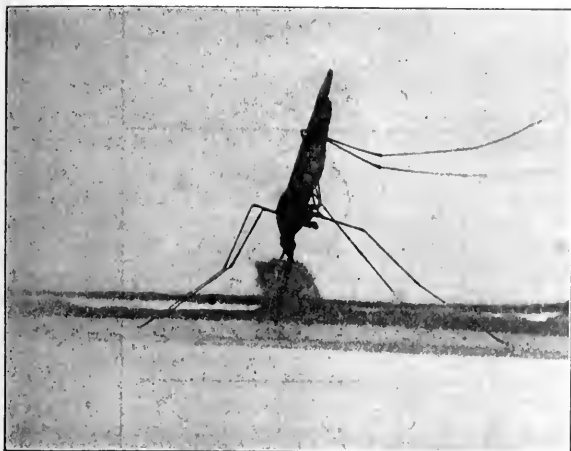


FIG. B.

sugar and water. Occasionally they were allowed a little human blood, the female anopheles attacking the hand viciously, not circling around looking for a "soft spot," as did female culex, but striking hard without hesitation or song; apparently anopheles did not secrete toxin in the salivary gland to the extent that culex did,

Figures B and C are from microscopic drawings used through the courtesy of Mr. Roy Cushman, Clark University, Worcester.



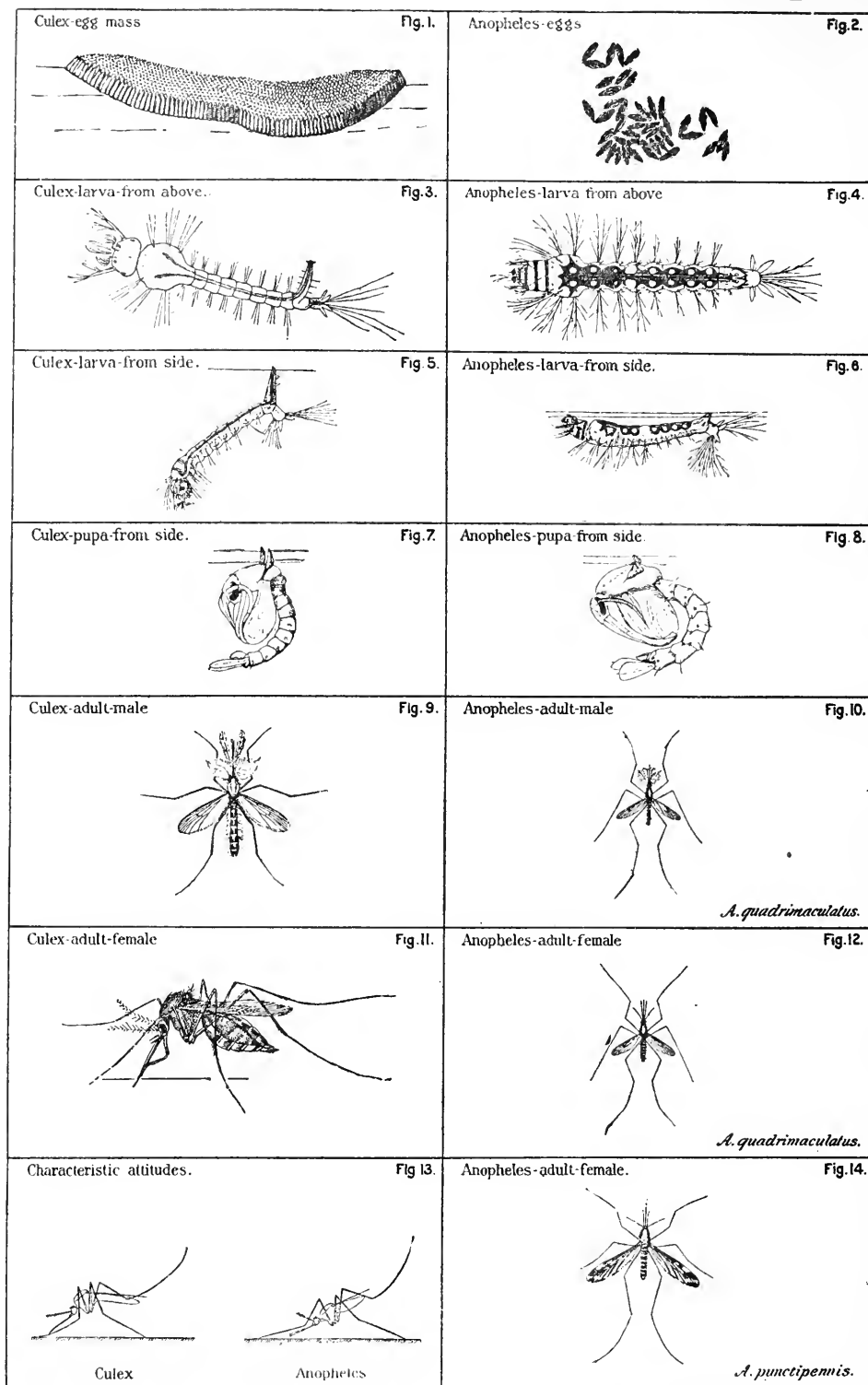
"Shame-faced, head-down anopheles." Photo. $\times 3$ times (Dr. Hodge)

It is a recognized fact that mosquitoes, being so delicate of wing, will not venture out of the grass, bushes, trees, ivy or from the lee side of the house while a strong wind is blowing. This accounts for the great prevalence of swarms of culex on warm, sultry evenings; not only does the high temperature favor breeding, but the absence of breezes allows them to come out of their hiding places. The condition which best favors anopheles flying so great a distance as four hundred yards is that of a continuous but gentle breeze. This condition is present on most summer evenings — the wind blowing softly from the west; consequently, the fact develops that most of the malarial victims live east of the breeding places. This is true in Quinsigamond village, South Worcester, New Worcester, "The Island," for two miles along Beaver brook, Mill brook and "The Sanctuary" at Lake Quinsigamond.

Culex is much more of a local insect. Being

MOSQUITOES.

PLATE



Copied by permission from Bulletin No. 25 new series, U. S. Dept. of Agriculture (Howard, Notes on Mosquitoes)

DESCRIPTION OF PLATE.

Differences between *Culex* (the ordinary Mosquito) and *Anopheles* (the malaria-carrying Mosquito).

Culex eggs. — Two hundred to four hundred eggs laid at one time by one female, aggregated in masses side by side, large end down; egg mass concave above; general color of mass from above, brown; the larvæ issue from lower end of egg, directly into the water, about twelve to sixteen hours after the eggs are deposited. (Figure 1.)

(Description continued on p. 669.)

as no wheal or irritation was produced. The point of puncture could be made out distinctly, however. Consequently it is easy to see how persons while asleep could be bitten unawares. Female anopheles sank her proboscis half its length into the skin, and on one occasion continued to swell her abdomen with blood until she burst, the blood spattering around on the hand.

Head & Mouth-Parts of Mosquito
Genus Culex (female)

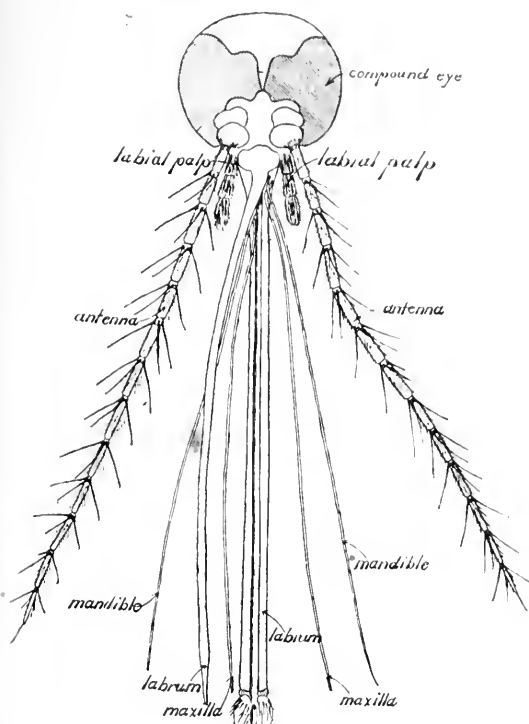


FIG. C.

Neither culex nor anopheles males could be made to bite; in fact the males lived only a day or two, dying after copulation. The females live on indefinitely under natural conditions, the exact duration of life not being ascertainable. They have many natural enemies such as dragon flies, bats, whippoorwills, night-hawks and winds; some females may possibly survive a whole

season and then hibernate in an old barn, vacant house, cellar, or hollow-tree trunk; but in all probability very few females succeed in living more than a couple of months. The cellars of those houses within a radius of one hundred yards from the breeding streams presented an interesting appearance; so much so, in fact, that a flashlight was taken of a white-washed beam in Dr. Hodge's cellar in order to make a stereopticon slide. Dr. Hodge left his cellar windows open in November so the adults would hibernate there and specimens could be obtained for demonstrations at lectures during the winter. The result was that almost every available spot on the beam photographed was occupied by an adult female.

Dr. Hodge used small bottles with conical holes through the corks for collecting specimens, by placing the bottles down over the mosquito; when the bottle was filled, cotton was inserted in the holes. Thus the anopheles were easily separated from the culex, being differentiated by the resting position, the spotted wings (especially marked in anopheles punctipennis), the long labial palpi, larger bodies, and the fact that the hind legs rarely curled up over the tail as did those of culex. At a "mosquito talk" these bottles were passed around, and the room being warm the mosquitoes began to sing. By holding the mouths of the bottles to their ears the appreciative audience easily heard the shrill songs of culex on the one hand, and the low-voiced hum of anopheles on the other, the difference being very marked.

In the spring the impregnated females fly out to deposit their eggs on the water. To illustrate the rapidity with which culex breeds, this instance is cited: In order to obtain larvæ and pupæ for an evening lecture, at five o'clock a dozen dippers full of stagnant water were taken from a small pool in a bog where the deep grass and cat-o'-nine-tails were growing thickly. This water was strained through a net in order to get the larvæ or "wrigglers" into clear water in one bell-jar. The "wrigglers" were all culex, having long breathing tubes at the tail end, which they brought to the surface to protrude for air every two or three minutes, the bodies being at an angle of 45° with the surface, — head down.

(To be continued.)

Anopheles eggs. — Forty to one hundred eggs laid at one time by one female; eggs float separately on their sides; general color of eggs from above, black; the larvæ issue in three to four days. (Figure 2.)

Culex larvæ. — General color, brown; head and thorax wide; breathing tube long. (Figure 3.) Feed near surface, breathing tube extended up to air, body at angle with surface, head and mouth down (Figure 5); when disturbed, they sink with quick wriggling movements downward to the bottom. The larvæ become pupæ in seven to ten days.

Anopheles larvæ. — General color usually black, but varies (green, etc.); head and thorax relatively narrow, breathing tube short (Figure 4); feed near surface, breathing tube extended up to air, body parallel with surface, head also at surface, mouth downward when resting, but turned up to the surface to seize food by rotation of the head (Figure 6); when disturbed, they skate backwards over the surface of the water, only sinking when frightened. The larvæ become pupæ in about sixteen days.

The pupæ of Culex and Anopheles resemble each other somewhat closely. (Figures 7 and 8.) Differences exist, but are not sufficiently striking for ready appreciation. The culex pupa becomes an adult mosquito (imago) in about two days; the anopheles pupa in five to ten days.

Adults. — The males of both genera can be distinguished from the females of both by the tufted antennæ of the former. (Compare Figure 9 with Figure 11, and Figure 10 with Figures 12 and 14.) Culex adults (male or female) can be distinguished from anopheles adults (male or female) by the spots on the wings of the latter, small and brown in anopheles quadrimaculatus (Figures 10 and 12), large and black in anopheles punctipennis (Figure 14).

Culex adults, when resting on a solid surface, take a hump-backed attitude, the abdomen lying more or less parallel with the surface; anopheles adults take a straight position, the abdomen pointing away from the surface (Figure 13). In this regard, the difference between Anopheles punctipennis and culex is very striking, but is much less marked between culex and Anopheles quadrimaculatus. Anopheles females of both species can be further distinguished from all culex females since they possess long palps, giving them the appearance of having three "stings" instead of one. In the culex female the palps are so short as to escape observation.

NOTE. — These reproductions are unfortunately to no definite scale, and may give the impression that the culex is larger than the anopheles. It is just the reverse, however.

SOME CASES OF FACIAL ERYSIPELAS FROM EROSIONS OF THE NASAL SEPTUM.¹

BY JOHN W. FARLOW, M.D., BOSTON.

IN all cases of erysipelas it is of great importance to find out if possible the point at which the infection enters the system. In scalp wounds, especially before the days of antiseptic surgery, erysipelas was the complication most feared. In obstetric practice, tears of the genitals were recognized as furnishing easy means for the much dreaded infection. In fact, all lesions of the skin or neighboring tissues may be the starting point where the germ of erysipelas finds lodgment and begins its rapid extension.

There is one form of erysipelas, facial, which seems particularly prone to occur where there has been no injury, a sort of "medical" erysipelas in contradistinction to the "surgical" form, and as there is no external lesion, a point of entrance is not looked for. The usual description of the disease speaks of it as beginning generally on one side of the cheek and then going over to the other side of the nose and face. As the outside of the nose is often the first part involved and as the germs in the air are naturally drawn into the nose, it is certainly reasonable to look inside the nose and see where such germs may find lodgment on a broken surface. Cracks and fissures of the vestibule, as well as pustules forming around hair follicles, may in certain instances become infected, but, in such cases, the first manifestation would probably not be at the bridge of the nose nor would the redness tend to spread so soon over the nose to the other side of the face.

The septum is the usual seat of nosebleed, ulcerations and perforations, and I think we may say without fear of being disputed that these lesions of the septum, especially erosions, are more common than all other lesions of the inside of the nose. If the septum is bent or irregular, or the mucous membrane atrophic, crusts form and are dislodged by the finger or by blowing, a raw surface is left and whatever enters the nose must pass this unprotected spot. The symptoms, other than profuse nosebleed, may be so insignificant that the patient is unaware that there is a very important lesion of the nose. No examination is made and the negative history causes the nose to be overlooked as a possible starting point of infection. If an examination is made when the erysipelas is well established the nostrils may be found inflamed and filled with secretions and crusts which are looked upon merely as a part of the disease, and no special attention is paid to anything but the outside of the nose.

If surgical erysipelas spreads from an external wound, proper cleansing and treatment of the wound itself are recognized as essential. The fact that erysipelas does not often result from surgical operations on the inside of the nose may perhaps be accounted for by the attention paid to the wound at the time of operation and its after-

treatment, whereas in case of septal erosions the crusts may serve to hold the germ in contact with the wound and there is no free secretion to dilute it and wash it away.

The ethmoid region suggests itself as a possible starting point for erysipelas infection as being in close proximity to the part of the nose where the external redness commonly begins; but ethmoid disease is not nearly so common as are erosions of the septum and from its more protected situation is probably not so likely to furnish a favorable situation for the lodgment of germs other than those of influenza.

I was quite forcibly struck with the probable septal origin of a case of facial erysipelas in a lady seventy-five years of age whom I saw several years ago. I was called to see her in consultation on account of occasional spasm of the throat. There was nothing of importance found in the throat, but I made note of an erosion and crust of the septum in the right nostril. Two months later I was called again and found her with a temperature of 101°, headache, septum very red and swollen, and a decided erosion on the right side of the septum on which was some pus. The bridge of the nose on the right side was very red, tense and painful and the redness was spreading toward the cheek and eye. I removed the secretion from the nose and used antiseptic washes and powders as dressing for the wound. She had a bad night and the temperature the next morning was 103. She was mildly delirious and looked and was very ill. The erysipelas had spread to the other side of the face. The septum was again thoroughly cleansed, as well as every part of the nose, and her physician and nurse were most assiduous in seeing that the nose was kept free from secretion. The outlook seemed bad, but the next morning she was decidedly better and on the following day the conditions, local and general, had much improved and she was soon convalescent. Her physician agreed with me that the recognition and treatment of the intranasal condition were the important factors in preventing what looked like a fatal termination.

Miss L., forty years of age, had had a number of severe attacks of facial erysipelas at frequent intervals. She had a marked erosion of the septum which I treated. On one occasion the septum became reddened and there was beginning pain and redness of the bridge of the nose just as her former attacks had begun, according to her story. Thorough cleansing of the nose caused the symptoms to disappear in a short time and she went nine years without another attack, dying of renal disease.

Mr. A., fifty-two years, had a very severe attack of facial erysipelas. I examined his nose later and found a marked septal erosion with bloody crusts. On one occasion the nose became reddened on the outside, but treatment of the septum seemed to stop what the patient was very much afraid would be an attack similar to his former one.

These three patients had never complained of the nose sufficiently to lead them to have their

¹ Paper read at the Twenty-fifth Annual Congress of the American Laryngological Association, held at Washington, D. C., May 12-14, 1903.

noses examined, yet each had a large open wound at the time I saw them.

I am told that at the Massachusetts General Hospital all cases of facial erysipelas coming to the Department for Diseases of the Skin are referred to the Department for Diseases of the Nose and Throat for examination of the nose. Very possibly if this custom were more prevalent, cases of recurrent facial erysipelas might be much diminished in number.

Since the above was written I have seen a patient whom I treated three years ago for an erosion of the left side of the septum. For the four years preceding he had had repeated attacks of facial erysipelas, generally two or three times a year, beginning on the left side of the nose and extending to the hair. Since the treatment of his nose he has had no attack of erysipelas and his general health is better than for many years.

A CASE OF GUMMA OF THE FALLOPIAN TUBE.

BY GEORGE S. WHITESIDE, M.D., BOSTON,

Assistant Genito-Urinary Surgeon to the Boston Dispensary; Assistant in Anatomy in the Harvard Medical School.

ABOUT five years ago my attention was called to the subject of gummata of the uterine adnexa by reading a very suggestive little book called "Maternal Syphilis," by J. A. Shaw-Mackenzie.¹ Since that time I have been looking for cases, but in spite of having had the opportunity of examining a large number of syphilitic women, I have found but one, which I report below. I have not reported it before for two reasons — first, I wished, if possible, to collect other cases of a similar nature to put with it; second, I thought it advisable to wait, in order to make the report more valuable.

I have tried to look up the general subject of gummata of the tube, or syphilitic salpingitis, with comparatively poor success. The "American Year Book of Medicine and Surgery," from 1896 to 1903, inclusive, makes no mention of it.² The "American Textbook of Pathology" has four lines on the subject. It says, "Syphilitic salpingitis of the tube has very rarely been found in the syphilitic new-born infant, child or adult. The tube is enlarged, tortuous, inflamed, the lumen usually obliterated, and the muscularis infiltrated with masses of small round cells, — miliary gummata."³ Taylor's "Venereal Diseases"⁴ has not a very encouraging account. "Syphilitic affections of the ovaries are rarely met with. According to Lancereaux, they present a close analogy to syphilitic affections of the testicle, and are either diffuse or circumscribed. This author has only met with the diffuse form after it has arrived at the stage of atrophy; the ovaries were of the usual size or smaller than natural, fibrous in their structure, with scattered cicatrices, and destitute of Graafian vesicles,

although the patients had not yet arrived at the usual age for the cessation of the menses. Lancereaux gives a representation of a case furnished by Dr. Richet, in which there was a circumscribed deposit of gummy material, similar to that found in syphilitic orchitis.

The symptoms of these affections are said to be a slight, dull pain in the region of the ovaries, possibly at the outset some increase in the size of these organs, perceptible on abdominal and vaginal palpation, a loss of sexual passion, and sterility. It is evident that these signs, taken in connection with the history of the case, can only furnish a probability of the nature of the disease, which may be further increased by the success of antisyphilitic treatment. No instance is known in which the Fallopian tubes have been affected with syphilis.

Certain cases in which uterine tumors in syphilitic subjects have yielded to the internal administration of iodine of potassium and mercurials render it probable that this organ is not exempt from the late manifestations of syphilis, but nothing more definite is known upon the subject, since post-mortem investigation has been wanting.

In Morrow we find:⁵ "Syphilis in connection with these parts is almost unknown in literature, aside from a few random observations which mostly lack authenticity. Gynecologists apparently almost entirely leave it out of their calculations in the diagnosis of disease in this connection, and pathologists seem to have failed so far to find more than a few stray traces of its existence. Perhaps the ovaries are affected during secondary syphilis in a manner corresponding to the epididymis, but of this there could naturally be very little proof. Oftentimes women during the secondary stage of the disease suffer from functional disturbances in menstruation which are probably largely due to the general malaise associated with the early general symptoms; still, they may be in some measure dependent on local manifestations. The ovaries and tubes are rarely the seat of late syphilitic lesions of a gummata nature. It has been questioned whether some of the sclerotic changes which are observed in connection with the ovarian connective tissues may not at times be due to syphilis, the same as in the testicle. This question has not as yet been settled, though it is very probable that some of these conditions are syphilitic in origin.

"Richet⁶ records a well-authenticated case of gumma of the ovary. Lancereaux also has been quoted to have observed a well-defined tumor of the ovary which disappeared speedily after the introduction of antisyphilitic treatment.

"A case of gummata salpingitis has been put on record by Bouehard and Lépine.⁷ In this case both tubes were involved, and thickened to the diameter of the finger. On exposing them by means of an incision, three gummata about

¹ Maternal Syphilis. Shaw-Mackenzie. London, 1898.

² American Year Book of Medicine and Surgery. Gould.

³ American Text Book of Pathology. Hektoen-Riesman. 1901. Pp. 1057.

⁴ Venereal Diseases, by Robert W. Taylor. 1895.

⁵ A System of Genito-Urinary Diseases, Syphilology and Dermatology. 1893. Vol. 11, Syphilology, p. 463.

⁶ Traité pratique d'anatom. Chir., fifth edition, p. 701.

⁷ Gomme des Trompes. Gaz. Méd. de Paris, No. 41. 1866.

the size of a hazelnut were found connected with each tube. The canal was obliterated in each instance. Some time since I was called to treat a young woman of doubtful antecedents who announced that she had a pelvic inflammatory trouble, which was gradually getting worse in spite of the treatment she had received. Bimanual palpation disclosed in the region of the left broad ligament a tumor about the size of an orange, moderately tender. As she had already been under the treatment of a good gynecologist without favorable results, I put her on large doses of iodide of potash, although I could not obtain, notwithstanding the many opportunities she had apparently had for contracting the disease, a history of syphilis. The patient began immediately to improve, however, and after a time, the treatment being continued, the tumor gradually disappeared. Although this case does not absolutely prove syphilis of this region, still it justifies one in strongly suspecting that such was the case."

This case, reported briefly by Dr. Fuller, in Morrow's "System," is so much like my own that I will make no further apology for reporting my case, in spite of the fact that no absolutely irrefutable proof can be given that my case really was what I suppose it to have been.

Mrs. M. G., aged thirty-seven years, was referred to me June 14, 1899, by her family doctor. She had had eleven pregnancies; two miscarriages. She had a clear history of syphilis, dating back to 1891. Both miscarriages since that time. On Jan. 29, 1899, she gave birth to a stillborn fetus at or near term. Since that time she has menstruated as often as every two weeks, and recently, in June, 1899, "was flowing most of the time." Bimanual examination showed the uterus somewhat retroverted, slightly enlarged, freely movable. Tubes and ovaries apparently normal. June 21 I curetted the uterus. After-treatment consisted of corrosive douches, the administration of ergot and hydrastis. She menstruated July 20 and Aug. 17. When seen Nov. 7 she had not menstruated since Aug. 17. A probable diagnosis of pregnancy was made, and she was put on ten drops of a saturated solution of iodide of potassium, three times a day. Being anemic, she was given iron also. Fetal movements felt Dec. 24. Iodide of potassium continued. On May 1, 1900, after a normal labor, she was delivered without instruments, of a healthy child.

She came to me again Aug. 1, 1901, more than a year after the delivery of her child. She had been receiving no antisiphilic treatment during the past year. She complained of pain, for two months past, in the right iliac fossa; worse at night. Some pain in back; headache; malaise. Too frequent and too profuse catamenia. Examination under ether showed on the right side a tumor the size of a large lemon, apparently the right Fallopian tube. She was ordered hot douches, rest, and the other usual remedies without success. She was averse to any surgical procedure, so in view of the history of syphilis, I thought it best to put her on a rigorous antisiphilic mercurial and iodide treatment, in order, if possible, to absorb the tumor. I saw her at intervals of a week during the next two and a half months. Weekly examinations revealed the fact that the tumor was constantly growing smaller. An ether examination on Oct. 7, 1901, showed that the tumor had absolutely disappeared. During these ten weeks' treatment her symptoms had gradually improved, so that by the end of November, 1901, she considered herself well.

I saw her again in May, 1902, and in September, 1903. She has had no return of the tumor. With regard to the child born May, 1900, it lived about five months, never presenting symptoms of syphilis, but died of what

I was told was broncho-pneumonia. I did not see the child myself. Autopsy refused.

This case is very similar to the one above quoted by Fuller, except that in his case the history of syphilis is less clear, and his was not preceded by a pregnancy. It seems unlikely, in this case, that the tumor of the tube should have been ordinary pyosalpinx. A normal labor with normal convalescence, an interval of a year of fairly good health, and complete disappearance of the tumor under antisiphilic treatment, also the fact that two years have passed since that time and no recurrence has taken place, make it seem probable that this tumor was a gumma of the Fallopian tube. I report this case with the hope that it may call the attention of other physicians, particularly syphilographers and gynecologists, to the occasional possibility of the occurrence of syphilitic salpingitis.

THE INDOL OF THE FECES AS A MEASURE OF PUTREFACTIVE PROCESSES IN THE INTESTINES.

A. E. AUSTIN, M.D., BOSTON.

From the Medical Chemistry Laboratory, Tufts College.

For many years the measure of albuminous decomposition in the intestinal tract has been the amount of indican and ethereal sulphates in the urine, but this has led to many errors because it is a measure, not of this process, but of the completeness of the absorption of its products. We have only to cite, in illustration of this, the fact that a marked indicanuria may disappear when constipation, or normal stool, is replaced by diarrhea, or when laxatives are used; and further examination will show that while the aromatic products are diminished, they are still present, lessened only by the shorter stay of the fecal matter in the intestine. For the extent of this putrefactive process many causes have been assigned; atony of the intestines has been given as one by Rosenheim, which may, or may not, be associated with constipation, for many have daily stools and still an enormous indicanuria; this condition may also be associated with an ileo-colitis of so-called catarrhal nature with large amounts of mucin in the feces which may be due to these presumably irritating products, or may be the cause of them by production of the atony. The lack of free hydrochloric acid in the gastric juice has also been given as a cause, though, as will be shown later, it is very doubtful how much influence a small or large amount of this acid, necessarily neutralized after entering the intestine, may have upon this condition unless, as I have suspected, the excessively acid stomach contents in hyperchlorhydria may produce the chronic enteritis and hence the atony. Von Noorden,¹ who found no increase of the ethereal sulphates when hydrochloric acid in the stomach was

¹ Zeit f. klin. Med., 1890, 530.

wanting, says that "the stomach acid exerts no influence beyond the limits of that organ, and especially has nothing to do with intestinal disinfection." Deficiency of bile has been given as a cause, not because of its disinfecting properties, but because it stimulates intestinal peristalsis. Of this I have seen one case, not given here, which soon afterwards developed jaundice and was operated for gallstones, which were found; and one other, given in the list following, which was also operated, but in which they were not found, though the gall bladder was everywhere adherent. Deficiency of pancreatic juice is also given, and one of the following cases suffered from that, if one can judge from the mass of undigested muscle fibers present in the feces. As a last cause for the appearance of indol in the urine, Blumenthal and Rosenfeld have given the breaking down of cell tissue in fasting and severe organic diseases like cancer, pernicious anemia, etc.; this point, however, still remains *sud judice*, and it has not yet been positively proven that indol does persist, in death from starvation, to the end. When my work was begun, the Ehrlich dimethylamidobenzaldehyde reaction for indol in the feces had not come to my attention and so the older and more cumbersome method of extraction and weighing was used. Among the products of this putrefaction other than indol are skatol which, according to Baumstark,² is so vastly less than indol that it is of only the slightest importance; phenol, which, according to Strauss and Philippson,³ was missed in the urine of over half their cases and which I could never find in sufficient quantity in a day's feces for estimation, though traces could always be found with Millon's reagent; and sulphuretted hydrogen, which Albu⁴ says, varies so that no distinct conclusions could be drawn from its presence. For this reason I neglected all the aromatic products except indol. Since in conjunction with the indicanuria which was present in every case, calcium oxalate was present as a sediment in all the urines, and since Soetbeer and Krieger⁵ have ascribed phosphaturia (phosphate of calcium) to catarrh of the colon, a quantitative estimation of the calcium in the feces of every case was made in order to determine whether absorption of indol or conversely, elimination of the calcium salt, was affected, since these authors claim that the normal eliminative powers of the colon for this salt are impaired in catarrh and an excess appears in urine. In most of the cases the nitrogen of the feces was also determined, since with a mixed diet a large elimination of nitrogen in the feces might indicate an impaired absorption or an increased motility, which was not present in any of the cases, or, at least, there was no diarrhea.

The method employed for determination of the indol, phenol, etc., was that given by Schmidt and Strassburger⁶ and is as follows: The day's

feces was first weighed and a portion weighed out for the determination of the water, which portion was afterwards destroyed for determination of the lime. Another portion was weighed out for the nitrogen estimation, and the remainder mixed with water until it formed a thin, soupy-like mixture and then one third distilled off; this distillate was then made alkaline with sodium carbonate to hold the fatty acids and a second distillate was made; this distillate was then made strongly alkaline to hold the phenol in check and distilled with steam as long as any indol was found to go over, which was easily seen by its floating on the top of the water; in order to remove those portions which clung to the distilling tube, ether was added to the last solution and its vapor dissolved out all the indol and carried it to the flask lying before the condenser. This watery solution of indol (and skatol) was repeatedly shaken with ether, the ether distilled until some began to fall out of solution and then allowed to evaporate spontaneously in a weighed beaker, dried in a vacuum over sulphuric acid and weighed. The solution from which the indol had been removed was then strongly acidified and distilled as long as Millon's reagent gave any reaction. Owing to the almost entire absence of phenol and fearing that it was escaping, the most of these distillations were made into bromine water. The portions of feces used for calcium determination were simply destroyed by the blast lamp and the ash extracted with acidulated water and the substance weighed as calcium oxyd. Before proceeding to a discussion of results, a brief *résumé* of the chemical features of the cases and amounts of the different substances under consideration is given as follows:

CASE I. Stomach contents one hour after test breakfast: amount, 200 c.c., no free hydrochloric acid, lactic acid abundant, rennin present, 1:160, total acidity, 52; combined hydrochloric .51 per thousand; abundant sarcine ventriculi.

Feces, — amount twenty-four hours, mixed diet, 183.2 gms., numerous muscle fibers, a great many fat globules (Sudan III) and numerous shreds of mucus (colon washing always produced great masses of mucous shreds). The amount of indol found was .022 gms. and the urine showed a marked indican reaction as well as reduction (glycuronic acid).

CASE II. Stomach contents, amount, 29 c.c. Total acidity, 81; free hydrochloric acid, 2.06, total hydrochloric, 2.48; erythrodextrin. Feces, amount twenty-four hours, 61.5 gms, dried residue, 20.19% or 13.0 gms. Large number muscle fibers, no fat, no starch, large number mucous shreds containing epithelial cells (shreds numerous with colon washing), no bilirubin, total nitrogen, .778 gms. (average of two estimations); indol and skatol, .280 gms.; phenol, mere trace; calcium oxyd, .341 gms.

CASE III. Stomach contents, amount, 30 c.c. Total acidity, 48; free hydrochloric acid, 1.21; total hydrochloric, 1.75; lactic acid, trace. Feces, amount, 42.2 for twenty-four hours, muscle fibers very numerous, many needles of fatty acids, some mucous shreds; dried feces, 28.66%, or 12.09 gms.; nitrogen, .738 gms. (an average of two estimations); calcium oxyd, .461 gms., indol and skatol, .0568 gms.

CASE IV. Stomach contents, amount, 100 c.c. Total acidity, 126; free hydrochloric, 3.12; total hydrochloric, 4.21. Erythrodextrin. Feces, amount, 99.2 gms., few muscle fibers, some connective tissue, no fat, hydrobili-

² Archiv f. Verdauungs-krankheiten ix, 207.

³ Zeit. f. klin. Medizin, xl, 369.

⁴ Deutsch. Med. Wochr., xxx, 958.

⁵ Deutsch. Archiv f. klin. Med., 72, 5 and 6.

⁶ Die Feces des Menschen, 136.

rubin. Dried feces, 23.6% or 23.41 gms.; total nitrogen (average of two estimations), 1.24 gms.; indol, .260 gms.; calcium oxyd, 1.19 gms.

CASE V. Stomach contents, amount, 48 c.c. Total acidity, 53. Free hydrochloric, 1.56; total hydrochloric, 1.85; trace of lactic acid. Feces; these were not weighed because obtained by means of an injection; no muscle fibers and no starch granules, numerous shreds of mucus, some with cells adherent; no fat. Indol in one day's feces amounted to .160 gms. Urine had a large amount of indican, and oxalates.

CASE VI. Stomach contents, amount, 140 c.c. No free hydrochloric. Total acidity, 6. Rennin, 1.80; total (combined) hydrochloric, .073; lactic acid present. Feces, amount 66.2 gms.; no muscle fibers; abundant fatty acid needles and fat globules; numerous mucus shreds (shreds also on colon washing); dried feces, 25.5% or 16.881 gms.; total nitrogen, .794 gms.; indol, .244 gms.; calcium oxyd, .549 gms.; urine showed a large amount of indican and urobilin. This is the case afterwards operated on my advice and that of others, by Dr. Brewster, for gallstones, but none were found.

All of these cases were regarded clinically as so-called chronic catarrhal colitis, or ileocolitis, of which mucous colitis or ileocolitis seems, from descriptions of others, to be a similar term. The term colitis was added when, in addition to the presence of large numbers of muscle fibers and bilirubin-stained shreds of mucus, similar shreds could be obtained in profusion by colon washing.

The stomach functions were examined secondarily as a means of determining what effect, if any, the contents which were passed into the intestinal tract had upon its condition. With reference to its secretion of hydrochloric acid, we may regard cases III and V, with elimination of 56 and 160 mgms. of indol, as normal; II and IV, with 280 and 260 mgms., as hyperchlorhydrias; and I and VI, with 22 and 244 mgms, as hypochlorhydrias; from this we should be compelled to say that the amount of acid in the stomach had little or no effect upon the formation of indol, as would be expected from the fact that most of the bacterial action takes place below the ileo-cecal valve, where the reaction is alkaline and all the acid formed has been neutralized.

With reference to motility of the stomach, judged from the amount withdrawn, it is evident that all are normal, having from 56 to 280 mgms., with the exception of I, having 22 and possibly IV, having 244 mgms., so that if the indol depends on motility, as is quite evident, impaired motility of the intestine is not necessarily associated with a similar condition of the stomach. With reference to absorption in the small intestine, by which the albuminous food is protected from the ravages of these micro-organisms throughout the colon, if we may judge from the nitrogenous waste, an inference that is only approximate, owing to the varied origin of this element and the difference in the digestibility and amount of foods, we have the lowest nitrogenous waste; .378 gms. with .056 indol, and the highest, 1.24 gms. with .260 indol, so that evidently no connection exists.

With reference to the amount of moisture in the feces, an increase of which is supposed to facilitate the growth of germs and hence the

formation of indol, we find with varying moistures of 79.81%, 76.4%, 74.5% and 71.34%, 280, 260, 244 and 56 mgms. indol. There may be some connection in this instance, though the cases are too few to put much dependence upon it. According to Grundzach,⁷ the average amount of calcium oxyd eliminated daily with a mixed diet is 1.316 gms. and in comparison with that, except Case IV, there was a marked diminution in the amount of lime eliminated by the intestine, and as before stated, if absorption follows elimination in its impairment it may account for the large amount of indol found, as well as the fact that calcium oxalate crystals were found in all the urines of these individuals, due, not to the increase in oxalic acid, but to the increased amount of lime in the urine which failed of elimination by the intestine.

The amount of indol found is vastly greater than that found by Baumstark, already quoted, who regarded 17 mgms. as an average normal quantity in the day's stool and whose greatest amount in a pathological condition (Achyilia gastrica) was 114 mgms. My much larger amounts may be due to the fact that the skatol was reckoned with it; of their purity there could be no question, both from the method by which they were obtained, excluding all other products, as well as from their well-defined crystalline form, and the response of the one (indol) to Legal's reaction.

My inability to find phenol in weighable quantities can only be explained by the fact that it is absorbed and oxidized, for it is always difficult to find it in the urine, unless ingested in more than mere traces. Yet this substance is very prominent among those produced by a spontaneous putrefaction of albuminous material, and Simnitzki⁸ found as high as .68% of the decomposed albumen in the form of phenol, keeping close to the amount of indol and sometimes exceeding it.

WAS HE INSANE? A STUDY IN MENTAL DIAGNOSIS.¹

BY C. A. DREW, M.D., BRIDGEWATER, MASS.,

Medical Director Massachusetts State Asylum for Insane Criminals.

(Concluded from No. 24, p. 645.)

ANOTHER letter to his wife, throwing light on his mental content in an angry mood, was as follows:

APRIL 10, 1902.

Written under duress.

ORDERS.

TO MRS. G. B. — (1) You are hereby ordered and directed by me, your lawful husband, to bring any money you may receive from Mrs. C. B., my mother, or from any party or parties on my behalf, to the above lunatic asylum and to deliver the same intact to me, and you are forbidden to remit by mail any money to me or deliver any money to Dr. Drew or any person or persons on my behalf. You are ordered to come yourself or send

⁷ Zeit. f. klin. Med., 23, pp. 70.

⁸ Zeit. f. physiol. Chemie, 39, 99.

¹ Read before the Plymouth District Medical Society, April 15, 1903.

Queenie G. B., my daughter, with the said money, but not to entrust the same to any other person or persons.

(2) You are ordered to cause Queenie G. B. and Clarence W. B., my children to write to me forthwith and to have the letters here by Saturday, April 12, 1902.

(3) You are ordered to go to the State Board of Lunacy at once and make a legal demand for the father of your children's immediate release from unlawful custody.

(Signed) H. J. B.

A copy of the above orders has been sent to my attorney, Mr. Fishacher, Esq.

The foolish arrogance of these "Orders" might come from a paranoiac or an imbecile, but the paranoiac, if educated, has commonly more sense than to write such stuff to any one. The following explains itself:

FEBRUARY 21, 1902.

TO THE MANAGER OF THE PINKERTON DETECTIVE AGENCY, BOSTON, MASS.:

Dear Sir, — Upon receipt of this letter please send a reliable, trustworthy and shrewd detective to see me. Tell him to bring blank drafts with him. I was robbed and unjustly sentenced to Massachusetts state prison and two months before the expiration of the sentence two unscrupulous quack doctors have conspired with officials and railroaded me to a lunatic asylum. I complain of foul play. I will not write full particulars, but will explain fully to your man. I have received a cable message from my mother in London, England, and my friends will be here soon. I am engaging reputable lawyers to reopen my case and to get an investigation. I am a lawyer. I have startling disclosures to make to your agent. Please make your charges as reasonable as possible and remember I am an attorney and may need you for many cases. Send your man at once and on his arrival I will pay him a good substantial fee. I have powerful friends. I have been sent to an asylum to save the officials from exposure, etc. Foul play. I cannot send any remittance by mail, as I do not want any one to know who I am drawing on or where my money is, owing to the trustee and attachment law being so strict in this state, and as I have legal trouble with my wife and she is looking to get alimony and to attach my properties, etc., and the officials here would know where cash is if I drew through them, as I should have to get a draft from them. Send good man with blank drafts. I will pay his fare and all expenses. Send as quickly as possible and be sure he sees me and tell him to be silent as to who he is. I need your man to hunt up evidence, etc.

Yours respectfully,

(Signed) H. J. B.

This letter to the Pinkerton agency, it may be noted, mentioning "legal trouble with my wife," antedated his loving letter of March 12 by eighteen days. He would not forget to write "bring blank drafts" in each of his many letters to lawyers, evidently thinking this suggestion best calculated to bring the lawyers quickly, and usually in his letters to the latter he promised payment in full for past services. When one lawyer came to see him, our patient did use the blank drafts brought as suggested, but he drew on another lawyer with whom he had formerly been on a friendly footing. This lawyer friend had also been promised full payment if he would come from New York city to co-operate with Massachusetts attorneys to obtain our patient's release. He had also been admonished to bring blank drafts. This New York attorney was evidently slightly indignant to find that our patient had drawn on him in favor of another lawyer. Some letters were exchanged, which we did not see, the Boston lawyer, who was

paid by drafts on the New York attorney, acting as mail carrier for our patient. The following letter was written to the New York lawyer, in reply, evidently, to a sharp letter from the latter, who had discovered that his sometime friend, our patient, was not acting on the square with him. It reads as follows:

MARCH 27, 1902.

MY DEAR DAVE: Your letter duly received and contents noted. Your extraordinary epistle and the peculiar tone and indignant manner in which you write can only be appreciated by me, as I understand you are a fighter and an indomitable "toner," and I verily believe you would rather fight than eat and your bickering and quarreling with me, your own client, is proof to me that you are a very eccentric attorney in some small matters, but with all thy faults I love thee still, and look upon you as the faithful "wondertour" young and reliable check-mating general that you always were. I mean you to try to checkmate my enemies in a legal manner. Let me explain a little. The fact that you say you never received a pawn ticket for ring and stud shows me that you have never received it, but I solemnly declare that I delivered it to the prison officials with a letter addressed to you, stating that the ring and stud had nearly run out and sent it to you as a present if it would be any use to you. This is over four years ago, and if you have never received it, then it only adds one more crime and felony to the list to be laid at the door of the unscrupulous prison officials and I am not to blame and you are not to be blamed. . . . Now let it be distinctly understood that I am not blaming you in any matters, but merely wrote you the other day because Mr. Bruorton stated that he had received a letter from you and that you asked him to go to the asylum and find out if I had the money to send to you for expenses and that you would have the affidavit drawn and sworn to if he desired you to do so, and Mr. Bruorton stated that he wrote you that you could use your own judgment as to the affidavit, but would not be responsible for the costs or for your expenses or for any work you might do for me. Upon receiving such a letter I immediately wrote to you to look at the past, etc., as I think, in view of the past and taking into consideration that I owe you nothing and that I have always faithfully and honestly remunerated you for your services that, to an old client, you need not be so particular and parsimoniously inclined. Mr. Fishacher, a Boston lawyer, was here yesterday with my wife and she stayed all day and dined with me. I delivered a letter to my wife to have registered a draft, etc., to you. Please come on and see this man at once on receipt of the cash from his brother. His brother's address is on the draft. In the meantime if any money arrives, I shall telegraph you \$50, as I did before through the Western Union Co., as I have received a heartrending letter on Monday from my father and mother who state they are sending me money. Have faith in me, my brave legal warrior, and be patient and do not write recriminating epistles acting as an injured man when you are not. You have a peculiar faculty for quarreling. Do you remember the order of Judge Newberger dangling in mid-air and Judge Pratt's stays (while you wait) and the conflicting orders and toners moving mysteriously as if by peculiar power and severance, supplementary orders and referee Hess and referee Stein being removed. DANGEROUS on the other side. Look out, I am coming soon. I rest my case.

Your affectionate friend and client,

(Signed) H. J. B.

P. S. — Write soon

It would seem, on the face of it, that a lawyer who would try to work the confidence game on his professional brothers must be very insane and it ought to be known in this connection that most of the attorneys to whom our patient wrote either did not notice his letter or else inquired by telephone or letter of the asylum officials concerning patient. Attorney Fishacher knew

the man and was trying to serve him, for his family's sake, in an ethical and honorable way. Another Boston attorney seemed to swallow his bait whole, made frequent trips to the State Farm, came and went, as a rule, without consulting with the asylum officials, until he obtained our patient's draft for \$1,800: \$300 for himself and \$1,500 for a New York law firm as whose agent he professed to be acting. After this his visits were infrequent and we do not know how much he realized on those drafts, nor how he felt when he heard from that New York attorney on whom the drafts were drawn, and whom our patient addressed as "My dear Dave."

The conclusion was forced upon us that our patient was not a true paranoiac, or monomaniac. I will admit that, using the term paranoia in its broadest generic sense, it may include most kinds of mental deficiency outside of dementia, paralytica and the acute psychoses embraced by the manic-depressive syndrome. I do not forget that Dercum² and others would include under paranoia all cases of chronic systematized delusional insanity, and that Ziehen writes of stuporous and incoherent paranoia. Dercum's classification seems eminently rational and helpful, if we agree as to the limitation of terms, but we hold that our patient's so-called delusions had not the true ring, and to speak of "stuporous" and "incoherent" paranoia is, seemingly, to confuse paranoia with dementia precox, or a toxic insanity with confusion, else to give a class name to a late and unusual phase of a disease. We believe the phrase "constitutional inferiority with moral perversion" best covers our patient's abnormality. The direct question, "Was he insane?" cannot be properly answered by "yes" or "no." There is no doubt but that he knew the difference between right and wrong in the abstract, and with reference to every dishonest act he did, but this could be said of almost all paranoiacs. The weight of evidence seems to show that he could act or refrain from acting according to his judgment of which was the best policy. The fatuous folly of his judgments is beyond dispute. Insincerity, duplicity and mendacity were characteristics evidenced at every interview and in every letter he wrote. To the governor and the British consul his letters were couched in technical and well-turned phrases. To the lawyers he emphasized the fact of his being a Jew and of having powerful friends and rich relatives. To these, he wrote of being robbed and illegally sent to an insane asylum, but to his mother he wrote very little about being robbed. To her he cried "I am hungry and abused. Help! Help! I shriek a sane man from a madhouse!" We know this was not delirium. It was carefully penned, — all the exclamation points were in place. The motive was, manifestly, to touch the maternal heart, to work on the mother's nerves that she should send more gelt quickly. There was just a little basis for his claims of being robbed, but not by any prison official. A certain New York lawyer had obtained money from patient's

mother, more than one hundred pounds, ostensibly for her son's defence. There was an effort to get more money, as the attorney's letters, which the mother forwarded, plainly evidenced. Our patient knew this, but it suited his purpose to make charges against state officials, because these charges received attention. To charge lawyers with getting money from his mother by misrepresenting the case would avail him nothing. People would laugh at that. May I requote a few significant lines to "Dear Dave," who resented being drawn on in favor of the Boston lawyer? "I verily believe," H. J. B. writes, "you would rather fight than eat and your bickering with me, your own client, is proof to me that you are a very eccentric attorney in some small matters, but with all thy faults I love thee still." This illustrates our patient's cleverness at cajolery and counts against paranoia, because a sense of humor is almost as rare to the paranoiac as a sense of honor is to the moral imbecile. It is difficult to conceive of a true paranoiac "jolly" another about anything.

The more we studied our patient, the more it seemed to be true that his mistrust of every one — his "delusions" if you please — were not the delusions of psycho-pathology, but rather false beliefs based on his peculiar experiences and his own self-consciousness. He had little knowledge of the reactions of an honest man's mind. The altruistic sense and the sense of honor were rudimentary, but these are the products of man's higher evolution and are probably rudimentary in most habitual and instinctive criminals. The primordial instincts of self-preservation and love of offspring seemed fairly developed, albeit his faulty judgments and ignorance of men and institutions as they are made his foolish pertinacity in wrongdoing seem suicidal. Read "Hard Cash," by Charles Reade. he would urge, in defence of his ideas. "Hard Cash" had apparently shaped our patient's beliefs and destiny in more than one sense. After we had studied H. J. B. for more than three months, I advised that he be returned to the prison from which he was committed. He was accordingly returned to prison, as per Section 101, Chap. 225, of the Revised Laws of Massachusetts, and held for about seven months, during which time there was no essential change in his condition. Early in December his mother came from England and was allowed to take her son, as his minimum sentence had expired. We were informed by the prison physician that his mother insisted to H. J. B. that she had all the legal knowledge necessary to free him and would not allow him to talk. "She was the only mortal able to control him in this respect," the physician added. It was understood that his mother proposed taking our hero to South Africa. The inference was not that the talented mother bore malice against that unhappy land, — rather that no indictment stood against our sometime patient there.

"If this man should kill some one would you hold him responsible?" was pertinently asked

by a physician whom I advised of my purpose to recommend the return of H. J. B. to prison. Being persuaded that there was no pathological condition present that would compel him to commit a homicide, I would hold him responsible as I would hold another weak-minded brother responsible. Not absolutely responsible, in a moral sense, nor entirely irresponsible, as the man suffering from brain disease, but sufficiently responsible to be kept in prison. Too much responsible to be allowed to prey on the truly insane. It is true that graded responsibility is debatable in medicine and not recognized by the courts, but we are not entirely responsible for the defects of the courts. The natural instinct of civilized man is to save life — his own first, then others. This order may even be reversed, in the highest types, in favor of the nearest and dearest by ties of blood. So it is that the instinct to kill is against nature and raises the presumption of psycho-pathology. The acquisitive instinct, on the other hand, is according to nature, and an exaggeration of this instinct is presumptive evidence only of moral deficiency, even to the making of a "common and notorious thief." We do not know that H. J. B. had any impulse to kill or do bodily injury to any one. His mother's testimony was to the contrary. Moral imbeciles are often exceedingly cruel and enjoy beating, cutting and killing for its own sake or for the sexual frenzy excited most intensely, — so to speak, — by the taste or smell of blood. Dr. Howard's heroine (?) Mizpra³ was considered entirely irresponsible, possibly so from a purely academic viewpoint. It is doubtful if the courts would support the contention, and practical psychiatry might classify the case as not amendable by hospital methods. It was very clever of the author, therefore, to have Mizpra hurled into a yawning abyss before she reached an insane asylum.

To glance again at the mother's analysis of H. J. B.'s case, is it not reasonable to assume that the man's objective mind was in abeyance, that the subjective mind held supreme sway, forcing the individual on in his irrational course "as fatally as the moth flies in the flame"? Was his oft-declared purpose to fight his enemies in the courts — to "pursue them with the dog whip of the law and hang them on the gibbet of public opinion," a manifestation of the "one grim resolve, the *idée fixe* of the monomaniac"? Concerning the subjective mind hypothesis, a review of much of Thomas Hudson's "dual mind thesis" would be needed for an adequate consideration of this phase of the subject. I will only observe that if the "subjective mind" is identical with an immortal soul, as Hudson holds, and is responsible for the atrocious acts of some persons on this planet, then the ancient theological conception of an unquenchable lake of burning brimstone seems to have a justification. As to our patient's passion for litigation being the fixed idea of a monomaniac, much more might be said than time will allow. A love of litigation may be but a manifestation

of a quarrelsome disposition which, unfortunately, is not limited to the insane. So far as it is an evidence of insanity, it points to imbecility quite as much as to paranoia. The same may be said of inordinate vanity and love of notoriety which is nourished by the publicity of the courts. H. J. B. might have engaged and discharged a dozen lawyers while in prison for the mere love and excitement of it. It is probable that he did not intend to pay any one of them, except by promises or bogus drafts. Experience had taught him that letters to lawyers and state officials were forwarded. He was a forceful writer and a ready talker and loved to do both. Most of all he longed to get into court to show off his talents before newspaper reporters and a crowd. When pressed on cross examination, concerning the false charges he was reiterating against the prison officials, he once declared doggedly, "A man has a right to defend himself." This was the key to many of his "delusions," — created for a purpose. He believed all men to be dishonest tricksters, — this was a natural subjective reflection, — and he was doubtless disgusted to find so many lawyers who did not think as he did. Life in "Cherry Hill" was rather monotonous; why shouldn't he keep on engaging attorneys till he found one of his own kind, who would help him into court or get his letters published in the sensational newspapers? He was stubborn and opinionated — like many weak-minded men, and some others. His little knowledge of the law puffed him up and made him intolerant of advice, but he was not dominated by "one grim purpose." On the contrary, he was vacillating as most men, at least. To-day he knew his wife was true and loyal; to-morrow he was sure she could not be trusted in anything. This week he was willing to follow the advice of his mother and attorney Fishacher; the next week his only reliable legal adviser was the Boston attorney who was paid by drafts on the lawyer in New York. It does not seem wise to generalize broadly about these mentally inferior and morally perverted ones. Each case must be decided on its own merits. One might strongly defend the postulate that all instinctive and incorrigible criminals are insane, but practical considerations would forbid that these mingle with those suffering from brain disease. Indeed, the doctrine of limited responsibility is not incompatible with the administration of a modern humanely managed prison, and it ought to be known that the isolation building for incorrigibles called "Cherry Hill," at Charlestown, has very large rooms, larger than any single rooms I know of in an insane hospital, well ventilated and well lighted through the roof, with good plumbing, running water and a good bed in each room. Humanity has a right to expect similar provisions in each penal institution, for the line of demarkation between sanity and insanity is particularly shadowy in the criminal classes and it is better that asylum features be introduced into prisons than that the hospital and asylum standards should be lowered by prison necessities.

I would express the opinion, in closing, that the committing physicians were fully justified in giving H. J. B. the benefit of every doubt. They were supported, too, in the diagnosis of "lithigious paranoia" by the teachings of some of the best authorities. My specified and implied reasons against the diagnosis run through this essay. I will only repeat that while paranoia and constitutional inferiority with moral perversion (moral imbecility) have much in common, may indeed be well called "first cousins," they ought to be separated clinically as readily as hereditary ataxia and locomotor ataxia are recognized as distinct disease forms. The parallel would not hold as to anatomical pathology, because these spinal degenerations have a clearly defined and well-known pathology, but that paranoia is a veritable psychical disease entity is evidenced by its distinct and fairly uniform stadia. It is essentially progressive, even though chronic, characterized by systematized delusions and hallucinations, especially of hearing, in the majority of cases. The systematic evolution, the distinct period of introspection and depression, followed by a period of delusional exegesis of his own morbid subjectivity, and the hallucinations which may begin to spur him on, followed again by an expansive and ambitious period, with its change of personality, — these are the landmarks by which we may know the true paranoiac. The moral imbecile is not so. He has false beliefs enough, certainly, but they change "with every wind of doctrine," like ordinary weak mortals. He has no period of depressive introspection. What little sense and judgment he has he keeps to the end of the chapter, barring the ordinary wear which all flesh is heir to. It is true that the moral imbecile may be far below the intellectual plane of the paranoiac — the differential diagnosis does not rest on the degree of mental defect. That the imbecile may be so defective as to be wholly irresponsible goes without saying. But call his condition "moral insanity," "the insanity of degenerates" or "phrenasthenia," if you please, yet, in the absence of substantial evidence of brain disease, the natural criminal product of a neurotic organization and a wrong education hardly fits the legal conception of insanity. When the impulse of the perverted imbecile is towards rape and murder, as it so often is, the common conception of insanity should be strenuously opposed before opening the asylum doors to let the perverted one free, but when inordinate vanity and infantile judgment leads the individual habitually to seek gratification in the publicity of the courts, the hospital physician's duty to society may not necessitate a rigid adherence to medical as against legal conceptions of responsibility.⁵ As the morbid man bent on suicide by hanging hardly ever shoots himself, so the imbecile seeking gratification through the courts rarely gratifies his unreasoning anger by personal vio-

lence to the object of his spite. Therefore it is that the weak-minded litigationist may be less harmful at large than among the insane, — than among other insane, if you choose to have it so expressed.

NOTE. — Several weeks after this paper was written, and less than five months after our hero was released on parole from the State Prison, letters began to come from H. J. B. from New York City, — registered letters, some of them, — notifying the asylum officials that legal proceedings were about to be begun for the release of several inmates of the Massachusetts State Asylum for Insane Criminals. Letters came from other counsellors at law in the same tone and spirit, giving notice of legal proceedings about to begin, "having been retained by Mr. H. J. B., etc." From these letters and other sources we learned that H. J. B. was "highly prosperous," "working night and day," "employing several lawyers," "supported by the most prominent people in our city (New York) who speak in the highest terms of his (H. J. B.'s) indomitable business acumen, responsibility and strict honesty." One of these assistant counsellors at law, H. J. B.'s "brave legal warrior," "dear Dave," subsequently came on from New York City, demanding to see certain patients in the name of H. J. B. and the Constitution of the United States. "Dear Dave" brought two baskets of fruit to asylum patients who had been wheedled out of their small supplies of delicacies for the benefit and promised favor of H. J. B., then "under duress," when he should have his "enemies" (?) figuratively on their knees before him. I wish to record this because it seems, on its face, an honest act and a promise kept. So far as it goes it indicates sincerity, and any evidence of sincerity, considered in relation to H. J. B.'s history, would strengthen the hypothesis of insanity. It seems that H. J. B. did not go to South Africa. His mother, we understand, settled the indictments against him in New York and there is evidence that his "indomitable business acumen" has been exercised on as high a plane as the "promoting" and "floating" of the "Iowa Pacific Railway" and the "International Cable Co."

Clinical Department.

DOUBLE CHOPART AMPUTATION.

BY CHARLES A. POWERS, M.D., DENVER, COLO.,

Surgeon to St. Luke's Hospital, Denver.

THE Chopart amputation has not borne a very good reputation. Its status in this country is expressed by Bryant,¹ who says:

"This operation is objectionable on account of the liability of the stump to become extended, causing the patient to walk on the cicatrix at the anterior extremity. The division of the

⁵ Peterson's brief and flexible definition of insanity — as good as any — reads, "Insanity is a manifestation in language or conduct of disease or defect of the brain."

¹ Operative Surgery, Vol. I, Third edition, 1899, p. 449.

tendo Achillis during or subsequent to the operation is practiced to counteract this tendency, but frequently without permanent success. If the stump be confined in a flexed position during the healing, and for a time afterward, there is less danger of this annoying sequel. No preventive expedient addressed to this sequel has as yet afforded the patient practical immunity. The operation cannot be recommended as a substitute for those that are to follow in point of comfort and usefulness. Better service is secured with an artificial appliance after the Syme amputation than after Chopart's."

Such an opinion by a surgeon of the mature judgment and wide experience of Bryant must carry great weight. In England Jacobson and Steward² say, "The value of the operation has been a good deal disputed." The following objections have been raised to it:

(1) That the tendo Achillis, no longer counterbalanced by the extensor muscles, which have not lost their attachment, draws up the heel, tilting down the scar, which now becomes tender and irritable. (2) In the normal foot the weight of the body is transmitted through the astragalus to the other bones of the tarsus and metatarsus. When, as in this amputation, these bones have been removed the weight of the body tends to thrust forward the astragalus, no longer supported by the elastic bones in front, against the scar and thus renders this tender and crippling. The above objections apply to the operation performed for injury or disease, the next to amputation for the latter only. (3) If the operation be made use of in caries, this disease is likely to recur in the two bones left. In answer to the first two of the above objections it may be said that this tendency to tilting upwards of the heel and downwards of the scar may be met: (a) By stitching the anterior tendons — *e. g.*, tibialis anticus, extensor proprius pollicis, and some of the tendons of the extensor communis — into the tissues of the sole-flap with stout carbolized silk or chromic gut, so as to give them a fixed point by which they may counterbalance the tendo Achillis; (b) by cutting the plantar flap sufficiently long, and securing firm primary union; (c) by division of the tendo Achillis. (This, however, is only of fugitive value); (d) wearing a wedge-shaped pad in the boot; (e) preserving the scaphoid, when sound, so as to retain the attachment of the tibialis posticus."

Mr. Jacobson attributes the stitching of the anterior tendons into the tissues of the sole-flap to Mr. Deleгарde of Exeter. He says that until it is more frequently made use of and a larger number of cases are collected the value of this amputation must remain somewhat undecided. He had taken this precaution of stitching the anterior tendons on five occasions and says that the stumps proved sound and useful.

As a minor contribution to the subject the following case is reported. Three years have



FIG. 1. Condition three years after operation.



FIG. 2. Showing voluntary dorsal flexion.

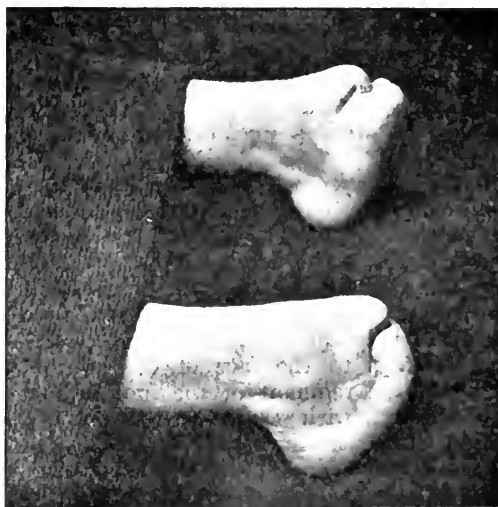


FIG. 3. Showing voluntary plantar flexion.

² The Operations of Surgery, Vol. ii, 1902, p. 713.

elapsed since the operation and the result may be considered permanent.

Mrs. M., a woman of twenty-seven years, came under my care in March, 1900. She had been caught in a mountain blizzard one month before and obliged to remain all night in a deserted shanty; as a result both feet were frozen. When I saw her each foot was the seat of dry gangrene to a point a little behind the middle of the metatarsus. The gangrenous portion was black, the line of demarcation was well-formed, the two sides were nearly symmetrical. The tissue above the line of demarcation seemed to be healthy on each side.

Double amputation under ether at St. Luke's Hospital, March 17, 1900. On the right side disarticulation was made between the os calcis and scaphoid behind and the cuboid and cuneiform bones in front because here the anterior surface of the scaphoid was but slightly in advance of the anterior surface of the os calcis. On the left side there seemed to be a little more healthy tissue, so disarticulation was made between the cuboid and outer two metatarsal bones, sawing through the three cuneiform bones on a level with the anterior surface of the cuboid. On each side the tendo Achillis was divided and on the left side the anterior tendons were sewn to the face of the stump with chromicized catgut.

On each side the soft parts were divided pretty close to the line of demarcation. Each foot underwent moderate suppuration. On the right sides the flaps proved insufficient and the tarsal bones to the medio-tarsal joint were removed under ether ten days later. The anterior tendons were here sewn to the face of the stump.

This made a typical Chopart amputation on the left side and an atypical one on the right side where the scaphoid bone was left. Both feet were kept in marked dorsi-flexion during healing which took place largely by granulation.

At the end of five weeks both wounds were firm and a little later the patient began to get about, being instructed to massage and move the ankles morning and night. There was no posterior contraction. At the end of three months, aided by a cane she could walk fairly well in ordinary shoes. A little later she was provided with artificial limbs on which she gets about very well indeed.

The accompanying photographs show the condition at the end of two years. There is no tendency whatever to equinus. Voluntary dorsal flexion is excellent. Motion has somewhat increased during the past year. Function on the side on which the scaphoid was preserved is no better than in the stump from which it was removed.

I have no doubt that this woman's locomotion is easier than it would be with amputation at a higher point. She is pretty fat and is obliged to work about the house all day in caring for a large family of small children. She tells me that she can go up and down stairs pretty easily and that she can walk a long distance without fatigue.

On two other occasions I have made a single Chopart amputation. Neither case was followed long enough to judge of the end result, though in each instance the condition was satisfactory when the patient passed from observation. I believe that when the operation is made with a division of the tendo Achillis, suture of the anterior tendons to the face of the stump and placing of the remnant of the foot in marked dorsal flexion with careful attention to this position during healing, together with massage and ankle movements, especially those of dorsal flexion, afterward, the result in most instances should be as good as that presented here.

Medical Progress.

PROGRESS IN PATHOLOGY.

BY JOSEPH H. PRATT, M.D., BOSTON.

THE ETIOLOGY OF LEUKEMIA.

WALZ¹ has prepared a critical review of 223 articles upon leukemia which were published between 1894 and 1902. The section devoted to the etiology of the disease is especially interesting. The rapid course which acute leukemia runs certainly resembles that of an infectious disease. The tonsillitis which frequently accompanies acute leukemia or the ulcers in the intestine, described first by Askanazy,² might well serve as portals of entry for the infectious agent. Walz states that Cabot³ has reported a case of apparently direct transmission of the disease from patient to nurse, and there is a similar oft-cited observation by Obrastzow.

Bacteriological studies and the earlier inoculation experiments yielded negative results. But by means of special staining methods Löwit⁴ has demonstrated peculiar bodies in the blood resembling protozoa which he regards as the cause of the disease. He further supports his claim by the artificial production in animals of a disease resembling leukemia. As a specific stain he uses thionin, followed by Lugol's solution. In his latest paper Löwit⁵ recommends that the blood be spread with a needle, as the leucocytes are injured when too thin a film is made.

Löwit found what he claims to be an ameba within the lymphocytes (*Hemameba leucemia magna*). In lymphatic leukemia he found meta-chromatic bodies. They were present in only two cases in the peripheral blood, but more frequently in the blood-forming organs. These also he regards as amebæ (*Hemameba leucemia parva sive vivax*). He describes with both hemamebæ various stages in the life-cycle— young parasites, crescent, sporulation and degeneration forms.

The views of Löwit have found a number of strong opponents, the most aggressive of whom is Türk,⁶ who asserts that Löwit's bodies are artefacts derived from mast cell granules, and that he was able to produce forms not distinguishable from Löwit's parasites in non-leukemic blood. Vittadini⁷ is the only one who claims to have confirmed Löwit's findings.

Pinkus⁸ thinks it is questionable whether the bodies, even if they occurred exclusively in leukemic blood, are the cause of the disease, since *Hemameba magna* has been found in a case of lymphatic leukemia, and furthermore, in myelogenous leukemia the so-called parasites are not in

¹ Cent. f. allg. Path., 1901, xii, p. 967.

² Virchow's Archiv, 1894, cxxxvii, p. 1.

³ Walz cites as his authority Dr. Cabot's Clinical Examination of the Blood, New York, 1900, but the book contains no such statement, and Dr. Cabot informs me that he has never observed such a case.

⁴ Cent. f. Bakt., 1898, xxiii, p. 206. Wiener klin. Woch., 1899, xii, p. 865.

⁵ Zeitschr. f. Heilkunde, 1901, xxii.

⁶ Wiener klin. Woch., 1901, xiv, p. 435.

⁷ Cited by Walz, *vide supra*.

⁸ Leukemie. Nothnagel's spec. Path. u. Ther., Vienna, 1901, p. 75.

the myelocytes, but in the lymphocytes, which are the least characteristic cells in this form of the disease.

Türk has never succeeded in transmitting leukemia to animals. He states that the disease produced in rabbits by Löwit has nothing to do with myelogenous leukemia, as the same disease-picture can be produced by inoculating portions of organs from individuals that have died of other diseases. Türk asserts that *Hemameba parva* is nothing more than the nucleolus of the lymphocyte.

UNDIFFERENTIATED LYMPHOID CELLS IN MYELOGENOUS LEUKEMIA.

In every case of myelogenous leukemia the blood contains non-granular cells with a small amount of protoplasm. These cells are present in considerable number and are generally looked upon as lymphocytes. L. Michaelis,⁹ however, regards them as undifferentiated lymphoid cells. They cannot be distinguished morphologically from lymphocytes. The undifferentiated lymphoid cells by further development become transformed into neutrophilic myelocytes, while the lymphocytes are adult cells. The undifferentiated lymphoid cell differs from Benda's myelogenic cell in that the former develops not only in the bone marrow but in other tissues.

Michaelis supports his view by a remarkable case of disease of the blood-forming organs which came under his observation. The total number of leucocytes in the peripheral circulation was only slightly increased, but 76% of the cells were lymphocytes and 7% myelocytes. The patient died after an illness of three months. The lymph-nodes were not swollen. The spleen was very large and soft and weighed 2,000 grams. The bone marrow was red and consisted almost entirely of lymphocytes and giant-cells. The spleen had the same histological structure.

LYMPHATIC LEUKEMIA WITHOUT ENLARGEMENT OF THE LYMPH NODES.

A careful histological study by Reed¹⁰ supports the view of Walz and Pappenheim that in every case of leukemia the primary seat of the disease is in the bone marrow. The old theory that lymphatic leukemia is essentially a disease of the lymph nodes is still supported by Ehrlich. He bases his claim on the assertion that no lymphocytes occur normally in the bone marrow. This statement the writer calls in question, as in the bone marrow cells are found identical morphologically with the lymphocyte. There is no proof that the lymphocytes of the blood come from the lymph glands alone, and although it cannot be stated positively that they arise in the bone-marrow it is known that all other colorless cells of the adult blood originate in the bone marrow from lymphoid cells and that cells identical morphologically with the lymphocytes of the blood are found there.

The case upon which this study was based ran a rapid course. Hemorrhages, anemia and pro-

gressive weakness were the chief clinical features. A thorough study of the blood was not made during life. At autopsy neither spleen nor lymph nodes were enlarged. The bone marrow of the femur was homogeneous, a deep red and very soft. Microscopically the bone marrow consisted chiefly of lymphoid elements. The predominating cell was smaller than the red blood corpuscle and possessed a densely staining homogeneous round nucleus, and a small amount of clear protoplasm. There was another type of lymphoid cells varying in size which possessed a nucleus relatively large in respect to its protoplasm. The nucleus always showed a definite chromatin network. The cell is identical in structure with the lymphocytes of the blood of the lymph nodes. There was no indication of hyperplasia in either the spleen or lymph nodes.

This case is not unique. Six similar ones have been recorded within the last few years, and authorities are now nearly agreed that in lymphatic leukemia the blood changes do not occur until the bone marrow is involved. The writer states that no case of leukemia has come to autopsy in which the bone marrow was normal.

If leukemia is always a disease of the bone marrow it is manifestly incorrect to restrict the term myelogenous to one form of the disease. The writer suggests a new clinical classification based upon the blood picture. Three forms of leukemia are recognized, all due to myelogenous changes: the myelocytic, the lymphoid and the mixed cell varieties. Leukemia resembles an infectious disease. Possibly in leukemia a positive chemotaxis exerted by some poison in the body draws out certain cells from the bone marrow into the blood.

Reed has apparently overlooked the case of lymphatic leukemia reported by Dennig¹¹ from Liebermeister's clinic in which there was no swelling of the spleen or lymph-nodes and the bone marrow showed no microscopic alterations.

Blumer and Gordinier¹² studied a case of lymphatic leukemia of at least a year's duration in which the lymph nodes were not enlarged. The clinical picture was that of pernicious anemia. As in the similar cases of lymphatic leukemia without enlargement of the lymph nodes reported by Pappenheim and Reed, the striking feature of the pathological examination was the marked lymphoid change in the marrow of the long bones.

The predominating cell of the blood, although resembling the normal lymphocyte, presented points of difference of which the most important was the acidophilic character of its protoplasm. The writers regard this prevailing type of cell as identical with the predominating cell in Reed's case. They are inclined to accept the theory of Rubinstein that both lymphocytes and erythrocytes originate from a colorless mother cell in the bone marrow, and they regard the predominating white cell in the blood of their case as this mother cell. Arrest of development of this mother or ancestral cell would explain both the anemia and

⁹ Zeitschr. für klin. Med., 1902, xlv, p. 86.

¹⁰ Am. Jour. Med. Sci., 1902, cxxiv, p. 653.

¹¹ Münch. med. Woch., 1901, p. 140.

¹² Medical News, 1903, lxxviii, p. 833.

the lack of typical lymphocytes noted in their case.

The writers hold that lymphocytes in adults are formed normally both in the lymph nodes and in the bone marrow. Theoretically, therefore, it would be possible to have lymphatic leukemia as a result of disease of the bone marrow, or of the lymph nodes, or of both. When lymphatic leukemia is of the ordinary type, that is, with enlargement of the lymph nodes, an increase of the typical lymphocyte occurs, whereas in the cases without enlargement of the lymph nodes the predominating cell differs from the ordinary lymphocyte and is formed in the bone marrow.

MYELOGENOUS LEUKEMIA WITH UNUSUAL FEATURES.

Ehrlich has asserted that in every case of myelogenous leukemia there is an increase of the absolute number of eosinophiles and this increase of eosinophiles is of great diagnostic value. This doctrine of Ehrlich has been repeatedly but unsuccessfully attacked. Simon,¹³ however, reports a case in which throughout the course of the disease the eosinophiles were absent from the blood. He could find no similar observation in the literature, and he met with but one instance of leukemia in which the total number of eosinophiles was not increased.

The blood picture in Simon's case was remarkable in other respects. The percentage of mast cells was small, and early in the disease the absolute number was low. This is interesting in view of Ehrlich's doctrine that the mast cells show an absolute increase in all cases of myelogenous leukemia and that this increase of mast cells is of even greater diagnostic importance than the increase of eosinophiles. Shortly before death, however, the total number of mast cells became markedly increased.

Until near the end of the disease there was only slight enlargement of the spleen, and the total number of leucocytes scarcely exceeded the physiological limit. Myelocytes were present in the blood and the number increased with the advance of the disease. During the last six months of illness myelocytes formed from 30 to 50% of the leucocytes. This case and the one reported by L. Michaelis illustrate the fact that the appearance in the blood of myelocytes rather than an increase in the total number of leucocytes is the characteristic feature of the disease. Shortly before death the leucocyte count rose to 116,000.

Large mononuclear cells devoid of granules and distinctly different from the large mononuclear leucocytes of the blood appeared in large number toward the end of the illness when no less than 54% of all the leucocytes belonged to this type. Nägeli claims that these cells are found in the blood in every case of myelogenous leukemia and he noted also that they may in the later stages of the disease form the predominating leucocyte in the blood. Nägeli regards them as specific bone marrow cells and the ante-

cedents of Ehrlich's myelocytes. For the study of the mononuclear non-granular elements in the blood the eosinate of methylene blue should be used, as Ehrlich's triple stain does not differentiate the lymphoid cells.

(To be continued.)

Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

TWENTIETH ANNUAL MEETING, HELD AT WASHINGTON, D. C., MAY 12-14, 1903.

THE President, DR. NORMAN BRIDGE of Los Angeles, in the chair. Sixty-five members of the association were in attendance. The President in his opening address called attention to some of the dangers and duties of the association. First of all we usually make our generalizations, as to the effects of climate, by its apparent influence on the newcomer sick, rather than on the permanent resident population. This subjects us to several possibilities of error. The effects witnessed in the bodies of sojourners in a new climate might be fairly attributed to the influence of the latter if other things were equal, but other things never are equal or nearly so, nor can they be, and every one of these invalid newcomers is under conditions and subject to manifold influences that are markedly different from those that obtained at his home where the invalidism began. Dr. Bridge characterized the melancholy migration of patients hopelessly ill of tuberculosis to some distant and famous climate as one of the greatest tragedies of modern times. After citing three cases in which the unfortunate patient was sent thousands of miles for a climate when death was evidently near, Dr. Bridge discussed the borderline cases in which there is a fair question as to the use of climatic treatment. We have created a widespread popular belief in certain curative effects of climate — those effects exist, but only for patients who still have fair physiologic forces, and it is our duty to try to prevent a blind faith in their power to raise the dead.

DR. SAMUEL A. FISK read

SOME NOTES ON NASSAU,

founded on a three months' residence during the past winter at that port. The picture of Nassau, as he witnessed it, was summer land in winter, roses in January, muslin gowns at Christmas, doors and windows open day and night, almost constant sunshine, snow and slush eliminated. It is reached by steamer in three and a half days from New York, or 160 miles from Miami, Fla. The island is about twice the size of Nantucket. The soil is dry, and rain does not stand in puddles. It is of coral formation, white lime rock, which can be quarried with the saw. There are more days of clear sunshine than the meteorological records indicate, as observations are taken only at 8 A.M. and 8 P.M. Thunder showers are rare

¹³ Am. Jour. Med. Sci., 1903, cxxv, p. 984.

in winter. The effect of this tropical climate on any one from the latitude of New York is somewhat enervating and suggests the onset of malaria. Proper regulation of diet, exercise and arrangement of clothing goes far to mitigate the depression experienced at first. It does not do to eat and drink as one may in a colder climate. There is a disposition to do very little, and this little must not be done at mid-day. There is no sewer system and, for the most part, the privies are insufficient and inconvenient. The mainland supplies most of the food for tourists. Ice is manufactured at the hotels, but the town generally is supplied with ice from Maine. Milk is very expensive. Drinking water is obtained from cisterns, which collect the rain water or from wells which are impregnated with lime. Golf and bicycling are possible, but the climate does not favor the necessary activity. Piazza life is the main feature. There are commodious hotels with modern conveniences. This station is suitable for persons with Bright's disease, diabetes, neurasthenia and insomnia. The climate is unsuited for cases of tuberculosis. Nassau is soothing, not bracing; as a sanatorium for winter alone the Bahamas are, beyond all question, superior to any other health resort on the eastern coast of North America.

DR. GUY HINSDALE presented a paper entitled

IMPRESSIONS OF CALIFORNIA RESORTS.

The paper was based on the experiences in connection with the recent visit of the association to California. Climatic details of Northern California, particularly in the vicinity of Mount Shasta, were given. The climate of San Francisco, Palo Alto, Santa Cruz, Monterey, Santa Barbara and other important stations was described. Dr. Hinsdale believes that sanatoria for tuberculous patients should be erected on the higher elevations on the Shasta route, at San Luis Obispo and Santa Barbara, excellent institutions having been already instituted at more southerly stations.

DR. R. H. BABCOCK of Chicago read a paper entitled

SOME FURTHER REMARKS AND QUERIES CONCERNING THE INFLUENCE OF ALTITUDE ON HEART DISEASE.

Dr. Babcock mentioned three cases of mitral stenosis which were able to endure an altitude of 6,000 feet without discomfort; also a female without previously recognized disease of the heart who yet experienced an acute disturbance, which disappeared soon after reaching a lower level. A report of a minor who developed precordial pain and tachycardia after considerable exertion was given, his symptoms becoming relieved at the level of Chicago. Brief allusion was made to the development of uremic symptoms in some cases of chronic nephritis at the altitude of Denver. In chronic nephritis are symptoms referable to lowering of blood pressure or to increased metabolic activity? In the case

of the miner, were the symptoms due to cardiac overstrain and not to the altitude *per se*? Could the effects in the other cases, good or bad, be attributed to lowered blood pressure incident to low atmospheric pressure? Or can any case of cardiac disease endure a moderately high altitude after having refrained from exercise until becoming acclimated? A consideration which seems to argue against a person's tolerance or intolerance of moderate altitude being due to the blood-pressure lies in the generally accepted statement that the pulse of the consumptive is one of low tension, and yet most of such patients are able to endure residence in Colorado at a mile or so elevation without serious cardiac embarrassment. Dr. Babcock showed that the danger of travel and residence at an altitude appears to be really greater in the case of apparently healthy hearts, since such individuals are likely to overdo and, therefore, get up a condition of cardiac overstrain, and that in all cases it is not so much the altitude itself which is to be feared as the ease with which the heart may be overstrained in the mountains. This strain is not due so much to the altitude as it is to the fact that in the higher regions the surface of the ground is uneven and hilly.

DR. DELANCEY ROCHESTER of Buffalo read a paper on

THE ROLE OF LOCAL SANATORIA IN PREVENTING THE SPREAD OF TUBERCULOSIS.

Assuming that the best results in the treatment of this disease are obtained in closed sanatoria, and that patients once cured are no longer foci from which the disease can spread, the author advocated the establishment in every community of two sanatoria, one for advanced and one for incipient cases. This is necessary, because the treatment of the two classes of cases is decidedly different, and also because the constant presence of advanced cases and the occasional painful death of one or more patients have a decidedly depressing influence on the incipient cases. Dr. Rochester advocated compulsory notification in tuberculosis, and also the power to remove patients to the sanatorium for the good of the community.

DR. VINCENT Y. BOWDITCH of Boston read a paper on

SUBSEQUENT HISTORIES OF SEVENTY-NINE ARRESTED CASES TREATED AT THE SHARON SANITARIUM FROM 1891 TO 1902.

The results were obtained in a climate thought to be most unfavorable for consumptives, not far from the sea coast, and at an altitude of 200 to 300 feet above sea level. This sanitarium and that of Dr. Millet at East Bridgewater, Mass., are under similar conditions in this respect, but the latter is for more well-to-do patients. During the eleven years in which the Sharon Sanitarium has been in existence, 182 patients have been treated. Of these, 18 are excluded, because they remained but a few days or were not cases of tuberculosis. Of the remaining

164 cases, 79 were recorded as arrested. Of these 79 there have died since leaving the institution after varying periods of comparative health only 12 persons, or 15.2%. These cases were all analyzed and the causes of death reported.

Among other cases reported as recovered was a woman who came in 1893 with tubercle bacilli and disease of the right lung. After fourteen months she left the sanitarium "a magnificent specimen of health, her cough having ceased several months before." She has remained perfectly well ever since—nine years; this result is a brilliant example of what can be done in a changeable, harsh climate not far from sea level. Dr. Bowditch believes, however, that in a better climate still better results, in general, will be obtained.

Dr. E. O. OTIS of Boston read a paper on

DISPENSARIES FOR TUBERCULOSIS, WITH A DESCRIPTION OF THE TUBERCULOSIS DEPARTMENT OF THE BOSTON DISPENSARY.

After describing English and French dispensaries, and advocating special dispensaries for tuberculosis, an account was given of the Boston Dispensary. This affords treatment to all classes of patients, the daily visitors numbering from 250 to 300 and occasionally approaching 500. The department for the tuberculous is in the same building, and this arrangement provides an easy examination of the throat, ear, eye or other organ when desired. The clinic lasts from two to three hours daily. The sputum is examined and a report given at the time of the visit. The tuberculin test is employed successfully in out-patients and x-ray diagnosis is used. The routine examination covers every possible feature of a tuberculous case. The Boston Dispensary divides the city into districts and sends a physician daily, one for each district, to all cases of sickness among those who are too poor to pay a physician and are unable to visit the dispensary. Accompanying each physician is a trained nurse furnished by the Instructive District Nursing Association, a most valuable adjunct to the medical supervision. Food, if needed, is supplied from a diet kitchen. Patients in the incipient stage are sent to the State Hospital for Consumptives at Rutland, and for the destitute means are provided to pay the sum required, viz., \$4 weekly. In many advanced cases admission is secured at the innumerable little boarding houses near Rutland, which have sprung up about the great sanitarium. In Boston notification in tuberculosis is compulsory. The dispensary also examines, when desired, patients who have been discharged from the Rutland Sanitarium or have taken the open air cure elsewhere. The dispensary affords clinical instruction to students and physicians in the examination of tuberculous patients.

DISCUSSION.

Dr. LEONARD WEBER of New York thought that an effort should be made in all of the large

cities, and particularly in New York, to equip dispensaries with every facility for the early diagnosis and treatment of tuberculosis, and that this object would be best obtained in the manner brought out by Dr. Otis' paper.

Dr. DELANCEY ROCHESTER. I have been very much interested in Dr. Otis' statement regarding the dispensary treatment for pulmonary tuberculosis in Boston, for I made a very bad failure of an attempt to establish such a thing at home. The men who were in charge of the general medical clinic simply wouldn't stand for a clinic for tuberculosis alone, and we had great difficulty, in fact we absolutely failed, in establishing such a clinic. I see that, according to Dr. Otis' statement, he has enlarged his clinic to one for diseases of the lungs in order to finally accomplish the purpose.

Dr. FREDERICK I. KNIGHT. Referring to the advent of the district nurse, I desire to state that any one who has visited the homes of the poor people since the introduction of the visiting nurse, will agree in feeling that her visits to the homes of these patients is going to bring about great good.

Dr. JUDSON DALAND. I wish to express my appreciation of Dr. Otis' paper, and to thank him for bringing out so thoroughly the uses to which a special dispensary service for this disease may be put, and more especially for his suggestions regarding the care of the patients so far as food is concerned. If we could put aside sufficient money for proper equipments, these cases that cannot go to sanatoria could be kept under close supervision, and I am perfectly certain that an enormous amount of good could be accomplished.

Dr. J. E. STUBBERT of New York read a paper entitled

TENT LIFE FOR CONSUMPTIVES.

The results of sleeping in the open air were noted, and arrangements for moving the beds from the patients' room to a balcony or projecting the head of the bed through low windows were commented on. Dr. Stubbart advocated tent life as better suited to the majority of cases, and said that two tent colonies will be established during the summer at Liberty, New York, under his supervision. One for the richer patients is located on the side of a mountain, and is arranged in camps. The tents are large, with compartments for living room, toilet, etc. There will be sanitary plumbing and special attention to drainage. The camp will have telephone connections and other conveniences. The other camp is an extension of a boarding house, in connection with which individual tents for sleeping and living are rented. The expense in the latter camp is ten dollars weekly.

Dr. FREDERICK I. KNIGHT. The economy of tents must be considered, which means that the air space and the facilities for its proper exchange will be limited, and I am therefore of

the opinion that barracks or cabins would serve the purpose much better. I am free to confess that the air in the few tents which I have been in seemed to me the worst possible for a consumptive to live in, and especially would this be true when artificial heating is necessary.

DR. SAMUEL A. FISK. I wish to endorse strongly the position taken in this matter with regard to the great necessity for fresh air. I think that the other considerations are of minor importance. The main thing that we are striving for is to provide an ample amount of fresh air and sunlight, and the kind of tent to be used is another thing. Food is likewise of prime importance. I know from my own experience on the frontier that persons can live in tents in mid-winter, and I know from living in a tent myself that when one has become accustomed to tent-life, and has lived and slept in a tent, he does not care to live in anything else.

DR. J. EDWARD STUBBERT. I agree with Dr. Knight in the statement regarding the poor ventilation often found in tents, but in citing that fact we must not overlook the other side of the question, namely, that the ventilation of the rooms in the majority of cases is much inferior to that found in the ordinary tent. I think the point that a person who has once lived in a tent will live in nothing else is true.

(To be continued.)

Recent Literature.

The Diagnosis of Surgical Diseases. By DR. E. ALBERT, late Director and Professor of the First Surgical Clinic at the University of Vienna. Authorized translation from the eighth edition. By ROBERT T. FRANK, A.M., M.D. 419 pages and 53 illustrations. New York: D. Appleton and Co. 1902.

This book is intended to present to practitioners and students the problems in diagnosis which actually confront them at the bedside. The subjects treated comprise only a part of the surgical lesions usually found in textbooks. They are the lesions of the different portions of the body which have especially attracted the attention of the writer in this connection. They are grouped according to their similarity of symptoms and points of general resemblance. In this way the advantages of clinical teaching are most nearly attained and by the presentation of a large number of clinical cases the value of this plan is further enhanced. Also, as the translator states, the fragmentary and disconnected instruction of clinical demonstrations, even under the most favorable circumstances, is more systematized. The subsequent reports of cases post-operative, and at times post-mortem, in confirmation or correction of diagnosis, is of great additional value to this system. It is unusual to meet a treatise on surgical diagnosis which is not an enumeration of a list of

possible diseases, or in other words a systematic pathological-anatomical classification of surgical diseases. This latter method is not a characteristic feature of the present work. The author was a veteran teacher and a clinician of great experience. The wide circulation of the book in Europe is proof of the favor it has found there. The volume in a way suggests to one that classic of Milton's "Rest and Pain."

From the above description, however, one must not expect to find an ideal "up-to-date" treatise in this work. For since its author left it surgical science has advanced and new means of diagnosis have developed, *e. g.*, radiography, which are not herein described. Taken as a whole, however, the book has much to commend it and will both interest and instruct its readers.

Operative Surgery, by HERBERT WM. ALLINGHAM, F.R.C.S., Surgeon of the Household of His Majesty the King; Surgeon in Ordinary to His Royal Highness the Prince of Wales; Senior Assistant Surgeon and Lecturer on Operative Surgery at St. George's Hospital; Consulting Surgeon to the Surgical Aid Society; Late Surgeon to the Great Northern Hospital; Late Assistant Surgeon to St. Mark's Hospital for Diseases of the Rectum. New York: William Wood & Company. 1903.

This book consists of a brief account of the leading features of an operation. The author has tried to give memoranda which would serve to emphasize the important points concerning many operations and has given many hints which are based on his personal experience. The book has the distinct advantage of being a small volume and will serve as a useful guide to practitioners who desire to look up an operation.

The Practical Medicine Series of Year Books. Volume VII. Pediatrics, edited by ISAAC A. ABT, M.D., Assistant Professor of Medicine (Pediatrics Department), Rush Medical College; Orthopedic Surgery, edited by JOHN RIDLON, A.M., M.D., Professor of Orthopedic Surgery, Northwestern University Medical School. June, 1903. Chicago: The Year Book Publishers.

This little work gives a fairly complete review of the pediatric and orthopedic literature of the past year. The abstracts are, as a rule, good. In some cases, however, they are not very clear; the wrong impression is given, or the relative values are not properly defined. The editor's notes are valuable.

Modern Materia Medica and Therapeutics. By A. A. STEVENS, A.M., M.D., Lecturer on Physical Diagnosis in the University of Pennsylvania, etc. Third edition, entirely rewritten. W. B. Saunders & Co. 1903.

This is primarily a textbook and suitable chiefly for students. It does not differ essentially from many others of its class.

The Surgical Treatment of Gastric and Duodenal Ulcers. By B. G. A. MOYNIHAN, M.S. (Lond.) F. R. C. S. (Eng.), Senior Assistant Surgeon, Leeds General Infirmary, etc., etc. Illustrated. Philadelphia and New York: W. B. Saunders & Co. 1903.

This brochure of 83 pages is devoted to a discussion of the author's personal experience in the operative treatment of simple ulcer of the stomach and duodenum and includes a tabulation of his operative work.

The subject has been classified and considered as: (1) Perforation of Gastric and Duodenal Ulcers; (2) Hemorrhage; (3) Chronic Ulcer; (4) Hour-glass Stomach.

The work is well known, and the substance of the volume has already been presented to the profession through the reports of Mr. Moynihan's paper read at the meeting of the American Surgical Association in May, 1903. His views on this important subject are now available in a convenient form for those interested in this branch of surgery. The operative technique of his method of gastro-enterostomy is well described and illustrated. The tabulation of his clinical work is interesting and instructive, the date, age, sex, a résumé of the clinical history, the character of the operation, the condition found and finally the result, with the author's remarks being systematically and concisely given in each case. His paper was one which has attracted much attention.

The Office Treatment of Rectal Diseases. By RUFUS D. MASON, M.D., Professor of Rectal and Pelvic Surgery in the John A. Creighton Medical College, Surgeon to St. Joseph Hospital, etc., etc. Illustrated. Second edition. Lincoln, Neb.: The Review Press. 1902.

The author's description of this little book of 125 pages is that it is not intended to take the place of larger works devoted to this subject, but that it shall supplement them and cover many points that have been omitted and that it gives details which he as a teacher and specialist by many years of practical experience has found valuable. Diagnosis is very briefly discussed. Etiology, pathology, anatomy, vague theories and major operations are omitted. Treatment mainly is presented to the reader and in the most terse, practical manner possible.

The special conditions discussed are Constipation, Hemorrhoids, Abscess, Fistula, Ulceration, Prolapse and Cancer. The concluding chapters are devoted to rectal examination for life insurance and local anesthesia. The book is written in that bright, positive, concise style that is always attractive and which makes the reader feel after its perusal that henceforth the treatment of this class of disease will be simple and successful. This effect is apparently due to the fact that the description of methods of treatment form the greater part of the work and that only successful methods of treatment are presented.

The book certainly does, as its author claims, supplement other more complete treatises. It contains many valuable suggestions and practical details of treatment.

Surgical Emergencies; The Surgery of the Head.

By BAYARD HOLMES, B.S., M.D., Professor of Surgery in the University of Illinois, etc. New York: D. Appleton & Co. 1903.

This book of 569 pages is one of a series describing the every-day surgery of the human body. The surgery of the eye, ear and other well-established specialties are not considered. The plan of the work is based on the author's experience in teaching surgery, and consultation work with many practitioners. In the Table of Contents one notes Congenital Malformations, Injuries to the Head and Face, Fractures of the Skull and Cerebral Injuries and Abscess, Otitis Media and its Brain Complications, Epilepsy, Meningitis, Diseases of the Parotid, Neuralgia, Tumors of the Face and Skull, Brain Tumors, Surgical Diseases of the Orbit, Cancer of the Tongue and other similar lesions. At the beginning of each chapter the subject described is defined, classified, its variations stated and concrete examples of the more important conditions requiring surgical attention enumerated. Care is taken to avoid undue prominence or emphasis of unusual conditions, but those of common occurrence are thoroughly discussed. Those unusual, but of such a character as to require immediate relief, are considered. Finally are described those conditions of uncommon occurrence, but of great theoretical importance. The writer has tried by a variety of means, graphic and otherwise, to present the different subjects in such a vivid manner that the impression on the reader is both distinct and permanent. Pathology, diagnosis and the "proper" methods of treatment are taught.

Dr. Holmes believes that anatomy and pathology are best studied by inspection of actual specimens. That a subject should be studied from textbooks, the current literature relating to it, and carefully reported clinical observations of actual cases. The subjects treated in this volume are rather the emergencies of the average physician than those of the professional surgeon. The book is somewhat fragmentary, but the plan on which it is written has many features which are attractive and commend it. It contains much of interest and value. It is illustrated by ninety wood cuts and fourteen colored plates, some of which are quite instructive.

A Compend of Diseases of the Skin. By JAY F. SCHAMBERG. Third edition, revised and enlarged, with 106 illustrations. Philadelphia: P. Blakiston's Son & Co. 1903.

The third edition of this "Quiz-compend" has just been published. The text has been carefully re-read and various additions and revisions made.

THE BOSTON

Medical and Surgical Journal

THURSDAY, DECEMBER 17, 1903.

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27 AND 29 BROMFIELD STREET, BOSTON, MASS.

SCARLET FEVER.

At a meeting of the Boston Society of Medical Sciences held in the Harvard Medical School, Dec. 15, 1903, Dr. F. B. Mallory presented a paper on certain protozoön-like bodies which he had found in the skin in four cases of scarlet fever.

The bodies may be divided into two groups, of which the first comprises a series of sharply defined bodies varying in size from about two to seven microns in diameter. They are composed of a granular, finely meshed reticulum and frequently contain one or more vacuoles. The second group consists of radiate bodies varying in size from four to six microns in diameter. They contain a central body around which is arranged a varying number of segments (10 to 18), which in the earlier forms are merely indicated, but in the later forms are sharply defined laterally from each other. At a still later stage the segments are separated from each other but are still grouped more or less closely around the free central body.

The bodies of the first group stain lightly but sharply with methylene blue in the eosin-methylene blue method after fixation in Zenker's fluid. In the radiate bodies, or rosettes, however, the central body and the peripheral parts of the segments stain deeply with the same color.

The bodies of both groups occur in vacuoles in the epithelial cells of the epidermis, between these cells, and free in the superficial lymph vessels and spaces of the corium, but nowhere else.

It is difficult to explain these bodies as artefacts or as degenerations. On the other hand they closely resemble the different stages in the asexual development (schizogony) of the malarial parasites, but they are about twice as large as

the latter when compared with them under similar conditions of fixation and staining.

It is impossible at present to say much in regard to the distribution of these bodies until favorable cases can be obtained for post mortem examination and the skin from various parts be carefully studied. In three cases dying within forty-eight hours after the first appearance of the eruption the bodies were numerous in two cases and few in the third, while in a case dying on the ninth day of the eruption occasional bodies could still be found. In all four cases the amount of skin saved for examination was very small. In bits of skin from several other early cases no bodies could be found.

In a recent paper Hektoen¹ places scarlet fever at the head of the list of those diseases of which the cause is absolutely unknown. The discovery of these peculiar and characteristic bodies in the skin of four cases may prove to be the first step in the unraveling of the cause of this disease.

Dr. Mallory concluded with the statement that while he personally believes that these bodies are protozoa and have an etiological relation to scarlet fever, he is far from claiming that such a relation has been proved.

The paper was illustrated with a microscope demonstration of sections of the skin and with a series of colored drawings and of lantern slide preparations of the scarlet fever bodies. For the sake of comparison a series of lantern slides of segmenting malarial parasites in fresh blood, and in the blood vessels of the brain and other organs from a fatal case of malaria, was also shown.

SANITARY SUPERVISION OF PUBLIC WATER SUPPLIES A PROTECTION TO PUBLIC HEALTH.

THERE can be no question that money invested in sanitary measures intended for the protection of the public health, and the consequent saving of human life, is well invested, and in the long run will yield profitable returns. Too often does it happen that the truth of the old proverb, "When the steed is stolen shut the stable door," is recognized only too late to prevent serious illness and loss of human life.

This principle is frequently illustrated in the indifference of many communities to the importance of providing every possible means of protection for public drinking water supplies.

¹ Hektoen. Recent Investigations Bearing on Infectious Diseases of Unknown Etiology. Journ. of the Am. Med. Ass'n, 1903, vol. xli, p. 405.

In Pennsylvania the people have paid dearly for this wanton neglect, as shown in the long-continued pollution of the water supply of Philadelphia, and the serious outbreaks of disease which have taken place at Plymouth and at Butler.

In Massachusetts the question of water pollution has been a subject of frequent discussion by legislatures, medical societies and social organizations for a third of a century, the result being the enactment of a general statute in 1886 placing all public water supplies under the supervision of the State Board of Health. Under the provisions of this act the work of introducing new supplies and of improving those already existing has gone rapidly forward until, at the present time, over 90% of the population of the state is supplied with public water, mostly of good and wholesome quality.

A valuable index of the purity of the water supplied to a community is the amount of typhoid fever prevalent among the people thus supplied, as shown either by the mean annual number of cases, or of deaths from this disease as compared with the existing population.

In Massachusetts during the years preceding the general introduction of public water supplies, for example, the ten years 1856-65, the death rate from typhoid fever throughout the state was high, at 9 or 10 out of each 10,000 inhabitants, but since such introduction it has rapidly fallen until in the last year (1902) the death rate from this cause was not over 2 per 10,000, or less than one-fourth of its former rate.

In the report of the State Board of Health for 1896 a diagram is published in which the death rate from typhoid fever and the percentage of persons not supplied with public water are shown in two parallel and descending lines, which are nearly coincident throughout the period of forty years. It is among this class of persons not supplied with public water that typhoid fever is most prevalent. What may be properly termed epidemics of such illness appear to be a thing of the past in Massachusetts. When, therefore, a limited outbreak occurs like that which was reported in Lowell in September last, or the occurrence of a dozen or more cases at Williamstown, public suspicion is unduly aroused, since even these limited outbreaks are of rare occurrence.

In Pennsylvania, however, the outbreak at Butler has assumed a seriously epidemic form, since here there were 1,200 cases in a population of 18,000, or more than 7%, a ratio exceeding

any that have occurred in Massachusetts in recent years at least thirty-fold, and this is only a repetition of the severe epidemic which proved so disastrous at Plymouth in Pennsylvania a few years earlier. Recent advices from Butler show that the probable cause of the epidemic in that town was due to the existence of cases of typhoid fever upon the watershed of the public supply at a time when repairs were being made in the filtering plant, which allowed unfiltered water to be supplied to the inhabitants.

In the state of Vermont, with less than 350,000 inhabitants, the Legislature appropriates \$10,000 a year for the use of its State Board of Health, while the Legislature of Pennsylvania, a state having a population of 6,000,000, makes a niggardly appropriation of \$6,000 for all sanitary purposes.

In Massachusetts liberal provision is made for special work in the protection of the purity of public water supplies, and the State Board of Health is given general supervision of this work. By this means the Board is enabled to assume a careful oversight of all the water supplies in the state, both those of municipalities and those of private corporations. It makes regular and systematic examinations of the waters, provides rules and regulations for the sanitary protection of such supplies, gives advice to the authorities of cities and towns, gives warning of impending danger from pollution and from lead poisoning, and by these means affords a protection the value of which is far beyond the amount expended in carrying out the provisions of the law.

HARVARD OARSMEN.

DR. GEORGE L. MEYLAN of Columbia University recently read a paper before the Boston Physical Education Society on the subject, "The Study of Harvard University Oarsmen from 1852 to 1892, Inclusive." The general result of his very careful investigation was that certainly no injury is done to the individual by the exercise of rowing, even in races, which taxes physical endurance to the extremest limit. He found that during the forty years under investigation there had been 152 "varsity" oarsmen, of whom 32 had died. He was able to obtain interviews or get direct information regarding the remaining 120.

It was found in the first place that these men gave an insurance risk averaging seven and one-half years more than among ordinary persons. As regards general health, they were found to be

decidedly above the average. Nor were they found in any case wanting when studied by statistical tests. Only one of the 120 men thought that he might have been injured by college rowing, but the evidence even in his case was by no means conclusive that this was the fact. On the intellectual side it furthermore appears that the oarsmen have in general been successful in life, and on the whole have obtained more distinction than students generally, or even men belonging to the Phi Beta Kappa society.

Interesting as these observations are, it must be borne in mind that the men under discussion are picked individuals, who would not have been chosen as representative oarsmen had they not at the outset had unusual health. It must also be borne in mind that the publicity given athletes in various ways must be regarded as an element, at least, in their future worldly success. Admitting, however, this possibility of error, it is a matter of great interest, amply borne out by Dr. Meylan's investigation, that violent athletic sport does not seriously impair the constitution in later life, as sometimes stated. Investigations of this nature should certainly be prosecuted with relation to other violent forms of exercise, since by these means alone may we arrive at a fairly exact knowledge of the benefit or injury of modern athleticism.

MEDICAL NOTES.

A FIVE-YEAR MEDICAL COURSE. — The College of Physicians and Surgeons of the Province of Quebec is reported to have recently decided to lengthen the medical course to five years and furthermore voted that British licenses should no longer be recognized in that province. A more complete preliminary education as represented by the B.A. degree was also advocated for students of medicine.

ITALIAN HOSPITAL AT ORANGE, N. J. — At a meeting held on Nov. 22, at Orange, N. J., a movement was set on foot for the establishment in that place of an Italian hospital, under the auspices of the Roman Catholic Church. It is proposed to rent a temporary building at once, and later to erect a substantial hospital building with complete modern appointments.

REMARKABLE CASE OF SKIN GRAFTING. — A successful case which has attracted much attention has just been discharged from the Muhlenberg Hospital at Plainfield, N. J. The patient, who was chief clerk in the New York office of the

United States Express Company, was one of the victims of the wreck on the New Jersey Central Railroad at Westfield last winter, and has been undergoing treatment since Jan. 27. He was scalded so severely with steam that one-third of the cuticle was destroyed. His case was at first regarded as entirely hopeless, but after he had lingered for several days it was determined to attempt skin grafting. The method of Thiersch was adopted, and over 4,200 grafts were employed, the material for which was generously furnished by two hundred Masonic brothers and employees of the express company.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Dec. 16, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 31, typhoid fever 12, measles 151, smallpox 0.

COMPULSORY VACCINATION AGAIN UPHOLD. — It is stated that recently another claimant for damages because of compulsory vaccination has been non-suited in the Boston courts.

NEW YORK.

REPORT OF BOARD OF HEALTH. — On Dec. 9 the President of the Board of Health transmitted to Mayor Low the report of the Department for the year 1902. In it, it is stated that the death-rate fell to 18.75 per thousand, as compared with 20 in 1901 and 20.57 in 1900. The total number of deaths was 68,085, as against 70,722 in 1901 and 70,872 in 1900. In the mortality from diarrheal diseases in children under two years of age there was a decrease of 858 from the preceding year. The death-rate in the section corresponding to the former City of New York (at present the Boroughs of Manhattan and the Bronx) was 19.49, which figure was not approached since 1814, when the low death-rate of 19.66 was recorded. In Brooklyn the death-rate, 17.88, is believed to be the lowest ever recorded, with the exception of the year 1866.

A CENTENARIAN. — Isaac Mitnitsky died in the Williamsburgh District of Brooklyn, N. Y., on Nov. 28, at the reputed age of 109 years. He was born in Moscow, Russia, and the year of his birth, 1794, the family affirms, is recorded in the official records of that city. He did not come to this country until he was 92 years old, and since then he has made the journey back to Russia no less than four times.

DECISION IN FAVOR OF A HOSPITAL. — In an action brought by Mary H. Rice against Vassar Brothers' Hospital, Poughkeepsie, to recover \$5,000 damages for injuries received by falling on the defendant's sidewalk, Judge Samuel T. Maddox, in the Supreme Court at Poughkeepsie on Nov. 24, non-suited the plaintiff on the ground that a charitable corporation is not liable for damages alleged to have been due to the negligence of the trustees. The decision was made on the application of the attorneys for the hospital, who brought forward the claim that to make a trust fund liable for damages might defeat the purpose of the trust by so depleting the funds as to make them inadequate.

DEATHS FROM VEHICLES. — Police Commissioner Greene has made public a statement in which he claims that the number of persons killed by vehicles in the streets of New York during 1902, 538, which was published a short time since, is too large. The correct figure, he says, is 375, and his statistics show that 172 deaths were caused by street cars, 146 by trucks, wagons, etc., 9 by automobiles, 7 by runaway horses and 2 by bicycles, while in 29 the exact cause was not reported. In his statement General Greene expressed the opinion that in order to reduce this evil there should be a more vigorous enforcement of the speed ordinances, and also the meting out of more adequate punishment to offenders.

AN APPEAL TO VANITY. — Last year 125,000 persons availed themselves of the privileges afforded by the permanent public baths, but of that number only 16,052 were women and girls. The Association for Improving the Condition of the Poor came to the conclusion that something would have to be done to increase the attendance of the latter, and after mature deliberation it was determined that an appeal to personal vanity would be more effective than one for the public welfare. Accordingly cards are now being handed out by agents of the society to girls and women in the neighborhood of the baths which bear this inscription: "For a soft, rosy complexion, a quick, graceful walk, and a healthy appetite, try a shower bath twice a week."

VACCINATION OF PUBLIC SCHOOL CHILDREN. — The Appellate Division of the New York Supreme Court for the Second Department, sitting in Brooklyn, handed down a decision on Nov. 20, upholding the constitutionality of the statute enforcing the vaccination of public school chil-

dren. The decision was given in the case of Edmund C. Viemeister of the borough of Queens, who sought to compel the Board of Education and the principal of Public School No. 12 in Queens to admit his child to school, admission having been denied because the child had not been vaccinated. It was urged on behalf of Viemeister that the statute was void, being contrary to the provisions of the Constitution. In the prevailing opinion Justice Woodward declares that the statute does not violate the Constitution, as it operates equally upon every person who is or may desire to become a pupil in the public schools, and affords equal protection to all. He then adds: "However willing we might be to agree with the appellant that the practice of vaccination is attended with dangers, and that its efficacy is a matter of uncertainty, these are matters which should be properly addressed to the legislative department, rather than to the courts." Justice Hirschberg also wrote an opinion sustaining the statute, declaring that it constituted a legitimate exercise of the police power of the state.

Miscellany.

RETIREMENT OF DR. EDWARD COWLES FROM THE McLEAN HOSPITAL.

At a meeting of the Trustees of the Massachusetts General Hospital, held on Friday, Dec. 11, 1903, the following votes relating to the retirement of Dr. Edward Cowles of the McLean Hospital were placed upon their records:

Voted: That the Trustees of the Massachusetts General Hospital, in grateful recognition of the long and successful administration of the McLean Hospital by Dr. Cowles, place this minute upon their records. Dr. Cowles entered the service of the Hospital as Superintendent of the McLean Asylum on Dec. 11, 1879, and is the first of its officers to take advantage of the scheme of retiring allowances adopted by this Board on July 14, 1903. He came to the institution a well-trained and successful hospital administrator. During the twenty-four years of his devoted and efficient service the Asylum has been transformed into a hospital; the attractive and admirably planned establishment at Waverly has taken the place of the unsatisfactory and outworn quarters at Somerville; valuable researches into the nature and treatment of the most terrible of human ailments have been made; and improvements in the care of the insane have been made possible by the knowledge so acquired. At all times he has been the patient and persuasive advisor of the Board and its trusted and efficient agent.

Voted: That a Board of Consulting Physicians for the McLean Hospital is hereby created.

Voted: That Dr. Edward Cowles be appointed a member of the Board of Consulting Physicians for the McLean Hospital.

Correspondence.

NOTE ON THE USE OF THE FLUOROMETER TO ESTIMATE THE PROPORTIONS OF BETA AND GAMMA RAYS GIVEN OFF FROM RADIUM SALTS.

Boston, Dec. 11, 1903.

MR. EDITOR: In the fluorometer described in the third edition of "The Roentgen Rays in Medicine and Surgery," pages 640 to 642, the fluorescence of a specimen of radium is used as a standard with which to compare the fluorescence produced by different vacuum tubes on a tungstate of calcium screen. The fluorescence which a specimen of radium may excite on a tungstate of calcium or on a barium platino-cyanide screen may also be used as a standard, but this method was not chosen because these screens might deteriorate by continuous excitation, especially the barium platino-cyanide screen. To compare the fluorescence produced by different specimens of radium or by the different rays emitted by a given specimen of radium, the fluorescence excited on the barium platino-cyanide screen of the fluorometer by the radium may be a more convenient standard than the fluorescence of the radium itself.

Recently, in order to compare the amount of fluorescence produced by a specimen of radium chloride of about 7,000 activity, contained in a glass tube, with a specimen of pure radium bromide, I placed the first specimen below and in contact with one part of a barium platino-cyanide screen and the specimen of pure radium bromide below the other portion of the screen, the first part of the screen spoken of being protected from the rays of the pure radium by a sheet of lead placed below the radium of 7,000 activity. Experiment showed that in order to have the two portions of the screen equally brilliant, it was necessary to hold the screen $4\frac{1}{2}$ inches (11.25 cm.) from the pure radium bromide. If, however, the Beta rays given off by this specimen of radium were cut off by interposing a plate of aluminum of suitable thickness between it and the screen the two portions of the screen were equally illuminated when the screen was held 1 inch (2.5 cm.) from the radium bromide. Judging by this experiment it would seem that the Gamma rays of pure radium bromide were only about one-twentieth as abundant as the Beta rays. I did not attempt to estimate the amount of Alpha rays; they were presumably cut off by the mica covering of the metal box which contained the radium bromide. This mica may have cut off also some of the Beta rays. I determined the thickness of the aluminum plate necessary for cutting off the Beta rays by first deviating them by a magnet and then interposing successive sheets of aluminum until no fluorescence was produced on a screen; this thickness of aluminum did not diminish to any noticeable extent the Gamma rays.

To diminish even slightly the Gamma rays I found it was necessary to interpose in their path an aluminum plate about five times as thick as that required to cut off the Beta rays so that for the purposes of the practitioner the thickness of aluminum about one-seventh of an inch, which cut off the Beta rays completely, would not affect the Gamma rays.

I am not studying the therapeutic effects produced by the Beta and Gamma rays together, on the one hand, and the Gamma rays alone, on the other. Thus far my observations indicate that healing can be produced in both ways, but if the Beta and Gamma rays are both used there is much more danger of a burn than if the Gamma rays are used alone. I am investigating this subject with a view to determining the method that should be followed in order to obtain the most good with the least danger to the patient. At present, however, I merely desire to direct attention to a method of estimating the amount of these rays given off by radium.

Very truly yours,

FRANCIS H. WILLIAMS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 5, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Percentage of deaths from | | | | | |
|--------------------|-----------------------------|--------------------------|---------------------------|----------------------|----------------------|-----------------------|---------------------|----------------|
| | | | Deaths under five years. | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. |
| New York . . . | 3,785,156 | 1,313 | 351 | 24.37 | 21.79 | 5.18 | 3.12 | .91 |
| Chicago . . . | 1,885,000 | 478 | 128 | 19.15 | 16.11 | 2.72 | 1.39 | 2.09 |
| Philadelphia . . . | 1,378,527 | 451 | 99 | 23.27 | 13.52 | 3.19 | 1.31 | 2.22 |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . . | 533,712 | 194 | 57 | 21.44 | 11.13 | 2.66 | 2.47 | 2.06 |
| Cleveland . . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . . | 351,745 | — | — | — | — | — | — | — |
| Cincinnati . . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . . . | 315,307 | — | — | — | — | — | — | — |
| Washington . . . | 295,103 | — | — | — | — | — | — | — |
| Providence . . . | 191,230 | 67 | 14 | 11.94 | 8.95 | 1.49 | 1.49 | — |
| Boston . . . | 603,163 | 214 | 54 | 19.16 | 16.35 | 3.74 | .33 | 2.34 |
| Worcester . . . | 132,014 | 35 | 8 | 5.71 | 17.14 | 2.85 | — | 2.85 |
| Fall River . . . | 115,549 | 46 | 22 | 23.91 | 13.04 | 6.52 | 8.70 | — |
| Lowell . . . | 101,559 | 30 | 9 | 3.33 | 30.00 | — | — | — |
| Cambridge . . . | 98,639 | 19 | 5 | 26.31 | 21.05 | 1.05 | — | — |
| Lynn . . . | 72,497 | 22 | — | 9.09 | 4.54 | — | — | — |
| Lawrence . . . | 69,760 | 20 | 10 | 20.00 | 20.00 | — | 15.00 | — |
| Springfield . . . | 69,389 | 21 | 4 | 9.52 | 23.81 | — | — | 4.76 |
| Somerville . . . | 68,110 | 21 | 6 | 14.28 | 14.28 | — | — | — |
| New Bedford . . . | 67,198 | 20 | — | 20.00 | 15.00 | — | 10.00 | 5.00 |
| Holyoke . . . | 49,286 | 17 | 2 | 29.41 | 11.76 | — | — | — |
| Brockton . . . | 44,873 | 10 | 0 | — | — | — | — | — |
| Haverhill . . . | 42,104 | 12 | 1 | 8.33 | 8.33 | 8.33 | — | — |
| Newton . . . | 37,794 | 7 | 2 | 14.30 | — | 14.30 | — | — |
| Salem . . . | 36,876 | 10 | 1 | 40.00 | — | — | — | 20.00 |
| Malden . . . | 36,286 | 10 | 2 | 10.00 | — | 10.00 | — | — |
| Chelsea . . . | 35,876 | 10 | 3 | 10.00 | 30.00 | — | — | — |
| Fitchburg . . . | 35,069 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Taunton . . . | 33,656 | — | — | — | — | — | — | — |
| Everett . . . | 28,620 | 5 | 2 | — | — | — | — | — |
| North Adams . . . | 27,262 | 8 | 1 | 62.50 | — | — | — | 37.50 |
| Glooucester . . . | 26,121 | — | — | — | — | — | — | — |
| Quincy . . . | 26,042 | 3 | 1 | 33.33 | — | — | — | — |
| Waldham . . . | 25,198 | 7 | 1 | — | 14.30 | — | — | — |
| Brookline . . . | 22,608 | 6 | — | 16.67 | — | — | — | — |
| Pittsfield . . . | 22,589 | 8 | 2 | — | — | — | — | — |
| Chicopee . . . | 21,031 | 3 | 0 | — | — | — | — | — |
| Medford . . . | 20,962 | 6 | — | — | — | — | — | — |
| Northampton . . . | 19,883 | 6 | 1 | — | 33.33 | — | — | — |
| Beverly . . . | 15,302 | 2 | 1 | — | 50.00 | — | — | — |
| Clinton . . . | 15,161 | 5 | 1 | — | 20.00 | — | — | — |
| Leominster . . . | 14,806 | — | — | — | — | — | — | — |
| Newburyport . . . | 14,478 | 2 | 0 | — | — | — | — | — |
| Woburn . . . | 14,300 | — | — | — | — | — | — | — |
| Hyde Park . . . | 14,175 | 3 | 1 | 66.67 | — | — | 33.33 | — |
| Adams . . . | 13,745 | 2 | 1 | 50.00 | 50.00 | 50.00 | — | — |
| Attleboro . . . | 13,677 | — | — | — | — | — | — | — |
| Mariaboro . . . | 13,609 | 3 | 1 | — | 33.33 | — | — | — |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — |
| Westfield . . . | 13,418 | 2 | — | — | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 1 | — | — | — | — | — | — |
| Framlingham . . . | 12,534 | 2 | — | — | — | — | — | — |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . . . | 11,344 | 3 | 0 | — | — | — | — | — |
| Southbridge . . . | 11,268 | — | — | — | — | — | — | — |
| Watertown . . . | 11,077 | 1 | — | — | — | — | — | — |
| Plymouth . . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,111; under five years of age, 792; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 677, acute lung diseases 546, consumption 343, scarlet fever 30, whooping cough 6, cerebrospinal meningitis 5, smallpox 16, erysipelas 6, puerperal fever 5, measles 10, typhoid fever 50, diarrheal diseases 87, diphtheria and croup 119.


From whooping cough, Chicago, Baltimore, Boston, Fall River, Lawrence and Holyoke 1 each. From smallpox, New York 1, Philadelphia 15. From cerebrospinal meningitis, New York 3, Somerville 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Nov. 21 the death-rate was 17.4. Deaths reported, 5,037; acute diseases of the respiratory organs (London) 165, whooping cough 59, diphtheria 73, measles 106, smallpox 2, scarlet fever 46.

The death-rate ranged from 7.1 in East Ham to 29.3 in York. London 16.6, West Ham 16.6, Brighton 9.6, Southampton 9.5, Plymouth 24.7, Bristol 15.5, Birmingham 20.6, Leicester 16.8, Nottingham 15.7, Liverpool 20.1, Bolton 15.9, Manchester 18.7, Salford 22.3, Bradford 18.8, Leeds 18.5, Hull 17.5, Cardiff 17.8, Rhondda 18.3, Merthyr Tydfil 21.8, Hornsey 9.3, Warrington 21.2.

METEOROLOGICAL RECORD.

For the week ending Dec. 5, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. | |
|---|-------------|----|--------------|----------|--------------------|-----------|--------------------|-------------|-------------------|-----------|-----------|-----------|---------------------|-----|
| | Daily mean. | | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | | |
| | | | | | | | | | | | | | | |
| S. . 29 | 29.70 | 23 | 30 | 16 | 68 | 73 | 70 | N W | N W | 7 | 9 | O. | O. | T |
| M . 30 | 29.92 | 30 | 35 | 25 | 71 | 62 | 72 | N W | N W | 9 | 8 | C. | C. | T |
| T. . 1 | 30.30 | 27 | 33 | 21 | 78 | 73 | 76 | N W | N | 9 | 4 | C. | C. | O |
| W. . 2 | 30.20 | 30 | 35 | 26 | 84 | 94 | 89 | N | N | 12 | 18 | O. | N. | .14 |
| T. . 3 | 30.04 | 29 | 32 | 26 | 88 | 89 | 87 | N | N | 18 | 18 | O. | O. | .10 |
| F. . 4 | 30.02 | 34 | 38 | 29 | 79 | 75 | 77 | N | W | 14 | 8 | O. | C. | T |
| S. . 5 | 30.06 | 34 | 40 | 27 | 69 | 82 | 76 | W | W | 11 | 8 | O. | O. | T |
|  | 30.03 | | 35 | 24 | | 78 | | | | | | | | .24 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. **Mean** for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING DEC. 10, 1903.

BROOKS, S. D., surgeon. To proceed to Brunswick, Ga., and assume temporary command of station. Dec. 8, 1903.

MC MULLEN, JOHN, passed assistant surgeon. Relieved from duty at Hongkong, China, and directed to proceed to San Francisco, Cal., and report arrival by wire. Dec. 3, 1903.

PARKER, H. B., passed assistant surgeon. To proceed to New York, N. Y., and report to Surgeon G. W. Stoner, Immigration Depot, for duty. Dec. 7, 1903.

WHITE, M. J., passed assistant surgeon. Relieved from duty at Honolulu, T. H., and directed to proceed to Hongkong, China, for duty. Dec. 2, 1903.

RICHARDSON, T. F., assistant surgeon. Granted leave of absence for seven days from Dec. 6, 1903, under paragraph 191 of the regulations.

AMESSE, J. W., assistant surgeon. To proceed to Seattle, Wash., and assume command of the service at that port. Dec. 5, 1903. Granted leave of absence for one day. Dec. 5, 1903.

BERRY, T. D., assistant surgeon. Detailed as inspector of unserviceable property at Cleveland, Ohio. Dec. 5, 1903. To proceed to Cairo, Ill., and assume temporary command of service at that port during absence of Surgeon G. M. Guiteras. Dec. 10, 1903.

EBERSOLE, R. E., assistant surgeon. Relieved from duty at Gulf quarantine station, and directed to proceed to Tampa Bay quarantine station and assume command. Dec. 7, 1903.

EBERT, H. G., assistant surgeon. Granted leave of absence for four days from Nov. 28, 1903, under paragraph 191 of the regulations.

SMITH, E. G., assistant surgeon. To proceed to Santa Clara, N. Y., for special temporary duty to examine aliens. Dec. 10, 1903.

BREADY, J. E., acting assistant surgeon. Granted leave of absence for two days from Dec. 15. Dec. 8, 1903.

GREGORY, G. A., acting assistant surgeon. Granted leave of absence for seven days from Dec. 5. Dec. 4, 1903.

RYDER, L. W., pharmacist. Granted leave of absence for fifteen days from Dec. 10. Dec. 9, 1903.

CASUALTY.

Acting Assistant Surgeon Hugh Burford died at Brunswick, Georgia, Dec. 7, 1903.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING DEC. 12, 1903.

W. M. WHEELER, surgeon. Ordered to the Navy Yard, Puget Sound, Washington, and also on board the "Nipsic."

J. C. THOMPSON, P. A. Surgeon. Detached from the Navy Yard, Puget Sound, Washington, and ordered to the "Albatross."

C. S. BUTLER, assistant surgeon. Detached from the "Albatross" and ordered home to wait orders.

C. S. PECK, assistant surgeon. Detached from the "Iris" and ordered home to wait orders.

H. T. PERCY, surgeon. Detached from the "Indiana" and ordered to the "Iowa."

P. F. JENNESS, assistant surgeon. Detached from the "Indiana" and ordered to the "Iowa."

C. D. W. BROWNELL, surgeon. Ordered to the "Amphitrite," with additional duty at the Naval Station, Guantanamo, Cuba.

G. PICKRELL, surgeon. Ordered to additional duty in charge of the Naval Hospital, San Juan, P. R.

W. N. McDONNELL, acting assistant surgeon. Detached from the Naval Academy and ordered to the "Glacier."

SOCIETY NOTICE.

LECTURES ON ALCOHOL AND OPIUM INEBRIETY.—Dr. T. D. Crothers of Hartford, Conn., Prof. of Mental and Nervous Diseases at the New York School of Clinical Medicine, will deliver a course of four lectures on "Inebriety from Alcohol, Opium and other Narcotics," Jan. 5th and 6th, 1904, at 4 P. M. and 8 P. M., in the hall of this school, 328 West Forty-second street, between 8th and 9th Ave., New York City. The public are cordially invited to attend.

M. STERN, M.D., Secretary.

THE next meeting of The New England Hospital Medical Society will be held at Hotel Nottingham, Dec. 17, 1903. The scientific programme is—"The Mutation Theory" by Dr. H. E. Lothrop.—"Modern Bacteriological Methods" by Dr. M. E. V. Frazer. Report of a case by Dr. E. C. Upham. Presentation of specimens by Dr. Mabel Austin.

MARION NUTE, M.D., Secretary *pro tem*.

32 Mill St., Dorchester.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—A meeting of the society will be held in Sprague Hall, Medical Library Building, on Monday, Dec. 21st, at 8.15 P. M. Papers—Dr. George G. Sears will read a paper on Prognosis in Acute Pleuritis. Dr. Robert W. Lovett will read on the Treatment of Severe Cases of Lateral Curvature. Discussion by Dr. Bradford and Dr. Goldthwait.

ARTHUR K. STONE, M.D., Secretary.

543 Boylston St.

THE HENRY PHIPPS INSTITUTE LECTURES.

THE third lecture in the course established by the Henry Phipps Institute will be given in the auditorium of the Witherspoon Hall, Philadelphia, on Tuesday, Dec. 29th, at 8.30 o'clock P. M., by Dr. G. Sims Woodhead, Professor of Pathology at Cambridge University, England. Subject—"The Paths of Infection in Tuberculosis." This lecture will be illustrated by slides projected on a screen. The profession, in general, is cordially invited. A reception to Professor Woodhead will follow the lecture.

MAZYCK P. RAVEALL, Assistant Medical Director.

RECENT DEATHS.

EDWARD FRIDENBERG, M.D., of New York, a well-known specialist in diseases of the eye and ear, died on Dec. 9, from cerebral apoplexy. He was born in New York City in 1855, and was graduated from the College of Physicians and Surgeons in 1878. He served as interne at the Charity Hospital, Blackwell's Island, and was afterwards on the medical staff of Mount Sinai Hospital. Later he spent a considerable time in Germany in the study of ophthalmology and otology. He was formerly President of the Harlem Medical Association and at the time of his death was ophthalmic and aural surgeon to the German Hospital and Dispensary.

ELISHA HALL BRIDGES, M.D., of Ogdensburg, St. Lawrence County, N. Y., one of the leading physicians in the northern part of the state, died from acute Bright's disease on Dec. 9, at the age of sixty-two years.

WILLIAM H. HOLMES, M.D., for many years a prominent physician and surgeon of Orange, N. J., died recently from chronic kidney and heart disease. He was sixty-nine years old and during the Civil War he served as an assistant surgeon in the navy.

BOOKS AND PAMPHLETS RECEIVED.

Quiz-Compends, No. 19. Compend of Diseases of the Ear, Nose and Throat. By John Johnson Kyle, B.S., M.D. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1903.

A Non-Surgical Treatise on Diseases of the Prostate Gland and Adnexa. By George Whitefield Overall, A.B., M.D. Illustrated. Chicago: Rowe Publishing Co., 1903.

Elements of Surgical Diagnosis. By A. Pearce Gould, M.S. (Lond.), F.R.C.S. (Eng.). Third Edition. Revised and enlarged. Chicago: W. T. Keener & Co. 1903.

Address.

THE RESPONSIBILITY OF THE MEDICAL EXAMINER.¹

BY HERBERT PARKER, ESQ.,

Attorney-General of the State of Massachusetts.

MR. PRESIDENT AND GENTLEMEN OF THE SOCIETY:

He who addresses medical examiners has need to speak carefully, even ingratiatingly; he must appeal to your kind consideration, for it is certain that to the medical examiner, of all men, we must look for the truth to be spoken of us, after we are dead; and there is grave significance in this.

You have probably, you younger medical examiners, examined the statute to see the material origin of your authority. You older men have long since forgotten to look for any such assurance as statutory authority because you draw it now, rightfully, from your experience. You would have been surprised to find that the statutes of the medical examiner are different than what you have found with relation to the appointment of any other executive judicial examiner of the Commonwealth.

You will learn, have learned, to your great satisfaction, that the requirements for your appointment as medical examiners are, first, that you shall be discreet men, and second, that you shall be profoundly learned in the science of medicine. It is to this field of your responsibility that I would call your attention now.

You are assumed to be, and you must be, discreet men before you are qualified to enter on the discharge of duties of the most profound importance to the community. You stand, gentlemen, upon that debatable ground over which there hangs always something of the atmosphere and shadow of doubt. The line between the medical and legal profession is the line between the medical and legal issue.

Only as you are enlightened by profound learning, only as you are guided by soundest discretion, can you pass upon the first and vital question of your requirements. I say that these questions are of profound importance to the community, for they concern not only the public interest that involves inquiry into the perpetration of the possible crime, but here again is the grave responsibility that rests upon every physician to whom of necessity is entrusted the tenderest care of the sentiments of numerous persons with whom you are concerned.

You are called by some hysterical neighbor or friend to come and view the body of some one suddenly stricken to death. The frightened relatives or neighbors know not from what source that bolt came, from where it fell. They know only that for the moment they stand awe-stricken in the presence of the awful mystery of death. You, gentlemen, are required to preserve, in that atmosphere of doubt and alarm

and excitement, the full possession of your mental faculties. It may be that what we human beings call accident caused that death. It may be that there was some lesion of some organ when the death occurred. We can no more tell than we can tell what causes the lofty trees of the forest to fall, and you can hear the plaint and fierce ravages that shall come and tear the forests. It may be that death came from that source, and we know who alone is to be invoked for such source. It may be that death came from violence — and I use violence in its statutory sense; not that some blow was stricken and death followed, but that violence that means intervention of some power, — whether death came from a sudden incisive blow, or the instantaneous effects of a poison perhaps caused that death. In either case it is a violent death, and this violent death for your consideration and investigation should be any death not immediately explainable from the surroundings that come to your attention.

Now, then, you have been called upon to consider, maybe, the result of any one of these causes. It may have been caused by the voluntary taking of some poison instigated by the voluntary wish of the victim, so that he or she should be relieved all of a sudden of the anxiety of life.

You will not and you do not, and it is to the eternal credit of your profession and to your personal character that you do not, hastily draw conclusions. You should not hastily draw the conclusion that death was through the voluntary act of the woman or man who has died, for you are to consider the effect of a hastily spoken word of judgment by the physician, upon whose utterance the stricken family and friends and community wait, as they would wait the utterance of an oracle. You are not hastily to conclude that death was caused by suicide, even though it is the easiest avenue through which you can escape from your doubt, for that means, if it be erroneous in its conclusion, that you not only have too hastily passed upon a medical and pathological question, but too hastily you have assumed to judge of the conduct of a fellow human being. And your words are not lightly spoken, for they carry the weight of the learning of your great profession. They carry the weight of that confidence which has come to you through your living and moving and being with and advising those who come to rely upon you.

You are not too hastily to conclude, and you do not, that the death was caused by the lawless act of some other, for the too hasty conclusion upon these lines is a twofold error. It would tend to fix suspicion first, upon some one who does not deserve such suspicion, and it sticks always, and years of righteous living cannot wholly obliterate the stain. It is a double error, because the too hasty conclusion of yours may lead to lines of investigation by the prosecuting officer or officers and they are shut off on other lines of inquiry through which and by which the truth might be ascertained. Far better not to pass upon it until the fullest and most exacting

¹Address at the Annual Meeting of the Massachusetts Medical-Legal Society, June 9, 1903.

investigation can and shall have been made by you.

The statute requires of you in the performance of your duty what is not ordinarily required of any other officers, because their lines of duty are pretty clearly circumscribed and do not go from one field of inquiry or from one field of responsibility to another; the medical field is one, the judicial another, and so on through the complex departments of our government and administration of government. But you, gentlemen, are required to make, not merely such examination as will enable you to make a report precisely and exactly, as has been made by Dr. Twitchell here to-day, an example of medical precision, in the autopsy of the Bitzer homicide, — and I need not call attention to the other papers which enlighten and which gives me great satisfaction as an officer of the Commonwealth; — in the consummation and the purpose of these inquiries by medical examiners you are required not merely to inquire what the anatomical results are, but the statutes require of you that you shall make examination into the cause and conditions and circumstances concerning the finding of the body, that you are to call the attention of those persons who are supposed to have been in its presence, and who may be there, as to the position in which it lies, all of those things which to your mind may be significant, which explain the mystery which you are investigating.

Now, why are all these things required? They are, first, because of the general responsibility that rests with you by reason of the very subject, by your study and determination. They are further required of you because one of the primary functions of the medical examiner is the investigation of crime and the fixing of guilt where it belongs, and I need not tell you men, who are engaged with us prosecuting officers, that the end of the prosecution of every crime is not simply the fixing of guilt upon the guilty and securing punishment to those who can restore no life. It would be but a futile and discouraging effort that we are making. But this is not the ultimate end of prosecution and investigation of crime. What we seek is, and that is what all law seeks, the protection and security of human life, and every conviction secured righteously, as all must be in our Commonwealth. Every offender who has taken human life, who is apprehended in his crime, should be punished, and must know the power of our law; and the effect on others, who may be likewise tempted, is to know that a certain hand of the law, guided by human agency, will mete out and apprehend, and that the power of punishment is in this law, upon which ultimate security can rest, until by the grace of God and the efforts of men there are changes in the criminal law that have never yet come.

Now, therefore, when you are called to inquire into the death of some one supposed to have died from violence, you are to steady yourselves, bring yourselves into that receptive, responsible state of mind that shall set your every faculty

into keenest activity, that shall constantly invoke the senses and ample responsibility that is in you. Be mindful of those whose interests are put into your keeping, the feelings of those who may be cast down by your word, but more than all you are to remember that wherever this ultimate purpose of the criminal law shall be appertained, the protection of human life shall depend upon the closeness of your observation and material opinion, and on the sentiments and inferences that you draw from those conditions, for you all know that the powers of the government first take their form and direction from the intimation that the medical examiner makes from the inferences that he draws from his examination.

Remember that the report on the autopsy that you make may be substantially the only material in which you may rely when the case may turn into a real case of homicide in court. The brain, preserved as this one we have here to-day, may not be brought before the court and jury by the physician, who may be called upon one side or the other to advise the court or the jury. It might all turn on the fact of this demonstration. The vindication of the law may all turn on the accuracy which you may have made and reported in your autopsy. You may have overlooked some detail that only momentarily attracted your attention. It may be that, by passing that door, you have gone by the avenue through which you could have passed very absolutely the question demonstrative of the cause of death.

I am saying to you these things which have occurred to every one of you. I am teaching you nothing. I am speaking to you of these things of which we all are reminded, and for us, we shall never forget that we will not discharge our duty if we suffer ourselves for a moment to be diverted from the absolute concentration on that which lies before us. Inferences one way or the other may be drawn from a statement, not absolutely verified by the autopsy. Or, if you make in your report of your autopsy suggestions that investigation might have made demonstrations rather than suggestions, the true inferences seen in the one case in the other are eliminated. Omit nothing that the closest scrutiny could suggest. Remember that the day is coming, gentlemen, when you are not to be confronted only by those persons who know nothing where you are wholly wise. The laymen who stand about, waiting for what you may tell them, contribute little to what you may tell, but rely on your manifesto. A case occurs, when your every conclusion is going to be disputed, when the inferences of guilt that you have drawn are unfounded. You cannot meet this attack that will be made upon you by counsel and by physicians, whose duty it will be to draw inferences, if there be any reason, differing from those that you have drawn.

The only method is by the absolute certainty so far as anything human can be of your original investigation and your report. It cannot be

met, believe me, gentlemen, by any ingenuity and reasoning, by any manifold duty and resentment of counsel. No ingenuity of convincing or manifold reasoning will permit you to meet this issue that you have got to meet.

Prepare yourselves by assuring yourselves that nothing in suggestion to your brain or mind has escaped this investigation. Then the case will be presented in court beyond a question of dispute of what the autopsy did reveal, leaving only legitimate elimination of the inferences that can be drawn from them.

This is the responsibility of the medical examiner briefly stated by one who is interested as you are in seeing to it that the beneficent purposes of our law, framed in our statutes, find its realization in the courts of justice, which are the places where human injuries manifest themselves, and the effort to make our human system of law follow along so far as we are able, to preserve them, and transform them to the divine law, under which we live and must ultimately go.

Original Articles.

DIFFUSE (COMBINED) DEGENERATION OF THE SPINAL CORD.

BY E. W. TAYLOR, M.D., AND G. A. WATERMAN, M.D., BOSTON.

(From the Department of Neurology, Long Island Hospital, Boston Harbor.)

THE following cases are reported as a further contribution to the subject of the combined lesions of the spinal cord. The confusion in the classification of these cases is still very great, and many further clinical and pathological reports are necessary before a satisfactory basis can be reached.

CASE I. DIFFUSE (COMBINED) DEGENERATION WITHOUT ANEMIA OR OTHER CACHEXIA.

C. G., unmarried, forty-nine years of age, was admitted to the Long Island Hospital June 8, 1901. Nothing of his family history bearing on the present condition was obtained. He had had typhoid fever when a young man and in 1882 syphilis, for which he was treated with apparent success. Since 1888 he had taken alcohol in excess.

About three years before entrance to the hospital he noticed a dull, constant pain which occupied small areas at the front of the abdomen at the level of the umbilicus. He did not notice any pain in his back. He had no nausea. He took medicine which seemed to improve the condition but led to a facial eruption. At the end of a year he was relieved of this pain, but in the summer of 1898 he noticed a cold area about the size of a hand just below both knees. This gradually enlarged and a feeling of numbness supervened in the cold areas. His feet became involved in the sensory disorder and he felt as though "walking on a thick carpet." In the winter of 1899 paresthesia of the legs developed, and his knees felt as though "in a vise." These disorders of sensation involved the legs from below upwards. During this period and up to April, 1900, he was able to walk steadily, whether in light or dark, and had no disorder either with his sight or handwriting. Since that time, however, his eyesight had gradually failed, so that at the time of entrance to the hospital he was wholly unable to read. His fingers had also begun to feel clumsy and cold, but there was no paresthesia or numbness of the arms. His handwriting became much impaired.

In February, 1901, he noticed a feeling of cold which gradually extended from the legs up to the level of the nipple. Up to six months before entrance he was able to walk, then gradually lost power in his legs until they were practically totally helpless. He had no disturbance of deglutition or articulation.

Physical examination showed a poor reaction on the part of the pupils both to light and with accommodation. His vision was poor. He could not count fingers at a distance of ten feet, nor could he read ordinary type. Lungs and heart were normal. A slight fibrillary twitching was noted over the pectoral region and in the muscles of the upper arm. His hand grasp was good, but there was general disturbance of temperature sense over the body and arms. His legs and toes could be moved very slightly. His legs took a semi-flexed position. Knee jerks were very much increased, ankle clonus and Babinski reaction were present. The tactile sense also showed some impairment. Later a marked disturbance in control of the sphincters came on and a certain mental failure became apparent. The Hgb. was 60%, whites, 12,800; reds, 5,281,000.

On June 28, 1901, it was noted that the patient was progressively failing both physically and mentally. He had become emaciated, was dirty in his habits and practically helpless. He died July 8, 1901.

Autopsy (01.71 lv.) by Dr. G. B. Magrath, July 9, 1901, twenty-one hours post mortem. There was slight sclerosis of the coronary arteries and some old fibrous adhesions in the pleural cavities, but beyond this, outside of the nervous system, nothing noteworthy. The brain showed slight edema, weighed 1,300 gms., and there was apparently slight atrophy of the first two frontal convolutions. The arteries at the base of the brain, circle of Willis and the vertebrals, showed a high degree of arteriosclerosis. All the vessels showed alterations of the lumen, irregular thickenings of the walls, and hypertrophy of vessels upon which depended the establishment of collateral circulation. The vertebral arteries were very unequal in size; the continuation of the basilar into the posterior cerebrals was practically interrupted at the bifurcation, the circulation in the distribution of the posterior cerebrals being effected by the posterior communicating

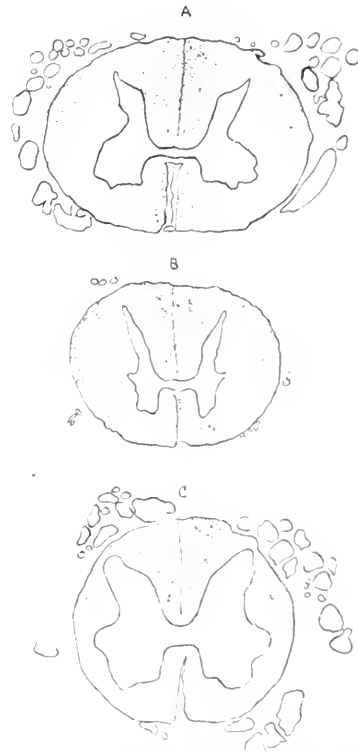


FIG. 1. Case I. A, cervical; B, thoracic; C, lumbar, showing diffuse lesions in a case without anemia. Accurate tracings, Edinger drawing apparatus.

arteries from the middle cerebials. The communicating arteries were much hypertrophied in consequence. Alterations of the ventral branches of the circle of Willis were less marked, though showing similar changes in the walls to the dorsal branches.

Sectioned frontally, the brain showed, especially in the region of the internal capsules and in the lenticular nuclei, a very marked tendency to the formation of small cysts, most of them less than one mm. in diameter. This condition was much less marked in the white matter and no such cysts were observed in the cortex. The cerebellum gave slight evidence of arteriosclerotic change.

Examination of the spinal cord in gross showed some diffuse degeneration in the dorsal and lateral columns.

Microscopic examination. Sections from the brain cortex, capsule, pons, oblongata, optic nerve and spinal cord were cut and stained by the usual methods. The cerebral cortex from the right frontal region and the paracentral lobule showed no striking alterations. The pia varied somewhat in thickness at various points and in places showed considerable infiltration with blood; there was no general atrophy of the cortex, and the blood vessels showed no evidence of endarteritis, or of hyaline or other degeneration, though the walls were generally thick. The optic nerves (Marchi) gave no evidence of myeline degeneration.

The internal capsule showed a high degree of general arteriosclerotic change, very much more marked than in the cortex, where the blood vessel lesions, as stated, were slight.

The pons was normal except for vascular changes, less in degree than in the capsule, but yet very apparent.

Beyond a very decided thickening of the arterial walls, the oblongata presented nothing abnormal. Especially to be noted was the complete absence of the type of degenerative change seen in the cord.

Cord. In general the lesions of the cord corresponded to those frequently described in diffuse, combined degeneration, in being most marked in the cervical and thoracic regions with degenerations in the dorsal, lateral and ventral tracts, and diminishing markedly in the lumbar region with a more definite limitation to the dorsal columns. At a level through the lower portion of the pyramidal crossing degeneration of white matter did not appear. In the cervical enlargement the lesions were pronounced and of characteristic appearance, involving the dorsal columns, particularly in their central portions, the lateral portions of the cord in the regions of the cerebellar tracts and to less degree of the pyramidal tracts, and the area on either side of the ventral fissure but beyond the limits of the uncrossed motor tracts. The degeneration here, as elsewhere in the cord, was of two characters, — a dense neuroglia sclerosis, most evident in the columns of Goll, and a degeneration with small overgrowth of neuroglia and the formation of vacuoles. Fat granule cells were abundant in the degenerating areas.¹ The lesions in the thoracic region were, in general, similar in distribution though slightly greater in extent than in the cervical portions of the cord. In the lumbar enlargement the degeneration was limited almost exclusively to the dorsal tracts, with narrow strips along the dorsal septum. The areas adjoining the dorsal commissure and the root zones spared. There were doubtful small areas of disintegration of the white matter in the ventral and lateral portions of the cord. In the sacral region there were no alterations.

Nerve roots throughout the spinal cord showed no sign of degeneration at any level studied, nor was there evidence of myeline or cell degeneration in the ventral horns.

Blood vessels. The vessels throughout the cord showed in certain places somewhat thickened walls, which could not be shown to stand in causal relationship with the areas of degeneration. The larger vessels of the pia and the ventral artery of the cord showed no alterations.

The essential points in the pathological anatomy of this case, therefore, were marked arteriosclerosis of the circle of Willis and the arteries of

the internal portions of the brain — internal capsule; diffuse quasi-systemic degeneration of the cord involving dorsal and lateral tracts, most extreme in the thoracic region; freedom from degeneration of nerve roots and gray matter; these lesions occurring in a patient who had not suffered from pernicious or grave secondary anemia, and who, so far as known, was not the victim of a cachexia of any sort.

The clinical history of this case is sufficiently explained by the pathological alterations. Syphilis and alcohol may have had some bearing on the widespread alterations of the vessels, but cannot be brought into direct causal relation with the main lesions in the cord. The early disturbance of sensibility is in accord with the usual history of these cases, followed by increase of deep reflexes and increasing incoördination, gradually leading to a condition of complete paraplegia. The marked increase of knee jerk



FIG. 2. Case 1. Lower cervical region. The diffuse, non-systemic character of the degeneration is evident; areas about ventral fissure suggest focal vascular lesions; nerve roots normal.

in spite of predominant lesions in the dorsal tracts is worthy of mention. Disturbance in vision was, no doubt, due to refractive error rather than to optic nerve atrophy, as shown by the microscopic study of the nerve. The case, in general, is a perfectly typical one of diffuse combined degeneration associated with arteriosclerosis in a person not suffering from pernicious or secondary anemia, or so far as discovered from any other wasting or debilitating disease. It is of interest in comparison with the following case in which pernicious anemia was a conspicuous feature of the clinical picture, and in which similar though somewhat more circumscribed lesions were found, and also as pointing to the fact that this general type of disease may and no doubt frequently does occur as a primary cord lesion, irrespective of accompanying conditions, with which it has usually been associated.

¹For details of this peculiar alteration see Putnam and Taylor: Journ. Nerv. and Ment. Dis., xxviii, 1, 1901. This lesion had also been previously described by others, with a somewhat different interpretation.

CASE II. DIFFUSE (COMBINED) DEGENERATION WITH PERNICIOUS ANEMIA.

H. R. (Massachusetts General Hospital, O. P. D. No. 20213), a woman sixty years old, unmarried, a seamstress, was well up to the spring of 1900 except for occasional attacks of rheumatism. She then began to have sensations of numbness in the fingers, but not affecting the body or the arms. In spite of the fact that her fingers felt as if "asleep," she was able to sew and make highly coordinated movements. In July she began to have similar sensations in her toes, which gradually spread until in October the whole of both legs was involved. Excepting for the numbness she considered herself perfectly well. There was no disturbance in walking. Her appetite was good and her bowels regular; nothing of importance was learned regarding her family history. Seen Oct. 8, 1900, she had an anemic appearance, and her gait was slightly ataxic. Heart and pupils showed no abnormality. The knee jerks were slight.

A blood examination Nov. 20 gave the following results: — Hgb. 25%; red cells, 1,850,000. Differential count of 500 white cells; — polymorphonuclear neutrophils, 71.8%; basophiles, small 25.2%; basophiles, large 1.6%; eosinophiles 1.4%. In the white count two megaloblasts and four normoblasts were seen. There was considerable poikilocytosis; many oval forms; an excess of macrocytes; some microcytes.

On Dec. 5 a note was made that the legs were very rapidly becoming weak and ataxic so that the patient was able to walk but a few steps at a time and very unsteadily. Dec. 18 she entered the New England Hospital, remaining until April 29. During that period, under general tonic and hygienic treatment she improved considerably.

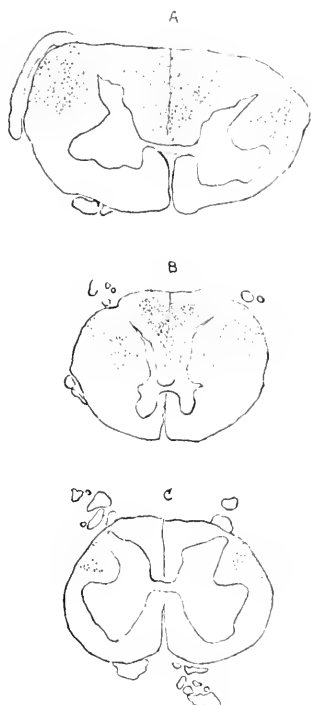


FIG. 3. Case II. A, cervical; B, thoracic; C, lumbar, showing somewhat circumscribed lesions in a case with pernicious anemia. Accurate tracings, Edlinger drawing apparatus.

A second blood examination showed a still further reduction in the red cells with poikilocytosis, Hgb. 45%, and 14,000 white cells.

After leaving the hospital she began again to fail, although her appetite remained good. She became more ataxic and by the middle of July could not move her legs while in bed, and very imperfectly when sitting in a chair. She could not stand alone. Her bowels were very constipated, with about one movement a week, in spite of attempts at catharsis. Aug. 15 without warning she fell, was taken up unconscious and remained so for several

hours. She was then delirious and helpless; vomited once or twice and had excessive diarrhea for several days. She failed rapidly and died Aug. 30, without recovering complete consciousness.²

Autopsy Sept. 1, 1901, by Dr. E. E. Southard. Examination of patient limited to the spinal cord. Extradural plexuses not injected; fat-tissue edematous. *Dura*, normal above, swollen to twice its size below by a movable mass of clear colorless fluid. Intradural attachments of cord, normal. *Pia*, pale, moist, of normal appearance, except in lower third, which shows the usual injection of post mortem origin. On section of the cord, microscopic evidence of lesion doubtful. No striking alterations of horns in size or shape. Gray matter soft and slightly retractile on section. No apparent alteration in distribution or amount of white matter. Color and consistency normal, except in lower dorsal region and upper portion of lumbar enlargement, where, in the dorsal columns, there is a vaguely limited area, 2 by 3 mm. in diameter, oval in cross-section, and bisected by the middle third of the dorsal septum, showing pinkish-gray color with slight if any loss of consistency. *Nerve roots*, normal.

Bulk of cord preserved in 1% formaldehyde solution. Specimens from each of three levels preserved in 95% alcohol, in Zenker's and in Mueller's fluids.

Microscopic examination. The spinal cord was stained by the usual appropriate methods and gave the following series of changes: — In the cervical region degenerations of white matter were sharply limited to the dorsal and lateral tracts, occupying a central area in the dorsal columns, including the columns of Goll and a part of the columns of Burdach, except at the dorsal periphery, where undegenerated fibers were interposed. The lesions were of the two characters frequently described, a fairly dense neuroglia sclerosis toward the centers of the degenerated areas, bounded by areas containing many vacuoles, and unproliferated neuroglia, with numerous fat granule cells, presumably being a more recent stage of the process than

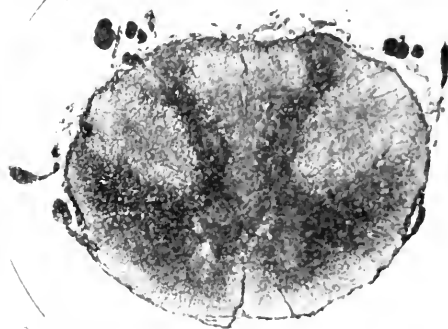


FIG. 4. Case II. Thoracic region, quasi-systemic degenerations of dorsal and lateral tracts in pernicious anemia; dorsal nerve roots normal. The apparent ventral degenerations are due to slight defects in staining, exaggerated in the reproduction.

the denser portions. The degenerations were not limited to neurone systems in any portion of the cord involved. In various portions of the thoracic region the lesions of the white matter were the same in general distribution, the more complete sclerosis being in the columns of Goll and in the crossed pyramidal tracts. The lesions in the lumbar enlargement were noteworthy from the fact that they were confined to the crossed pyramidal tracts, and had all the appearances of a simple secondary degeneration. (Fig. 3, C.) The far more usual degenerations in the dorsal columns (see previous case, Fig. 1) were wholly lacking.

² For many of the facts in this case we are indebted to Dr. Annie Hamilton.

The *gray matter* showed no noteworthy alterations, other than hyperpigmentation of cell bodies.

The *nerve roots* throughout the cord were normal, both ventral and dorsal.

Blood vessels external to the cord in the pia showed no abnormality. The vessels in the cord were for the most part distended with blood, but beyond a possible slight thickening of the walls were normal. There were no signs of inflammatory reaction in the neighborhood of vessels. A definite relationship between lesions of the white matter and vessels could not be demonstrated by the histological appearances.

The points of chief pathological interest in this case were:

Lesions of the spinal cord in a person dying presumably of pernicious anemia, sharply limited to dorsal and lateral columns of the cord, but not anatomically confined to neurone systems; no noteworthy alterations of nerve cells of ventral horns; no general changes in the blood vessels either without or within the cord; no degeneration of nerve roots.

On the clinical side the case presented the type of symptoms often seen; vague at first, chiefly characterized by paresthesiæ, gradually leading up to a very considerable degree of ataxia, with final inability to stand, due, no doubt, to the combined dorsal and lateral cord lesion — ataxic paraplegia. It is to be observed that during the course of her illness of something over a year there was at no time a sharp exacerbation of symptoms. Slight knee jerks in the presence of marked pyramidal degeneration with intact dorsal tracts in the lumbar region (Fig. 3, C) is worthy of mention and comparison with the increased knee jerks in Case I, in which the predominant degenerations were in the dorsal columns. The final collapse two weeks before death, however, remains unexplained.

These two cases evidently belong in the general group of the diffuse (combined) degenerations of the cord, the most striking accompanying condition in the first case being general arteriosclerosis and in the second a fatal anemia of the pernicious type. The lesions of the first case, though in general similar, were much more diffuse in character than those in the second, and more widespread, though less compact. This fact is worth noting since it has been maintained (Bastianelli, Russell, Batten and Collier, Spiller) that the converse is apt to be the case, and that cases in which pernicious anemia has occurred show less well-defined, apparently systemic alterations. The association of arteriosclerosis with the lesions of combined degeneration has not been frequently reported and its occurrence in this case is no doubt to be regarded as a coincidence rather than a causal relationship, particularly since the vessel changes were much more conspicuous in the brain than in the cord, whereas the diffuse nerve lesions were, as is usual, practically limited to the cord. In general we are strongly inclined to the view expressed by Russell, Batten and Collier that anemia, arteriosclerosis and the various other concomitant conditions associated with this now well-defined type of nerve degeneration are not etiologically significant, and that a common but as yet un-

known cause lies behind, which, recognizing the vagueness of the term, we may call a toxemia.

Since the publication in 1901 by Putnam and Taylor³ of a paper on "Diffuse Degeneration of the Spinal Cord," containing a general though by no means exhaustive review of our knowledge of these lesions, a considerable number of articles have appeared bearing directly on the subject. In a carefully reported case, Pickett⁴ discusses various matters pertaining to the general questions involved in the combined degenerations, criticises the term "diffuse degeneration," used in a previous article,⁵ as inadequate, and insists that the process is, at least, partly systemic, and that we have to do with two processes, one systemic and the other diffuse, a view also held by Russell, Batten and Collier. This is evidently merely a matter of terminology. A process must be either systemic or non-systemic as we use the term "system," as applied to neurones, and not merely to circumscribed areas in the cord. There is not sufficient evidence, as yet, to show that in these conditions the pyramidal tracts or the peripheral sensory neurones are degenerated as independent systems, although the superficial appearances are often suggestive of such limited lesions. The usual abrupt ending of the degeneration of the pyramidal tracts in the oblongata and the sparing of the dorsal nerve roots is evidence of this. The systemic character of the lesions in the lumbar or thoracic regions may, in a measure, be accounted for by secondary degenerations, an explanation which, no doubt, must be sought for the evident alterations in the pyramidal tracts in the second case reported above. The diffuse lesions are usually most marked in the thoracic portions of the cord, which would lend weight to this supposition of secondary degeneration. In this sense, therefore, that the lesions are partly diffuse and partly the result of secondary degeneration, it may be admitted that we are dealing with a double process, but it is not clear that the lesions are partly diffuse and partly systemic in any other sense. This, naturally, does not imply that true systemic combined sclerosis may not exist in which the diffuse element is lacking. A safer basis for the present is to regard these combined lesions either as systemic or non-systemic, rather than as a mixture of the two.

The whole subject has also been discussed in much detail, but with an inexcusable neglect of much of the American work by Kattwinkel.⁶ Eight personal cases are reported both on the clinical and pathological side, and a further observation of Kremer's is added. The cases are of the general type of combined degeneration, for the most part without sharp limitation to recognized fiber tracts, and the author takes occasion to discuss at length the difficulties of diagnosis when both dorsal and lateral tracts are involved, and the frequency of symptoms point-

³ Putnam and Taylor: Loc. cit.

⁴ Pickett: *Medicine*, viii, 740, 1902.

⁵ Loc. cit.

⁶ Kattwinkel: *Deutsch. Arch. f. klin. Med.*, lxxxv, 37, 1902. Dana's work is given due credit in this paper, but Putnam's is not mentioned.

ing toward tabes in spite of degenerations beyond the sensory systems. On the etiological side Kattwinkel lays much stress upon the work of Marie regarding the vascular arrangement in the cord, and also upon the less known work of Guillain and others in determining the course and relations of the lymph channels. From this investigation it appears that the arrangement of the lymph spaces in relation to the meninges and blood vessels is such that a stasis of lymph takes place with greater readiness in some parts of the cord than in others, in the presence of alterations of the blood vessels, or in certain instances even in the absence of visible vascular changes. This combination of dilatation of lymph spaces and consequent lymph stasis and vessel changes, he holds responsible for the alterations observed in the diffuse combined lesions of the cord. The two findings were practically constant in the cases cited. So far as we know, this conception of the function of the lymph system in producing these degenerations has not been maintained by other writers. It needs further verification before being generally accepted.

A case has also been reported by Rheinboldt⁷ from Hitzig's clinic, of so-called "combined system disease," in which the literature is again reviewed in great detail, but imperfectly, and conclusions drawn which add little of significance to our knowledge of the subject. The distinction made that cases with slight anemia are particularly associated with diffuse sclerosis of systematic distribution, as contrasted with the more irregular distribution of the lesions in fatal anemia, does not conform to our experience. We have in the examination of such cords found absolutely no changes which can be regarded as distinguishing the various types of cases.

Frank Billings, in the Shattuck Lecture⁸ before the Massachusetts Medical Society for 1902, presented an important contribution to our knowledge of the cord and oblongata lesions following or associated with pernicious anemia. Billings is inclined to accept the term "diffuse degeneration" as a sufficiently exact pathological statement of the conditions found, and regards it as highly probable that in cases of pernicious anemia the hemolysis and the diffuse cord degenerations are due to the same toxin.

Burr, in conjunction with McCarthy, has reentered the discussion of the "postero-lateral sclerosis" with a report of eight additional cases,⁹ and makes a classification of these lesions into eight groups, which he thinks may for clinical and laboratory purposes be sufficiently differentiated. Such a classification seems to us rather more elaborate than our present knowledge warrants; it is, at least, apparent that the transitional forms of disease of this type are so numerous that sharp categories are to be maintained only with great reservations. An essential

distinction, if it can be demonstrated, is between true combined parenchymatous neurone degenerations and lesions from the outset diffuse in character. Burr and McCarthy are apparently of the opinion that such a distinction may be made, even excluding Friedreich's ataxia and the combined lesions occurring in dementia paralytica. Their group 8 seems to come in this first category, whereas under group 6 are included those cases in which in our experience a much larger proportion of all the combined lesions are found. Oppenheim still maintains the existence of a true combined systemic neurone disease and is inclined to place in a distinct category the type of case described by Russell, Batten and Collier.¹⁰

In general, so far as we have followed the work done since the publication of the former paper alluded to, there seems no sufficient reason for altering the statement then made that no fundamental characteristics of the lesion have been found depending on different causes, and that for the present the term "diffuse" or, to be more specific, "diffuse combined degeneration," is a sufficiently exact designation of the usual anatomical alterations. This naturally excludes the cases, in the post-mortem study of which we have as yet had no experience apart from Friedreich's disease and dementia paralytica, in which true systemic degenerations of lateral and dorsal tracts may take place.

Finally certain evidence appears to be accumulating that cases which present during life a high degree of spasticity with slight ataxia, implying extreme degeneration of the lateral tracts are more chronic in their course than those with early and marked ataxic symptoms. A number of cases recently observed by us clinically and after post-mortem study, as well as the experience of others bears out this supposition.

HISTORICAL NOTES ON THE LAWS GOVERNING CIVIL MALPRACTICE IN THE ANCIENT TIMES AND THE MIDDLE AGES.¹

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

THE question of civil malpractice is of interest to both the medical and legal professions, and of recent years many rather unusual cases involving medical liability have been tried in various courts of the United States. That the physician or surgeon have been held liable for their actions by the courts of justice is as old as law, and it occurred to the writer that publishing a few scattered notes he had made on the history of this subject might not be without interest, although he must concede that the question consigned in the following pages is only superficially discussed.

Among the Egyptians the law punished very fully any too imprudent or audacious physician, and in the seventh volume of his "*Histoire de la Legislation*" De Pastoret says that "general

⁷ Rheinboldt: Arch. f. Psych., xxxv.

⁸ Billings: Bost. Med. and Surg. Journ., cxlvii, 225, 1902; also Trans. Mass. Med. Soc'y., 1902.

⁹ Burr and McCarthy: Journ. Nerv. and Ment. Dis., xxx, 14, 1903.

¹⁰ Loc. cit.

¹ Read by invitation at the Annual Meeting of the Massachusetts Medico-Legal Society, June 9, 1903.

rules had been established for the treatment of patients. These were the result of carefully made observations which were guarded by the priests in books that were so respected that they were solemnly carried in the processions taking place on days of public fête. An absolute prohibition did not exist preventing a physician from applying a new truth, but if, far from obtaining the salutary effects that he expected to procure he caused the death of his patient, he was obliged to pay his tribute for the misfortune or the boldness of having sacrificed the life of a citizen, by being beheaded. On the other hand, he was never liable to a patient confided to his care when he followed the rules laid down in the sacred books."

The same authority says that the Greeks also admitted medical liability, and Tourdes quotes an example related by Plutarch of a certain physician of Ephesus, by name Glaucus, who, having left his patient to go to the theater, was condemned by Alexander to be put to the cross, because the patient, having imprudently eaten during his absence, died.

In Roman law the principle of medical liability was admitted, and this is proof positive since it is so formally stated in the old texts. This can easily be understood, since at Rome any one could practice medicine who so wished, and, generally speaking, the slaves practiced the healing art, which was a source of large income for their masters. These physicians, or perhaps it were better said empirical practitioners, had no other end than the gain of money, and there was, consequently, a double motive for making them liable for mistakes committed in the exercise of their practice. On the one hand, there was no guarantee offered by a diploma attesting to serious studies and a certain science, while on the other, there was a complete lack of devotion and scientific disinterestedness.

A physician who gave his services to a patient was responsible to the master if the latter were a slave, and he fell under the jurisdiction of a suit *lege Aquilia*, or under the application of the law for the hire of labor. The first clause of the suit *Aquila* covered in point of fact by those cases where another's slave had been killed without right. It was quite sufficient that a slave had been mortally wounded. The physician who, after having operated upon a slave, abandoned the after care and allowed him to die was at fault according to the terms of the law which ran as follows: "Præterea si medicus qui servum tuum secuit, dereliquerit curationem, atque ob id mortuus fuerit servus, culpæ reus est."²

There was also error on the part of a physician who by ignorance killed his patient by administering a medicine *mal à propos* and which caused the latter's death, as the following text shows: "Imperitia quoque culpæ admuneratur; veluti si medicus ideo servum tuum occiderit quod cum male secuerit aut perperam ei medicamentum dederit."³

Wounds which were not fatal but which were

sufficiently serious to be damaging to the master of the slave were comprised in the third clause of the law *Aquila*. The direct application of the law *Aquila* was only allowed when the detriment resulting was caused *corpore corpori*, for example, when it was applied to a physician who had wounded or killed a slave by the performance of an operation upon the latter. But it was not applicable to the one who had only been the cause of the detriment, and who had not caused it by his proper body, as, for example, a physician who had prescribed a medicine *mal à propos*. In this case the *juris consultis* gave the application to the law, that is to say, introduced by interpretation, following the example of that of the law and procuring by the manner in which it was drawn up by the pretor the same results.

According to Accarias the professional services of a physician could become the object of a hire of labor when it was a question of a slave, and Proculus declared that a physician who had badly cared for a slave could be sued either *ex lege Aquilia* or *ex locato*. The following is the exact text: "Proculus ait, si medicus servum imperite secuerit, vel ex locato vel ex lege *Aquila* competere actionem."⁴

The direct application of the law *Aquila* could not be applied to a physician when the victim was a free man, and Ulpian says that "a man has not the right of ownership of his limbs." Now, in order to obtain a direct application of the law *Aquila*, it was necessary that the person injured should have also his patrimony involved. But a free man who had become the victim of errors committed by a physician could have the direct application of the law *Aquila* accorded by the pretor who procured the same effects, excepting in that which concerned the pecuniary reparation of the injury. In the latter case the value of human personality was not considered. The reparation could only include the tort resulting from expenses involved for the cure, from incapacity to work and, lastly, the funeral expenses.

Now, although the texts are perfectly affirmative regarding the admission of the principle of medical liability in Rome, it is more difficult to say whether or not it was frequently applied, and it would appear that the contrary was more likely the case if one considered with what violent indignation Pliny affirmed that in Rome a physician enjoyed the most complete impunity as he states in the 29th book of his "Natural History," as follows: "Nulla præterea lex, quæ puniat inscriptionem; capitale nullum exemplum vindictæ. Discunt periculis nostris, et experimenta per mortes impunitè summa est. Quin imo transit convicium et intemperantia culpatur: ultroque qui periire arguuntur."

The Roman laws were not, however, as severe as Montesquieu has upheld in his immortal work entitled "*Esprit des Lois*," in which he says "that the people were desirous of having physicians punished for their negligence or their ignorance. In this case they condemned a physician who

²Instit. Liv., iv, tit. iii, § vi.

³Instit. Liv., iv, tit. iii, § vii.

⁴D. Liv., ix, tit. ii, vii, § viii.

occupied a certain social position to exile, while death was the sentence applied to the one occupying a lower social condition." This great writer committed an error, for the law to which he makes allusion,⁵ "*Ad legem Corneliam de Sicariis* . . .," did not punish negligence, ignorance or lack of attention, but the *crime*, the grave mistake committed with the criminal intention of producing death.

Medical liability was rigorously followed out in the ancient Germanic law, to such an extent that before undertaking the cure of a patient the physician was obliged to give a security in order to guarantee the indemnity in case he was unsuccessful. A physician who while bleeding a free man wounded him, was obliged to pay his family a compensation of one hundred and fifty denarii in gold. In case of the death of the patient, the physician became the property of the family, who could use its right of vengeance as it saw fit. "*Si quis medicus, dum fleotomiam exerceat, ingenuum debilitaverit. CL solidos coactus exolvat; si vero servum hujusmodi servum restituat (in lege Ervigiana post exolvat leguntur: si vero mortuus fuerit propriis continuo tradendus est ut quod de eo facere voluerint habeant protestatum.*"

A physician could not bleed a free woman unless her husband or some of her near relations were present, because the law said: "*Difficillimum non est sub tali occasione ludibrium interdum adrescat.*"

In Beugnot's edition of the "*Assises de Jérusalem*" will be found many important remarks regarding the liability of physicians in the middle ages.⁶ A physician called to attend a serf, and by his ignorance causing the death of his patient, was condemned to pay the value of the serf and was obliged to leave the city, and I here quote an interesting paragraph:

"C'il avient par aucune mésaventure que je naffre un mien serf ou serve, ou aucune autre personne le naffre, et je i amène un meige et celui meige s'accorde o mei a pris noumé et me dit au tier jor, puisqu'il ot bien veu la plaie, que bien le garet sans faille; et il avient puisque il le tailla malement ou por ce que ne devet être taillé et il le tailla et porce il mourut et porce que it devet tailler la blaie par la levure et l'apostème donc et il le tailla de travers et por ce mourut: la raison juge et commande en ci a juger que celui meige doit amender le serf ou la serve par droit tant comme il valait au jour qu'il fut naffré, ou tant comme l'acheta celui de qu'il estait car c'est dreit et raison par l'assise. Et deit la cort celui meige congeer de la vile ou it fist cele mauvaise megerie."

According to this text the physician after having seen the wound promised to cure the patient, but following a badly conducted operation which resulted in the death of the patient, the physician was declared liable for this unfortunate occur-

rence. The text then goes on so as to cover those cases in which a wound became gangrenous because the physician did not give the patient daily attendance, and it declares the former liable for this accident. In the same way it holds the physician liable for any imprudence committed by the patient, because he did not indicate in what ways the patient should care for himself. And, lastly, the text speaks of damages due in case the victim was a serf. The physician, after having promised to cure him, employed bad drugs and did not succeed in his object. The patient was maimed forever. The physician was obliged to take the serf for himself and to pay to his master the sum that the serf had cost him. In case the physician could not pay the entire sum, he was obliged to leave the serf with his master and only pay "celui serf ou cele serve vaura de mains por ce qu'il est mahaignes par sa coulpe."

When the victim was a free man the liability of the physician was very much greater. If it were a question of simple wounds or of bad treatment which did not cause death, not only the physician had no right to demand any fee but he had his right hand cut off. In case of death of the patient the physician was condemned to the gallows: "*Mais se il avet se mahaign fait a un crestien ou a une crestienne, la raison juge qu'il det predre le poing destre et ne det plus estre damages for tant que c'il avet rien pris de celui por le meger si est tenus dou rendre par dreit. . . . Et se celui miege avet anei malement mege come est dit dessus aucun franc home ou aucune franche femme et elle en moret la raison juge que celui meige det estre pendus et . . . it a det estre dou seignor par dreit. Mais ce il avait riens receu dou mort si det estre rendu as parens dou mort des choses dou meige car ce est raison et dreit.*"

The text adds that before being put to death the physician should be taken through the streets of the city in order to serve as an example to his colleagues.

It happened that, on account of fear regarding their liability, physicians refused their services to patients, or if they gave them they demanded a guarantee releasing them from any responsibility should the case terminate unfavorably. Guillaume de Tyr tells us that Amaury I, feeling that his strength was leaving him, demanded medicines from some Syrian physicians. These they refused, and he was only able to obtain them from the Latin physicians after he had given his promise that they need not be disturbed, no matter what issue the disease might take.

In the ancient French law the liability of physicians and surgeons was distinctly held. Denizart established a hierarchy difference between physicians and surgeons, and declared that the latter were subordinate to physicians. He admitted the liability of surgeons and declared them held for tort towards those they might maim by their ignorance, and attributes to physicians the power of examining the facts of the case in order to ascertain whether the surgeon was repre-

⁵ D. iv, iii.

⁶ The ideal type of feudal law is that so graphically depicted in the works which pass under the title of the *Assises de Jérusalem*, and which profess to describe the usages of that curious product of the Crusades, the Latin Kingdoms of Palestine.

hensible or not. He goes on to say that: "When a surgeon has conducted the case according to the rules of his art, he should be paid for his operations and for his care and dressings, although the patient may have not been cured, even if one was obliged at a later date to do an amputation of some fractured limb, the cure of which the surgeon had undertaken."

Efforts were made in France by Charles VI, Henry IV, Charles VII and Louis XIV to formulate laws to control the practice of surgery, but these were apparently only partially successful. It is not without some interest perhaps to add that, as far as I have been able to discover, Henry IV of France was the first to create what would at the present time be called a medico-legal expert. These experts were selected from among the most capable surgeons. It is also positive that about the middle of the sixteenth century certain cities appointed what might be termed expert surgeons, for the purpose of examining the wounds of patients seriously injured, and to see that the attending surgeon treated the case properly; for otherwise the patients could bring suit for tort should it be shown that there had been malpractice. That this is a fact will be found from the following quotation that I make from the treatise on surgery by Felix Wurtz, a noted surgeon of Basel, whose fame was widespread at about 1560:

"Un Chirurgien ne doit point permettre à un chqun de voir, ou mettre la main aux blessures de ses patiens, ce que neantmoins plusieurs ont accoustumé de jure. Ce n'est pas que je oeuille blâmer la coustume de plusieurs Villes bien policées, où les Magistrats font ordinairement visiter une joie, ou deux, toutes les blessures considerables, par les Chirurgiens jurez; au contraire, je soustient qu'elle est extremement necessaire et qu'elle se devoit establis par tout, enfin que si quelque'un est malpensé, ainsi qu'il arrive assez souvent, il en puisse pacie ses plaintes à la Justice."

The mistakes committed in the rules of practice should be appreciated by men engaged in that profession, and Denizart quotes a judgment which acquitted a surgeon who was accused of having given bad treatment, only after having heard the testimony of expert surgeons. The case was as follows: A surgeon sued a patient, who had a broken arm, for the payment of his fee. The arm had either been set badly or too early and, having been inconsiderately moved by the patient gangrene appeared. The patient refused to pay the bill. The court then ordered some expert surgeons to examine the question as to how the accused had acted and if the operation and his dressings were in conformity to the rule of his art. After having heard the declarations made by both the surgeon and the patient, they returned a verdict in favor of the surgeon, and as a final consequence the court ordered the patient to pay the surgeon's fees. This same writer mentions another case where the surgeon was sued in the criminal court and was condemned to pay fifteen thousand

pounds damage and interest, because the ignorance of the surgeon was proven by the findings of the experts called in on the case.

Charondas, a well-known lawyer who flourished in the middle of the sixteenth century, said that a surgeon was liable for accidents which might occur to his patients if they came from his mistake. He mentions a case of a surgeon who was taking care of a patient afflicted with a venereal ulcer, but an accident occurred during the treatment which caused the death of the patient. For this mishap the surgeon was brought to justice as having been the cause of the death. Charondas during the trial held that since neither deceit nor ignorance on the part of the surgeon could be shown in the treatment employed for the cure of the ulcer, the surgeon could not be held responsible for the accident which occurred later.

Papon, a well-known judge who lived during the regency of Catharine de Medicis, says, that although a patient may die, the physician should not be held liable unless he was found ignorant or too hardy in his treatment, and that consequently a legal examination should be held in order to ascertain the true circumstances of the case, and if the physician is found to have committed a mistake he should be punished by the courts. This same author then relates the case of a physician who gave a potion to a patient which was either capable of killing him or saving him in a very short time, and the patient died from its effects. The physician was, however, easily acquitted, but he was admonished by the court never to repeat the same treatment again under penalty of being severely punished.

Jean Duret, a physician of some note who lived during the last half of the sixteenth century, declared that a physician was liable if he showed himself an idiot in both the theory and practice, or if he showed himself too audacious, and Raymond de l'Eglise upheld that a physician was liable not only for his temerity and his neglect of a patient but also for his ignorance as well. Brillou, whose classical dictionary was published in 1711, also upheld that physicians were liable for their acts. He based his opinion on Papon and another writer, who declared that a physician was liable either for a slight mistake or a very slight mistake, and he relates several judgments in which the principle of medical liability is upheld.

The public was far better protected against nostrums and quacks a few hundred years ago than it is at the present time, as will be seen from the following: In the reign of Edward VI, Grigg, a poulterer in Surrey, was put in the pillory at Croydon and again in Southwark, for cheating people out of their money by pretending to cure them by charms, or by looking at them, or by casting their water. Many other quacks have at various times been subjected to punishment. Anthony was punished for his Aurum Potabile; Arthur Dee for advertising medicines to cure all diseases; Foster for selling a powder for the cure of chlorosis; Tenant, a urine caster, who sold pills at six pounds apiece; Aires, for selling purging

sugar plums; Hunt for putting up bills for the cure of diseases in the streets. The council in the reign of James I dispatched a warrant to the magistrates of the city of London to arrest all reputed empirics, and cause them to be examined by the censors of the Royal College of Physicians. Several were arrested and acknowledged their ignorance. In the reign of King William a certain Fairfax was fined and imprisoned for injuring persons by his *Aqua Coelestis*, while in Stow's chronicle it is recorded that a water caster was punished for exercising his quackery. He was set on horseback with his face to the horse's tail, which he held in his hand, with a collar of urinals about his neck, led by the hangman through the city, and was whipped, branded and then banished.

The old French jurisprudence felt some hesitation in pronouncing for or against medical liability, and Merlin believed that suits brought against physicians were rarely successful. He mentions a number of judgments which acquitted the physician. The parliament of Paris in 1696 gave the following judgment in one case, the court saying: "That surgeons are not liable for their remedies as long as they have showed no evidence of ignorance or rashness in their practice." And in summing up the case on which the court had rendered judgment, the Advocate-General Portail said: "There is only one case where suit can be brought against the medical profession, and that is when deceit had been practiced, in which case it is a true crime."

In 1596 the children of a surgeon, who had wounded a patient while bleeding him, were condemned to pay 150 pounds damages by the Parliament of Bordeaux, and in another case a surgeon was condemned, because he cut a child for stone in the bladder without the advice of a physician, to pay damages amounting to 60 pounds, with the injunction of the court never in the future to cut another patient for stone without the consent of some physician who was approved by, and who had been received by, the faculty of medicine.

Many other cases could be cited, but I think from what has been said in this short paper that medical liability has been sustained by all the courts of former times. The question of criminal malpractice I have entirely left aside, hoping at a future date to discuss the history of this important subject.

THE BITZER HOMICIDES.¹

BY GEORGE P. TWITCHELL, M.D.

Medical Examiner, Greenfield, Mass.

LOUIS BITZER, thirty-six years of age, a jeweler by trade, in 1901 lived in Turners Falls. His place of business was on the main street of the village, and he lived on a side street a short distance from his store. His family consisted of his

mother, his wife and three children, Anna, fifteen years of age, Caroline ten, and Louis Martin, five.

Ida Columbe, seventeen years of age, worked in the store for Bitzer as clerk or saleswoman. On the morning of Dec. 31, 1901, Ida went to the post-office to get the ten o'clock mail; when she got back they started to put away the Christmas goods in the back room. Bitzer had two revolvers, one of 32 and the other of 38 caliber, lying on a table in this room. Ida told him to put them away as she was afraid of them.

He opened one to see if it was all right and when he closed it it accidentally went off and shot the girl. When he saw that he had shot the girl he felt that he could not bear to be pointed out by people as one who had done a crime but had rather be dead himself, yet he did not want to die and leave his children, so he went home to take them with him and kill himself. Before leaving the store he wrote a statement of the accident on a large sheet of brown paper. What he subsequently did he does not remember, but he did go to his house and shot his wife, his two daughters, and his son; the boy, who was in bed recovering from an attack of measles, was killed and the others more or less seriously wounded; all recovered. He was disarmed by his wife, sister-in-law and mother and shortly afterward was arrested. He told his mother that he had shot Ida Columbe. At the station house he gave to one of the officers the statement he had written at the store. It was as follows:

Starting in to work, Ida and myself putting goods away which were left over from Christmas, I put away my revolver which I have taken home with me nights to protect myself and Ida late at night. Looking it over and closing it up it went off accidentally and killed the poor little girl. For Heaven's sake don't blame me about it. The moment it went off I thought by myself what will become of my dear wife and children, so I do not want to be looked upon as a man thinking that he committed a crime, so I will die for it, and I cannot die without having my poor children with me. Take us all to church and sing our last farewell, 'Nearer my God to Thee.' Farewell to those who have loved us. Have John Gould take care of our bodies. My business affairs, write to Mr. Wm. S. Dana and J. Aschin, 43 Maiden lane, and the two gentlemen will look after my business affairs. Everything I leave behind will be for my dear old mother and Martin.

I for my last words, sitting here and write this pitiful letter, wish you all good luck. This is a sorrowful thing but it must be done, and O My God don't blame me for it.

I wish my dear old mother and brothers good-by.

Your beloved Louis Bitzer.

About 12 o'clock I first viewed the body of Ida Columbe. In the back room of Louis Bitzer's store I found her, lying on the floor on her back, the legs fully extended, the feet about three inches apart and resting on the heels, the forearms flexed and the hands resting on the chest. Her head was slightly turned towards the right and rested on a man's ulster, which was arranged as a pillow. She was fully dressed, without her outer garments; the clothing was all in good order, the skirts covering the tops of her shoes and fully extended under her body; her underclothing orderly arranged. Blood was about her mouth and nostrils, smearing the side of her face and neck and upper part of her blouse and

¹ Read at the Annual Meeting of the Massachusetts Medico-Legal Society, June 9, 1903.

a little on the ulster. A penetrating wound was in the head, in the hairy scalp, just in front of the left ear. Lying on the floor, on the left side of the body near the knee, was a hairpin with a velvet knot on it. One hair ribbon was on the head and another was found under the buttocks when the body was removed.

The body lay in the comparatively narrow space between the table and safe, with the feet about one foot from the front of the sink. This was an iron sink, open underneath, and from about six inches under the sink, extending nearly to the heels of the body, were two nearly parallel marks or scratches on the floor. There was a mirror hanging over the sink on the wall, and a comb lying in it. Her hat, outer garments and chate-laine bag were on the table.

The autopsy showed a well nourished young woman, 4 feet 11½ inches in height, weighing probably about 115 pounds. Blood was about the mouth, nostrils, left side of the face and in the hair on the left side of the head. One inch anterior to the highest point of the left ear was a penetrating wound, the edges of which were blackened and burned. The hair around the wound was singed and brain substance oozed from the wound.

On removing the brain the course of the bullet was found to be on a line parallel with the horizon; the bullet passed entirely through the brain and was reflected back and was found in the right lateral ventricle. The organs of chest, abdomen and pelvis were normal. Her hymen was intact.

Autopsy on Louis Martin showed that the bullet entered through an opening in the left parietal bone, bordering on the coronal suture and two inches from the union of the coronal and sagittal sutures, passed superficially through both hemispheres and broke out a triangular piece of bone from the parietal bone on the right side at its eminence. The bullet was found in the substance of the brain directly under this loose fragment of bone.

Both lobes of the left lung and the lower lobe of the right lung were congested. Pleuritic adhesions were in the left thorax. All the other organs were normal.

After an indictment for murder had been found by the grand jury against Bitzer, the district attorney requested Dr. Frank W. Draper to conduct experiments to determine at what distance the revolver must have been held to singe and burn the hair and scalp. I had the pleasure of being present at these experiments.

The same revolver and similar ammunition were used, namely, the one of 32 caliber. The targets were various places on the hairy scalp of cadavers. At a distance of 6 inches the hair was not singed; between 3 and 4 inches the results were similar to what I saw on the head of Ida Columbe. I understand experts, employed by the defense, found they could singe hair at a very much greater distance. They used wigs as targets and the question arises as to whether that might make a difference in the results.

Bitzer was examined by experts as to his mental

condition. The case never came to trial. The plea of murder in the second degree was offered and accepted by the government.

MALARIA AND MOSQUITOES OF WORCESTER. A YEAR'S OBSERVATIONS ON THE HABITS OF CULEX AND ANOPHELES.

BY WILLIAM W. MCKIBBEN, M.D., WORCESTER, MASS.,

*Assistant Resident Physician, South Department,
Boston City Hospital.*

(Concluded from No. 25, p. 669.)

In another puddle close by a few anopheles larvæ were found, lying like sticks flat on the surface with the two short respiratory syphons where the ears ought to be. By the aid of a lens they were seen to create a current towards the mouth by means of brushes, rejecting sticks and other débris. Their food probably consists of algæ and protozoa. There were no culex in this pool with the anopheles. In fact it is more strictly true with the larvæ than with the adults that anopheles and culex do not get along well together. The culex, being so prolific, soon kill out anopheles. This was seen time and again in the laboratory. Close by on the edge of a "dump" in some organic refuse, maggots were seen in countless numbers, the adult flies swarming about them. The ashes on this South-bridge street "dump," as is the case with at least four other large dumping grounds of Worcester, were graded on a level with the street. It would have been just as easy to have spread the ashes one quarter the depth, and over four times the area; that would have done away with the whole bog which now furnishes malaria to a section of the city called "the Island."

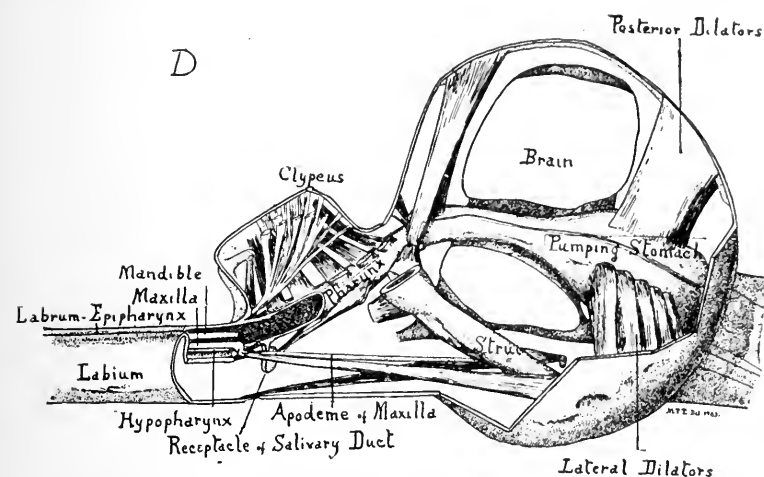
About six o'clock the bell-jar which had been pretty well shaken up riding over the cobble stones, drowning quite a number of larvæ, was seen to contain about fifty adult mosquitoes which had hatched out from the pupal stage. Whereas at five o'clock there had been about 75% larvæ and 25% pupæ, now there were about 25% larvæ and 75% pupæ. The pupæ are exceedingly active to escape fish which regard them as choice morsels of food. When the lecture began at eight o'clock, by placing an incandescent light back of the bell-jar, the audience was enabled to see at least 500 adult culex flying in the upper half of the jar and innumerable "wiggle-tails" in the water. In a separate bottle containing some of these "wigglers" a few drops of kerosene or light fuel oil were added. A very thin film of oil spread over the surface, which the larvæ in vain tried to pierce with their breathing tubes. After sucking the oil into these tubes they wiggled violently to the bottom, turning on themselves hoop-like, trying desperately to suck the oil free from the tube. Several attempts of this kind generally resulted in death in a few minutes; sometimes, however, convulsive movements were seen even at the end of an hour.

Another experiment was shown of adding a minnow, a stickle-back and a goldfish to a bell-jar of water containing a large number of mosquito "wrigglers." It was laughable to see how greedily all the fish devoured these larvæ. Soon their little bellies stuck out quite perceptibly. After starving the adults in the original bell-jar for a week and losing a considerable number of them, a quarter of a banana hung to a string was dropped into the jar. In less than five minutes every available space on the banana was occupied by a ravenous mosquito, the proboscis deeply imbedded into the soft juicy pulp. Another instance, resembling the one of the bell-jar jolting over the cobble-stones, illustrates how nature makes an effort to propagate the species in time of danger by rapid changes from larval to pupal and from pupal to adult stages: in the dry weather of May the same puddle, where the original larvæ were obtained, began

twenty-four hours, all the "wiggletails" were found dead in the mud at the bottom, while many adult females were caught while attempting to deposit their rafts, consisting of about four hundred eggs each.

In Peat meadow there is a drainage ditch about four feet deep and three feet wide. In some places the ditch is completely bridged over with grass, under which adults were very thick. The water is just the kind anopheles prefers, *i. e.*, slow-moving and clear. *Culex*, not being so particular, will breed in any kind of standing water except that having a scum over it, such as from algae, duckweed, etc. In the little inlets or recesses in the banks, generally where there was sunshine, the anopheles larvæ were scooped off the surface with a dipper having a white enameled lining. This small ditch is one source of Beaver brook, the banks of which for two hundred to three hundred yards on either side are covered with cases of malaria for a distance of two or three miles.

It is very rare that anopheles larvæ are found in accidental receptacles, such as the tin cans on these "dumps" where *Culex* breeds so profusely. They prefer natural bodies of water. Lake Quinsigamond was sterile of larvæ in the main body of water owing to the winds, waves, currents and fish. But anopheles larvæ were found in the "Sanctuary," a grassy stream leading back from the lake, where, after passing under the boulevard, it opens into a large grassy marsh. Just south of "The Sanctuary" are thick woods of tall trees, favorite camping grounds of the Worcester people. Owing to the protection from the wind the mosquitoes collect there in



*Figure D is the head section simplified, showing the pump with its two posterior dilators attached to the dorsal plate and the five lateral dilators attached to the lateral plate; the complicated musculature which binds the anterior end of this pump to vertex, frons and the hollow struts which strengthen the head; the pharynx with its complicated musculature; and below, the muscles from base and head of the strut that retract the cutting lancet or maxilla, and the muscles from the head of the strut and the base of the labium which are attached to the posterior end of the apodeme of the maxilla and probably serve for protractors of this organ, *i. e.*, the maxilla.

to dry up and the "wrigglers" were driven into a smaller and smaller space, until finally there was nothing left but a soft black ooze. It was at this period that the rapid change from stage to stage was seen in the hot sun — adults being born in large numbers. After four days in this mud the larvæ were passive and probably could not have survived much longer without food, when a welcomed shower came and again the puddle was formed and again the surface was seen covered with little rings, which represented the ends of the breathing tubes protruding for air.

Light fuel oil proportioned at the rate of one ounce to fifteen square feet of surface was spread on the water by means of a child's watering can, purchased at the ten-cent store. Returning in

swarms. Many cases of malaria can be traced to these woods, the boys of St. John's Brigade being a striking example. In July three boys from Plantation street camped in tents there for two nights, and then went home because they could not sleep for the mosquitoes. Plantation street is situated on a hill, where neither anopheles nor malaria is to be found. In eleven days after returning home all three of the boys came down with periodic chills and fever, the second attack occurring exactly at an interval of forty-seven hours from the first. One of the boys had severe abdominal pain, finally becoming localized to the splenic region. Examination of fresh blood, and specimens stained with Ehrlich's and Wright's stains, showed the tertian parasite filling completely the red blood corpuscle, which was swollen and pale; actively motile, fine black granules of digested hemoglobin occupied the center of the

*Figures D and E are from the original laboratory drawings made and kindly furnished by Mr. M. T. Thompson, Clark University, Worcester. These will be published in more detail by him later.

plasmodium, which in the fresh specimen showed ameboid movement. At maturity each nucleus of pigment had gathered some protoplasm around itself until the amebula had subdivided into about twenty or thirty spores. With the rupture of the corpuscle simultaneously with the chill these young gametes were freed into the blood serum. Four hours before the next attack was due the plasmodia were seen to be segmenting again, so twenty grs. of quinine bisulphate were administered in capsule form. The attack which followed was lighter than the preceding one in each case, and proved to be the last paroxysm. However, another twenty grs. were administered four hours before the third attack was due, and after that prophylactic doses of two grs. three times a day were given for three weeks. This was combined with a tonic consisting of iron, arsenic and strychnia, in tablet form, as the hemoglobin averaged only 70% and the corpuscles in one case had diminished from 4,700,000 to 3,000,000.

Among the Italian authorities, however, the method of Sydenham is preferred. Here the quinine is administered after the chill in the sweating stage, because at this time the stomach is more retentive and there is a greater number

study also the head and mouth parts of the mosquito in order to see in just what manner she punctures the skin, sucks the blood containing gametes, infects herself and finally gives subcutaneous injections of sporozoites or blasts to uninfected persons.

Mr. M. T. Thompson, one of the students in biology at Clark University, succeeded in getting a longitudinal section exactly through the median line of a *Culex stimulans*, showing beautifully the musculature of the head. The slide was shown under the microscope at the June meeting of the Boston Society of Medical Sciences, to demonstrate the pumping stomach with its five lateral and two dorsal dilators, the pharynx, the salivary duct, etc. Two excellent drawings of the mouth parts of *Culex* (dissected) and *Anopheles* (not dissected) were made from the microscope by another student — Mr. Roy Cushman. The biting apparatus is hidden within a sheath which terminates in an olivary body. In the act of biting this covering is folded down over the chest out of the way, leaving six pieces exposed: the two maxillæ which terminate in serrated extremities, two mandibles, the epipharynx and the lips, which end in a sharp oblique point. The parts fit on to each other very

much as a lid would fit on to a trough. These stylets are capable of pricking through clothes or even through the tough skin of a horse or cow. After having pierced the capillaries of the skin the lateral and dorsal dilator muscles of the little pumping stomach begin to contract, causing the stomach walls — which normally are collapsed — to dilate. This creates a vacuum and the blood fills the stomach from the suction produced. In

the ordinary tertian parasite,

such as is seen in Worcester, the cycle in the human ends in about forty-eight hours with the liberated spores entering new red blood cells. Some, however, die and are assimilated by leucocytes. But should any of these free-swimming gametes be taken from the human body they undergo a further cycle of development — the sexual. A part grow larger in size, while others protrude long filamentous processes called flagella which separate from the parent body to fuse with the female or receptive forms. These flagellating forms were sometimes seen in fresh specimens of blood — after standing a half-hour under a 1-12th oil immersion lens — taken from cases which had newly entered the Worcester City Hospital. Ordinarily the process of development stops here. But if this union of the sexes takes place in the *Anopheles*' stomach the fertilized females work through the mucous, inner muscular and outer muscular coating of the stomach, entering the esophageal diverticulum. As they enlarge, short dark lines quickly sur-

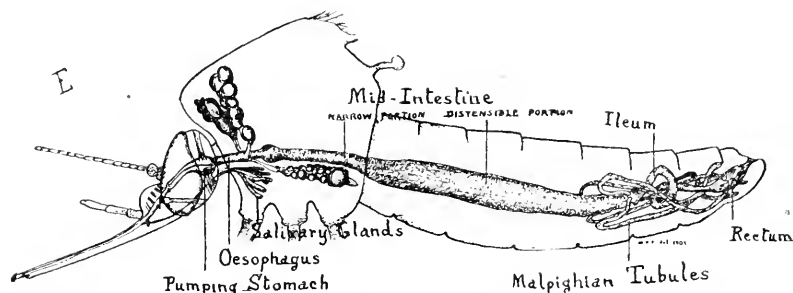


Figure E shows the general relations of the alimentary canal to the body; the pharynx and pumping-stomach followed by the esophagus with its three "air"-filled diverticula; the elongate digestive or mid-intestine whose distensible portion serves (in our species at least) to contain the ingested blood; then the five malpighian tubules, ileum and the rectum with the six conical "glands."

of young ameboid forms swimming free in the blood, in which form they cannot resist the disinfecting properties of the alkaloid, as the organism can when enclosed within a red blood corpuscle. Ferguson¹ recommends the bihydrobromate of quinine, 3 gr. hypodermically. He claims that it is non-irritating in solution, is ten times more effective than by mouth, and that six doses will cure. Italian observers have fully demonstrated that the only certain path of entrance of malarial infection is through the skin; that water taken through the stomach is not the vehicle; the epidemiological data prove it; a long series of experiments confirm it. Marshy water taken from intensely malarial places both in the summer and autumn, ingested in quantities up to three liters a day, failed to produce the disease in more than sixty persons experimented upon by various authors. It is of interest to study the exact method of this infection by the skin; and in this connection to

¹ *Progressive Med.*, December, 1902.

round clear spaces on the surfaces. The clear spaces are known as centremeres, and the lines as blasts. The latter, which are really spindle-shaped cells, enlarge until they burst the mother cell (Zygotes), and being very motile soon find themselves free in the connective tissue supporting the salivary glands. From here it is an easy matter for those so-called sporozoites to reach the tubules of the salivary glands and become inoculated with the saliva in the act of biting. They then enter the red blood corpuscles and thus the original cycle in the human is started all over again. Since the Italians demonstrated this complete biological victory four years ago, it has been verified by scientific observers the world over. But not satisfied with the life history of the parasite alone, practical demonstrations were made. One hundred and four persons in a thickly malarious region were carefully protected at night from the bites of anopheles by screens and mosquito bars, and although practically everybody around them developed malaria, they themselves were free from it the whole season.

Drs. Cambon and Low, of the London School of Tropical Medicine, lived during the whole summer of 1900 next to an old canal in one of the worst malarial swamps in the Campagna. The doors and windows of their little five-room house were most carefully protected by screens, and they were always indoors before sunset, from where they could see the anopheles collecting on the wire screens outside. They were exposed to the mist which arose from the stagnant water at night, but were unaffected by malaria even during the wet season when all the peasants were suffering. Beside these two, a check experiment is described by Dr. L. O. Howard in his book on "Mosquitoes." The Italian authority Bastianelli sent some anopheles mosquitoes which had been fed on the blood of a patient suffering from malaria in Rome, to Dr. Patrick Manson in London. Dr. Manson's son, who had not been in a malarious country since a child, allowed himself to be bitten and in due time came down with double tertian malaria, microscopical examination demonstrating the parasites in the blood. It was Dr. Manson who, twenty years ago, after proving that the parasitic worms, filaria, could be demonstrated at night in the blood of persons suffering from elephantiasis, had the happy thought that as mosquitoes were nocturnal in their habits they might be concerned in the transmission of this dreaded disease. To-day we are positive that the embryos of these filaria Bancroftii are inoculated into man by the beaks of a species of culex, commonly seen around the houses in Australia.

And now comes under the date of Aug. 15, 1903, a command — from Brig.-Gen. Grant of the War department, at the Headquarters Department of Texas, at San Antonio — to screen all barracks, manholes, ventilator openings, barrels, etc., containing standing water, to prevent the spread of yellow fever from Mex-

ico into the United States by means of the Stegomyia or brindle mosquito. The police officers of each port are to be held personally responsible for the proper drainage, filling or protection by oiling of all accumulation of water outside of premises, for the removal of all possible receptacles, such as old cans, crockery, etc., and for the proper condition of surface drainage. The command concludes with, "Two mosquito-proof rooms with wire gauze ceiling, seven feet from the floor, should be prepared at or near the hospital, the one for the reception of suspicious cases, and the other for the treatment of yellow fever cases."

In 1895 the unsanitary condition of Havana, Cuba, was appalling. Water from the houses was allowed to flow out into the streets and settle there. Mosquitoes bred freely. During the year there were 551 cases of yellow fever in the city. In 1896 with the arrival of crowds of non-immune immigrants from the United States and elsewhere the number of cases shot up to 1,278. In 1897 there were 828 cases. But in 1898 when the sanitary laws became more rigid, the streets were cleaned up, better drainage established, etc., the number dropped to 138, and to 102 in 1899. In 1900 the arrival of hundreds of non-immunes again brought the number up to 406. It was in the summer and fall of that year that the conclusive experiments were carried on in and around Havana to demonstrate that the Stegomyia mosquito was the carrier of yellow fever, although it was not then known that the disease itself was caused by a protozoön.

Following the methods now about to be used in Texas, of destroying the breeding places of mosquitoes and of screening the hospitals and houses, the number of cases dropped in 1901 to seventeen. Since that time there have been only five cases in Havana. In spite of all this evidence of satisfactory mosquito extermination, Worcester still remains inactive, although interested, as is shown by the fact that fifteen different clubs listened to lectures on the subject last winter. All of the daily papers contained articles — one covering three pages.

An editorial in the *Evening Gazette* severely criticised the Common Council for recommending a loan of \$25,000 to be expended in improving the filtration beds and refusing to donate the \$1,200 which the Board of Health, at the suggestion of the Worcester District Medical Society, recommended to fight mosquitoes and malaria. The mayor, while admitting the necessity of combating malaria, considered that the tuberculosis hospital was more important in spite of the great expense attached to it. Consequently, anopheles flourishes, not through the mayor's friendship (as is the case with the Common Council) but through his indifference. The writer on a visit south this summer found the laity of New Orleans actually opposing measures for mosquito extermination — about to be taken by the board of health backed by the medical profession — on the grounds that

the mosquito was put there for a purpose which was known to the Lord (and he alone); that they probably destroyed certain impurities in the air and ought to be befriended. Considering the system of shallow cisterns in New Orleans, they will get all the chances to befriend they wish. It remains to be seen what will be the attitude of the Worcester city authorities as the scourge of malaria increases and as the evidence of successful mosquito extermination accumulates elsewhere as it has at Brookline under Dr. H. Lincoln Chase and Dr. J. Albert C. Nyhen. The conditions are certainly most deplorable in Worcester at present (September, 1903).

We've fought our way up from the Gulf
By that loud-ringing blade "Quin. Sulph.,"
And now are we to sit here dumb,
And let Anopheles "go hum"?
No! Fight him with Petroleum!
Purveyor of Plasmodium,
Anopheles Mosquito.

Envoi.

To me will come an awful ease
When thou art gone, Anopheles!
My Plasm freed from Odium,
When thou art dead, Plasmodium!

Medical Progress.

PROGRESS IN PATHOLOGY.

BY JOSEPH H. PRATT, M.D., BOSTON.

(Concluded from No. 25, p. 682.)

LEUKEMIA REGARDED AS A TUMOR FORMATION.

LEUKEMIA, according to Weber,¹⁴ is the result of a neoplastic activity of the leucocyte-producing organs in which the tumor cells gain entrance into the blood stream. Hence the disease, according to this theory, should be grouped with the new growths. If the less differentiated cells of the type of the large lymphocyte are drawn from the lymph-nodes or from the bone marrow lymphatic leukemia is the result. In the acute cases the blood usually contains more of the large than of the small lymphocytes. If the more differentiated cells, that is, the granular cells of the bone marrow, are concerned chiefly in the tumor formation, the pathological picture of myelogenous leukemia is produced. According to this theory lymphatic leukemia is a tumor arising from the proliferation of a more embryonic cell-type than myelogenous leukemia, and this agrees with the fact that in its development and course lymphatic leukemia is generally more rapid. Leucocytosis or lymphocytosis is simply the expression of a tissue reaction while leukemia is always due to the emigration of tumor cells from a hyperplastic neoplasm in the leucocyte producing tissues. If the organism attempts the rapid formation of myelocytes there may not be sufficient time for the development of granules in the cell protoplasm, and as a result unripe cells are thrown into the circulation. These unripe

cells resemble the large and small lymphocytes and not the typical myelocytes. The writer holds that cells of the myelocytic type, found in the spleen and lymph nodes in cases of myelogenous leukemia, may be formed *in situ* out of the undifferentiated large lymphocyte.

Weber¹⁴ reports a case of acute leukemia of two months' duration, in which the blood picture was that of a mixed cell leukemia (Reed's terminology). In a spread of the heart's blood 93% of the white cells were lymphocytes and 6% myelocytes. The liver, spleen and lymph nodes were enlarged. Great numbers both of lymphoid cells and eosinophilic myelocytes were found in the internal organs. Professor Muir of Glasgow, who examined the sections, regarded the case as one of lymphatic leukemia, although he had never seen such numbers of eosinophiles in that disease.

The theory advanced by Weber is not wholly new. Türk¹⁵ was the first to regard lymphatic leukemia as belonging in the neoplastic series.

A FERMENT IN THE BLOOD IN MYELOGENOUS LEUKEMIA.

Brandenburg¹⁶ in 1900 called attention to the fact that the blood in myelogenous leukemia without the addition of H₂ O₂ or turpentine oil would color guaiac tincture blue. This held true even when very small amounts of blood were used. Bone marrow from a case of myelogenous leukemia gave the reaction, but the structures rich in lymphocytes, as the spleen, thymus and lymph nodes, as well as the other organs of the same individual, yielded negative results.

Meyer¹⁷ found the reaction did not occur when the blood and bone marrow from a case of lymphatic leukemia were tested. He confirmed Brandenburg's results in two cases of myelogenous leukemia and modified the technique. The following simple method of applying the test is recommended: Two or three drops of leukemic blood are collected in a test-tube and mixed with a large amount of water, so much, in fact, that no color of blood remains. The fluid becomes a deep blood on the addition of guaiac tincture.

Under Prof. Friedrich Müller's direction a study of this property of myelocytic blood was made. The reaction was found to depend upon an oxidizing ferment present in the myelocytes. The same ferment was demonstrable in pus cells and in the completely normal neutrophilic leucocytes, but not in the lymphocytes.

The author believes that the conception of an acute lymphatic leukemia as a distinct variety of the disease is correct, and that it should be sharply differentiated from the myelogenous form.

Rosin and Bibergeil have shown that the nucleus of dead leucocytes is colored by neutral red, while the nucleus of living leucocytes is not. The cytoplasm of both living and dead leucocytes takes this stain.

¹⁴ Berl. klin. Woch., 1901, xxxviii, p. 965.

¹⁵ Münch. med. Woch., 1900, xlvii, p. 183.

¹⁷ Loc. cit., 1903, l, p. 1489.

¹⁴ Virchow's Archiv, 1903, clxxiv, p. 324.

Meyer found in a case of leukemia that a relatively large number of nuclei were stained at the time when the excretion of uric acid was greatest. Hence he concludes that the destruction of leucocytes can be estimated not only by the uric acid output, as is well known, but by the number of leucocytes in a blood smear taking the nuclear stain with neutral red.

ACUTE MYELOGENOUS LEUKEMIA.

Until recently all cases of acute leukemia were regarded as belonging to the lymphatic type of the disease. Fränkel, who made a careful study of the literature up to 1895, did not admit the existence of an acute myelogenous leukemia. Pinckus, in his article in Nothnagel's "System," published in 1901, was not able to record a single case. Billings and Capps¹⁸ give the details of an undoubted case of acute myelogenous leukemia observed by them and the analysis of seven cases collected from the literature. The duration of the disease in their case was two months. The number of leucocytes varied from 540,000 to 374,000 per cm. When first examined the blood showed 30% of myelocytes and 39% of large mononuclears. Later the percentage of myelocytes increased to 54.

The onset in most of the recorded cases was sudden. Four cases had an inflammation of the throat, and necrosis of the jaw or palate occurred in three instances. The lymph nodes were usually somewhat swollen, and the spleen was always palpable, although in only two instances greatly enlarged. The anemia in every case was severe and progressive. The number of leucocytes ranged from 16,000 to 540,000. The average count was much lower than usually found in the chronic myelogenous leukemia. There was difficulty in separating the mononuclears and the myelocytes, due to the fact that many transitional cells with faint indistinct granules occurred. The myeloid cell has usually an eccentrically placed nucleus, which is often oval and the protoplasm is frequently faintly granular.

When the large mononuclears are associated with a considerable number of myelocytes of the same size, and when many of the mononuclears show indistinct granules, the writers believe it is safe to regard them as myeloid cells.

In the recorded cases of acute myelogenous leukemia the large mononuclear never formed less than 15% of the leucocytes in the blood, while the myelocytes varied from 8 to 60%. Eosinophiles, mast cells and nucleated red corpuscles were present in varying number in some cases and absent in others.

Billings and Capps do not refer to the striking case of acute myelogenous leukemia observed by Kraus.¹⁹ The patient was a woman of the age of twenty-seven. The onset was sudden, and apparently the entire course of the disease embraced only seven days. There was fever, and hemorrhages occurred into the gums, skin

and uterus. The blood contained 40% of hemoglobin. The myelocyte was the predominating cellular element. There were almost no lymphocytes and no normoblasts. Türk²⁰ demonstrated last spring at a meeting of the Vienna Society of Internal Medicine the anatomical and microscopical preparations from a case of acute myelogenous leukemia. The clinical picture was that of pernicious anemia, and the blood findings were remarkable. The anemia was profound. There were 1,060,000 erythrocytes and 19% of hemoglobin. The marked alterations of the red blood corpuscles which occur in pernicious anemia were absent. No erythroblasts were seen. The leucocytes numbered 42,200, and of these 47% were myelocytes, 32% polynuclear leucocytes and 14% lymphocytes. Eosinophiles were rare and no mast cells were found.

At section the bone marrow of the vertebrae, ribs and sternum and the proximal parts of both femora was homogeneous and of a grass green color. Microscopically, the marrow was composed almost exclusively of neutrophilic myelocytes.

TOXEMIA IN ACUTE LEUKEMIA.

Hayem and Bensaude²¹ have shown that the toxemia of purpura hemorrhagica resembles that produced by injecting into the blood-stream of one animal the blood or serum of another species. In the list of maladies of this type they include, in addition to purpura hemorrhagica, pernicious anemia, variola hemorrhagica and acute hemorrhagic leukemia.

They report a case of acute hemorrhagic leukemia with the blood picture of lymphatic leukemia in which the spleen, liver and lymph-nodes were not enlarged. The duration was three months. At the close there was severe hematuria, associated with cutaneous and visceral hemorrhages, epistaxis, and metrorrhagia.

CHANGE IN TYPE FROM MYELOGENOUS TO LYMPHATIC LEUKEMIA.

Wilkinson²² reports a case of chronic leukemia with great enlargement of the spleen and complete absence of lymphatic involvement. A blood examination toward the close of life showed myelocytes and lymphocytes in about equal number. The white count was 560,000 per cm. During the week following this first examination the blood picture changed to that of a typical lymphemia, though an occasional myelocyte was present.

Klein²³ has observed 41 cases of leukemia during the past twelve years; 23 of these were of the lymphatic type and 7 ran an acute course. In one of the acute cases, in which 99% of the 360,000 leucocytes per cm. were lymphocytes, not a single enlarged lymph-node was found during life or at autopsy, and the spleen was barely palpable. Acute cases with only slight enlargement of the lymph nodes were not rare. In

¹⁸ Zeit. für. inn. Med., 1903, xxiv, p. 376.

¹⁹ La. Med. Moderne, 1903, xiv, p. 56.

²⁰ Lancet, 1903, i, p. 1739.

²¹ Cent. fur. inn. Med., 1903, xxiv, p. 817.

¹⁸ Am. Journ. of the Med. Sci., 1903, cxxvi, p. 375.

¹⁹ Die Erkrankungen der Mundhöhle und der Speiseröhre, Vienna, 1902, p. 291.

these cases three symptoms are of diagnostic importance:—the alterations of the buccal mucous membranes, the hemorrhagic tendency and the anemia. Without a blood examination some cases of acute lymphatic leukemia could not be distinguished from scorbutus or others from Werlhof's disease.

Klein maintains that in the diagnosis of lymphatic leukemia the increased percentage of lymphocytes rather than the total number of leucocytes is the essential thing. In one of his cases the leucocyte count ranged from 5,800 to 75,000. The percentage of lymphocytes was 54.8 when the total number of leucocytes per cm. was as low as 7,400.

ERRORS IN DIAGNOSIS OF ACUTE LEUKEMIA.

Melland²³ truly observes that in the acute form of leukemia "there is frequently nothing either in the size of the spleen or the lymph nodes to suggest the true nature of the disease or the advisability of estimating the numbers of leucocytes, and so, in the absence of a routine blood examination in all cases of severe anemia, a diagnosis of pernicious anemia, of purpura hemorrhagica, of scurvy, or even of severe chlorosis may be made. Indeed, in the thirty-two years from 1857, when Friedreich described his first case, to 1889, Ebstein was only able to collect 17 cases in the medical literature, whilst in the last ten years, during which systematic blood examination has become the rule, some 40-odd cases have been added to the list." Melland reports a case in which the anemia was intense and hemorrhages frequent. No enlargement of the spleen or lymph-nodes occurred and the post-mortem findings were almost negative. Smears of the bone-marrow showed a lymphoid degeneration; both large and small lymphocytes were present, but the former largely predominated.

THE ORIGIN OF LYMPHOMA.

Glénski²⁵ studied a case of lymphatic leukemia in which there were multiple lymphomata on the meninges and ribs and a leukemic infiltration of the tissues of the orbit causing exophthalmos. The author believes that the so-called heteroplastic lymphoma may arise *in loco* from pre-existing lymphoid tissue or may be due to the proliferation of lymphocytes which have left the blood stream. He states he has often seen lymphocytes in the various coats of the vessel wall from the sub-endothelial layer to the adventitia. These lymphocytes pass from the blood through the vessel wall to the surrounding tissue, where they multiply and give rise to lymphoma. Glénski does not believe the lymphocytes have an independent movement.

TRAUMA A CAUSE OF LEUKEMIA.

Reckzeh²⁶ reports interesting observations on a series of leukemic cases which occurred in Kraus's Berlin clinic. He thinks that injuries are important predisposing factors in the causation

of the disease. As men are more exposed to trauma than women, it is not surprising that leukemia is more frequent among men. All his patients were males. This theory of the causal relation of trauma to leukemia is supported by several of the cases studied.

Shortness of breath was frequently noted. This may be the result of some complication such as pneumonia or pleurisy, but is usually due to pressure from the enlargement of the thoracic lymph-nodes. In three cases there was much pain in the sternum. In every case the blood showed a definite poikilocytosis. Granular degeneration of the erythrocytes was observed in only one instance. The blood-plates were frequently very numerous. The author accepts the view of Pappenheim and others that every leukemia is of myelogenous origin and divides the cases into the mixed-cell and lymphoid varieties. Experiments undertaken to throw light on the active movements of the lymphocytes yielded negative results.

One case presented the clinical features of pernicious anemia as well as of leukemia. Similar instances have been reported by Strauss, Grawitz and others. There was marked poikilocytosis and polychromatophilia and extensive granular degeneration. Numerous microcytes and megalocytes occurred. Megaloblasts were present in great number. The number of erythrocytes ranged from 1,850,000 to 3,750,000 and the hemoglobin from 40 to 55%. The leucocyte count varied from 302,000 to 102,000. Myelocytes formed from 5 to 27% of the white cells. Toward the close the eosinophiles vanished from the blood. Reckzeh regards the pernicious anemia as secondary and due to profuse hemorrhages which occurred during the course of the leukemia.

LYMPHATIC LEUKEMIA WITHOUT MACROSCOPIC ALTERATIONS OF THE BONE MARROW.

In the brief allusion to Dennig's case on page 681, an unfortunate typographic error makes 'macroscopic' read 'microscopic.' There were no gross morbid changes of this case, but a smear from the bone marrow showed a decided increase of lymphocytes. In all the other recorded cases visible alterations in the bone marrow have been present. The author states that Walz, who performed the autopsy and who is well known through his studies of leukemia, will make the histological report.

FIRST AID BY RAILWAY EMPLOYEES.

THE trainmen of the Chicago and Eastern Illinois road are to be given a course of instruction regarding the best method of giving aid to the injured in case of railway wrecks. The plan is to establish schools in the various division headquarters and require the trainmen to attend the lectures and demonstrations which will be given on the subject. — *Med. Record.*

²³ Med. Chron., 1902, xxxvi, p. 372.

²⁵ Virchow's Archiv., 1903, clxxi, p. 101.

²⁶ Zeit. f. klin. Med., 1903, l, p. 34.

Reports of Societies.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

TWENTIETH ANNUAL MEETING, HELD AT WASHINGTON,
D. C., MAY 12-14, 1903.

(Concluded from No. 25, p. 685.)

DR. R. A. CLEEMANN of Philadelphia described

A CABIN FOR OPEN-AIR TREATMENT.

Plans were shown of a cabin, the sides of which let down and afford free circulation of air. The cabin rests on posts which form the four corners and rise to eleven feet in height. Horizontal beams extend between these posts at a distance of two feet above the ground, and on these the floor of the cabin is laid. The walls of the cabin, made of $\frac{3}{4}$ -inch planking, are eight feet high; three of the walls are hinged along their lower edge so that they may open outwardly and downward. Posts are placed at a suitable distance outside the cabin to prevent their descent below the plane of the floor. When the sides are drawn up they fit snugly into grooves or rabbeting. The walls are let down and raised by pulleys attached to the upper beams. These movable walls are the important feature.

DR. W. C. GLASGOW of St. Louis read a paper entitled

SOME EXPERIMENTS IN THE TREATMENT OF PULMONARY AND LARYNGEAL TUBERCULOSIS BY MEANS OF THE ELECTRIC LIGHT.

The treatment gave satisfactory results.

DR. ROCHESTER of Buffalo stated that he had been experimenting for the last two years on the consumptives of the Erie County Hospital, using the actinic rays, and that he had obtained absolutely no beneficial results thereby.

DR. THOMAS D. COLEMAN of Augusta, Ga., read a paper on the

SUSCEPTIBILITY OF THE NEGRO TO TUBERCULOSIS.

It was shown that the present condition of the negro has been growing worse since he has been left to his own devices. The natural susceptibility to tuberculosis in the colored race is accentuated by bad environment, bad habits, improper food and poor clothing. There is a racial predisposition to the disease. Evidence was adduced to show that the negro was comparatively healthy in slavery times. Now the death-rate from tuberculosis is about twice as great in the colored as in the white race, as shown by statistics from Charleston, S. C., Atlanta and Augusta, Ga., and New Orleans, La. Since the abolition of slavery the negro has left the plantations in large numbers and has sought the cities. Dr. Coleman suggested the usual remedies, viz., moral education, fresh air and disinfection. In Augusta the ratio of deaths from tuberculosis to total mortality for the last five years has been for whites 1 in 11.36; for colored 1 in 6.11; in

other words, though the colored population is from 10 to 16% less than the white, in five years tuberculosis caused the death of 117 white persons and 448 colored. In round numbers, allowing for the discrepancy in population, about twice as many colored people die annually from tuberculosis as in the white race. In Atlanta the ratio is 1 to 10.90 for whites and 1 to 8.12 for colored; in New Orleans, 1 in 8.95 white, and 1 in 6.64 colored.

DISCUSSION.

DR. SANGER BROWN thought that much of the discussion that we see in the press, societies and elsewhere relative to tuberculosis misses the main point — the importance of pure air and proper ventilation. In the British Army we know that barracks were maintained throughout the civilized world in every climate, and before the subject of ventilation was properly presented in relation to tuberculosis we know that the death-rate was something frightful from tuberculosis, and when those same men, under the same conditions, same food, habits, etc., were given large barracks and the ventilation was looked to the disease almost disappeared from among them, and yet here we go on talking about spitting on the floor and the influence of civilization and a great many other things, losing sight of those demonstrations.

DR. EDWARD R. BALDWIN. I am convinced that such a racial weakness exists, and I think that this is amply illustrated by the susceptibility shown by various races toward certain of the infectious diseases. Racial susceptibility is still a recognized factor, and I agree fully with Dr. Coleman in this particular.

DR. THOMAS J. MAYS. About four or five years ago I undertook to investigate the relation between consumption and insanity in the negro. I communicated with eminent medical men in the South, and was informed that, for example, in the state of Georgia, there were before the Civil War or before the emancipation of the negro, about forty insane negroes, and that pulmonary tuberculosis was practically unknown in that state. The same testimony came from North Carolina and also from Mississippi and Virginia, namely, that tuberculosis was practically unknown in these states. The results of my investigation led me to believe that insanity comes first amongst the negroes, then probably syphilis, or possibly syphilis precedes insanity and then comes tuberculosis.

DR. BEVERLEY ROBINSON of New York opened the discussion on

THE COMMUNITY AND TUBERCULOSIS.

After discussing the uses of sanatoria for the well-to-do and the poor, Dr. Robinson spoke of home treatment, which, for the vast number, is the only available treatment. The day of specifics is passing. Hygiene in its broadest and best sense is, after all, our main reliance. Statistics based on other means, no matter how favorably interpreted by their warm advocates,

meet with little response from those who have learned by long experience to become properly skeptical. We are looking forward to the bright day when, perhaps, a really efficacious anti-tubercle serum shall be discovered or, better still, an immunizing serum. Dr. Trudeau's work in this line was referred to, and encouraged us to believe that the day is not far distant. Dr. Robinson referred with gratification to the excellent results of Dr. John F. Russell of New York, reached by improving the resistance of the patient by administering fats in assimilable form.

Dr. Robinson hoped that while seeking to improve or abolish the nests of disease we will not lose sight of the broadest humanity for the sufferer. Don't make him a social outcast! Don't add to his misery. Tuberculosis is not contagious in the ordinary sense of this word and in the same way as the eruptive fevers, for example, are contagious, through a third person or through the air of the patient's room. One may be as safe in the room of a phthisical patient as anywhere else, provided, of course, every rational and important precaution and observance be upheld to prevent infection. The disease is infectious and communicable, but not contagious. Dr. Robinson noted the growing repugnance found at summer resorts to tuberculous persons. But in an experience of thirteen years in the Out-door Department of the New York Hospital where patients coughed, expectorated and where frequently tuberculous sputa reached the floor, dried up and were later wafted freely to the respiratory tract of all present, no case of consequent infection was noted. Dr. Robinson advocated tent life and took, in general, a broad humanitarian and rational view of the whole subject.

DR. FREDERICK I. KNIGHT. While sanatorium physicians are perhaps the proper ones with their statistics to defend the sanatorium treatment, there is no doubt but that tuberculous patients may recover under all conditions whether treated or not treated; many of them have recovered in my practice under the most disadvantageous circumstances, with no proper hygiene or care of any kind. Of course, those cases are comparatively few. Others have recovered under old-fashioned treatment, but I do not hesitate to say that far more, very many more, have recovered under the proper modern treatment, which we call sanatorium treatment. It isn't necessary for a person to be in a public institution, but it is very important for him to be away from home, if possible, particularly if he lives in a rigorous climate. He can be away from home, for instance, in a private house at Asheville or at Saranac lake and be treated practically on the sanatorium plan; but he must be away from home, and I have always advised a patient even if living in a good climate to go out of his own home if he wished to be treated to the best possible advantage. That is very much more true, though, in the case of a rigorous climate. It is impossible in New England

to make a patient live on the piazza, to live out of doors all day long as they do in the Adirondacks for instance. He will do it there because everybody else does it. But it is different in New England; it necessitates his being alone all day long, and he won't do it; he runs into the furnace or stove or whatever it may be, because the rest of his family is there. So I say that the home treatment cannot be carried out as satisfactorily in a cold climate. Now, in regard to tents. I never saw a tent that was comfortable in summer; it is too hot with the heat of the sun, and in the winter the air must be foul. I don't see how we can well heat and ventilate a tent in cold weather so that the patient has pure air.

DR. E. O. ORIS. Dr. Robinson seems to disparage, I might say, the private sanatorium for paying patients. There are two points I think that it is well to bear in mind in this connection with regard to private sanatorium. Dr. Knight has just referred to one; that is, the control of the patient. You may have a patient who could command any amount of money who lives in the country, who can turn his whole house into a special sanatorium, and still you may not be able to control that patient, which is one of the most important points in the sanatorium treatment. I had an experience of that sort this very last year: the patient was wealthy, the house was in the country, it was on a hill, had verandas on all sides, and every condition so far as material resources were concerned for good treatment, but the husband of the lady declared that she could never be properly controlled under those circumstances, and she was consequently sent to a paying sanatorium where she is recovering. The second point I desire to make is this: the educative influences of the sanatorium treatment. We know that in Massachusetts we are experiencing the great value of the teachings of the cured patients, the graduates of Rutland, upon the community. Is it not as important that these paying patients should give us that influence upon the class of people with which they are brought in contact? It is a very valuable and important matter to be kept in mind. One thing further. Dr. Robinson has referred to the cruel and inhumane treatment accorded in many cases by the unreasoning fear of others in regard to this disease. I think that the profession itself is largely to blame for this. I do not know of any other one thing that has done more perhaps to create that undue fear than the signs which we put up in all of our street cars and at our stations and many other places, against spitting. That is all right, but it seems to me at least inconsistent to have a large sign with regard to spitting on our street cars and not to pay any attention to the matter of pure air and ventilation.

DR. THOMAS J. MAYS of Philadelphia read a paper on the

DEATH RATE OF ACUTE PNEUMONIA.

He noted its increasing prevalence and its rank

as the most frequent cause of death in the great cities in the United States, outranking pulmonary tuberculosis in nearly every instance. While statistics are more or less incorrect, still he believes that on the whole they are in respect to mortality reasonably accurate and useful. Dr. Mays' presented charts covering a period of twenty-five years, showing the mortality from acute pneumonia in fourteen of the cities in the United States, including Rhode Island and New Jersey and representing a total of over eleven million inhabitants. The lines showed the deaths from pneumonia, pulmonary tuberculosis and heart disease and the gradual ascendancy of the pneumonia curve. In Chicago the greatest increase in the mortality from pneumonia was observed, amounting in forty-two years to over 350%. The deaths from heart disease increased 450% in the same period. Dr. Mays said there is no good reason for believing that pneumonia has gradually sprung into such prominence as to cause present or future alarm, for its highest death rate occurred before 1896, and since that time it has declined 21.17%. The conclusion is that deaths from pneumonia are decreasing; that deaths from disease of the heart are increasing and that deaths from phthisis decreased until five years ago, but have markedly increased since that time.

DR. THOMAS D. COLEMAN of Augusta, Ga., read a paper entitled

SOME COMPLICATIONS OF PNEUMONIA, WITH REPORT OF CASES.

Dr. Coleman assumed that the mortality of pneumonia was about 21.8%, taking the world over and taking statistics as they are presented. The most common complication is pleurisy, so common that it may almost be considered a part of the disease, for it occurs in all cases where pneumonic consolidation reaches the surface of the lung. Endocarditis and pericarditis and gangrene of the lungs are formidable complications.

DR. GLENTWORTH R. BUTLER of Brooklyn read a paper on the

TREATMENT OF LOBAR PNEUMONIA.

Dr. Butler noted the absence of any specific treatment of the disease, but looks for it in the discovery of an antitoxin which will counteract the toxemia of the disease. The possibility that the disease is not a bacteriological unity and that it may be caused by other pathogenic organisms than the pneumococcus of Fraenkel would indicate the necessity in this case of suitable mixed antitoxins.

DISCUSSION.

DR. JUDSON DALAND, Philadelphia: I am of the opinion that the high mortalities quoted for pneumonia are from hospital and not private practice. There is one simple point in regard to pneumonia and that is that frequently in severe cases death occurs through the heart as mentioned by Dr. Rochester.

DR. EGBERT LEFEVRE, New York: In regard to the treatment of the so-called cardiac failure, I have made some study of cases of pneumonia brought to the hospital and also in private practice in relation to the blood pressure in these cases and the question of drugs used to control the same. I find that these cases may be divided into two great classes, namely, those in which we have a true failure of the heart where the heart muscle weakens, and those cases where the apparent failure of the heart is in reality due to vasomotor paralysis and dilatation of the blood vessels. This collapse in the general vascular system is probably caused by the direct action of the toxins on the vasomotor center. The intravascular blood pressure shows this very distinctly when taken by the Gaertner or Riva-Rocci instruments. The vessels are widely dilated, and as a result we have a rapid and irregular heart and a loss of tension in the whole arterial system. The first sound of the heart loses its distinct character and becomes very similar to the second sound. These cases react quickly to drugs that act upon the medullary centers. In the other class where the heart itself is primarily affected, I find that stimulants which act directly upon the heart produce the best results, such as the digitalis group, for instance, or preferably strophanthus. In regard to the other cardiac stimulants, I have largely discarded the alcoholic and substituted therefor the liquor ammonii acetatis.

DR. H. L. ELSNER, Syracuse, N. Y.: It is a well-known fact that the pneumococcus toxin paralyzes the spinal centers, and that a vasomotor paralysis results. In cases in which nitroglycerine and the nitrites have been indiscriminately used much harm results. If the resistance of the peripheral blood vessels is far removed you add insult to injury, and I believe there is an enormous amount of extra work thus thrown upon the right heart. There are cases of arterial sclerosis in elderly people with pneumonia with tense arteries, where the arterial wall offers monstrous resistance to the heart with extremely high arterial tension, where I believe nitroglycerine does much good. But these are exceptional cases. The truth of the matter is that the indication which we must always keep in mind is toward stimulating the right heart. One remedy not mentioned here to-day is spartein, which I believe to be one of the best remedies for this purpose, not in small but in large doses of, say, 1 or 2 gr. administered every two or three hours. Then, too, adrenalin or suprarenal extract is useful. Those of us who have recently used the sphygmomanometer to test blood pressure I believe can bear testimony to the efficiency of adrenalin and suprarenal extract in this condition. I believe that we have in suprarenal extract and its adrenalin the very best heart tonic which we can use, and I believe that all of these cases ought to be given suprarenal extract or adrenalin from the beginning as a food and not a medicine. Pneumonia justifies polypharmacy, and persistent effort on the part

of the doctor and nurse at every moment in the illness of these patients will often bring its reward in the unexpected and brilliant results.

DR. E. FLETCHER INGALLS of Chicago presented a paper on

THIOCOL IN THE TREATMENT OF CROUPOUS PNEUMONIA.

He showed that thiocol may be given to pneumonia patients in large doses without disturbance of the digestive tract and without apparent harm. In no case did he observe that it affected the temperature, pulse, respiration or physical signs because in these cases where these factors indicated improvement the natural course of the disease would have been expected to cause a similar change. Dr. Ingalls suggests 5 gr. as an initial dose, rapidly increasing to 30 gr.

DR. G. R. BUTLER, Brooklyn, N. Y.: I have perhaps seemed to insist a little too strongly on the importance of treatment in pneumonia, but it was written while still under the impression got from certain consultation cases. The physicians in attendance were therapeutic nihilists, and to my mind their patients were being left to drift to death without a finger lifted to prevent. Under proper therapeutic treatment recovery took place, and it was while laboring under a very vivid recollection of these cases that I wrote the paper.

DR. S. E. SOLLY of Colorado Springs reported a case of

TUBERCULOUS BRONCHIECTASIS.

The patient was a woman aged forty-eight, who had a tendency to colds and came to Colorado from western New York in July, 1902. She had fever, loss of weight, rapid pulse and a scanty, watery sputum containing staphylococci and streptococci, but no tubercle bacilli. There was a small area of consolidation of the right middle lobe. There was a leucocytosis of 13,800. Tubercle bacilli appeared in the sputum in rather large numbers. The expectoration was fetid and reached sixteen ounces in twenty-four hours. As the sputum became scanty the temperature rose; as it discharged the temperature fell. At no time was there evidence of a cavity. Skiagraphs showed what appeared to be a dilated bronchus. Recovery seems to be assured at the time of the report.

Dr. Solly said that tuberculosis may occur as a complication of bronchiectasis, but that practically bronchiectasis of large areas never arises as a complication of tuberculosis. Nevertheless it is admitted that small bronchiectatic areas, without special clinical importance, are not infrequent, also that large areas sometimes occur in the tuberculous in cases in which there have been circumscribed processes in the apices, or a tendency to recovery by subsequent fibrosis, and only under such circumstances.

DR. RICHARD C. NEWTON of Montclair, N. J., read a paper on

DEEP BREATHING.

Dr. Newton advocated deep breathing so that,

by the increase of respiratory capacity, the action of the heart and blood vessels will be strengthened and the oxygenation of the blood will be increased, with the result that all the tissues will be better nourished, metabolism will be better carried on and secretion and elimination will be more perfectly accomplished. Every bodily function will be better performed and the improvement will be more manifest than in digestion and the assimilation of food. Few people breathe properly and they know very little of this important physiologic process. Textbooks have little to say on this point. The abnormal respiratory conditions in obese subjects, for instance, should be studied. Indolent and shallow breathing causes suboxidation with resulting obesity, and obesity is a prominent cause of dyspnea on exertion. Children should be taught deep breathing early and it should have a place in the physical exercises of all schools. Dr. Newton quoted Dr. Edward Hitchcock, who has said that "There is no doubt that if as much care were bestowed on our young in seeing that this particular part (the thorax) was developed with that care that the brain receives, tuberculosis would almost disappear."

DR. D. H. BENGEY of the Laboratory of Hygiene, University of Pennsylvania, presented a paper entitled

NEGLECTED PROPHYLACTIC MEASURES AGAINST DISEASES OF THE RESPIRATORY TRACT.

The paper showed the bad effects of dust, especially in cities where electric cars and smooth pavement are found. He advocates greater efforts to flush and cleanse the streets. Defective ventilation in the schools is another cause of respiratory affections. Neglect of proper ventilation is a cause of untold suffering.

DR. C. L. MINOR of Asheville, N. C., read a paper on

THE CYRTOMETER, A NEGLECTED INSTRUMENT OF PULMONARY DIAGNOSIS AND PROGNOSIS.

The following officers were elected: President, JAMES C. WILSON, M.D., of Philadelphia; Vice-Presidents, DR. THOMAS DARLINGTON, JR., of New York; DR. THOMAS D. COLEMAN of Augusta, Ga.; Secretary, DR. GUY HINSDALE of Philadelphia.

The twenty-first annual meeting will occur June 2, 3, 4, 1904, at Philadelphia.

Recent Literature.

The Medical Epitome Series: Anatomy. A Manual for Students and Practitioners. By HENRY E. HALE, A.M., M.D. Series edited by V. C. PEDERSEN, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co., 1903.

This volume purports to be more than the mere essentials of human anatomy. It goes somewhat beyond the scope of the ordinary quiz-compend, and contains in compact form the important points of anatomical knowledge. Questions are appended to some of the chapters.

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THE FORMATION OF BILIARY CALCULI ELSEWHERE THAN IN THE GALL-BLADDER.

At a recent meeting of the Surgical Section of the Suffolk District Medical Society the question was discussed whether or not calculi formed in the liver after cholecystectomy. It would appear from the chemistry and pathology of biliary calculi that, should they be met with after removal of the gall bladder, they in all probability were there before the operation and had simply remained undiscovered at the time.

The theory that biliary calculi originate from concentration of the bile has long since been laid aside and given place to the view that cholesterol and calcium bilirubinate, which are essential for the formation of calculi, collect about debris of one sort or another which has accumulated in the gall bladder and there become precipitated or slowly crystalize.

The experimental work of Dochmann, which consisted in the ligation of the cystic duct, showed that when obstruction to the exit of bile existed the percentage of calcium in the bile of the gall-bladder increased as compared with that of the liver; and since an increased percentage in the calcium signifies a decrease of solubility of cholesterol, as well as bilirubin, it would be quite rational to conclude that an obstruction to the flow of bile cannot be excluded as an etiological factor in the formation of calculi.

The experiments of Naunyn, however, showed that an increase of the calcium salts of the bile in amounts obtained in Dochmann's experiments were not sufficient to cause the precipitation of calcium bilirubinate to take place. On the other hand, it seems well proven by the experiments of

Jankau and Rey that food does not influence the percentage of calcium salts in the bile. When salts of calcium have been absorbed they are secreted again, more especially in the colon. It would also appear that the percentage of cholesterol in the bile is quite independent of the blood in health and disease.

The question of gallstone formation has been treated by Naunyn in a masterly manner and his conclusions must be considered valid at the present day. He demonstrated that a catarrhal process, an angiocholitis desquamativa, is the fundamental cause for the formation of biliary calculi, a view upheld by all to-day.

The epithelial debris which have been cast off consist mainly of cholesterol and lime salts and serve as nuclei for calculi; bilirubin and cholesterol being deposited on these, the calculi continue their growth. The entrance of pathogenic bacteria from the intestine, such as the *B. coli* or typhosus, are also etiological factors, inasmuch as they give rise to cholecystitis, provided an obstruction takes place. An injection of the *B. coli* into the gall bladder will only set up a cholecystitis when the cystic duct has been ligated.

The etiology of cholelithiasis may be summed up as follows: A desquamative catarrh, due to the entrance of pathogenic bacteria from the intestine, followed by an obstruction to the flow of bile.

It is quite evident that theoretically, biliary calculi can form wherever bile is present, therefore they may be developed in the liver, cystic duct and gall-bladder. These are authentic observations proving that calculi may primarily form in the intrahepatic cystic ducts. This, however, must be of most infrequent occurrence, as can naturally be surmised if one considers that in a patent cystic duct the bile current would carry down any nuclei that might be forming and since the cystic duct system becomes broader as its final exit from the liver is approached, it consequently must happen that small calculi originating in the finer branches of the hepatic duct must also be washed down by the bile current passing onward into the choledochus and into the intestine.

Not infrequently calculi have been met with in the hepatic cystic ducts when an obstruction of some duration has been present in the choledochus. In a case operated on by Riedel, which came to autopsy, numerous calculi were found in the hepatic cystic ducts, the cystic and choledochus being obstructed by a large calculus

sending ramifications into each. Other similar cases have been recorded.

As with the intrahepatic ducts, calculi exceptionally form in the hepatic duct and choledochus and a case is reported by Niemer in which he believes that a calculus originated in the hepatic duct. The gall-bladder and cystic duct, as well as the choledochus and hepatic ducts, were full of stones, those in the hepatic being tightly imbedded in the hepatic parenchyma. The intrahepatic cystic ducts contained numerous calculi and bile-stained pus. It is, however, probable that the calculi found in the hepatic duct formed there after the choledochus became occluded by a stone. Other similar cases have been recorded, but it is more than probable that the obstruction of the main ducts was the original cause. It therefore appears that primary formation of calculi in the cystic duct, if occurring at all, is most infrequent. They are usually secondary to obstruction of the choledochus from a calculus coming from the gall-bladder or from pressure without.

REPORT OF THE SURGEON-GENERAL OF THE UNITED STATES NAVY.

THE annual report of the Surgeon-General of the United States Navy for the year 1903 has recently appeared. Many recommendations and suggestions for the improvement of the service are made, and the report, as usual, contains many facts of interest. It appears that since the passage of the law increasing the medical corps up to 150 members, 16 applicants have been successful in meeting the requirements, and there are now but 11 vacancies, which it is hoped may be filled before the expiration of the calendar year. In spite of this increase, it became necessary to increase the medical service by the appointment of acting surgeons for temporary service. In making these appointments particular care was taken to select men fitted, both physically and mentally, for the service, with prospect of promotion to the regular service.

An excellent suggestion is made that the present titles in use by the medical corps are somewhat derogatory to the dignity of their office. It is, therefore, recommended that Congressional action be taken to permit the renaming of the different grades of the medical corps, using, for example, the term surgeon-admiral instead of surgeon-general, surgeon-captain instead of medical director, surgeon-lieutenant in place of past assistant surgeon. Such a change certainly seems in

accordance with the dignity which should be invested in men of this branch of the service.

Regarding the matter of hospital ships, certain interesting facts are stated. This country was the first to provide such vessels for active service, but since the recent war with Spain it has fallen behind other nations in this respect. At the last international medical congress the inspector-general of the British Navy's medical corps stated that the British Navy is the only one at present which has a hospital ship permanently in commission. He also stated that eight more ships of this type were being planned, each with a capacity for 200 patients. The need of such permanent ships in the United States Navy is becoming more and more apparent, particularly owing to the policy of the department in carrying on extensive drill operations at distant stations. At recent manœuvres at San Juan, P. R., it is stated that one vessel was unable to take part in the drill, owing to the widespread prevalence of malaria among the crew. This might, it is believed, have been avoided had a hospital ship been available. In general, it is the opinion of the admiral of the navy that for a fleet and base having together a force of 10,000 men, a hospital ship should be provided.

For those interested in the details of the medical management of the Navy, the report should be of much interest. It contains the usual statistical tables and individual reports from the various stations and vessels in active service.

THE RETIREMENT OF DR. EDWARD COWLES.

IN the retirement of Dr. Cowles from active service as superintendent of the McLean Hospital, the branch of medicine which he represents loses an indefatigable worker and a most able executive. His service at the hospital has been long and honorable, dating from Dec. 11, 1879, when he assumed the superintendency of what was then the McLean Asylum. He has therefore been contemporaneous with the striking advances which the last two decades have seen in the study and care of the insane and in the development of the science of psychiatry in its wider bearings. During this eventful epoch, which is surely destined to be but the beginning of a period of continued progress, the institution of which he is the head has unvaryingly been a leader and not a passive follower in the onward movement. There has been no hesitation in accepting the teachings of what has come to be known as the Kraepelin school, and of putting into active practice in this

country the plan of study of mental disease which Kraepelin has done so much to further.

Not the least of Dr. Cowles' services to the profession and to the community has been the unflinching insistence upon the abolition of old methods and the introduction of the new. His influence may be seen in the substitution of the word "hospital" for "asylum," in the development of training schools for nurses in institutions for the insane, and in his capacity to draw to his assistance men of distinguished ability in the various fields of psychiatric research. In his retirement from active service he has the somewhat unusual satisfaction of realizing that he has been closely identified with a movement for the betterment of the insane, in the inception of which he was a participator, and in the consummation of which he has been a constant factor.

Although retiring from the active duties of the superintendency, he becomes a member of the Board of Consulting Physicians, and in this capacity will, no doubt, for many years to come render the hospital a further and peculiarly valuable service.

MEDICAL NOTES.

A MEDICAL PRESS EXHIBIT AT THE ST. LOUIS WORLD'S FAIR. — An effort is being made to organize a collective and comprehensive exhibit at the St. Louis Exposition of the medical and scientific publications of America. Those interested may communicate with Dr. Charles Wood Fassett, St. Joseph, Mo.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Dec. 23, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 80, scarlatina 47, typhoid fever 11, measles 158, smallpox 0.

CENTENARIAN. — Mrs. Honoretta Marshall of Webster, Mass., died in Worcester Insane Hospital, Saturday, Dec. 19, at the reputed age of 105 years 4 months and 12 days.

SANITARY CONFERENCES FOR THE HEALTH OFFICIALS OF CONNECTICUT. — The Connecticut Board of Health has inaugurated sanitary conferences, to include all the health officials of the state, encouraged thereto by the favorable experiences of such assemblings in neighboring states. The proposed subjects for consideration at these

conferences are of an eminently practical character and such as relate to the daily official functions of local health officers.

BEQUESTS TO HOSPITALS. — By the will of the late George W. Boyd the following institutions are benefited, among many others: The Perkins Institution for the Blind, \$5,000; Maine General Hospital at Portland, for free beds, \$12,500; Maine General Homeopathic Hospital at Portland, for a like purpose, \$12,500; Memorial Hospital for Women and Children at Brooklyn, N. Y., for free beds, \$5,000; the Children's Hospital, Boston, \$5,000. A reversionary interest of \$35,000 is also given to the Massachusetts Homeopathic Hospital, and \$25,000 to the Massachusetts General Hospital upon the termination of certain trusts.

NEW YORK.

LINCOLN HOSPITAL. — The graduating exercises of the training school for nurses of the Lincoln Hospital and Home were held Dec. 12 at the New York Academy of Medicine, when diplomas were awarded to a class of twelve young negro women and an address was made by Booker T. Washington. This institution, which was formerly situated at 65th Street and First Avenue, where it was known as the Colored Home and Hospital, has, since its removal to the Bronx, developed into a full-fledged hospital, with ambulance service, etc.

APPOINTMENTS, COLUMBIA UNIVERSITY. — Among the appointments announced at the monthly meeting of the Trustees of Columbia University held on Dec. 7 were the following: Dr. Thomas B. Morgan, at present Professor of Biology at Bryn Mawr College, to be Professor of Experimental Zoology; Professor Hugo Münsterberg of Harvard University, to be non-resident Lecturer in Psychology for the current academic year.

SUPPRESSION OF THE MOSQUITO. — A convention, called at the suggestion of the Governor of New Jersey, of scientific men and others interested in the suppression of the mosquito, was held in New York on Dec. 17. Robert W. de Forest, president of the Tenement House Commission and of the Charity Organization Society, was elected permanent chairman, and resolutions were adopted recommending the appointment of a provisional committee to consider the formation of a central organization of national character with which local bodies might co-operate in conducting a general mosquito crusade.

INCREASED WATER SUPPLY. — The completed details of the recommendations of the commission appointed to investigate the most feasible sources for an increased water supply for the city, whose preliminary report in November was recently noticed in the JOURNAL, were submitted by Mayor Low to the Board of Estimate and Apportionment on Dec. 18. With the report of the commission he presented a letter in which he showed the ability of the city, from a financial point of view, to take immediate steps toward the consummation of the desired end, and stated his conviction that the professed new system would eventually be more than self-supporting. He also urged that the incoming administration, upon whom this responsibility will devolve, should give immediate consideration to the great work that has now been outlined.

SMALLPOX. — In view of the prevalence of smallpox in Philadelphia and other Pennsylvania cities, the Board of Health is taking vigorous measures to prevent an outbreak of the disease in New York, and sixty-four new inspectors have been appointed to co-operate with the regular vaccinating corps. In Manhattan but one case of smallpox has thus far been found, that of a Pullman car porter, but there have been several cases in Brooklyn. Investigation showed that they originated with laborers at the Navy Yard, and a dozen inspectors were promptly dispatched to the yard, with orders to vaccinate all the sailors, marines and workmen who did not object. As less than one-tenth of the men (numbering over five thousand) are willing, the Secretary of the Navy has been requested to issue instructions requiring the remainder to submit to vaccination. The Pennsylvania Railroad Company has set a good example by ordering all its employees to be vaccinated.

COTTAGE COLONY FOR AGED AND INFIRM. — The Commissioner of Public Charities has awarded a contract for the erection of the first three cottages of a new cottage colony for the aged and infirm poor of the city, which is to be established on Staten Island. Two of them are for women, accommodating thirty each, and one is for aged couples, accommodating twenty couples. The present policy of the Charities Department is to erect all additional almshouse accommodations as this new cottage colony. The almshouses (now known as Homes for the Aged and Infirm) on Blackwell's Island and at Flatbush, Brooklyn, are taxed to their utmost capacity during the winter season, and, with the normal increase in

the number of inmates, will soon be quite inadequate to the demands upon them. At neither of these institutions is there any opportunity for outdoor employment for such of the inmates as are able to work a part or all of the day. To the new colony will be assigned the more able-bodied class of inmates; while the infirm and helpless will be left in their present quarters. Each cottage will have attached to it a plot of ground on which the inmates may be employed, according to their various tastes and capacities, and the outdoor life will, no doubt, be of material physical benefit to them.

A CENTENARIAN. — Isaac Price, a native of New York City, died of apoplexy in Greenpoint, Brooklyn, on Dec. 11, in his one hundred and second year. It is stated that he was a total abstainer as regards alcohol, but that he was an inveterate chewer of tobacco, and that it was to its use during practically his whole life he attributed the excellent health which he always enjoyed.

REQUESTS TO HOSPITALS. — By the will of James King Gracie, the uncle of President Roosevelt, \$25,000 is left to the New York Orthopedic Dispensary and Hospital, to be known as the Anna Bulloch-Gracie Endowment Fund, and an additional \$5,000 for the endowment of a bed in perpetuity, to be known as the Esther Gracie Ogden bed.

Obituary.

IN MEMORIAM. GEORGE J. ENGELMANN.

At the December meeting of the Obstetrical Society of Boston the following resolutions were passed:

In the death of Dr. George J. Engelmann the Obstetrical Society of Boston desires to place on record its sense of loss.

For seven years he was a faithful and devoted attendant at its meetings and contributed to their success by his discussions and writings.

He served the society faithfully as president and corresponding secretary.

A man of wide scholarship, kindly, hospitable and courteous, he left many pleasant memories for which he will long be remembered by his fellow members.

Miscellany.

REPORT OF NEW YORK'S TENEMENT HOUSE DEPARTMENT.

ROBERT W. DE FOREST, the Tenement House Commissioner of New York City, has transmitted

to Mayor Low the first report of New York's new Tenement House Department. In it he says:

"On Jan. 1, 1902, a new department of the city government, known as the Tenement House Department, was created. Since that time all the tenement houses in New York have been examined and their condition ascertained.

"The cleansing of the Augean stables was a small task compared to the cleansing of New York's 82,000 tenement houses, occupied by nearly 3,000,000 of people, representing every nationality and every degree in the social scale. The task that confronted the department was not, however, limited to this. Without organization, without employees, with all its problems before it, it was on the very day that it came into existence confronted with an organized and vigorous attack in the legislature upon the fundamental principles of the law for whose enforcement it was created.

"Without previous records, with almost no information in regard to the condition of the existing tenement houses, it was called upon to carry out an important and far-reaching scheme for their improvement, involving the structural alteration of over 40,000 buildings.

"In the period under consideration in this report a new branch of the city government has been organized, its machinery created and a force of about 400 employees trained, disciplined and educated; far-reaching and important advances in legislation have been secured as a result of the department's action, and radical and vicious attempts to break down the tenement laws defeated.

"The existing tenement houses have been frequently and systematically inspected; foul cellars have had the accumulated filth of years removed; defective and unsanitary plumbing which has apparently existed for long periods has been remedied; houses unfit for human habitation vacated; hundreds of houses have been radically reconstructed and improved; light has been let into dark rooms; vile yard privies and privy sinks have been removed and the whole sanitary condition of the city raised to a higher standard. The results of this work are clearly reflected in the reduced death-rate, which in 1902 was 18.7 as compared with 20.0 in 1901, and in the first eight months of 1903 has been reduced to 18.0.

"To those who have borne the burden of the organization of the new department what has been done seems but a beginning—a first step in the endless fight against disease and death."

The report is the most comprehensive report on this subject that has ever been made by a city department, and will shortly be printed, in two volumes, of about 1,000 pages. It will contain many photographs, plans and other illustrations. One of the leading features of the report is a series of colored maps, showing population, density of population and the nationality and the number of families living in each block throughout the tenement districts of the Borough of Manhattan.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 12, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|-----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . | 3,785,156 | 1,315 | 327 | 21.67 | 23.11 | 3.12 | 2.58 | 1.14 | |
| Chicago . . . | 1,885,000 | 489 | 123 | 20.45 | 19.63 | 2.24 | 1.09 | 1.43 | |
| Philadelphia . | 1,378,527 | 496 | 109 | 21.88 | 19.56 | 4.23 | .40 | 2.42 | |
| St. Louis . . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 211 | 38 | 21.19 | 14.02 | 1.40 | 1.40 | 1.10 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 151 | — | 28.28 | 19.92 | 2.57 | 1.48 | 9.98 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 74 | 20 | 14.86 | 18.91 | 5.10 | — | 1.35 | |
| Boston . . . | 603,163 | 221 | 55 | 21.72 | 20.81 | 2.26 | 1.81 | .45 | |
| Worcester . . | 132,044 | 29 | 1 | 13.80 | 27.58 | — | — | 3.45 | |
| Fall River . . | 115,549 | 34 | 14 | 26.47 | 26.47 | 2.94 | 11.76 | 2.94 | |
| Lowell . . . | 101,959 | 33 | 6 | 18.18 | 24.24 | 6.06 | — | — | |
| Cambridge . . | 98,639 | 19 | 5 | 31.58 | 5.26 | 5.26 | — | — | |
| Lynn | 72,497 | 20 | 5 | 5.00 | — | — | — | — | |
| Lawrence . . | 69,766 | 24 | 6 | 25.00 | 12.50 | 4.16 | — | 4.16 | |
| Springfield . | 69,389 | 19 | 7 | 15.79 | 15.79 | — | 5.26 | — | |
| Somerville . . | 68,110 | 22 | 6 | 27.27 | 18.18 | 4.54 | — | — | |
| New Bedford . | 67,198 | 21 | 7 | 14.28 | 4.76 | — | — | 4.76 | |
| Holyoke . . . | 49,286 | 21 | 7 | 23.81 | 23.81 | — | — | — | |
| Brookline . . | 44,873 | 11 | 2 | 27.27 | — | — | — | 18.18 | |
| Haverhill . . | 42,104 | 12 | 1 | 16.67 | 16.67 | 8.33 | — | 8.33 | |
| Newton . . . | 37,794 | 14 | 2 | 7.14 | 7.14 | — | — | — | |
| Salem | 36,876 | 14 | 5 | 50.00 | — | 28.56 | 14.28 | — | |
| Malden . . . | 36,286 | 11 | 3 | 36.36 | 9.09 | — | — | — | |
| Chelsea . . . | 35,876 | 15 | 4 | 26.66 | 6.66 | — | — | — | |
| Fitchburg . . | 35,069 | — | — | — | — | — | — | — | |
| Taunton . . . | 33,656 | 11 | — | — | — | — | — | — | |
| Everett . . . | 28,620 | 4 | 2 | — | — | — | — | — | |
| North Adams . | 27,862 | 4 | — | 25.00 | 25.00 | — | — | 25.00 | |
| Gloucester . . | 26,121 | — | — | — | — | — | — | — | |
| Quincy . . . | 26,042 | 12 | 6 | 25.00 | 33.33 | 16.67 | — | — | |
| Waltham . . . | 25,198 | 9 | — | 11.11 | 22.22 | — | — | 11.11 | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | — | — | — | — | — | — | — | |
| Chicopee . . . | 21,031 | 4 | 0 | — | 25.00 | — | — | — | |
| Medford . . . | 20,962 | 5 | 2 | 20.00 | — | — | — | — | |
| Northampton . | 19,883 | 9 | 2 | 11.11 | 22.22 | — | — | — | |
| Beverly . . . | 15,302 | 4 | — | 25.00 | — | — | — | — | |
| Clinton . . . | 15,161 | 4 | 0 | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 7 | 0 | 28.60 | — | — | — | — | |
| Woburn . . . | 14,300 | 3 | 2 | 66.67 | — | — | — | — | |
| Hyde Park . . | 14,175 | 6 | 1 | 33.33 | 16.67 | — | — | — | |
| Adams | 13,745 | 1 | 0 | — | — | — | — | — | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . . | 13,609 | 3 | 0 | 33.33 | — | — | 34.33 | — | |
| Melrose . . . | 13,600 | — | — | — | — | — | — | — | |
| Westfield . . | 13,418 | 0 | — | — | — | — | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | — | — | — | — | — | — | — | |
| Framingham . | 12,534 | 4 | — | — | 25.00 | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 4 | 0 | — | — | — | — | — | |
| Southbridge . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 1 | 0 | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,377; under five years of age, 771; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 720; acute lung diseases 677; consumption 392; scarlet fever 20; whooping cough 11; cerebrospinal meningitis 10; smallpox 21; erysipelas 5; puerperal fever 12; measles 17; typhoid fever 63; diarrheal diseases 73; diphtheria and croup 102.


From whooping cough, New York 4, Pittsburg 2, and Chicago, Philadelphia, Baltimore, Boston and Woburn 1 each. From smallpox, Philadelphia 16, Pittsburg 8. From cerebrospinal meningitis, New York 7, Baltimore 1, Lynn 1, Woburn 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Nov. 28 the death-rate was 17.6. Deaths reported, 5,092; acute diseases of the respiratory organs (London) 200; whooping cough 92, diphtheria 49, measles 114, smallpox 1, scarlet fever 30.

The death-rate ranged from 8.0 in Hornsey to 29.6 in Sunderland. London 17.4, West Ham 17.1, Brighton 13.3, Southampton 13.9, Plymouth 19.5, Bristol 16.8, Birmingham 17.6, Leicester 15.4, Nottingham 19.1, Liverpool 21.7, Bolton 17.4, Manchester 20.6, Salford 20.5, Bradford 16.6, Leeds 20.2, Hull 16.7, Cardiff 16.0, Rhondda 14.4, Merthyr Tydfil 21.1, East Ham 12.3, Warrington 23.6, York, 24.7.

METEOROLOGICAL RECORD.

For the week ending Dec. 12, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | | Thermometer. | | Relative humidity. | | Direction of wind. | | Velocity of wind. | | We'th'r | | Rainfall in inches. | |
|--|-------------|-------------|--------------|----------|--------------------|-----------|--------------------|-----------|-------------------|-----------|-----------|-----------|---------------------|-----------|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. |
| | | | | | | | | | | | | | | |
| S. 6 | 30.00 | 32 | 38 | 25 | 68 | 65 | 66 | W | W | 12 | 12 | C. | C. | 0 |
| M. 7 | 29.96 | 34 | 40 | 28 | 72 | 60 | 66 | W | W | 9 | 10 | F. | C. | 0 |
| T. 8 | 30.04 | 38 | 44 | 31 | 84 | 62 | 73 | S | N | 9 | 6 | C. | C. | 0 |
| W. 9 | 29.68 | 43 | 52 | 34 | 74 | 100 | 87 | E | N | 8 | 30 | O. | R. | .32 |
| T. 10 | 29.43 | 42 | 52 | 32 | 87 | 70 | 78 | S | W | 20 | 10 | O. | C. | .43 |
| F. 11 | 29.96 | 32 | 37 | 28 | 76 | 46 | 61 | W | S | 10 | 8 | C. | C. | 0 |
| S. 12 | 30.30 | 34 | 45 | 24 | 74 | 66 | 70 | S | S | 12 | 10 | C. | O. | 0 |
|  | 29.91 | | 44 | 29 | | 72 | | | | | | | | .75 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. **W.** Mean for week.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY, SURGICAL SECTION.

At the last meeting of the Surgical Section the members voted to leave the details of the arrangement of future meetings to the chairman and secretary. It has seemed best to Dr. Harrington and myself to arrange for four meetings, to take place on the first Wednesdays of January, February, March and April. At the next meeting we are going to discuss the question of early operation in diseases of the stomach, but the subjects for the other three meetings have not been decided upon. The subjects for these discussions will, however, be announced at the next meeting, so that members may have an opportunity to look up the results of cases they have operated upon.

It is hoped that the Surgical Section may, this year, be rather a meeting for the discussion of mooted questions in everyday surgical practice than an opportunity of reporting rare cases, or of presenting digests of the papers of foreign operators. Interesting pathological subjects, or the patients themselves, may be shown at the first of the meeting, but the bulk of the evening will be devoted to discussion rather than to the reading of papers. Meetings will be held around the table in the reception room of the library, and smoking will be permitted, if so voted at each meeting by the members present. The Section proposes to send invitations to attend the meetings this winter to surgeons of the smaller hospitals in the suburbs and surrounding towns. Members of the Massachusetts Medical Society who wish to have notification postals sent them before each meeting may send their names to the Secretary.

On the next notification postal the following questions will be printed, as of especial interest in the discussion:

How often is persistent stasis of the stomach contents due to a purely functional condition?

Should exploration be advised as a routine in cases of marked stasis of the stomach contents?

Comparative results of medical and surgical treatment in cases of stasis?

E. A. CODMAN, M.D., Secretary.

RECENT DEATHS.

CORNELIUS M. O'LEARY, M.D., of Manhattanville, New York City, was killed by a motor train in Brooklyn on Dec. 12. He was born in Ireland sixty-four years ago and was a graduate of the College of Montreal. In 1862 he was graduated from the Medical Department of the University of the City of New York, and upon the death of his father, in 1864, succeeded him as professor of philosophy and classics in Manhattan College. He retained his chair up to the time of his death, but also conducted an extensive medical practice. In 1870 he was appointed an inspector in the New York Health Department and in 1871 was made a commissioner of pharmacy. Dr. O'Leary was also a writer of some note, especially on evolution and allied subjects, and was an ardent disciple of Herbert Spencer.

FRANCIS W. HIGGINS, M.D., of Cortland, N. Y., died suddenly of cardiac disease on Dec 18, at the age of forty-six years. He had been president of the Third District Branch of the New York State Medical Association and a vice-president of that society.

SAMUEL FOSTER QUIMBY, M.D., M.N.S.S., died in Salem, Mass., Monday, Dec. 21, at the age of sixty-three years. He was a member of the staff of the Salem Hospital, and had practised his profession in Salem for nearly forty years. Dr. Quimby was a graduate of the Harvard Medical School, and a member of the Massachusetts Medical Society and of the Harvard Medical Alumni Association.

ERRATUM.

In the first line of the last paragraph of Dr. F. H. Williams' letter on radium salts, in the last issue of the JOURNAL, for "I am *not* studying the therapeutic effects," read: "I am *now* studying," etc.

BOOKS AND PAMPHLETS RECEIVED.

The Nature of Man. Studies in Optimistic Philosophy. By Elie Metchnikoff. The English Translation edited by P. Chalmers Mitchell, M.A., D. Sc. (Oxon.) Illustrated. New York and London: G. P. Putnam's Sons. 1903.

Clinical Pathology of the Blood. A Treatise on the General Principles and Special Applications of Hematology. By James Ewing, A.M., M.D. Second Edition. Revised and Enlarged. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1903.

Modern Surgery, General and Operative. By John Chalmers Da Costa, M.D. Fourth Edition. Rewritten and enlarged. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

A Manual of the Practice of Medicine, Prepared especially for Students. By A. A. Stevens, A.M., M.D. Sixth Edition. Revised and Enlarged. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

The Four Epochs of Woman's Life. A Study in Hygiene. By Anna M. Galbraith, M.D., with an Introductory Note by John H. Musser, M.D. Second Edition. Revised and Enlarged. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Manual of Medicine. By Thomas Kirkpatrick Monro, M.A., M.D. Illustrated. Philadelphia and New York: W. B. Saunders & Co. 1903.

General Pathology or the Science of the Causes, Nature and Course of the Processes of Disease. By Dr. Ernst Ziegler. Translated from the Tenth Revised German Edition and edited by Aldred Scott Warthin, Ph.D., M.D. Illustrated. New York: William Wood & Co. 1903.

The Medical Annals of Maryland, 1799-1899. Prepared for the Centennial of the Medical and Chirurgical Faculty. By Eugene Fauntleroy Cordell, M.D. Baltimore, 1903.

The Practice of Medicine. A Text-book for Practitioners and Students, with Special Reference to Diagnosis and Treatment. By James Tyson, M.D. Third Edition. Thoroughly revised and in parts rewritten. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

Transactions of the New Hampshire Medical Society at the One Hundred and Twelfth Anniversary, held at Concord, May 21 and 22, 1903.

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Original Articles.

TYPHOID FEVER IN CHILDREN.¹

BY ADOLF BAGINSKY, M.D., BERLIN, GERMANY.

Professor of Children's Diseases, University of Berlin; Director of "Kaiser und Kaiserin Friedrich Kinderkrankenhaus."

TYPHOID fever of children, although known and often mentioned by the older authors, was considered to be a rare disease until the latter part of the nineteenth century, but progress and rich experience since then have taught us that it is frequent and a disease of great interest to the practitioner.

In his "Historical Study and Pathological Anatomy of Typhoid Fever of Children," V. Szokalski² states that Roederer and Wagner, in an essay entitled "De Morbo Mucoso," mention that this disease does occur; on the contrary, Petit and Serres describe under the name "Febris Entero Mesenterica," what they consider merely a disease of adults. Typhoid has since been known under other names, as, *e. g.*, "Entero Folliculosa," "Febris Typhoides," "Typhus Fever" and "Nerve Fever." We find, however, from Abercrombie,³ in his monograph, "Diseases of the Digestive Canal," in the chapter, "Diseases of the Mucous Membrane of Children," the dangerous forms are so pictured that one is able to recognize typhoid fever from the description: "The fever is high, the tongue dry and leathery, the thirst increased; in other cases a sudden loss of vitality is observed which can in no way be accounted for by the frequency of the intestinal discharges, followed by coma and a look of general exhaustion. The autopsy shows in the intestine, particularly in the ileum, a variety of inflamed and slightly elevated spots sown with small vesicles and ulcers."

Somewhat later Wendt,⁴ Evanson and Mannsell,⁵ Meissner,⁶ Constant⁷ and Becqueral⁸ more or less thoroughly considered the disease, but Taubin⁹ and Rilliet,¹⁰ through careful studies, made known its definite course, and in the "Handbook of Children's Diseases," by Barthez and Rilliet, a true picture of the disease is portrayed. From German authors we find a presentation of typhoid in children from Löschner,¹¹ in which it is interesting to note that in 104 cases he found 1 case under one year of age, 5 cases between one and four, 17 cases between four and five, 37 cases between five and seven, 20 cases between eight and nine. These facts led him to the conclusion that typhoid most frequently afflicts children between the ages of five and nine years.

The literature of the subject has recently become very rich. The course of the disease is somewhat similar to that in adults, yet in children so many peculiarities show themselves that a special study of the subject is interesting and necessary from a therapeutic standpoint.

ETIOLOGY.

Löschner agrees with the preceding authors that typhoid is more rarely seen in infancy than in later childhood; but this may be only apparent and an error of observation, because it is probable that typhoid in sucklings often is present in cases which are diagnosed as feverish dyspepsia. Further and more accurate observation will be necessary to make this point perfectly clear. Koch,¹² in his latest publication on the prevention of typhoid, alludes to the, as it were, latent typhoid in children. On this account the following observations must be accepted with caution: In the typhoid epidemic¹³ in the Saxon village of Eggenslädt, observed by me, there were in 90 cases only 16 children under ten years of age. Henoch, in 97 cases, saw only two under one year of age, 21 between two and five years, 89 between five and ten years. Steffen records 148 cases — two under one year old, 28 between three and six years and 34 between six and nine years of age. In 277 cases observed by Wolberg, the majority were between six and twelve years of age. In the Kaiser und Kaiserin Friedrich Kinderkrankenhaus in Berlin I have observed 88 cases, of which 17 were between one and four years, 41 between four and ten years and 30 between ten and fourteen years old. There were 51 boys and 37 girls.

According to general observation and experience boys are more susceptible to typhoid than girls. This may be from the fact that boys by their superior quickness and more frequent contact with each other are more exposed to infection than girls, through taking water, milk, etc., away from home.

The accumulated evidence of recent years points to the conclusion that typhoid fever is most commonly spread by means of fecal infected water, milk or other liquid nourishment. Thoinot,¹⁴ Vallin, Landourzy and Hanriot have all written concerning the epidemic in Paris in July and August, 1898, following the use of typhoid infected street water; likewise the epidemic in Dresden, reported by Hesse,¹⁵ and the one in Bern, reported by Stoss,¹⁶ were all, as well as hundreds of others, referred to the result of infected water. The epidemic in Holland, according to Verbeek,¹⁷ Dazy¹⁸ and some others, was caused by infected milk. Koch, in the

¹ Translated by Dr. C. T. Warner, Marlborough, Mass.² Viator Szokalski: *Journal f. Kinderkrankheiten*, Bd. viii, Nov. 1846.³ Abercrombie: Edinburgh Journal, 1820.⁴ Wendt: *Die Kinderkrankheiten systematisch dargestellt*, 1837.⁵ Evanson & Mannsell: *Kinderkrankheiten*, 1836.⁶ Meissner: *Kinderkrankheiten*, 1838, Leipzig.⁷ Constant: *Gazette médicale* 1833-1836; Review of Baudelocque's Clinic in the Children's Hospital, Paris.⁸ Becqueral: 1839.⁹ Taubin: *Journal de conaissance medico-chirurgicale*, Nov. & Dec., 1839; Jan., 1840.¹⁰ Rilliet: Dissertation, Jena, 1840.¹¹ Löschner: *Über den Typhus der Kinder*. *Journal f. Kinderkrankheiten*, 1845, Bd. v.¹² Robert Koch: *Die Bekämpfung des Typhus*.¹³ Baginsky: *Virechow's Archiv*, Bd. xlix, 1868.¹⁴ L. Thoinot: *Note sur la fièvre typhoïde à Paris, 1898*. Vallin, Landourzy et Hanriot: *Rapport sur un mémoire de Thoinot*. *Académie de Médecine*, p. 377, 1900.¹⁵ Hesse: *Typhus epidemic in Lüftan*. *Deutsche med. Woch.*, 1899, No. 35.¹⁶ Stoss: *Sitzungsbericht der med. pharm. Vereins, Bern*, Dezember, 1898.¹⁷ Verbeek.¹⁸ Dazy: *Verspreiding van febrils typhoida door melk*, *Weekblad* 38, Januar, 1899.

already mentioned publication, has somewhat shaken confidence in the above reports, since he has shown that typhoid is more or less transmissible from person to person, and this is particularly liable to be the case with the not seriously ill. That typhoid of children is exceedingly easy to transmit has been apparent for a number of years, to the detriment of the children's department of our hospital. Children are more easily the carriers of infection, because they are naturally more careless about soiling the surroundings. In the hospital a nurse and an assistant became sick from the disease, and only by the observance of the most scrupulous cleanliness were similar occurrences prevented. I had, however, before this, observed the progressive spreading of the disease from person to person and from place to place — the latter being carried by persons. Notwithstanding all this, the spreading of the disease by means of water, milk, infected food, etc., cannot be denied, and the most careful attention must be given to the cleansing of the wells, watercourses and bathing pools. A source of danger to children lies in closed bath houses, as the water may easily become contaminated by germs from the mouth or nose of those infected. The spreading of the disease through the medium of flies, as asserted by Vaughan,¹⁹ and as I myself almost to a certainty believe to have seen, must not be lightly regarded.

The season of the year plays an important part in the spread of the disease, by far the largest number being observed in the autumn; at least, this is true in Berlin, but sporadic cases are observed throughout the year. No one to-day doubts that typhoid fever is produced by a specific germ, the typhoid bacillus. This germ was first seen by Eberth in the intestinal mucous membrane, lymph glands and spleen, and described by him in the year 1880. Almost at the same time Robert Koch observed the germs in the intestinal wall, and proved their existence by coloring and photographing them. The bacilli were then thoroughly studied by Gaffky, who, in 1884, developed a pure culture of them, and also through cultures upon the potato proved their growth and peculiarities. The literature of the subject has now become so voluminous that in this article it is only possible to mention the most essential points, and besides much more remains to be proved on the special bacteriology of typhoid.²⁰ The difficulty²¹ of separating the typhoid bacillus from the great colon group and other intestinal bacteria caused considerable expansion of the literature of the subject. But finally the discovery of certain biological phenomena connected with the growth and life processes of the typhoid bacillus, together with clinical observation, has helped to clarify the subject. This is particularly true of the

so-called agglutination process. The typhoid bacilli most closely resemble the colon bacteria in their appearance, size and ordinary circumstances of growth, and are characterized by an exceedingly great motility on account of the large number of flagellæ with which the whole body is supplied. They are not colored after Gram's method form in a sugar culture medium; few or no gas bubbles (in strong contrast to the colon bacilli); grow in sterilized milk without coagulating it (thereby showing the acid formation to be very insignificant), and form in an albuminous medium no indol. The dull appearance when grown upon the potato, looking like a thin mucus, is considered by Gaffky and others to be an essential in its differentiation from the colon bacilli, but this statement, like so many others, has proved uncertain and unreliable. They grow best at the body temperature, and are both aërobic and anaërobic. Gelatin, even after the bacilli have grown on it for a long time, does not become liquid, and still more characteristic, the stab cultures become filled and the surface covered. Colonies upon the gelatin plate after twenty-four hours are characterized as sharply defined, circular or whetstone-shaped bodies, and after forty-eight hours appear brownish in color, more granular, more delicate and thin, growing out in so-called grape-leaf forms. The behavior of the bacilli to the litmus whey is important. Petrushky observed that when the typhoid culture was carried into litmus whey the neutral violet color became reddish, the whey remaining perfectly clear, while on the contrary the colon bacteria make the whey dark red and at the same time cloudy. It is necessary with this otherwise important test to make a control test, comparing the color and general behavior with a pure typhoid culture. The formed acid in the litmus whey culture must not exceed 0.3% of the normal acid. We also distinguish the typhoid bacilli from the colon bacilli by Barsiekow's litmus nutrose solution (1.0 nutrose, $\frac{1}{2}\%$ whey, 1% either grape sugar or milk sugar). The grape sugar solution becomes acid, reddened and curdled from both the typhoid and colon bacilli, while the milk-sugar solution is changed by the colon group but not by the typhoid bacilli. When grown upon a litmus-colored nutrose medium, the typhoid bacilli do not alter the medium, and the colonies have a blue color, while the colon bacilli redden the medium and the colonies appear red.

All the above reactions must be studied and controlled in relation to each other before we can certainly say that the bacillus in question is a typhoid bacillus. The most important test, however, is the certainty of the biological reaction, which was originally studied by Pfeiffer and Kolle,²² and which Widal worked out into a standard clinical reaction. Animals previously treated with typhoid bacilli very soon form substances in their blood which in high dilutions are able quite specifically to cause the typhoid

¹⁹ Vaughan: *Am. Journ. Med. Sci.*, July, 1899.

²⁰ P. Baumgarten: *Lehrbuch der pathologischen Mycologie*, Braunschweig, bei Bruhn, 1890.

²¹ W. Knoll u. A. Wassermann: *Handbuch der pathologischen Microorganismen*, Bd. II, p. 204, Abschnitt II. Typhus, von F. Neufeld, Gustav Fischer, Jena, 1902.

²² W. Pfeiffer u. W. Kolle: *Deutsche med. Woch.*, 1896, No. 12, p. 185.

bacilli to come together into clumps. This agglutination test is the most certain, because it is quite specific for the typhoid bacillus. Widal²³ then proved that this agglutination ability of the blood serum also occurs in man, and often during the first days of the illness, so that it may be accepted as a specific diagnostic aid. The typhoid bacilli occur in the stools, the urine, the blood, the saliva and in almost all the organs of the body, and may not only be proved in the above-mentioned secretions and in the skin of the patient during life, but also in the organs after death — and Pfeiffer, Simmonds, Fraenkel, Kileher and many others have cultivated the bacilli from corpses; Widal and Chantemesse found the bacillus in the placenta of a four months' fetus; Giglio and Frascani found it in fetal blood (see literature by Burdach, *l. c.*, p. 314); Locatello, in the saliva and mucous membrane of the larynx; and Ebermeyer, Quinke and others, in the marrow of the bones. The bacilli may also be found in the pus of abscesses accidentally accompanying typhoid, as I have proved in one case and also as shown by Spirig, Klemm, Hintze and others. Neuhaus, Curschmann and others have proved their presence in the rose spots of the skin, and A. Fraenkel, in pneumonic consolidations of the lungs. The recently much-studied existence of the typhoid bacilli in the urine is very important on account of its contagiousness and peculiar liability to be transported. Konjajeff, Levy and Gisler, Urban, Petruschky, Burdach and a great many more have investigated this branch of the bacteriology of the urine, and have suggested that this may be the cause of albuminuria and inflammatory irritation of the kidneys occurring in the course of the illness. As already said, we must limit ourselves to these few hints from the enormous literature of the subject, but they are sufficient to bring out the clinical importance of the typhoid bacillus.

It is not certainly known how the typhoid bacilli affect the human organism. It is known, however, that they create necrotic processes in the places first attacked, as is observed in the ulceration of Peyer's patches, but other lesions may be characterized as the result of their direct action on the tissues. However, their effects are not only attributable to this direct action, but much more to the action of the toxins which are produced in the system by the bacilli, because the severe general symptoms of typhoid can hardly be considered otherwise than as of a toxic nature. It still remains very questionable whether the metabolic product of the typhoid bacillus made by Brieger and called by him *typhotoxine* ($C_7H_{17}NO_2$) has anything to do with these effects.

PATHOLOGICAL ANATOMY.

The pathological anatomy of typhoid of children is distinguished from that of adults by the

greater prominence of the degenerative and necrotic process in the intestine of the former and by the more evident hyperplastic process of the latter. The intestine of children shows solitary follicles and swollen patches which are elevated above the surrounding tissue. These are pink in color and their surroundings profusely injected. The microscope shows new cell formation in addition to simple injection and swelling. Necrotic and ulcerative processes occur very often — Montmollin in Basel recording 77%, Pfeiffer 72% and Gerhard 67.5%. I have seen very extensive intestinal ulceration in children, and have described one important case. Two of my patients died of peritonitis due to perforation. The ulceration is not at all different from that observed in adults. We find the rod-shaped micro-organisms, the bacilli, in the mucous membrane, in the sub-mucosa and as far as the mesenteric glands. The muscles are dry, dark and show what Zenker speaks of as waxy degeneration. In the brain Popoff²⁴ describes nuclear division in the ganglionic cells and immigration of lymphoid cells, division of protoplasm of the nerve cells, accumulation of migratory cells in the perivascular tissues and along the nerve filaments, and finally deposits of fat and pigment granules in the ramifications of the blood vessels and nuclear division in the capillaries of the brain — all taken together being the result of previous inflammation. These statements in their essential particulars have been recently attacked by Herzog Carl,²⁵ Blaschko and Rosenthal, although maintained by Popoff. Langworth²⁶ describes serious lesions of the peripheral nerves and also of the motor cells of the anterior horn (change of the nucleus, dissolution of the Nissl granules) of the spinal cord. The spleen is enlarged, congested and soft; the mesenteric glands are swollen and do not differ from the typhoid glands of adults. The heart is, as a rule, flabby, the muscles brittle, the muscle nuclei very much degenerated, and the muscle fibers have undergone fatty degeneration. The lungs are frequently the seat of atelectasis and catarrhal pneumonia. Typhoid ulcers of the larynx have often been described and fibrinous laryngeal affections with medullary infiltration of the mucous membrane frequently occurs. The statements of Eugene Fraenkel concerning the rose spots of the skin are also interesting, as he found the typhoid bacilli in the surroundings of the blood vessels of the swollen papillae. Besides these regular conditions we find fibrinous coating of the tonsils, abscesses of the middle ear, swelling of the parotid gland, gangrene of the mouth, cheek and also of all the soft parts of the face. In some cases considerable meningeal effusion has been observed, but real meningitis is very rare. Peritonitis through perforation of an intestinal ulcer is not frequent, but I have observed it in several fatal cases. The kidneys of patients who die during the height of the fever

²³ Widal: *Semaine médicale* 1896, 15 Juli u. O. Forster: *Literatur, verzeichnis zur Widal'schen Reaction*, *Zeitschr. f. Hyg.*, Bd. xxiv, p. 501. auch Burdach: *Zeitschr. f. Hyg.*, Bd. xlv, 1902,

²⁴ Popoff: *Virchow's Archiv*, Bd. lxxiii, 1882, u. 87.

²⁵ Herzog Carl: *Ibidem*, Bd. 69, 1887.

²⁶ Langworth: *Journ. of Exp. Med.*, vol. xiv, No. 2.

show parenchymatous swelling and clouding of the epithelium, but rarely a genuine nephritis.

SYMPTOMS AND COURSE.

The majority of cases of typhoid fever in children begin with ill-defined and indefinite symptoms. Particularly is this true of very young children. The beginning is usually marked by headache, pains in the throat, loss of appetite, ill-humor, restlessness, thirst and moderate fever. Sometimes diarrhea is an early symptom, but constipation is more commonly observed. After a time the fever increases, accompanied by decided somnolence. The children sleep a great deal, the lips are dry, the tongue is coated gray white with red edges and a triangular red point. The eyes are somewhat injected, the abdomen is soft upon pressure but at the same time painful. Gradually the spleen becomes swollen — detected in the beginning only by means of percussion, but later by palpation. About this time, usually from the sixth to the ninth day, the roseola appear on the skin as small, isolated, slightly elevated spots. The abdomen is soft and slightly swollen. Epistaxis is an occasional symptom at this period of the illness and may become very misleading, for, as I have observed in a girl eight and a half years old, the blood may be swallowed and when vomited be mistaken for melena. Diarrhea is now frequent, the stools being foamy, brownish, fetid and thin or liquid. The somnolence becomes more and more marked, the child being with difficulty awakened and again very soon falls asleep. The hearing now often becomes difficult and cough is frequently a troublesome symptom. As a rule the physical examination reveals sonorous and sibilant râles and sometimes the percussion note is duller than normal in the lower posterior thoracic border. The facial expression is dull and apathetic, the child lies on his back and sinks into the bed. When being examined he usually cries and struggles, sometimes very energetically, but at other times will permit himself to be disturbed without offering resistance, depending, of course, upon the degree of somnolence. At this time there are two reactions to be observed: the diazo reaction of the urine, described by Ehrlich, and the Widal reaction (agglutination of the typhoid bacilli culture by the blood). This condition continues a longer or shorter time according to the severity of the illness. The lighter cases now improve gradually from day to day, the little patients showing more interest in their surroundings, at the same time becoming capricious and whining. The tongue, which till now has been dry and often red upon the point and edges, becomes pale, the coating more moist and thinner, the lips lose their coating and are not so fissured. Diarrhea ceases, cough becomes more frequent but looser. The roseola vanish. In place of the diarrhea comes an inclination to constipation. In the more difficult cases the advent of convalescence is much longer deferred, sometimes till the end of the third week and even longer; then the child slowly loses apathy

and dullness and the individual symptoms in the manner already pictured. Very gradually the condition returns to the normal, at the same time the appetite is markedly increased. In the meantime the patient has lost much flesh, and the low condition now makes itself clearly apparent. The fever now slowly sinks and gradually disappears.

The observation of the course of the temperature is a most important aid in diagnosis. The symptoms are often every indefinite, particularly in the early stage of the illness, and in these cases the fever has often led to a correct diagnosis before the other symptoms were pronounced. In general, especially in older children, the fever comes on slowly, but in younger children it is more apt to begin suddenly, often being characterized by rapidly rising temperature (Wolberg). In the slower forms of onset the temperature seems to rise by degrees. The evening temperature of the first days is always higher than the morning temperature of the same day, and the morning temperature of the next day is nearly as high as the temperature of the preceding evening. The fever reaches to the height of 40° C. to 40.5° C. (104 to 105° F.), and sometimes higher by the end of the first week, remaining at this height several days when not influenced by treatment, showing a difference of about 1° C. between the morning and evening temperature; then begins a gradual sinking of the morning fever and at the same time the still high evening fever becomes less. Finally the morning fever becomes normal and the evening exacerbations less marked and disappearing, at the same time the morning temperature going below normal. The fever may disappear inside of two weeks, but according to the observations of Hensch, Montmollin and others the larger number of cases require two weeks, while a somewhat smaller number require three weeks. This is proved by a large number of clinical charts and my own observations. It is important to observe the influence of age upon the duration of the fever. Wolberg found the fever duration with children between three and five years to be fourteen days, and with children above that age seventeen days. Long continuous fever comes almost exclusively in older children, and the interesting fact is learned from Montmollin's studies that from the first to the tenth year of life typhoid has a steadily increasing duration. This study showed that during the first year of life the duration was 12.3 days, in the fifth year 15.7 days, in the eighth year 18.3 days and in the tenth year 20.3 days; from then it appears to hold quite constantly to a duration between these limits. Of course these average results must not be applied in attempting to determine the duration of an individual case, but in general we can agree with Montmollin that the course of the fever in children, so far as the duration is concerned, is milder than in adults, but the severity of the illness in its individual phases will be found quite as serious. My observations are in essential accord with the foregoing remarks, and I must once

more emphasize the fact that in single cases of typhoid in children the course of the fever both in its duration and severity is on a par with the worst cases in adults. I have before me a temperature chart showing a fever of 40° C. (104° F.) or higher for more than two weeks, which was reduced only by means of energetic antipyretics, and remained lower but a short time. Such cases generally pursue a very severe course and end fatally. The temperature does not always fall by lysis, but more commonly by crisis similar to pneumonia, and is observed about the end of the second week, after which recovery begins. The frequency of the pulse beat corresponds pretty closely to the elevation of temperature, 100, 120, 140 in the morning, not so rapid as in the evening, and it is usually dicrotic, as in adults. During the height of the fever the pulse is irregular and intermittent, indicating a considerable heart weakness and a threatening heart paralysis. In such cases the heart tone is dull with an absence of the second sound, or the tones are divided. I have treated one case of typhoid complicated by chorea with very pronounced galloping tachycardia, but which was undoubtedly of some duration before the typhoid attack. It is not rare to hear a soft systolic murmur over the heart apex. During the convalescent stage we often observe an irregularity of the pulse and an acceleration of the sphygmograph tracings — a visible evidence of heart weakness.

(To be continued.)

ACUTE FLEXION OF THE GALL BLADDER AS A CAUSE OF BILIARY COLIC. ITS RELIEF BY OPERATION.

BY A. T. CABOT, A.M., M.D., BOSTON,

Surgeon to Massachusetts General Hospital.

IN 1896 Fenger read before the American Surgical Association a paper¹ in which he described cases of biliary colic and jaundice which he believed to be due to an obstruction in the biliary passages, caused by a bending or kinking of the ducts. He also urged that a valvular condition might be brought about by an oblique insertion of the common duct into the duodenum. In supporting his views, he cited what authorities he could find in the literature of the subject, but in his study of these conditions he found no suggestion that a bending of the gall bladder itself could give rise to symptoms requiring an operation for their relief.

I wish to put on record two cases in which characteristic attacks of biliary colic seem to have been caused by the acute flexion of the gall bladder at about its middle. In all such cases when there are adhesions it is difficult to recognize on the operating table the exact condition which is responsible for the colic. As the operation is usually done in a period of quiescence, between attacks, it is plain that in many cases

¹ Retention from Displacement, Bending and Valve-formation (oblique insertion) in the Biliary Tract. Med. Standard, Chicago, Nov., Dec., 1896, and Jan., 1897.

the mechanical obstruction or drag is not in action at the time of operation. It is conceivable and probable, when the stomach or colon are united to the gall bladder or the gall ducts by adhesions, that the drag of these viscera is responsible for the distortion which causes the colic.

This drag may be very much increased when these viscera are loaded and may amount to but little when they are empty. Fully recognizing the uncertainties that surround the determination of the causes of colic in these conditions, I present the following cases with a statement of my reasons for thinking the flexion of the gall bladder responsible for the colic:

CASE I. Mrs. H. E. R., a strong and healthy woman approaching fifty years of age, had for years been subject to attacks of pain in the right hypochondriac region. This pain had a tendency to shoot up into the right shoulder. Nausea associated itself with some of these attacks. Dr. Charles Folsom, who had watched her for years, thought that in some of her attacks the conjunctivæ were slightly yellow, but she never had any distinct icterus. Dr. Folsom and Dr. F. C. Shattuck, who saw her in consultation, both thought the attacks probably due to gall stones, though none had ever been seen in the stools. I saw Mrs. R. in February, 1899, and concurred in the belief that gall stones probably existed. At this time, I felt what I took to be the somewhat distended gall bladder in the usual place. The examination was, however, much interfered with by the thickness of the abdominal wall, which besides a thick adiposa had a strong and rather rigid muscular layer.

An operation was advised and accepted.

On Feb. 25, 1899, I operated. Under ether, when relaxation was complete, I could make out that what I had believed to be the gall bladder was, in fact, the end of one of the floating ribs. The lower ribs curved sharply inward and reached much nearer the umbilicus than usual. An incision was made just below and parallel with the costal margin. The liver lay high up under the ribs and its lower edge was pressed by them inward towards the middle line of the body.

The gall bladder was rather long, with its fundus extending below the edge of the liver and the pressure of the ribs carried this fundus downward and inward, producing a distinct bend or kink in the middle of the gall bladder. When the fundus was drawn outward, this bend was effaced, but it reproduced itself when the gall bladder was allowed to fall back into its usual position. Light adhesions existed between the gall bladder and the colon, but these exerted no appreciable drag on the organ, and certainly could not be accused of producing any distortion of the ducts. The gall bladder was opened, but nothing found within it to account for the attacks of pain. In order to efface the bend above described, the fundus of the gall bladder was drawn outwards and attached to the parietal peritoneum, a drainage tube being inserted within it. Recovery from this operation was satisfactory, and the patient had no more attacks of pain simulating hepatic colic. She did, however, have at times a pain lower in the right side which presently pointed so distinctly to the appendix as its cause that appendectomy was done in the summer of 1902. I found the appendix bent and adherent. Since that operation Mrs. R. has been exceedingly well and strong.

There was no doubt that the first operation was followed by a decided relief of a distinct hepatic colic. There was, however, for a considerable time a sense of uneasiness in the right hypochondrium which I ascribed to the tension of the gall bladder.

CASE II. Dec. 18, 1901, I saw, in consultation with Dr. C. J. McCormick, J. R., a strong, well-developed and

healthy looking man who gave the following history:—Twenty-one months previously he had had an attack of pain in the right hypochondriac region. This pain did not radiate to the shoulder and there was no icterus. The attack gradually passed away. A year later he had a similar attack in which the pain lasted all the spring. Then, he was easier through the summer. Five days before our consultation the pain again attacked him suddenly, and now, for the first time, vomiting was associated with the attack. He was still suffering, though not acutely, at the time of our examination. The abdominal muscles were extremely rigid and he was totally unable by any effort of the will to relax himself. As he was a strong, muscular man, this made the examination of the abdominal contents of practically no value. The only thing that was learned was that there was moderate tenderness at the normal position for the fundus of the gall bladder. In view of the recurrent nature of the attacks and their increasing severity, he was advised that an operation was probably wise, and should certainly be done if the pain continued.

After consideration, he decided to have the operation at once and it was accordingly done on Dec. 24, 1901. On opening the abdomen it was found that the gall bladder was long and rather lax. It projected beyond the edge of the liver and being attached to that organ up to the very edge, it made by its weight and downward pull a distinct sulcus in the lower edge of the liver. At first it was thought that the gall bladder was attached to the colon, but this was found not to be the case. The downward drag of the gall bladder was supplemented by the pressure downward and inward of the rigid abdominal wall and seemed to make a distinct bend about the middle of the gall bladder. It was decided to remove the gall bladder and this was done. The cystic duct was tied off and a gauze wick was introduced down to this point. The patient had considerable pain following the operation, but made a good recovery. I saw him March 14, three months after the operation, at which time he stated that he was entirely relieved of the pains that he had had, although there was a little sense of drawing in the scar.

The experience of these cases would lead me to prefer cholecystectomy as the better operation for the cure of such a condition as I have described. While the attachment of the fundus of the gall bladder to the abdominal wall, in the first case, effaced the bend in its body and stopped the attacks of distinctly hepatic colic, it left a sense of dragging in the right hypochondrium which prevented our regarding the operative result as a perfect one. The subsequent history of chronic appendicitis introduces a doubt as to the relation of the gall bladder to the attacks of pain. The disappearance after operation of the pains having distinctly the character of biliary colic, seemed reasonably convincing evidence that the gall bladder had been responsible for them. In the second case entire relief was afforded by the removal of the gall bladder. My experience in cholecystectomy leads me to regard this operation as having no more danger than a cholecystostomy when done in a case of ordinary difficulty. In these cases that I have been considering there were no deep nor extensive adhesions to make the removal of the gall bladder difficult.

SOME REMARKS ON CHRONIC SPHENOIDAL SINUSITIS.

BY ALBERT E. ROGERS, M.D., BOSTON.

FROM my study of the sphenoidal cavity, in the throat clinic of the out-patient department of

the Massachusetts General Hospital, last summer, I came to the conclusion that a chronic sphenoidal sinusitis occurs much more frequently than is generally supposed. The cases which I have to report occurred in the service of Dr. J. Payson Clark, to whom I am indebted for the privilege.

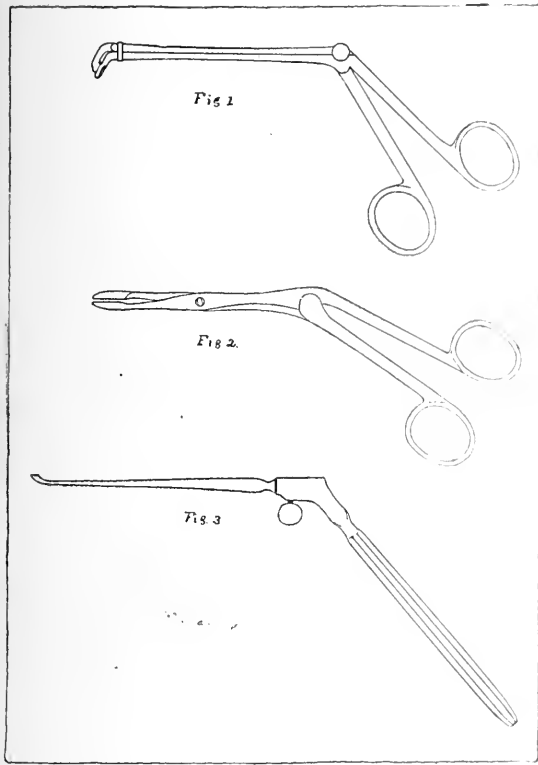
I found on examining 600 patients, that 29 were cases of accessory sinus disease, or nearly five (4.5-6) per cent of all who came to the throat department for treatment. Chiari and Lichtwitz report an average of only 2%. Of these 29 cases I found the antrum of Highmore affected four times; the frontal sinus once; a mixed frontal and ethmoid two times; the anterior ethmoidal three times; the posterior ethmoidal two times; the sphenoidal sinus sixteen times and a mixed posterior ethmoidal and sphenoid once. This places the empyema of the sphenoid at the head of the list, which does not agree with the majority of clinical observations in placing the maxillary sinus as the most commonly diseased. The great difference of opinion in regard to the frequency of sphenoidal disease is shown by the statement of Bosworth, that true primary disease of the sphenoidal cavity is very rare. He considers that affections of the ethmoidal cells are the most common. He is supported by the observations of John Mackie, who reports forty-four cases of ethmoid to eight of sphenoid. In the records of the clinic at the hospital I have been unable to find the diagnosis of chronic sphenoidal sinusitis occurring a single time for the past five years. On the other hand, Lichtwitz states that next to the maxillary the sphenoidal is the most commonly affected. This statement is supported by Grünwald, who has opened 51 sphenoidal and found it necessary to operate on only 14 frontal. Hajek states that the sphenoidal is the most common of the posterior group of sinuses.

Before taking up the subject of diagnosis, it may be well to make a few remarks concerning the anatomy of the sphenoidal sinuses. They are located in the body of the sphenoid bone and are usually two in number, being separated by a delicate septum. Ordinarily the cavity is limited by the sphenoid-ethmoidal fissure. Its opening is in the anterior wall in the sphenoidal fissure, just above the upper turbinate. In the majority of cases the opening is in the middle part of the anterior wall, though sometimes it may be higher or lower. In most cases it is impossible to see the opening into the cavity, due to the obstruction of vision by the middle turbinate.

In examining a large number of fresh specimens prepared by Professor Zukerkandl while I was a student with Hajek in Vienna, I was struck with the extreme thinness of the upper and posterior wall of this cavity and its intimate relation with the sinus cavernosus. The inferior wall, on the other hand, is very thick. The size and shape of the cavity varies greatly in different individuals. One can never be sure how far backward it may go.

In making the diagnosis of sphenoidal disease I rely mainly on the probe. If pus is seen in the olfactory fissure it may be due either to trouble in

the sphenoidal sinus; the posterior ethmoidal cells; rarely the posterior part of the antrum of Highmore when a division exists therein; the frontal sinus; atrophy of mucous membrane, which I believe is sometimes primary, or to caries of the superior turbinate (as tubercular). Eliminate the last two and begin to investigate the cavities. I commence with the sphenoidal, as I think it the most commonly diseased and the easiest to enter. The probe must be passed in a direct continuation of the line from the inferior nasal spine to the middle part of the middle turbinate. *It must not go anterior to this line.* The distance from the inferior nasal spine to the anterior sphenoidal wall is $7\frac{1}{2}$ cm. and never more. If the probe goes a greater distance one is either in the sphenoidal



namely, post-nasal discharge which, is too often treated as an ordinary "catarrh" by post-nasal applications.

In opening the sphenoidal cavity I proceed in the following manner: After thoroughly cocaineizing the nose I remove a piece of the middle turbinate anteriorly, at its attachment to the outer wall, with a Knight's cutting forceps (Fig. 2). Then with the same forceps I grasp the body of the turbinate and bend it toward the outer wall, then by quickly twisting in the opposite direction fracture it along its attachment. The forceps, still grasping the bone, is now removed and usually the whole turbinate comes away, leaving a free and easy approach to the sphenoidal opening. The hemorrhage is generally brisk at this time, but it is not of long duration and further bleeding is exceptional. I do not use adrenalin solution at the time of the removal of the turbinate, but for after treatment I give the patient a spray of the 1-1000 solution, to use twice a day for ten days, when I proceed to the opening of the sinus. This is done under cocaine with a forceps which I have constructed on the principle of Grünwald's downward-cutting forceps, but with shorter jaws, fenestrated, and with a stouter rivet at the joint. I have also had a strengthening clasp placed at the joint (Fig. 1). After the forceps has entered the nose its jaws are slightly opened and while paying attention to the upper jaw only the instrument is passed into the sphenoidal opening in the same manner as a probe. The jaws are then brought together with firm pressure biting out the anterior wall and establishing free drainage. In those cases in which the opening is too small to admit the forceps I first enlarge it by means of Hajek's sphenoidal hook (Fig. 3). Usually this is all that is necessary to obtain complete relief. In two cases only have I found it necessary to curette and syringe out the cavity.

This method has given complete relief in the eleven cases, the notes of which follow, and the more extensive operation by way of the antrum of Highmore, as recommended first by Jansen and later by Luc and Furet, has not been necessary in a single case.

CASE I. Man, age twenty-four. No tubercular or syphilitic history. For five years has had a constant dropping in pharynx. Had been under treatment for three years, receiving post-nasal applications and nasal douches. For a year complained of severe pain in back of head. Examination showed an hypertrophy of right middle turbinate. Pus in olfactory region and considerable pus in naso-pharynx. No atrophy of mucus membrane. Probe passed into sphenoidal cavity discovered roughened bone. Middle turbinate was removed under cocaine. Considerable hemorrhage, which soon subsided. Ten days later the anterior wall of sphenoidal cavity was removed, establishing free drainage. Three weeks later patient was entirely relieved of symptoms.

CASE II. Woman, age thirty-seven. No tubercular or syphilitic history. Always in good health. Nine years ago began to be troubled with nasal polypi. During the past eight years came to hospital four or five times to have the polypi removed. For five years has had a constant dropping in back of throat. Examination showed a moderate hypertrophy of right middle turbinate, remains of polypi and a slight post-nasal discharge. Probe revealed roughened bone in sphenoidal cavity. No disease in other sinuses. Polypi and middle turbinate were removed and two weeks

sinus, brain cavity or naso-pharynx. If it goes over turbinate in the middle part, in the direct line I have mentioned, one is certainly in the sphenoidal cavity. I have verified this on more than a hundred specimens. The probe must be bent with a slight horizontal concavity (\cup) in order to pass around the convexity of the middle turbinate. I also bend the tip very slightly downward, as it is easier to enter the cavity and there is less danger of injuring the posterior wall. Having entered the cavity and feeling roughened bone or the spongy granulation tissue, one is warranted in making a diagnosis of sphenoidal disease and justified in opening the cavity for the relief many obscure symptoms such as somnolency; of numbness of upper lip and general nervousness; cough; deafness; chills; vertigo; diffuse pain in head; pain in back of head; deep-seated pain back of eyes and another symptom not so obscure,

later the sphenoidal cavity was opened. The discharge continued for about five weeks, when it entirely ceased.

CASE III. Woman, age thirty-two. No tubercular or syphilitic history. Complained of severe diffuse headache, vertigo, specks before the eyes. For five years had been troubled with a copious post-nasal discharge. She had been treated with nasal douches and post-nasal applications without relief. Examination showed an enlarged left middle turbinate and a great deal of muco-pus in the naso-pharynx and olfactory region. Probe showed roughened bone in sphenoidal cavity. Middle turbinate was removed and ten days later the anterior wall of sphenoidal cavity was removed. Three weeks later the headache and dizziness had disappeared. The discharge was greatly diminished, but as it still existed I curetted and syringed out the cavity. Two weeks later all discharge had ceased.

CASE IV. Woman, age thirty-nine. No tubercular or syphilitic history. For three years had been troubled with a copious post-nasal discharge. Had severe diffuse headaches and dizziness. For over a year had severe cough and frequent chills. Noises in left ear and hearing in same affected. Examination showed an enlarged left middle turbinate, polypi, and pus in olfactory region. Posteriorly there was to be seen a copious muco-purulent discharge. There was a chronic laryngitis. The probe revealed roughened bone in the left sphenoidal cavity. Polypi and middle turbinate on the left removed and two weeks later the cavity was opened. For two weeks more the discharge continued to flow freely, after which it began to diminish until six weeks after the cavity was opened it had practically disappeared. There was complete relief of all the other symptoms except the cough, which although diminished still persisted. This will undoubtedly cease as the laryngitis is secondary to the pharyngitis which was caused by the post-nasal discharge.

CASE V. Woman, age twenty-six. No tubercular or syphilitic history. Has had a continued dropping in throat for over a year. Complained of deep-seated pain in right side of head. Examination showed the right middle turbinate to be moderately enlarged. There was a very slight amount of muco-pus in the olfactory region. The probe revealed roughened bone in the sphenoidal cavity. The middle turbinate was removed and two weeks later the sphenoidal cavity was opened. When the anterior wall was removed considerable pus escaped. Three weeks after operation the discharge and pain had ceased.

CASE VI. Man, age forty-one. No tubercular or syphilitic history. For many years had been troubled with a post-nasal discharge. Three years ago had an attack of facial erysipelas. Complained of vertigo and deep-seated pain back of eyes. Examination showed no hypertrophy of turbinates and there was no discharge anteriorly. Posteriorly there was considerable muco-purulent discharge. The probe revealed roughened bone in both sphenoidal cavities. The middle turbinates were removed and both cavities opened, resulting in complete relief to the symptoms four weeks after operation.

CASE VII. Woman, age twenty-seven. No tubercular or syphilitic history. Two years ago had an attack of facial erysipelas. Had had a copious post-nasal discharge for two years. Complained of severe headache in top and back of head. Examination showed a very large middle turbinate on right side. No pus seen anteriorly. Posteriorly naso-pharynx filled with pus. Probe revealed a large area of roughened bone. The middle turbinate was removed and two weeks later the cavity was opened. The pain in head was relieved, but as three weeks later the pus continued, I curetted and syringed the cavity twice a week for two weeks, when the discharge ceased.

CASE VIII. Woman, age forty. No tubercular or syphilitic history. For four years had a copious post-nasal discharge. Complained of a diffuse pain through head, deep seated back of eyes. Examination showed polypi on both sides and enlargement of both middle turbinates. There was a great deal of muco-pus seen posteriorly. The probe showed spongy tissue in both sphenoidal cavities. Both turbinates were removed and the anterior wall of both sphenoidal sinuses taken away. Considerable polypoid tissue was curetted out of both cavities and after a few weeks' syringing the symptoms were entirely relieved.

CASE IX. Man, age twenty-five. No tubercular or syphilitic history. For two years complained of difficulty in breathing through right nostril. Had a deep seated pain back of eyes. Complained of being dizzy at times. Upon examination the right middle turbinate was found greatly enlarged. No pus to be seen either anteriorly or posteriorly. The probe found roughened bone in the right sphenoidal cavity. No other sinuses were found affected. A fine pointed catheter was next passed into sphenoidal cavity and a small amount of muco-pus was syringed out, thus confirming the diagnosis. The middle turbinate was removed and one week later the anterior wall of sphenoidal cavity was taken away. The symptoms were entirely relieved.

CASE X. Man, age forty. No syphilitic or tubercular history. Was being treated in the nerve department for neurasthenia and was referred to throat department for examination of nose. He complained of a pain in back of head; a numbness of upper lip and was generally very nervous. Examination showed a moderate enlargement of left middle turbinate. No pus either anteriorly or posteriorly. The probe revealed considerable roughened bone and there was some pus adhering to probe on withdrawal. Operation was advised and done, with complete relief to symptoms five weeks later.

CASE XI. Boy, age fifteen. No tubercular or syphilitic history. Had severe post-nasal discharge for two years. Complained of dizziness and frequent headaches. Examination showed pus in olfactory region and a copious discharge in naso-pharynx. Probe showed roughened bone in left sphenoidal sinus. Three weeks after sinus was opened all symptoms were relieved.

THE CASE OF LOUIS BITZER.¹

BY EDWARD B. LANE, M.D., BOSTON,

Superintendent of the Boston Insane Hospital.

UPON first reading the account of the Bitzer homicides I believed his was probably a case of acute melancholia. It read like many cases where a victim of melancholia, with delusions, who, seeing nothing but disgrace and suffering for himself and loved ones, in his frantic desire to save them from awful misery takes their lives and then commits suicide. But after seeing Bitzer and talking with his family and friends, I found he was not nor had he been suffering from melancholia in the ordinary sense of the term. Melancholia is a disease of slow onset and runs a course of months. I have never seen nor read of a case of transitory melancholia. The line of reasoning in the writing is strikingly similar to that of a homicidal melancholiac. And here the similarity ends.

Transitory frenzy is described and after much debate upon the subject is, I think, now admitted as a rare form of mental disturbance. In transitory frenzy there is evidence of cerebral congestion, flushed face, congested eyes, furious excitement followed by a deep, profound sleep. During this excitement the victim runs amuck and may commit violent and unprovoked assaults upon any one he chances to meet. This case was clearly not one of transitory frenzy. There was no evidence of great physical excitement; the shooting of his family was deliberate and planned and intended suicide was confessed. There was no deep sleep. But in this case we still have to face the fact that a fond husband and a loving

¹ Read at the annual meeting of the Massachusetts Medico-Legal Society, June 9, 1903.

father attempted suddenly to annihilate his family, and the ordinary man is inclined to use his common sense and say, such a person must have been insane. Such a horrible, unnatural act is of itself evidence of an abnormal state.

To the medical man Bitzer did not appear insane at the time of his examination, in February, nor was there any evidence that he had previously suffered from any of the ordinary forms of insanity as observed in our hospitals for insane. The serious question arises, What was the explanation of this terrible deed? and was he responsible for it?

Then follow the very practical questions, What shall be done with him? How shall the law be enforced and society protected? Unfortunately, laws cannot be so framed as to meet all individual cases and deal equitably with each one.

To find an answer to the medical question in this case, I made a careful study of Bitzer, personally, and inquired into his history. The case was much simplified for all by the unusual document which he wrote immediately after the shooting of Ida. In this his state of mind is revealed and his intentions disclosed.

Upon examination by four physicians (Drs. Quinby, Houston, Scribner and myself), all familiar with the insane, we agreed that Bitzer impressed us as a man "not quite up to par mentally." He was poorly nourished, weak and emotional. He was born in Germany, and no trace of mental or nervous disease was discovered in the family. He is said to have had a prolonged and exhaustive illness when a small child. His habits as to intoxicating drinks were very temperate, judged from the standard of his nationality. He drank a little ale or beer daily. Used spirits rarely. Did not drink while at work and was never drunk. He was liable to lose his self-control under slight provocation. It is related at one time that he was holding an auction when some one remarked that he must be about to fail in business or he would not hold an auction sale. He lost his self-control and smashed his hat and a piece of furniture near him. He admits this fact, but says he does not remember all the incident.

From childhood he walked in his sleep. His wife tells of repeated incidents of his sleep-walking. She would find him asleep on the floor in another room from that in which he had gone to bed. When anxious about his store, thinking of fire or burglars, he has been known to leave his bed and go to the store and in the morning have no recollection of it. One night his wife missed him from their bed and got up to look for him. She found him lying in a ludicrous position in the child's cradle with his head and legs hanging over either end. Only four nights before the tragedy she missed him and found him walking about another room, and had she not caught hold of him he would have walked out of the window.

His brother was a somnambulist as a boy.

Two of his most intimate friends describe him two weeks before the tragedy as peculiar and "morose." He failed to greet them in his accustomed manner when they entered his store; he answered them in monosyllables and appeared nervous and his hands were trembling. At other times he was as usual. Bitzer failed to recall these incidents when I questioned him about them later.

Six years ago, when recovering from the grip, he became very excited and tried to bang his head against the wall. It took two or three men to prevent him from injuring himself. They believed he was attempting suicide. He went to sleep after this temporary frenzy. He states that he knows nothing of this and that he never heard of it until questioned about it months after his arrest.

His account of the shooting was substantially this:

"Ida asked me to put away two revolvers. I closed one quick and it went off and Ida fell on the floor on her back. I did not examine her to see if she were dead. I did not touch her. I first thought of running away, as I was afraid of being arrested, and I took the money out of the drawer. I then thought of doing away with myself. I thought of going to the girl's home. Then I wanted to see my people before I died. I remember going to get a paper and kneeling at the table to write. The last thing I remember was putting on my hat and coat, which I did before I wrote. At the house I remember my wife's arm pulling at my neck and hearing her say something about shooting. I remember the officer at the lockup saying my boy was shot, when I got the same feeling I did when the girl was shot. I remember I came to the Greenfield jail in a sleigh. I came to myself here in the jail the next morning."

His wife says that when he entered the house he looked like a crazy man. His appearance was so unnatural, she asked him what was the matter. He made no reply, but went out into the kitchen.

Assuming that Bitzer's account of the shooting is true and that it is also true that he does not remember anything after the shooting of Ida, save the few incidents related, we must conclude that he was not in a normal state at the time of shooting the family. The coherent statement he wrote, his finding his way home and selecting his family in order are against the idea of his suffering from ordinary delirium. Nor is there any evidence that he was an epileptic. But he was subject to periods where there was a divided or dissociated consciousness. As is well known, this condition is not rare in epileptics and hysterics, and is identical with the hypnotic state. It is not uncommon for such a condition to succeed a mental shock. It usually lasts for hours, but may endure for months or even years.

In this condition it is not uncommon for there to be islands of memory; that is, there will be a memory more or less distinct of certain incidents, as in this case: Bitzer remembered feeling

his wife's arm about his neck and hearing her voice as in a dream and of feeling the cold steel of the handcuffs as they were put on his wrists by the arresting officer. Very important is the circumstantial evidence in this case that Bitzer was a somnambulist. That is to say, it was well recognized that he was frequently subject to disturbances of consciousness. The somnambulism was frequent from childhood. The periods at the store when he appeared preoccupied and failed to greet his friends in his usual manner and answered in monosyllables, and his denial of such occurrences, may possibly be explained in a similar way.

No one would think of holding one who had committed a crime during delirium or while dreaming, responsible. Yet, strictly speaking, is either the result of insanity? The defence of hypnotic influence has been set up in one or two cases. But there was grave doubt as to the criminal being in that state, but if we were satisfied that a crime was committed when the criminal was in a hypnotic condition it is certain the popular verdict would be for acquittal.

What then shall be said of the responsibility of Bitzer if he was in a state of divided consciousness and impelled by the horrible fears of a disgrace while in a condition of partial consciousness, as shown by his peculiar expression and no memory of the horrible and unusually exciting events? It has been found that in the half-waking or hypnagogic state people are particularly susceptible to depressing emotions. Depression tends to continue the hypnagogic state (which is practically identical with the hypnotic condition), and a case is told of a young man who was slow in waking and his sister, to arouse him, told him that his oldest sister had died suddenly and he must get up. Instead of awakening, he began to sob convulsively and finally alarmed his sister so that she called the oldest sister, who tried to reassure him by showing herself alive and well. It was of no avail and he had a series of convulsions and it was several days before he recovered his normal condition.

I believe that Louis Bitzer was profoundly shocked by the discovery that he had killed his clerk. As a result of that shock he at once passed into an abnormal mental state of partial consciousness, analogous to the post-epileptic, somnambulist, hypnotic and hypnagogic states, where his judgment was largely suspended, his actions were automatic and the result of profoundly depressing emotions of fear and shame. Reflection and will power were largely in abeyance. He was an automaton and as is to be expected, he has no memory of the events. He is as irresponsible for them as if he had committed these crimes during sleep.

I do not believe it at all probable that he would again be guilty of a similar crime. It is probable that if he were hypnotized he would be able to recall the events that took place in his home. It is understood that I believe he was in a normal condition and responsible when he shot his clerk.

A BRAIN HARDENED BY KAISERLING'S METHOD SHOWING THE TRACK OF A BULLET.¹

BY WM. F. WHITNEY, M.D., BOSTON,

Curator Warren Anatomical Museum, Harvard Medical School.

I wish to call attention to a brain preserved by Kaiserling's method, which I think should always be adopted in the case of any injury, as it is the only one by which the seat and extent of the lesion can be accurately determined. The delay incident to this method of preparation would be rarely any obstacle in the course of a legal inquiry. The following case of suicide is an illustrative one:

A man who had been drinking hard fired two shots from a 32-caliber revolver at himself at 10.35 A. M. He was brought to the hospital at 11.07 A. M., and in the right frontal region were two ragged wounds, each one inch in length with powder-stained edges, one lying on either side of the temporal ridge. About one inch towards the median line from wound nearest median line, a bullet could be felt lying subcutaneously, which was easily removed and no bony injury felt. Through the other wound a round hole could be felt in the skull. There was considerable hemorrhage, pupils normal in size, equal and reacted. No bleeding from ears or nose. Heart, lungs and abdomen negative. Patella reflexes were equally exaggerated, superficial reflexes absent. He moved his arms and legs about freely, apparently with equal strength and required restraint. Pulse 140, irregular, temperature 97.8 in axilla. Half an hour after admission the patient had a clonic convulsion which lasted about one minute and affected both sides of the face and extremities equally.

At 12.30 P. M. noticed that he did not move right extremities while the left were moved about freely. Right knee jerks more active than the left.

At 1.30 P. M. the left pupil was larger than the right and there was slight exophthalmos of the left eye. Increasing coma.

At 2 P. M. deep coma, but on painful stimulation there was slight motion of both arms, and the right extremities were flaccid. Pupils and other reflexes as before noticed. Pulse 128.

At 3 P. M. trephine opening made by the surgeon in charge, on left side, 1.5 inches behind and 1.5 inches above external condyloid process. Posterior branch of middle meningeal artery exposed and seemed to be formed by two small branches which formed a main branch at about the middle of trephine opening. Dura bulged, with a bluish tinge, no pulsation, arteries tied and dura opened. A dark blood clot escaped, followed by fresh blood and disintegrated brain. No trace of bullet seen. Hemorrhage rather profuse, direction not determined. Pulsation of brain returned after relieving pressure, but he never regained consciousness. Respiration stertorous. Pulse continued to fail, and died at 6.45 A. M.

¹ Read at the annual meeting of the Massachusetts Medico-Legal Society, June 9, 1903.

Brain. Was hardened in bulk in Kaiserling's fluid² for about two months. It was then cut in a series of sections each 1.5 cms. thick and the track of the bullet located as follows:

It entered at about 4 cms. from the front of the right anterior lobe, passed directly across, traversing both lobes. In the left one was a cavity the size of the end of the thumb, filled with blood clot and disintegrated brain substance. This opened upon the surface at the point where the trephine wound had been made. From this cavity the track turned almost at right angles and proceeded directly backwards, passing through the white substance of the left hemisphere and along the upper part of the convolutions of the island of Reil, in the middle part of which it was found to be lodged.

The case is interesting in the different courses which the two bullets followed. Either there must have been a great difference in the charges of powder, or the skull must have been very much harder or denser at the point where one struck than the other. Moreover, the one that penetrated the skull must have struck the opposite side, rebounded, turned around and destroyed the brain substance extensively at that point. It then went in a direction at nearly a right angle to that in which it was originally fired, and finally lodged at about the middle of the hemisphere.

In concluding I wish to express my thanks to Dr. Bottomley for his kind permission to use the clinical notes of this case, and to Medical Examiner Harris for the opportunity of obtaining the specimen, which is preserved at the Warren Anatomical Museum at the Harvard Medical School.

WHAT WAS THE CAUSE OF DEATH?¹

BY A. ELLIOTT PAINE, M.D., BROCKTON, MASS.,

Medical Examiner, Brockton.

ON the morning of Jan. 3, 1903, I was notified of the death of Mrs. S., aged thirty-nine, whose death was supposed to have been caused by poison.

The autopsy showed a well-nourished female, who weighed about 130 pounds. All the organs of the body were normal except the stomach, which contained one quart of grayish fluid. The mucous membrane on its posterior surface was somewhat congested in an area of 2 by 3 inches.

² KAISERLING'S METHOD FOR THE PRESERVATION OF SPECIMENS WITH THEIR NATURAL COLORS.

Slices of organs from 3-5 cms. thick are placed from 3-5 days in

| | |
|-------------------------|-------------|
| 1. Formaline | 200 c. c. |
| Aq. | 1,000 c. c. |
| Nitrate of Potash | 15 grm. |
| Acetate of Potash | 30 grm. |

They are then removed, the fluid allowed to drain off and placed in

2. Alcohol 80% for 6 hours, then
- Alcohol 95% for 2 hours

From this directly into

| | |
|-------------------------|-------|
| 3. Aq. | 2,000 |
| Acetate of Potash | 200 |
| Glycerine | 400 |

for permanent preservation in a dark place.

Further details for the preservation of whole organs, etc., should be studied in the original article.

¹ Read at the annual meeting of the Massachusetts Medico-Legal Society, June 9, 1903.

The stomach, one pint of its contents and sections of the liver, kidney and brain were sent to Prof. E. S. Wood for further examination.

Investigation showed that Mrs. S. had been divorced for two years, and had been given the custody of her children, a girl aged thirteen and a boy aged nine, together with \$10 per month as alimony.

In September, 1902, while living in Whitman, her daughter became ill. The mother reported at that time and later that her child was being poisoned by its father, and that the child was under the influence of some woman. The father visited the child and consulted a clairvoyant, from whom he obtained two bottles of medicine, part of which was given to the child.

A physician who attended her found no evidence of the administration of poison. She was, however, extremely nervous.

The mother said that she found a white powder scattered upon the bed, floor and window sill in the child's room.

She told the child and others of her powers as a medium, and that she could tell the future and know what was being done by others, etc.

In November she and her children moved to Brockton, taking the rooms in which she died. Soon after going to Brockton Mrs. S. mixed the child's medicine and took them to the chemist of the Board of Health for examination. He did not tell her, but after her death, he informed me that the medicine contained a large amount of arsenic.

Some three weeks before she died, Mrs. S. was found in bed with a man. They were immediately arrested. He pleaded guilty and paid his fine. She appealed her case.

On Dec. 29 she and the children drank cocoa with their breakfast. In the afternoon she went to Whitman, refusing the company of her landlady, who offered to accompany her. At 5 p. m. she returned, complained of being very sick and distressed and was helped to her room and put to bed. She was nauseated. A physician attended her until Jan. 1. She said that her husband had poisoned her, repeating this statement to a lawyer who had been called to make her will, also saying that she would live but a short time. The lawyer advised her to call Dr. B. Dr. B. found her very nervous, but did not believe that she had been poisoned and made a favorable prognosis. On his next visit, however, the following day, she was vomiting and had burning pains in the stomach and intestines, a dry skin, an excited pulse and was passing only a very small quantity of urine.

He then accused her of taking poison. This she denied and said that she did not want to die. After considerable resistance she allowed him to pass a stomach tube. The stomach was washed out and its contents examined.

Her urine was drawn; it was scanty and highly colored. She grew rapidly worse, and at midnight her ante-mortem statement was taken. She said, realizing that she was dying, that her husband had poisoned her, and that she had

taken no poison by her own free will. She died at 3 A. M.

A legal investigation followed.

The contents of her stomach from the washing, with the stomach tube, and the cocoa and milk found in her room, were examined for poison with negative results.

Witnesses testified that, in September, 1902, at the time her daughter was ill, she had purchased an ounce of arsenic. The daughter said that she saw the powder in her room in Whitman on the bed, floor and window sill; that her mother put a teaspoonful of the powder in the medicine which had been examined by the Board of Health; that she knew her mother was poisoned with arsenic and told her so, and that she persuaded her mother in consequence to join the church, which she did, about ten days before her death. The child is old for her years.

Another witness testified that Mrs. S. had on two occasions attempted suicide by jumping into a cistern. On each occasion she regretted her act, holstered for help and was fished out. Early on one morning, while her husband was away, she, in her night clothes, ran toward the river, saying that she would drown herself. A friend took her home. She begged of him that he should not inform her husband.

Several testified that for two years she had been saying that she and her children were being poisoned by her husband.

It was proved that Mr. S. had not seen her for several months and there had been no opportunity for him to give her any poison.

She did go to Whitman on the trip mentioned, where she drew some money on a check.

On her way home she called on a lawyer and paid him a retainer to defend her case. He assured her that she would only be fined if found guilty.

Prof. E. S. Wood examined the specimens sent him for poisons, with negative results.

The return of death was "Cause unknown."

This woman purchased arsenic, put arsenic in the medicine, had a chemist examine it, told her friends that she and her children were being poisoned, was taken sick, sent for priest and lawyer, told them she was poisoned and was going to die, and did die.

She had burning pains in the stomach and intestines, vomited, had retention of urine, a dry skin, pulse quick and weak, face showing distress, etc. What could have done it?

The case has been of interest to all who were brought in contact with it and now I want to know, what was the cause of death?

New Instrument.

A NEW FRAME FOR THE TREATMENT OF FRACTURES OF THE LOWER EXTREMITIES.

BY JOHN H. CUNNINGHAM, JR., M.D., BOSTON.

THIS fracture frame which has been in use especially on the services of Dr. Abner Post and Dr. Fran-

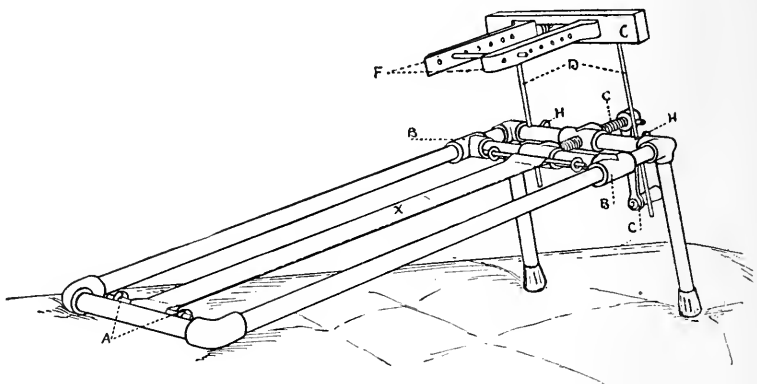


FIG. 1.

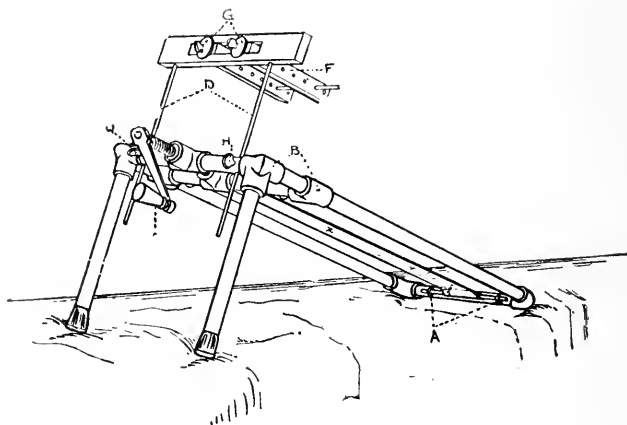


FIG. 2

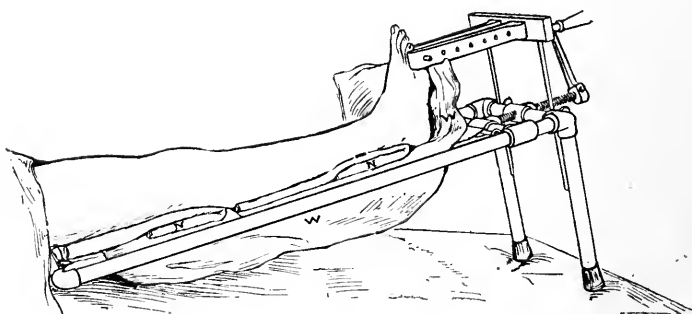


FIG. 3.

cis S. Watson, at the Boston City Hospital, was designed for fractures of the leg, both upper and lower, which because of their nature were difficult to hold in a corrected position during the application and setting of a plaster cast.

It was the writer's desire to make it a mechanical device to maintain the fractured bones in a corrected position by preventing posterior bowing, inversion or eversion, to keep the foot at right angles with the leg, and to allow of an easy and accurate method of approximating the ends of the fragments and of holding them by means of a plaster of Paris cast.

ing which plays back and forth over the long arms of the frame for a distance of 6 inches by means of a thread-screw and crank (BB, Figs. 1 and 2). By the latter two devices the canvas strip is drawn sufficiently tight to prevent sagging by the weight of the leg.

The upright at the end of the frame consists of two $\frac{1}{4}$ -inch brass rods 11 inches long fastened into a piece of oak (DDD, Figs. 1 and 2). This piece of wood has a slit 8 inches by 1 inch into which there are fitted two wooden braces perforated by $\frac{1}{4}$ -inch holes at corresponding points (FF, Figs. 1 and 2). The braces slide sidewise and may be

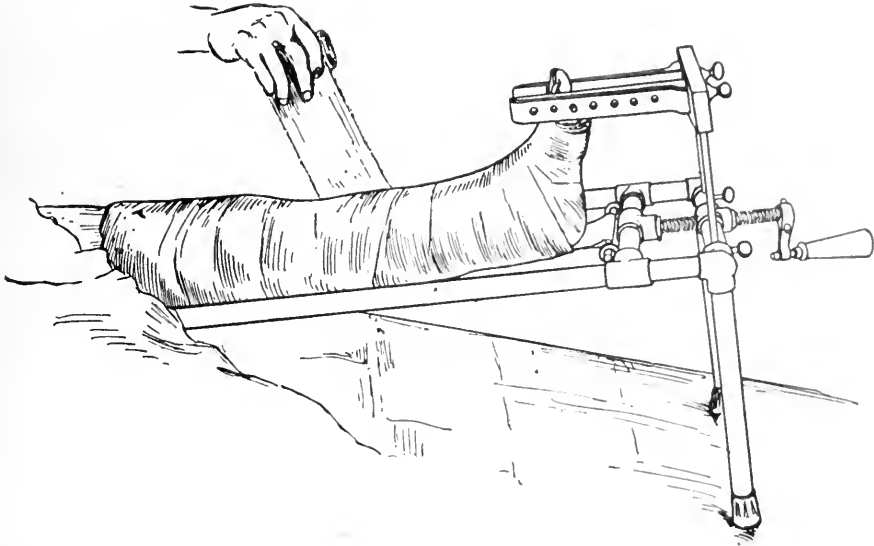


FIG. 4.

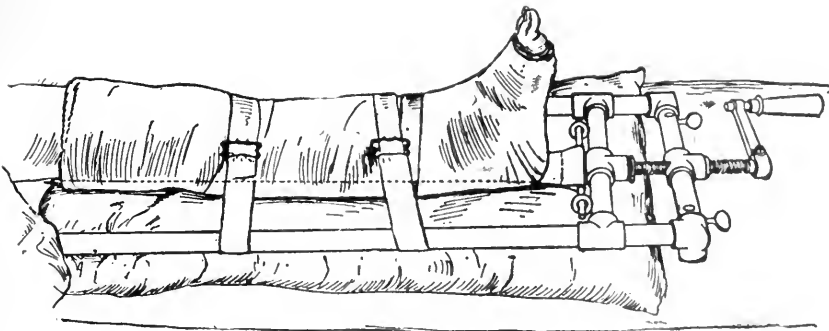


FIG. 5.

The apparatus (Figs. 1 and 2) consists of a pipe frame 40 by 14 inches, with two detachable legs 13 inches high which are screwed into one end. This frame serves as a support for a strip of canvas about 3 inches wide and 30 inches long (X, Figs. 1 and 2). The canvas is made with a loop at either end, large enough to admit a $\frac{1}{4}$ -inch brass rod. The lower rod is held in position by 2 screw-eyes in the lower end of the frame (AA, Figs. 1 and 2). The upper one is held in position by 2 screw-eyes placed in a piece of pip-

fixed at the desired point by thumb-screws (GG, Fig. 2). The two brass rods (DD, Figs. 1 and 2) play up and down through two holes in the upper end of the frame, and may be held by two thumb-screws at the desired level (HH, Figs. 1 and 2).

The canvas strip having been drawn tight, giving a firm, straight surface to work on, it is covered with two or three layers of sheet-wadding long enough to fold up over the sole of the foot (W, Fig. 3). The leg is placed upon it and the normal curve at the ankle and in the popliteal

space is padded (N, Fig. 3). Any anterior or posterior bowing may now be corrected by placing pads at the proper points. The upright is then raised to such a level that a round piece of wood placed through corresponding holes in the braces will be at the upper part of the ball of the foot. This round of wood is placed in that hole which will bring the foot at right angles with the leg. The braces are now brought in contact with the foot, one from either side, and the foot turned to right or left as the case may be, thus correcting any inversion or eversion and giving the proper alignment of the big toe, inner side of patella and anterior-superior spine of the ilium. By setting the thumb-screws the proper relation of these points is maintained. If extension be necessary it is procured by some one pulling on the foot through the upright, counter extension being secured by the weight of the patient's body.

These steps having been completed, anterior or posterior deformity, toe drop, inversion or eversion, or any overriding or lateral displacement of the fragments have been corrected.

Having mechanically fixed the leg in the desired position, the layer of sheet-wadding (W, Fig. 3) is turned over the leg and foot and held by enough sheet-wadding rollers to supply the proper amount of padding. Plaster of Paris bandages, including the canvas strip, as well as the leg, are then applied (Fig. 4).

After the plaster cast has been completed, the leg is strapped to the frame by buckle-straps and its upright and legs are removed (Fig. 5). The frame then acts as a support to the plaster and is left in position until the latter is hard. By cutting the canvas in its points of attachment to the frame, it is removed and the canvas strap drawn out of the cast.

Besides being useful in the more difficult simple and comminuted fractures, the apparatus has been especially servicable in those which are compound, requiring operation. By its means, fractures that otherwise would have had to be wired have been held in good position without the introduction of a foreign body into the bone.

When used for this latter class of cases it has secured better immediate position; and as sufficient wadding can be applied to allow for subsequent swelling without fear of losing the alignment of the leg, the patient remains comfortable without the plaster being split.

The dressing of a wound is rendered more easy, as the cast is really a fracture-box, from which the dressing can be taken and replaced without disturbing the leg; while the ordinary plaster cast follows the contour of the leg too closely to make this procedure an easy one.

In the treatment of fractured femurs by extension, good results have been attained by incorporating the leg in plaster by the use of this apparatus. In this class of cases special attention is paid to supplying considerable padding over the dorsum of the foot and above the condyles, and to applying the plaster so as to cause

the extension to be made from these two points. The extension straps are incorporated in the plaster cast, and therefore the disagreeable feature of adhesive strips applied to the skin for extension is overcome. This method of applying extension has been the most comfortable for the patient and the easiest and most accurate for the surgeon.

Another feature of the frame is that but one person is required to apply a plaster accurately in the majority of cases, thus dispensing with the necessity of holding the leg, which has always been a disagreeable and often unsatisfactory part of the treatment of fractures of the lower leg by plaster-of-Paris casts.

Clinical Department.

TWO UNUSUAL FORMS OF FRACTURE—FRACTURE OF THE CAPITELLUM; FRACTURE OF THE FIFTH METATARSAL BY INVERSION.

BY F. J. COTTON, M.D.,
Assistant Surgeon, Boston City Hospital,
AND C. P. SYLVESTER, M.D., ROXBURY, MASS.

Of all the almost infinite varieties of fractures that occur some are but variants of the common types, many are obvious and typical enough when found and interesting only from their rarity, while yet others are both rare and obscure even where they do correspond to pretty definite types. It is this last class—the class we are especially liable to overlook or misinterpret—that it is really important for us to know about. Common types we all know; the utterly atypical cases we must work out as best we can when we meet them, but in other cases it may be only the knowledge of the occasional occurrence of a lesion that makes it possible for us to recognize it when it does occur. Both the cases here recorded belong to this class; both presented lesions which the writers had long been on the lookout for.

FRACTURE OF THE CAPITELLUM. (*Fractura rotuli humeri partialis*.)

Hahn,¹ a number of years ago, described this fracture on the basis of a post mortem on a case observed clinically. Kocher² has recorded five cases in which the diagnosis was confirmed by operation. Wright,³ Steinthal⁴ and Stimson⁵ have each reported a case.

The fracture in all cases consists of a splitting off of the anterior articular surface of the external condyle—the face with which the head of the radius articulates—described as the capitellum (or capitulum) humeri. The fracture thus involves but a portion of the total mass of the external condyle. The fragment has no firm attachments and hence lies practically free in the joint. For this reason the displacement may be forward or backward; for this reason also there

¹ Hahn: Deutsche Chirurgie, Billroth and Lucke, Lief 63a, 1886, p. 728.

² Kocher: Praktisch wichtige Fracturformen. Mitth. a. d. kln. u. med. Inst. d. Schweiz, Heft 10-12, ref. in Cbl. f. Chir., 1896, 545.

³ Steinthal: Cbl. f. Chir., 1898, xxv, p. 17.

⁴ Stimson: Fractures and Dislocations, 3d Ed., p. 256.

⁵ Wright: Guy's Hosp. Rep., 1873, lii, s. xxiv, p. 51.

is practically no chance of firm union of the fragment with the shaft of the humerus.

Wright's case and one of Kocher's were in children (twelve and fourteen years), all others were in adults ranging up to over sixty years of age. The cause seems to be direct trauma.

CASE I. Mrs. P., aged forty. Jan. 21, 1902, fell down six steps and struck on the left elbow. Two days later she went to the hospital. The elbow was by this time much swollen and discolored. No definite diagnosis seems to have been made, but the arm was put up in an "internal angular" splint and the patient told to return for massage. This she did not do, but shortly began to use the arm. The appended X-ray was taken within a month of the injury.

She was first seen by the writers six months later. At this time she was able to use the arm moderately, but had a good deal of pain after use, especially at night.

The general outline of the arm was normal, but there was slight general thickening about the elbow, and notably just in front of the external condyle. At this point an abnormal, hard, moderately movable mass was to be felt. Extension at the elbow was checked at 40° beyond the right angle; flexion was possible to a right angle only. Pronation and supination were much limited; and rotation, especially in supination, brought out a very definite, rather soft crepitus at about the point where the loose fragment seemed to be. It was obvious that there was a loose fragment in the joint and the diagnosis was made on the clinical evidence alone.

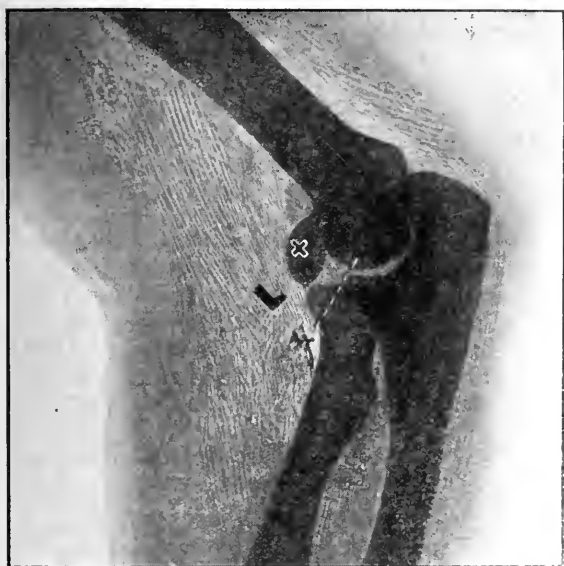


FIG. 1.

X shows loose fragment in front of the external condyle.
Y shows, apparently, the gap from which the fragment came.

The X-ray previously taken was obtained and showed (Fig. 1) a joint substantially normal except for the presence of a loose fragment (X). This fragment, flat on one side, shows on the other an even curve, which can only be from an articular surface. There is no articular surface here save the capitellum which can give such a curve; moreover, there seems to be at (Y) a defect in the articular face of the external condyle roughly corresponding to this fragment. Evidently this is then a case of Kocher's "fractura rotuli humeri partialis," a splitting off of the face of the capitellum, leaving a fragment which has not been united and which (in combination with the small callus masses) greatly interferes with normal motion and use of the joint. The patient was advised to have the fragment removed, but declined any operation, disappeared and has not returned.

In all the recorded cases there has been failure of bony union; and interference with function varying⁶ according to whether the fragment is as here anterior to the joint or has, as in three of Kocher's cases, slipped into the capsular space between radius and olecranon behind.

The operations done to date have been very successful; there is no tendency to restoration of full function by palliative treatment. It is evident that these cases (given the diagnosis and the patient's permission) should be operated on whenever they occur. The symptoms may be generalized as follows:

Limitation of joint motion following trauma (limitation of extension and supination especially).

No displacement of any of the landmarks.

Crepitus on motion.

Local thickening and a more or less palpable fragment of relatively small size, either above and in front of the external condyle or below and behind.

The skiagraph may help, as in the case presented, by showing a curved articular surface that could only come from the capitellum.

FRACTURE OF THE FIFTH METATARSAL BY INVERSION OF THE FOOT,

In the *Annals of Surgery* for 1902, Vol. XXXV, p. 697, Robert Jones of Liverpool reported a half dozen cases of fracture of the fifth metatarsal bone apparently caused by so turning the ankle as to bring the weight to bear suddenly on the outer edge of the foot. This was a new cause for such fracture. We present here a like case:

CASE II. Mrs. N. M., age forty-five. Was dancing in very thin-soled and rather worn shoes. Came down with



FIG. 2.

Oblique fracture of fifth metatarsal, from inversion of the foot.

⁶In Hahn's case there was forward displacement with limited flexion and extension but with pretty free rotation. Three of Kocher's cases, however, showed the backward displacement with marked interference with rotation. Steinthal's case showed "extension to 150 degrees, flexion to 135, pro and supination present with crepitus."

her weight on the outer side of the right foot with the heel raised; felt something give way; stopped dancing and went home, not without some difficulty, but unassisted. The foot became swollen and painful and discolored on the outer side, but she managed to do her housework, and only after a week did she appear at the City Hospital Out-patient Department, where we saw her Oct. 31, 1902.

There was moderate swelling of the right foot, localized over the fifth metatarsal. There was sharp pain when she bore her weight on the ball of the foot. There was no obvious deformity, but on manipulation distinct crepitus was obtained.

The X-ray herewith reproduced shows an oblique fracture of the fifth metatarsal with some displacement.

A pad was applied to the dorsal surface and a padded plantar splint to the sole of the foot. She did not re-appear for treatment, but was looked up on Nov. 28, 1902. There was then firm union with slight callus. No palpable deformity. The usefulness of the foot was already substantially normal.

Save for the obliquity of the fracture line this is the exact counterpart of Jones' cases — the causation by weight bearing on the inverted foot is in this case beyond question. The probability is, as Jones suggested, that this fracture is not very rare; how easily it may be passed over as a sprained foot is evident from the history given in this case.

Reports of Societies.

AMERICAN PUBLIC HEALTH ASSOCIATION.

PROCEEDINGS OF THE THIRTY-FIRST ANNUAL MEETING,
HELD AT WASHINGTON, D. C., Oct. 26, 27, 28, 29
AND 30, 1903.

THE Association met in the Assembly Hall of the New Willard Hotel under the presidency of DR. WALTER WYMAN, Surgeon-General of Public Health and Marine Hospital Service, Washington, D. C.

OPENING ADDRESS.

This was delivered by GEN. GEORGE M. STERNBERG.

He spoke briefly of the Association as an important factor in promoting the welfare of the people of the United States, not only from a sanitary point of view, but also in the way of national prosperity. He called attention to the epidemic of 1878, which caused a loss of \$15,000,000 to New Orleans alone, and more than \$100,000,000 to the entire section invaded. Having now an exact knowledge of the method by which yellow fever was transmitted, its prevention had become comparatively easy, and sanitarians had no longer any fear of the recurrence of extreme epidemic of the disease within the limits of the United States. In Washington there was still much to be accomplished in the way of sanitary improvements, the necessity for which was generally recognized. The sewer system was incomplete and in the alleys of the city there were many houses which had no sewer connections and no water supply except from a street hydrant. These alley houses, occupied principally by the more ignorant class of the colored population,

were usually overcrowded and were the hot-beds of vice, immorality and disease. The high death rate from typhoid fever, tuberculosis and diphtheria and the excessive infant mortality among this class of the population gave to the nation's capital a mortality rate which did not compare favorably with that of many other cities in this country or of the great capitals of Europe. A law for the condemnation of unsanitary houses was urgently needed. The sewer system should be pushed to completion and the health department should have the authority and the money necessary for the sanitary reclamation of these plague spots which disgraced our otherwise beautiful and healthful city.

REPORT OF THE COMMITTEE ON CAR SANITATION.

This report was read by the Chairman, DR. GRANVILLE P. CONN of Concord, N. H. While the committee was not prepared to suggest reform which would at once settle the much vexed question, yet it was believed progress was being made, and the managers of railroads were coming more nearly in accord with public opinion, and that the problem was gradually being solved. The house on wheels not only had the atmospheric influences which at all times surrounded the dwelling, but at different rates of speed this pressure was immensely greater than that upon the ordinary domicile. One should always consider the character of the occupants, who, for the time being, were tenants and had but little or no thought of the sanitation or well being of those who might be the next passengers to occupy the same seats, and who, perhaps, had little or no appreciation of what an expert in sanitation would consider a healthy condition of personal cleanliness or of a habitation. The more permanent the means and methods adopted by health authorities, the more satisfactory they would prove to the commercial world and the general manager.

TRANSPORTATION OF PERSONS SICK WITH TRANSMISSIBLE DISEASES.

DR. J. H. HURTY, Indianapolis, Ind., read a paper with this title. Among other things, the author stated that leprosy was not so easily transmitted as tuberculosis and compared with the latter malady in its destructiveness to human life it amounts to nothing at all; yet the mere mention of the word "leprosy" caused a shudder, and a riot would result if an attempt was made to introduce a leper into a railway car. Influenza, also a transmissible and very destructive malady, killed a thousand where leprosy killed one, still people did not fear it sufficiently to take even ordinary precautions against it. The public welfare could in no degree or manner be advanced through risking the increase of transmissible diseases. All intelligent observers could clearly see the possible harm which might attend the transportation in railway trains of cases of small-pox, yellow fever, bubonic plague, diphtheria, scarlet fever and leprosy, and in consequence

public opinion would not tolerate such a thing. An equal understanding in regard to pulmonary tuberculosis, influenza and typhoid fever would develop a public opinion, demanding patients having these diseases, that rational regulations intended to prevent transmission must be rigidly enforced. Special compartments for persons sick with communicable diseases were impracticable.

CAR SANITATION IN THE REPUBLIC OF MEXICO.

DR. JUAN BRENA of Zacatecas said it was a well-known fact that the infectious germs of diseases were floating in the air and were by it deposited in the veneers, mouldings and ornaments of furniture, and thence again taken up by the air and inhaled with it, and for that reason writers on hygiene and sanitary authorities had again and again recommended simplicity of ornamentation, hardness of materials and polished surfaces for the interior of cars. He referred to the construction of railway cars, the methods of cleaning them, the drinking water, water closet, and ventilation.

The suggestions and observations made by scientific writers had been neglected and very little or no attention paid to them up to date, and thus the grave defects were still existing. These obstacles, however, should not dishearten sanitarians, but they should incite them to preach and work with the tenacity of the water drop which falls upon a hard stone.

REPORT OF THE COMMITTEE ON ANIMAL DISEASES AND FOOD.

DR. D. E. SALMON of Washington, D. C., Chairman, presented the report of this committee. He said the experiments and comparative studies of Theobald Smith had attracted special attention to the difference in virulence shown by tubercle bacilli from human and bovine sources when inoculated upon cattle. Smith also pointed out certain morphological and cultural differences in bacilli from these two sources, and in the location and histology of the lesions in cattle produced by such bacilli. He did not conclude, however, that bovine bacilli could not produce disease in the human subject, but said that bovine tuberculosis might be transmitted to children when the body was overpowered by large numbers of bacilli, as in udder tuberculosis, or when certain unfavorable conditions existed. He adduced evidence that four human cultures caused generalized tuberculosis in cattle; but Kossel suggested that it might be possible that the bacilli in cases of human tuberculosis under certain circumstances could likewise attain a very high pathogenic activity for cattle without their being for that reason bovine bacilli.

Of 39 cases of human tuberculosis tested, 4, or over 10%, were virulent for cattle, and would be classified as of bovine origin; but these 4 cases were all found among the 16 cases of tuberculosis in children which the German Commission investigated; hence it was plain that 25% of the cases

tested of tuberculosis in children by Koch's method would be classified as of bovine origin.

While the Committee agreed that it was advisable to scrutinize clinical evidence as carefully as possible before it was accepted as influencing the decision of such an important question, consistency demanded that one should accept clinical evidence bearing upon the transmission of bovine tuberculosis to man on the same terms that evidence was accepted as to the transmission of the disease from man to man.

The Committee concluded that it would require much work to decide with even approximate accuracy the proportion of human tuberculosis caused by animal infection; but the fact that 25% of the cases in children investigated by the German Commission, and 50% of similar cases investigated by de Schweinitz, showed by this test that they were caused by animal infection was sufficient to convince the Committee that measures should be taken and enforced at once to guard against infection from this source.

GEN. GEORGE M. STERNBERG said that the Koch school was disposed to differentiate very closely between pathogenic bacteria along specific lines, but investigation had shown that all pathogenic bacteria varied greatly in virulency. Pasteur, in his earlier researches, showed how attenuated varieties might be produced. Motile bacilli might lose their motility, etc. Furthermore, pathogenic bacteria might become practically non-pathogenic as the result of cultivation, as in the case of the diphtheria bacilli, and the tubercle bacillus showed the same characteristics.

DR. GARDNER T. SWARTS mentioned the shaking of the hide of the cow as a means of transmission of tuberculosis through milk, in addition to shaking the udder during the milking process.

DR. JOHN GUITERAS said the results in Cuba tended to show the transmission of tuberculosis through milk was not as frequent as was generally supposed. No milk was used in Cuba that was not boiled, and yet he believed infantile tuberculosis was as frequent in Cuba as elsewhere.

DR. J. M. LINDSLEY did not believe consumption, strictly speaking, was a contagious, infectious or hereditary disease. He said it was a product of wrong living. This wrong living might be from taking milk from tuberculous cows, or from living in a tuberculous house.

DR. SALMON said that while Cuba sterilized its milk more than America did, yet it might also be the case that if Cuba did not sterilize its milk it would have more tuberculosis than it did at present.

REPORT OF THE COMMITTEE ON THE CAUSES AND PREVENTION OF INFANT MORTALITY.

This report was read by DR. HENRY MITCHELL of Asbury Park, N. J., Chairman. Among the measures which were most promising for a further reduction of the mortality among infants, the Committee directed attention to the following:

(1) To secure a more general adoption of cleanly methods of the collection, cooling and handling of cows' milk. It was not enough to destroy bacteria which had been permitted to gain entrance into the milk, for while pathogenic bacteria might be rendered innocuous, the toxins already formed were not affected by high temperature, hence no manipulation of the milk could be safely substituted for cleanliness in its collection and distribution. (2) To abolish breeding places for flies in dwellings and to exclude them from contact with food. (3) To encourage the erection of improved tenements in cities and to show the dwellers in crowded districts the advantage of residence in the suburbs. (4) To more effectually isolate all cases of the dangerous communicable diseases.

IMMIGRATION AND PUBLIC HEALTH.

DR. A. J. McLAUGHLIN of Washington, D. C., read a paper on this subject. In considering the danger to the public health from immigration, he said three factors must be taken into account: First, the physique of the immigrant. Second, his destination. Third, the presence or absence of communicable disease. The physique of the immigrant was by far the most important factor. Destination was scarcely less important than physique, and it was the rule that aliens of a race having a low physical standard would invariably herd together in the overcrowded unsanitary tenement districts of our great cities; while the sturdy races of unskilled laborers were scattered over a wide territory and tended to establish little homes of their own in the country or in the suburbs of manufacturing towns or cities. As to the question of communicable diseases among immigrants, the ordinary quarantinable diseases were eliminated by efficient quarantine methods, but certain communicable maladies, classed as loathsome or dangerous contagious diseases, existed among immigrants, and constant vigilance and considerable skill were necessary on the part of medical inspectors of immigrants to detect these cases and separate them from the healthy immigrants. The most important of these diseases, because of its frequency, was trachoma. Of the total number of cases of loathsome or dangerous diseases found in immigrants, 87% was due to trachoma, and 10% to favus.

The writer concluded that if the thousands of recruits for the sweat-shop army which arrived each year could thus be checked for ten years, the present existing tenement-house problem would solve itself. The terrible congestion of the tenements would be relieved; the scale of wages for the sweat-shop worker would be elevated; and the general sanitary conditions of life in such districts as in the lower East Side, New York City, improved sufficiently to reduce the menace to the public health from this cause to a minimum.

PREPARATION OF VACCINE VIRUS.

DR. JOHN F. ANDERSON of Washington, D. C., said experimental work had shown that the germ-

icidal action of glycerine was feeble. Recently some valuable work had been done with other substances than glycerine to be used in the destruction of the bacteria found in vaccine. These substances were sodium bichlorate, boracic acid, carbolic acid, chloroform and potassium cyanide. Of these, chloroform seemed the most valuable.

According to Green of England, by the use of chloroform vapor the crude pulp was freed from non-sporebearing germs in from a few hours to seven days, while the active agent of the vaccine remained potent as long as in the glycerine controls, and in some cases longer. The quick elimination of the extraneous bacteria by this method was a great saving in time as compared with the use of glycerine, which rarely exerted its full effect before the fourth week. Chloroform being extremely volatile could be allowed to evaporate from the vaccine under aseptic precautions after being allowed to act as long as desired. It would be especially useful in hot countries where the active agent in vaccine does not retain its potency long, or when, as in epidemics, sudden calls were made for large quantities of virus.

DR. EDUARDO LICEAGA, of Mexico City, offered some suggestions in regard to the desirability of an agreement between the sanitary authorities of adjoining countries for mutual defense against transmissible diseases.

ADDRESS OF WELCOME.

This was delivered by HON. H. B. F. MACFARLAND, President of the Board of Commissioners of the District of Columbia. After expressing his gratification that the Association had assembled in Washington, he stated that the city had a particular claim upon the interest of the Association at present because of the work of improving the water supply and sewer systems which was in progress, and also because there was being made an earnest effort to secure legislation from Congress to enable the city to end the unsanitary conditions in its alleys where the slums existed. It was fully realized that the health of the people was the first duty of the statesman, and that all else that could be done for this or any capital went for nothing if its health was not protected and promoted.

PRESIDENT'S ADDRESS.

Following Mr. Macfarland's welcome, SURGEON-GENERAL WYMAN, President of the Association, delivered his annual address, during the course of which he gave an exhaustive review of the history of the Association, its aims and objects, the researches into the fields of medical science which it had conducted, and the results it had accomplished. Coupled with this, he gave an epitome of the causes that led to the formation of the Association and the history of its growth by the addition from time to time of the various countries of the Western Hemisphere, the last of which to join the Association and take up its part in the field of scientific research being Cuba, only recently liberated from the bonds that had pre-

vented her from assuming her proper sphere in a study of one of the most deadly plagues with which she had been for years afflicted.

After reviewing the need and effect of sanitation, the sanitary laws of states and municipalities, Dr. Wyman paid a tribute to the unselfish medical men who for the good of science and from a sense of civic pride had repeatedly carried out investigations in the interest of the public health and given their services without thought of compensation to the public good.

He cautioned the members against being placed in the role of reformers, who, he said, often sought one worthy object and attained it at the expense of many other objects no less meritorious; that their dependence upon an enlightened public sentiment and the careful scrutiny of every proposed message forefended them against inconsiderate, spasmodic or overzealous action, but that they might exhort others in behalf of those measures which would insure to the rich protection from the dangers surrounding the very poor and to the very poor sanitary dwellings, pure air, good water and sunlight in abundance, the God-given blessings of the human race, which should be inalienable. This would then create an aristocracy to which all might belong — the aristocracy of sunshine.

REPORT OF THE COMMITTEE ON THE DISPOSAL OF REFUSE MATERIALS.

MR. RUDOLPH HERING, New York City, read this report. The committee pointed out that (1) different local conditions demanded different methods of collection and disposal; (2) that each municipality should select the method which, after a careful study of specific local conditions, and a further careful investigation of the cost of securing satisfactory results, proved to be the most economical in construction and maintenance; (3) that the problem must include the consideration of the methods and cost of handling all of the several kinds of refuse between the origin in the house and on the streets and the points of final disposal; (4) the several kinds of refuse being ashes, street sweepings and manure, dry rubbish, and kitchen garbage, swill or slop. In conclusion, the Committee said that while there were several methods of satisfactory disposal, every one would not be the best for all cities. Each city should study the question as related to its own special condition, and from a large experience both in Europe and at home, select what was found best for itself.

REPORT OF THE COMMITTEE ON THE ETIOLOGY OF YELLOW FEVER.

DR. JOHN W. ROSS, U. S. N., Washington, D. C., read this report. Reference was made to contributions to the subject of yellow fever since the last annual meeting. A table was presented of cases treated at Las Animas hospital, Havana, from Oct. 20, 1902, to Oct. 20, 1903, showing the number of cases of yellow fever and of other

diseases; also of the patients immune and non-immune to yellow fever.

He said during the past summer there had been a sharp epidemic on the Mexican littoral. Havana was in constant communication with the infected ports; ten regular passenger steamers plied to and fro each month with a considerable passenger traffic, not to mention the number of other vessels. The quarantine was rigid in preventing the entrance of persons who had been exposed to infection until the period of incubation had passed, and also against the entrance of mosquitoes from these ports; but no precautions were taken against the entrance of baggage, bedding or household goods from those ports. Such things came in without let or hindrance; yet not a single case of yellow fever originated in Havana. Seven cases of yellow fever occurring among men from these vessels were treated in the hospital in Havana during the last yellow fever season, with no precautions except to prevent the access of mosquitoes to the patients, still with no case of yellow fever contracted therefrom.

Attention was called to the fact that this was but a repetition of the experience of the previous year. The chances of this being an accident, considering the former history of Havana, seemed scarcely worthy of consideration. The Committee stated that there were minor problems in the etiology of yellow fever yet to be investigated.

REPORT OF THE COMMITTEE ON THE CANTEN IN ARMIES.

DR. GEORGE M. KOBER, Chairman, Washington, D. C., read this report. Reference was made to the introduction of the canteen system, and after dwelling at great length on the increase of drunkenness, the increase of trials by summary or other courts for drunkenness and for offenses caused by drunkenness, increase of desertions; increase in absence without leave; effects of the abolition of the sale of beer at the posts on the morality and discipline of the command, the Committee recommended the presentation to the Senate and House of Representatives in Congress of the following resolutions, which were adopted by the Association:

Resolved, that this body deplores the action of Congress in curtailing the authorization of the army canteen or post exchange and in the interests of general and military sanitation recommends its establishment on its former basis at the earliest possible date.

Resolved, that this body, in the interest of temperance and humanity, cordially invites the intelligent co-operation of a very large element of good citizens, who have been active in securing legislation against the sales in the military service of alcohols of any character, in taking successive steps toward the betterment of existing conditions, and thus assist in controlling and largely curtailing an evil which it is powerless at present to prevent.

Recent Literature.

A Manual of Operative Surgery. By SIR FREDERICK TREVES, Bart., K.C.V.A., C.B., LL.D., F.R.C.S. New edition, revised by the author and JONATHAN HUTCHINSON, JR., F.R.C.S. In two volumes. Vol. I. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

This volume (Vol. I of this new edition) of 750 pages is a book which at once attracts attention. First it is conspicuous by its ornate appearance, its binding and rough edged leaves. Again the reputation and previous work of its author are of such a character that one examines with interest this his latest production.

Appreciating the many changes that have occurred during the past decade, Mr. Treves has attempted to entirely revise his previous edition of this work, which appeared in 1891. Many sections have been rewritten or remodelled, and great effort has been made to bring the work thoroughly up to date. This applies to the illustrations as well as to the text. For the convenience of the reader historical details relating to operations and sections of minor importance are printed in smaller type. The subject matter is classified as follows:

Part I. General principles of operative surgery, including details relating to the preparation of patients for operation, to dressings, post-operative treatment of wounds, the selection of instruments, the elementary principles of operative technique.

Part II. Ligation of arteries.

Part III. Operations on nerves.

Part IV. Amputations.

Part V. Operations on bones and joints.

Part VI. Tenotomy.

The operative measures described are those which have appeared best to the author, as tested by an extended personal experience in the operating theater and repeated studies on the cadaver. Also the comparative merits of the various operations described are discussed. The introductory chapters, especially that in which the indications and contraindications for operation in the individual patient are discussed, are forcible and instructive; notably so in the present era of operative enthusiasm. The chapter on aseptic technique is interesting as compared with the methods of this country, since it presents some differences. The plan adopted for the presentation of special operative procedures is as follows: First, the history of the operation in general is described and its indications stated. Next, the instruments required are enumerated. Then the arrangements of patient, operator and assistants, the anatomy of the region by layers (the anatomical landmarks and guides being noted), the operative technique, the dressings and, finally, the after treatment, with often the final results are presented. In the section on amputations the

general consideration of the subject is unusually full, and contains many valuable suggestions relating to the formation of and the secondary changes in stumps, the instruments used, the methods of flap-formation and other interesting data. In the section on excisions the statements of after-results of operations are of especial interest and importance, particularly to a surgeon of limited experience, or to the student. The new illustrations are a feature of the volume, and greatly increase the facility with which the reader masters the text.

The book is carefully and well written, and is an excellent presentation of modern surgery. The subject is well classified. It is systematically arranged. The story is effectively told. It is a work fully up to the established standard of its noted author, and the next volume, which will contain the surgery of special regions, much of which may be termed atypical, will be awaited with great interest.

The Diagnosis of Diseases of Women. A Treatise for Students and Practitioners. By PALMER FINDLEY, B.S., M.D. Illustrated with 210 engravings in the text and 45 plates in colors and monochrome. Lea Brothers & Co. 1903.

As stated in the preface, medical literature in the English language has not hitherto included a work on this subject.

To justify the making of a book of 494 pages on a single department of a specialty, albeit that most important one, diagnosis, the author ought to furnish much more complete and much fuller information on his subject than can be found in the best of contemporaneous textbooks. It is a question whether Findley has done this so as to offer to the student and practitioner what cannot be found in the usual treatises.

From the standpoint of the specialist who is studying diagnosis the book is a decidedly good one. The ground is carefully gone over, the style is clear, the illustrations are remarkably good, especially those of instruments and appliances, and the subject matter is in accord with the latest teachings. Lea Brothers have produced a handsome volume which maintains their usual high standard in typography and binding.

Diseases of the Skin. An Outline of the Principles and Practice of Dermatology. By MALCOLM MORRIS. With two colored plates and 58 plain figures. New edition. Chicago: W. T. Keener & Co. 1903.

The author states that the revised edition of this book, which was published in 1898, has been out of print for some time. In the present new edition much new matter has been added and there has also been some judicious pruning. Of the new illustrations, many are extremely good. For its size the book is quite complete, as almost all of the more recently described affections are at least touched upon.

The Principles and Practice of Surgery. By GEORGE TULLY VAUGHAN, M.D. (University of Virginia), Assistant Surgeon-General, Public Health and Marine Hospital Service of the United States. Philadelphia and London: J. B. Lippincott Co. 1903.

This is a compactly written volume of convenient size (569 pages) and moderate price, designed to present the subject of general surgery in a way best adapted for the use of the general practitioner and student. For this reason the consideration of surgical specialties have been omitted. The author's purpose has been to present the subject matter from the most practical point of view, avoiding long theoretical discussion; in other words, a book of ready reference for the student preparing for examination when there is not time to review the more complete works usually studied; or for the busy practitioner who must at times refresh his memory in the most concise practical manner possible.

The subject is presented in two parts: Section I, which treats of the usual general subjects, such as inflammation, wounds, anesthesia, infection and infectious diseases, tumors and cysts; also, operative and minor surgery, bandaging, skiagraphy.

Section II, which comprises more than three-fifths of the book, is devoted to the surgery of "Systems and Regions," classified physiologically into the vascular, osseous, respiratory, digestive, genito-urinary and other systems. In this section are chapters on orthopedic surgery and tumors of the breast.

The text is illustrated by 281 wood-cuts, diagrams and reproduction of photographs, which graphically present clinical, pathological and traumatic conditions, details of surgical technique, instruments and apparatus.

Any work in which modern surgery is condensed into 533 pages must necessarily deal only with the more important and ordinary subjects. The task of making this selection is a very difficult one. In this volume it has, on the whole, been satisfactorily accomplished, and except, perhaps, in minor details the reviewer finds little to criticise and much to commend. It seems to be well adapted to occupy the position for which it is intended.

To a student in books of this type it is often difficult, on account of the arrangement of the text, to distinguish between what he is to consider as a complete presentation of a given subject, what is a statement of accepted facts or demonstrated actualities; and what is incomplete, merely the opinion of to-day, or a temporarily accepted method of treatment on account of ignorance of something better. It would be well, perhaps, if this distinction should be more definitely made than it is in this volume, although often this point is purposely ignored in order to prevent confusion of the readers' impressions. However, to make a subject too simple incurs the risk of creating a false impression of accuracy. An illustration of this is the description of aseptic

technique, the treatment of osteomyelitis, or the post-operative treatment of club-foot.

It is as a rule well that a student should be able to separate clearly facts from theories; what is satisfactory, productive of definite results and practical, from that which is only used as an expedient in the absence of what is surely efficient.

Ambulance Work and Nursing. A Handbook on First Aid to the Injured, with a Section on Nursing, etc. Profusely illustrated. Chicago: W. T. Keener & Co.

This rather ornately published volume in blue cloth and gold with its numerous illustrations is a book which by its "exterior," so to speak, attracts attention. It is according to its preface intended to be strictly a "First Aid" book, since great emphasis is placed on the importance and value of this class of knowledge to non-medical people.

It consists of two parts, the first of which deals with "First Aid to the Injured," while the second is devoted to Nurses and Nursing, Massage, Bone Setters and Bone Setting.

Part I is classified as is usual in this type of book. The essentials of anatomy and physiology are concisely described and are well illustrated. Then the subjects of bleeding, wounds, bandaging, fractures, obstruction to respiration, insensibility, burns and scalds, "fire," poisoning, foreign bodies, transportation of the injured and stretcher exercises are successively treated.

Part II consists mainly of the details usually found in nurses' manuals, with the exception of the chapter on bone setting, and is based on English ideas and methods.

The book is a small quarto of 305 pages and 173 illustrations. It is well indexed. As above stated it is written with the evident intention to produce a book intelligible to the non-medical part of the community, and of as practical a nature as possible. It is indeed unusually free from technical phraseology. The name only of its publishers appears on its title page. Its style is at times fragmentary. It contains many valuable suggestions and shows the influence of practical experience and a practical mind in its compilation. On closer inspection one notes here and there minor details which cause the reader to gradually form the opinion that it is a book (like many of its class) which requires a technical knowledge sufficient to separate the "wheat from the chaff;" also in certain subjects, as for example, "disinfection," that it is not in accordance with the most recent ideas. Again it has a characteristic canon to this class of book that occasionally extraneous material is introduced in a detailed description of treatment which impairs its conciseness, confuses the reader and much diminishes the definiteness of the description of details.

It is not intended by the above criticisms to imply that the book has nothing to commend it, for, on the contrary, it is very interestingly

written and is full of valuable practical points. It presents also many instructive and suggestive illustrations. Its title page without an author's name and its evidently English character, while presenting the name of a Chicago publisher, stimulates one's curiosity to learn the personality of its writer and its history.

Compend of Gynecology. By WILLIAM H. WELLS, M.D. Third edition revised, enlarged, with 145 illustrations. Philadelphia: P. Blakiston's Son & Co. 1903.

This third edition of Dr. Wells' compend has been improved by the addition of a chapter on the general therapeutics of gynecology. It is a valuable book of its kind for the student who wishes to refresh his memory.

It has the disadvantages of all compends in that the detailed descriptions are necessarily cursorily treated and incomplete. It would seem to be of more advantage for the student to have full directions for the performance of a limited number of selected operations rather than scanty directions as to many.

It is to be doubted whether a short paragraph is sufficient to give an adequate idea of Dudley's operation for antelexion, for instance (page 126). Many operators find this operation difficult to understand even with the aid of the best illustrations of the various stages and an abundant descriptive text. With the exception of the figuring of a few obsolete instruments and pessaries the book is well up to date and should maintain its former popularity.

A Text-Book of Surgery for Students and Practitioners. By GEORGE EMERSON BREWER, A.M., M.D., Lecturer on Clinical Surgery at the College of Physicians and Surgeons, Junior Surgeon to the Roosevelt Hospital, Surgeon to the City Hospital, etc., etc., etc. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1903.

This book is a handsomely published volume of 706 pages, illustrated by 280 engravings and 7 plates in color and monochrome.

The first eight chapters are devoted to general subjects such as infection, inflammation, acute and chronic infections, surgical diseases, tumors, shock, technique and anesthesia. The remainder of the work deals with the surgery of regions, systems and organs classified anatomically; but with the exception of the chapters on deformities, genito-urinary surgery in the male and the rectum, "special" surgery has been omitted.

The title of the book indicates its purpose. It has been written to furnish a comprehensive yet abridged text-book in surgery which presents the accepted modern views of pathology and treatment as well as the essential practical facts as concisely as is compatible with clearness. The surgery of to-day has developed so rapidly that the modern text-book usually comprises two large-sized volumes. Hence one opens the single compact octavo of Dr. Brewer's with curiosity and interest to learn how he has condensed his

subject into its present convenient form without essential sacrifice. As one reads, however, the plan becomes apparent, and the reader's doubt as to the possibility of the task gradually disappears and he is ready to congratulate the author on his success, for certainly he has produced a text-book which is a well balanced, well adapted work for students. This has been accomplished by attention to several details. First mention of special surgery, as for instance, the eye, ear *et alii*, has been omitted. Next no bibliography or citation of authorities is introduced except when recent methods are mentioned which have not yet received general recognition. Again, when several or many methods or opinions exist, only one or two (the ones in the author's opinion most satisfactory) are selected and described.

The book is a presentation of the most advanced ideas both as regards pathology, laboratory work, operative technique and treatment. This is shown in the chapter on abdominal affections, especially the surgery of the stomach and biliary passages, the surgery of aneurism, acetonemia, etc.

One must not expect in a book of this size to find full details, and often the description given is very brief; but when one reads carefully what is presented, one finds the essentials are usually given. For example, the "Edebohl" treatment for chronic nephritis which is condensed to a single paragraph, but in that paragraph is stated the procedure, its originator's name, the supposed pathological effect of the operation of decapsulation, the manner of cure, a statistical summary of the results and an opinion of its practical value.

The whole book shows the same concise style, pregnant with facts, well classified and systematically arranged, excellently well presented from a "graphic" standpoint.

It will without doubt be received by students with favor and its author is to be congratulated on the satisfactory, commendable manner in which he has performed a most difficult task.

Medical Jurisprudence, Insanity and Toxicology.

By HENRY C. CHAPMAN, M.D., Professor of Institutes of Medicine and Medical Jurisprudence in the Jefferson Medical College, Philadelphia. Third edition, thoroughly revised, greatly enlarged and entirely reset. pp. 329, fully illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

This, as its name implies, is a small volume on the general subject of medical jurisprudence, being essentially the lectures given on this subject by the author to his medical class at the Jefferson Medical College during the years 1891 and 1892. The author discusses the usual matters which bring medicine into relation with the law, and offers them in brief, readable form, with adequate illustrations in the text. This third edition has been revised to meet the advances in the subject, and the book, although far from exhaustive in its treatment, should still find a place of usefulness, particularly as was originally intended, in the crowded curriculum of the modern medical student.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, DECEMBER 31, 1903.

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THE CANCER QUESTION.

IN spite of the somewhat negative results hitherto obtained in the investigations regarding the etiology of cancer, interest in the subject does not appear to be in the least on the wane. On the contrary, the elusiveness of the problem apparently adds a certain zest to the zeal of its investigators, and the literature is continually growing in consequence.

We have before us the fourth annual report of the work of the Cancer Laboratory of the New York State Board of Health. This laboratory, under the direction of Dr. Roswell Park of Buffalo, has been assiduously engaged in the cancer research for the last four years. This fourth report is a pamphlet of upwards of one hundred and sixty pages, containing the results of the work done by the various persons connected with the laboratory during the past year.

Dr. Park in his report draws attention to the fact that the work is now being conducted along three principal lines and in three laboratories. Investigations on the pathological, the chemical and the bacteriological sides are being used in correlation in the hope of reaching results which a single line of investigation has hitherto been unable to accomplish. Metabolism in the broadest sense is being studied in relation to cancerous disease.

Regarding the much disputed protozoa and the part they play in the genesis of cancer, Dr. Park makes the following remark:

"There is not a practising physician in the United States who has anything more than a rudimentary knowledge of this subject, and yet the question of cancer is becoming more and more a biological problem."

To meet this need Prof. Gary Calkins of Columbia University has been added to the laboratory staff as consulting biologist. Dr. Gaylord contributes several articles in continuation of the work he has hitherto done, and which is already well known to many of our readers. A paper of the report to which we desire to call special attention is from the pen of Professor Calkins, whose authority on the subject of the protozoa is wide reaching. In this paper, under the title "Suggestions for the Biological Study of Cancer," Professor Calkins maintains in the first place that, inasmuch as the specific organism of small-pox, as discovered by Dr. Councilman and worked out through its life cycle by himself, is no longer open to doubt, it follows that the contention for a like origin of cancer is strengthened, and that we are therefore justified in considering as a working hypothesis that the cell inclusions in carcinoma are phases of an organism. He thinks that:

Inclusions in carcinomatous tissues should be studied by specialists trained to the study of protozoa and not left exclusively to pathologists, many of whom regard all structures which are to them incomprehensible as some type of degeneration product of the cell. Such a study, made with the best methods and the best technique that the zoological side can afford, should lead to an independent point of view, and should give definite results, which, together with those of the pathologist, the chemist, the physiologist, and the surgeon, should give a clear conception, if not a solution, of the general problem of carcinoma.

Professor Calkins also urges work from the physiological and chemical points of view, with reference especially to the possibility of a specific activity of toxins derived from micro-organisms. Finally he believes that the experimental side of the question may ultimately give definite results. The morphology of the so-called cell inclusions demands further study, and the work hitherto done, although far from complete, leads him to the provisional assumption that the cell inclusions are not secretions, as described by Greenough, or degeneration products of the cell, nor modified centrosomes and spheres, but are phases of an organism belonging to the group protozoa.

Coming from such a source, this statement must attract wide attention and renew the somewhat waning interest in the protozoa as the important etiological factor in cancer. Professor Calkins' remarks, however, are not to be interpreted as a belief that protozoa are the cause of cancer. His contention merely is that evidence is accumulating which, with our increased knowledge of the morphology of the protozoa, is likely to make the demonstration positive that protozoa do

exist in cancerous tissue, whatever their significance there may be, — a contention which gains weight from certain organisms discovered in smallpox, and more recently observed by Mallory in scarlet fever. The remainder of this Buffalo report indicates much earnest work on various phases of the general problem, not as yet conclusive, but at least promising for the future. Certainly the laboratory is to be congratulated upon having obtained the services of Professor Calkins, who stands pre-eminent in his knowledge of these lower forms of animal life.

The *British Medical Journal* for Dec. 12 publishes as the Bradshaw Lecture an address by Mr. Henry Morris on "Cancer and its Origin," together with a series of papers by various authors on the general subject, among which one on the parasitic theory of cancer by H. G. Plimmer will be read with interest. Mr. Morris reviews the various theories which have of late been advanced, and concludes that the so-called tumor germ theory of Cohnheim is deserving of the most faith. Plimmer naturally holds to the view, which he has often previously expressed, that the parasitic theory alone explains the facts and is therefore most worthy of acceptance. From Germany comes a second paper from Feinberg that the parasite of cancer is a protozoön belonging to the special class of sporozoa.

It is not to be doubted that ultimately, out of the various conflicting opinions, a definite and satisfactory solution will come. In the meantime those of us who are not actually engaged in the research must assume the attitude of unprejudiced observers and give to each theory its due. We beg leave now merely to call attention to the fact that the parasitic origin of the disease through protozoa has received a new impetus which must be acknowledged and from which no doubt certain definite results will come.

HYDROTHERAPY AND ALLIED METHODS OF TREATMENT.

ONE of the most noticeable features in recent therapeutic advance is the increasing attention which is being given to what, for want of a better term, we may call physical methods of treatment. Physicians are gradually coming to recognize that such therapeutic measures demand serious consideration, and also that they may be adequately given at home and at relatively small expense. For years past, well-to-do persons have sought foreign baths and health resorts at their physicians' advice for a great variety of ailments and

have no doubt, in many instances, been materially benefited thereby. We are not disposed to maintain that equally satisfactory results could always be attained by similar treatment at home, but we are, at least, convinced that very much more could be accomplished than is ordinarily supposed possible by the establishment under strictly medical control of properly equipped institutes for this type of treatment. For many patients it is an impossibility to go abroad or to a distance in this country or even leave their occupations for any length of time in search of health, and for these as well as for the more independent it seems our manifest duty to provide.

It is eminently reasonable, therefore, that cities which pride themselves on their progressiveness in medical matters should be adequately provided with those means of treatment which cannot be satisfactorily given in the individual physician's office. Such an establishment should ensure not only treatment by baths and water generally, but also the possibility of using electricity in its various forms, hot air cabinets, light rays, and, in fact, whatever appears to promise a rational means of benefit or cure.

It should also be remembered that such methods of treatment are not limited to any one class of patients, but that under certain conditions, arterial, cardiac, pulmonary, renal, rheumatoid, joint and nervous affections may all be benefited. Finally, it is desirable, if these methods of treatment are to be applied at all, that they should be given under strict medical control, which alone provides reasonable assurance that harm may not be done in cases requiring special precautions. It is self-evident that unless such treatments are given skillfully and with knowledge they will neither appeal to the intelligent physician nor be of benefit to the patient. On the other hand, we are confident that under proper conditions of management and medical direction a very positive benefit to the community would result.

In consideration of these facts, and recognizing, as we do, the need of such an establishment for hydrotherapeutic and other treatment of an allied sort, we take pleasure in calling to the attention of our readers a letter printed in another column from Drs. Putman, Cutter and Lovett, in which they speak of an enterprise of this character in Boston, which is now well started, but which will require the co-operation of the profession at large if it is to fulfill its completest function. We have no doubt that physicians, in whatever line of practice, will feel the need which we have at-

tempted to express and will rally to the support of an enterprise which should prove a credit to themselves and to the city.

INVESTIGATION OF THE BUTLER TYPHOID EPIDEMIC.

It is always a sign of progress in the conflict with disease when persons other than physicians take an active and intelligent interest in its cause and prophylaxis. Tuberculosis will no doubt finally be held in check through the efforts of the laity rather than through the direct work of the physician. The cause of typhoid fever likewise is coming to be generally understood by intelligent people without medical training, and no doubt this will in time prove the greatest possible safeguard to the community.

It is, however, extremely rare to see the subject of a typhoid epidemic discussed with the skill and acumen which characterizes a paper in the current number of the *Engineering News* from the pen of George A. Soper, an associate member of the American Society of Civil Engineers. In most systematic form, amply illustrated, Mr. Soper discusses with much detail the cause, the course and the outcome of the phenomenal epidemic of typhoid which has recently visited Butler, Pa. The cause of this epidemic, which fortunately appears now to be under control, was the water supply. Water for some months had been taken from a creek at a point at which it was obviously polluted. No disease appeared, however, so long as filtration was carried on. Filters were discontinued from Oct. 20 to Oct. 31, and the epidemic began Nov. 2.

We have not space to enter into detail regarding the scope of this most admirable paper. We, however, wish to call the attention of our readers to it as a model example of a systematic, succinct and exhaustive treatment from the sanitary point of view of a notable typhoid epidemic. It may well be read by physicians everywhere and should serve as an object lesson of the methods by which such an investigation should be carried on. As we suggested at the outset, this paper is of particular interest as coming from a man presumably not primarily interested in the medical aspects of his subject. It also demonstrates how with the increase of special knowledge it becomes necessary for the civil engineer to encroach upon what formerly would have been called the domain of the physician, and conversely is suggestive of the fact that the modern physician may well devote a part of his time to the scientific investi-

gation of the problems of engineering, particularly as applied to sanitary questions.

So far as this epidemic is concerned, we are gratified to make mention of the fact that even before the complete cessation of the disease the situation has been thoroughly discussed and the facts presented to the medical profession as well as to sanitarians in a way which precludes the necessity of a further medical investigation. If physicians may thus depend upon sanitarians without definite medical training for their investigations into epidemic disease, we may certainly look forward to a still more speedy conquest of what are now coming to be regarded as preventable conditions.

Pennsylvania's misfortune seems to be in a measure merited. We have on more than one occasion alluded to the wholly inadequate provision made for the work of its Board of Health by that state, and it is not difficult, in such typhoid epidemics as this of Butler, to read a lesson which the state should certainly take to heart. If the experience through which this town and Plymouth in the same state has recently passed has no other effect than to stimulate the authorities to an appreciation of the necessity of an adequate health board, a result of much value will have been gained, though at a high cost.

PHYSICIANS FOR THE PHILIPPINES.

It is announced by the United States Civil Service Commission that on the days of Jan. 27 and 28 examinations will be held at various places to fill vacancies in the position of physician in the Philippine service with a salary ranging from \$1,200 to \$1,800 a year. Applicants, who must have had at least one year's experience in hospital work or as assistant surgeons in the army in the Philippines, are to be examined in the various fundamental branches of medicine, including questions on tropical diseases.

As inducements to this service it is suggested that the service itself has many attractive features, and involves a visit to a most interesting part of the world. China and Japan are near and are suitable places to visit during vacations. The service is classified, promotions are probable, the climate is good, and as a rule employees maintain excellent health. Liberal arrangements are made regarding traveling expenses and after a certain period spent in the service. It is suggested that the cost of living in Manila or in its suburbs is relatively small, and that rents will probably be less in the future than now.

We are strongly inclined to think that this service will be attractive to many men of good medical attainment. When one considers the almost hopeless competition at home one wonders why more young men of ambition and proper equipment do not avail themselves of such offers for positions in the government service. Various indications seem to show that medical men are being accorded a more proper position in the army than heretofore, and with this legitimate concession it is not to be supposed that the service will long be lacking in suitable men.

MEDICAL NOTES.

INDEX MEDICUS. — With the following opinion of the *Medical News* we are in entire agreement:

This valuable publication has now some 450 subscribers — a meager list and unfortunately a commentary on bibliographical scholarship. We learn that there is every reason to believe that if 500 bona fide subscribers can be secured the Carnegie Institute will continue its appropriation and make the *Index* a permanent affair. American physicians should not rest under the imputation that there are only 500 of its 120,000 practitioners who are up and alive to the interests that the *Index Medicus* represents. There should be thousands of active, wide-awake men in this country ready to support the *Index*. American physicians are proud of their institutions. Surely the extent of this is not measured by a paltry \$5

THE GERMAN EMPEROR. — The *British Medical Journal* is authority for the statement that the German Emperor has practically entirely recovered from his local ailment. His voice is again clear and resonant. Professor Schmidt has been honored by an effective privy councillorship, which carries with it the title "Excellency." Professors von Esmarch, von Bergmann and von Behring are hitherto the only physicians who have received this distinction.

REAPPOINTMENT OF CHICAGO'S HEALTH COMMISSIONER. — Dr. Arthur R. Reynolds has been reappointed Commissioner of Health of Chicago, by Mayor Harrison, and his appointment has been confirmed.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Dec. 30, 1903, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 55, scarlatina 54, typhoid fever 9, measles 129, smallpox 0.

A CENTENARIAN. — Mrs. Hannah Newell Barrett has recently died in Boston at the age of upwards of one hundred and three years. In

addition to being one of the city's oldest residents, Mrs. Barrett also had the honor of being the oldest daughter of a soldier of the Revolution drawing a pension from the Government.

REPORT OF STATE HOSPITAL AT TEWKSBURY. — According to the annual report of the trustees of the State Hospital at Tewksbury, there were admitted to the institution during the year under consideration 3,493 persons, being 247 more than in the previous year. The whole number cared for was 4,688, or 216 more than in the previous year. Among these, 606 were insane. Of the total number, 3,698 were treated as hospital patients, which gives one an idea of the prominence of this portion of the institution's work as contrasted with the almshouse element. Among the recommendations, the trustees present as the most urgent needs a ward for consumptive women, wards for the isolation and treatment of contagious diseases, a home for male attendants, and additional land for cultivation and pasturage.

LOWELL LECTURES ON BACTERIA IN MODERN MEDICINE. — Dr. Harold C. Ernst, Professor of Bacteriology in Harvard University, will deliver a course of free public lectures under the auspices of the Lowell Institute, beginning Jan. 5, 1904, on the general subject of "Bacteria in Modern Medicine." The lectures will be given Tuesdays and Fridays of each week until the course of eight lectures is completed. Special topics to be considered are:

(1) Considerations in Regard to Infection. (2) General Characteristics of Pathogenic Bacteria. (3) Methods of Action of Pathogenic Bacteria. (4) Defence and Reaction of Living Tissue against Bacteria and their Products. (5) The Condition of Immunity. (6) Immunity, continued. (7) Therapeutic Measures. (8) Hygienic and Prophylactic Measures.

APPOINTMENT OF GEORGE T. TUTTLE, M.D. — It is announced that Dr. George T. Tuttle, who has for many years been connected with the McLean Hospital, will succeed Dr. Edward Cowles as superintendent of that institution. The position of first assistant physician will be filled by Dr. E. Stanley Abbott, at present assistant superintendent of the Boston City Hospital.

WAR UPON CONSUMPTION. — The Boston Association for the Relief and Control of Tuberculosis, to the work of which we have previously alluded, is sending out a leaflet entitled, "A War upon Consumption." This leaflet contains, briefly stated, a list of directions as to the prevention of consumption and as to methods of strengthening

the body against it. These directions are put in popular form and are excellently expressed. The general work undertaken by this association should certainly bear fruit in increased knowledge on the part of the community regarding tuberculosis.

NEW YORK.

ATTENDING PHYSICIAN TO MANHATTAN COLLEGE. — At a meeting of the board of trustees of Manhattan College, held Dec. 21, Dr. Arthur J. O'Leary, Registrar of the Bureau of Vital Statistics of the Borough of the Bronx, was appointed attending physician to the college, to succeed his father, Dr. C. N. O'Leary, who was killed recently in a railroad accident. Dr. A. J. O'Leary's grandfather was appointed to the position at the organization of the college, and was succeeded by his son, Dr. C. N. O'Leary.

THE SEAMAN PRIZE. — The Seaman Prize (\$100 in gold) for 1903 has been awarded by the Military Service Institution of the United States to Capt. J. P. Jerrey, Engineer Corps, United States Army, for his essay on "How Best to Promote Rifle Practice." The subject selected for competition in 1904 is Military Hygiene. This prize was established by Dr. Louis Livingston Seaman of New York, who was surgeon, with the rank of major, of the Volunteer Regiment of Engineers in the Spanish-American War.

SMALLPOX AT BUFFALO. — Of nine cases of smallpox taken to the Quarantine Hospital at Buffalo on Christmas day, six were discovered at a dance hall in that city, where a large number of persons were exposed to infection.

Correspondence.

AN ESTABLISHMENT FOR HYDROTHERAPY.

MR. EDITOR: We beg leave to call the attention of your readers to the fact that the arrangements are now complete for giving varied and variable treatments by water, in the Farragut Building, 126 Massachusetts Avenue, corner of Boylston Street, at the rooms formerly occupied for the same purpose by Miss Colby.

It must rest with the members of our profession in Boston and its neighborhood whether or not they will take the pains necessary to make this enterprise a success. If this end is gained we shall have a convenient establishment to which we can send patients suffering from local or general disorders of nutrition, such as are treated with benefit at "water cures" of various sorts, the world over. And not only is this true, but we shall be helping to support an establishment of enlarging usefulness; for it is the intention to introduce, also, other methods of treatment, so far as practicable, as by reliable forms of electricity, hot air, massage and the simpler kinds of exercise. This is to be pre-eminently a doctor's enterprise, and Dr. J. H. Pratt, who is in charge of it, will be glad to receive either the criticisms or the suggestions of any doctors who are interested to make them.

Yours truly, JAMES J. PUTNAM,
E. G. CUTLER,
R. W. LOVETT.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 19, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | | |
|----------------|--------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------|--------------------------|------------------------|-------------------|--|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal diseases. | Typhoid fever. | |
| New York . . | 3,785,156 | 1,288 | 331 | 21.27 | 23.39 | 3.10 | 2.40 | 1.00 | |
| Chicago . . . | 1,845,000 | 570 | 133 | 20.54 | 17.27 | 2.73 | 4.63 | 1.38 | |
| Philadelphia . | 1,378,527 | 579 | 163 | 25.21 | 18.65 | 1.90 | .69 | 2.97 | |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — | |
| Baltimore . . | 533,712 | 199 | 47 | 17.08 | 16.57 | 3.01 | .50 | 2.61 | |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — | |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — | |
| Pittsburg . . | 351,745 | 146 | — | 29.45 | 12.33 | 7.53 | .68 | 8.90 | |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — | |
| Milwaukee . . | 315,307 | — | — | — | — | — | — | — | |
| Washington . | 295,103 | — | — | — | — | — | — | — | |
| Providence . . | 191,230 | 64 | 10 | 18.74 | 14.06 | 1.56 | — | — | |
| Boston . . . | 603,163 | 204 | 56 | 16.66 | 21.50 | .98 | .49 | 1.96 | |
| Worcester . . | 132,044 | 23 | 10 | 8.70 | 4.34 | — | 4.34 | 4.34 | |
| Fall River . . | 115,549 | 37 | 12 | 16.21 | 24.30 | 2.70 | 2.70 | — | |
| Lowell . . . | 101,959 | 24 | 6 | 8.33 | 20.83 | — | — | — | |
| Cambridge . . | 98,639 | 20 | 8 | 25.00 | 20.00 | 5.00 | — | — | |
| Lynn | 72,497 | 21 | 2 | 23.81 | 4.76 | 14.28 | — | — | |
| Lawrence . . | 69,766 | 17 | 3 | 35.29 | 23.53 | — | 11.76 | 11.76 | |
| Springfield . | 69,389 | 22 | 4 | 9.09 | 9.09 | — | — | — | |
| Somerville . . | 68,110 | 20 | 4 | 25.00 | 10.00 | — | — | — | |
| New Bedford . | 67,198 | 22 | 6 | 13.63 | 22.72 | — | — | 4.54 | |
| Holyoke . . . | 49,286 | 16 | 7 | 18.75 | 12.50 | — | — | — | |
| Brockton . . | 44,873 | 5 | 0 | — | — | — | — | — | |
| Haverhill . . | 42,104 | 6 | 2 | 16.67 | — | — | 16.67 | — | |
| Newton . . . | 37,794 | 4 | — | 25.00 | — | — | — | — | |
| Salem | 36,876 | 10 | — | — | — | — | — | — | |
| Malden . . . | 36,286 | 10 | 2 | 20.00 | — | — | — | — | |
| Chelsea . . . | 35,876 | 9 | 1 | — | — | — | — | — | |
| Fitchburg . . | 35,069 | 7 | 2 | 14.30 | 28.60 | — | — | — | |
| Taunton . . . | 33,656 | 12 | 2 | 25.00 | 8.33 | — | — | — | |
| Everett . . . | 28,620 | 2 | 2 | — | — | — | — | — | |
| North Adams . | 27,862 | 7 | 1 | 14.30 | 57.20 | — | — | — | |
| Gloucester . . | 26,121 | 7 | 2 | — | — | — | — | — | |
| Quincy . . . | 26,042 | 6 | 1 | 16.67 | 16.67 | — | — | — | |
| Waltham . . . | 25,198 | 7 | 2 | — | — | — | — | — | |
| Brookline . . | 22,608 | — | — | — | — | — | — | — | |
| Pittsfield . . | 22,589 | 12 | 2 | — | 25.00 | — | — | — | |
| Chicopee . . . | 21,031 | 5 | 2 | 20.00 | — | — | — | — | |
| Medford . . . | 20,962 | 4 | 3 | 25.00 | 25.00 | — | — | — | |
| Northampton . | 19,883 | 3 | — | — | — | — | — | — | |
| Beverly . . . | 15,302 | 5 | — | — | 20.00 | — | — | — | |
| Clinton . . . | 15,161 | — | — | — | — | — | — | — | |
| Leominster . . | 14,806 | — | — | — | — | — | — | — | |
| Newburyport . | 14,478 | 7 | 0 | 28.60 | — | — | — | — | |
| Woburn . . . | 14,300 | 8 | 1 | 25.00 | 25.00 | — | — | — | |
| Hyde Park . . | 14,175 | 2 | 1 | — | 50.00 | — | — | — | |
| Adams | 13,745 | 8 | 5 | 12.50 | — | — | — | 12.50 | |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — | |
| Marlboro . . | 13,609 | 4 | 0 | 25.00 | — | 25.00 | — | — | |
| Melrose . . . | 13,600 | 1 | — | — | 100.00 | — | — | — | |
| Westfield . . | 13,418 | 5 | 2 | 20.00 | 20.00 | 20.00 | — | — | |
| Milford . . . | 13,129 | — | — | — | — | — | — | — | |
| Revere | 12,722 | 3 | — | — | — | — | — | — | |
| Framingham . | 12,534 | — | — | — | — | — | — | — | |
| Peabody . . . | 12,179 | — | — | — | — | — | — | — | |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — | |
| Weymouth . . | 11,344 | 3 | 0 | — | — | — | — | — | |
| Southbridge . | 11,268 | — | — | — | — | — | — | — | |
| Watertown . . | 11,077 | 1 | 1 | — | — | — | — | — | |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — | |

Deaths reported, 3,415; under five years of age, 836; principal infectious diseases (smallpox, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 714, acute lung diseases 666, consumption 343, scarlet fever 43, whooping cough 15, cerebrospinal meningitis 8, smallpox 30, erysipelas 10, puerperal fever 6, measles 32, typhoid fever 63, diarrheal diseases 63, diphtheria and croup 94.

From whooping cough, New York 6, Chicago, 1, Philadelphia, 2, Baltimore, Pittsburg, Boston, Cambridge, Holyoke and Woburn 1 each. From smallpox, Philadelphia 22, Pittsburg 8. From cerebrospinal meningitis, New York 6, Lynn 1, Somerville 1. From erysipelas, New York 4, Chicago 2, Philadelphia 2, Baltimore 1, Boston 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Dec. 5, the death-rate was 18.6. Deaths reported, 5,364; acute diseases of the respiratory organs (London) 193, whooping cough 87, diphtheria 55, measles 102, smallpox 3, scarlet fever 43.

The death-rate ranged from 7.4 in Kings Norton, to 34.4 in Wigan, London 17.8, West Ham 18.1, Brighton 18.3, Southampton 14.2, Plymouth 19.1, Bristol 16.6, Birmingham 15.7, Leicester 13.5, Nottingham 18.4, Liverpool 22.1, Bolton 19.2, Manchester 21.6, Salford 21.9, Bradford 22.3, Leeds 17.3, Hull 22.8, Cardiff 18.4, Rhondda 19.6, Merthyr Tydfil 19.6, Hornsey 10.6, Sunderland 21.6.

METEOROLOGICAL RECORD.

For the week ending Dec. 19, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Bar- om- eter. | Ther- mometer. | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. | | |
|----------------|----------------------|-------------------|---------------|-----------------------|--------------|--------------|-----------------------|--------------|----------------------|--------------|--------------|--------------|------------------------|--------------|-----|
| | Daily mean. | Daily mean. | Maxi- mum. | Mini- mum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | | 8.00 P.M. | |
| S.. 13 | 29.92 | 40 | 55 | 25 | 85 | 41 | 63 | S | W | W | 34 | 16 | R. | C. | .48 |
| M.. 14 | 30.28 | 23 | 27 | 19 | 40 | 65 | 52 | W | W | W | 26 | 12 | C. | C. | 0 |
| T.. 15 | 30.16 | 20 | 25 | 16 | 73 | 49 | 61 | S | W | S | 8 | 15 | C. | C. | 0 |
| W.. 16 | 29.87 | 22 | 28 | 16 | 67 | 66 | 66 | S | W | S | 12 | 15 | C. | C. | 0 |
| T.. 17 | 29.97 | 20 | 30 | 11 | 68 | 71 | 70 | N | W | N | 14 | 8 | C. | C. | T. |
| F.. 18 | 30.34 | 16 | 20 | 11 | 58 | 30 | 44 | N | W | N | 14 | 18 | C. | C. | 0 |
| S.. 19 | 30.49 | 22 | 34 | 11 | 45 | 22 | 34 | W | S | W | 9 | 9 | C. | C. | 0 |
| Mean for week. | 30.15 | | 31 | 16 | | 56 | | | | | | | | | .48 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING DEC. 17, 1903.

BAILHACHE, Preston H., surgeon. Detailed to represent the Service at the "Convention to Consider the Questions Involved in Mosquito Extermination," to be held in New York Dec. 16. Dec. 4, 1903.

IRWIN, Fairfax, surgeon. Granted leave of absence for two days from Dec. 24. Dec. 17, 1903.

BROOKS, S. D., surgeon. To rejoin station at Savannah, Georgia. Dec. 16, 1903.

WHITE, J. H., surgeon. Granted leave of absence for five days from Dec. 17. Dec. 16, 1903.

CARRINGTON, P. M., surgeon. Three days' leave of absence from Dec. 15, 1903, under paragraph 189 of the regulations.

GUIERAS, G. M., surgeon. Granted leave of absence for three months from Dec. 19. Dec. 16, 1903.

PERRY, J. C., passed assistant surgeon. Detailed to represent the Service at the "Convention to Consider the Questions Involved in Mosquito Extermination" to be held in New York Dec. 16. Dec. 15, 1903.

GREENE, J. B., passed assistant surgeon. Upon being relieved at Cleveland, Ohio, by Passed Assistant Surgeon H. S. Mathewson, to proceed to Habana, Cuba, for duty in office of U. S. Consul-General, relieving Assistant Surgeon F. E. Trotter. Dec. 16, 1903.

MATHEWSON, H. S., passed assistant surgeon. Relieved from duty at Detroit, Michigan, and directed to proceed to Cleveland, Ohio, and assume command of the service at that port, relieving Passed Assistant Surgeon J. B. Greene. Dec. 16, 1903.

VON EZDORF, R. H., passed assistant surgeon. Relieved from duty at Laredo, Texas, and directed to proceed to Washington, D. C., and report at Bureau. Dec. 15, 1903.

BILLINGS, W. C., assistant surgeon. Granted leave of absence for fourteen days from Dec. 13. Dec. 14, 1903.

KERR, J. W., assistant surgeon. To proceed to Ellis Island, New York, N. Y., and report to Surgeon G. W. Stoner for duty. Dec. 12, 1903.

GOLDBERGER, Jos., assistant surgeon. To report to Director of Hygienic Laboratory for duty. Dec. 8, 1903.

TROTTER, F. E., assistant surgeon. Upon being relieved from duty at Habana, Cuba, by Passed Assistant Surgeon J. B. Greene, to proceed to San Francisco, Cal., and report to medical officer in command for duty and assignment to quarters. Dec. 16, 1903.

LLOYD, B. J., assistant surgeon. To proceed to Concord, Cal., for special temporary duty. Dec. 15, 1903.

STIMSON, A. M., assistant surgeon. Granted leave of absence for seven days from Dec. 8, 1903, under paragraph 191 of the regulations.

FOSTER, A. D., assistant surgeon. To proceed to Ellis Island, New York, and report to Surgeon G. W. Stoner for temporary duty. Dec. 11, 1903.

BALLARD, J. C., acting assistant surgeon. Granted leave of absence for five days from Dec. 24. Dec. 16, 1903.

SAFFORD, M. V., acting assistant surgeon. Granted leave of absence for four days from Dec. 14, 1903, under paragraph 210 of the regulations.

STEARNS, H. H., acting assistant surgeon. Granted leave of absence for fourteen days from Dec. 18. Dec. 15, 1903.

MAGUIRE, E. S., pharmacist. Department letter of Nov. 21, granting Pharmacist Maguire leave of absence for thirty days from Nov. 1, 1903, amended so as to read thirty days from Dec. 1. Dec. 12, 1903.

GIBSON, R. H., pharmacist. Granted leave of absence for eight days from Dec. 24. Dec. 15, 1903.

RYDER, L. W., pharmacist. Department letter of Dec. 9, granting Pharmacist Ryder leave of absence for fifteen days from Dec. 10, 1903, amended to read fifteen days from Dec. 7. Dec. 11, 1903.

BOARD CONVENED.

Board convened to meet at Philadelphia, Pa., Dec. 17, 1903, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon Fairfax Irwin, Chairman. Assistant Surgeon W. A. Korn, Recorder.

APPOINTMENTS.

J. N. COOLIDGE, M.D., has been appointed an assistant visiting physician at the Boston City Hospital.

EDWARD N. LIBBY, M.D., has been appointed a physician to medical out-patients at the Boston City Hospital.

S. G. UNDERHILL, M.D., has been appointed as an assistant to the superintendent at the Boston City Hospital.

CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING DEC. 26, 1903.

W. A. MCCLURG, medical inspector. Ordered to the Bureau of Medicine and Surgery, Navy Department.

M. K. JOHNSON, surgeon. Detached from the naval hospital, New York, N. Y., and ordered to the "Tacoma."

L. H. SCHWERIN, acting assistant surgeon. Detached from the "Southern" and ordered to the "Abarenda."

L. W. SPATLING, surgeon. Detached from the "Hancock" and ordered to the navy yard, New York, for special temporary duty at the naval laboratory.

D. N. CARPENTER, surgeon. Detached from the naval hospital, Washington, D. C., and ordered to the "Dixie" for duty with the Panama marine brigade.

L. W. SPATLING, surgeon. Detached from the naval laboratory, Brooklyn, N. Y., and ordered to the "Dixie" for duty with the Panama marine brigade.

G. L. ANGENY, passed assistant surgeon. Detached from the naval hospital, Philadelphia, Pa., and ordered to the "Dixie" for duty with the Panama marine brigade.

RECENT DEATHS.

DANIEL E. KISSAM, M.D. Dr. Daniel Embury Kissam, formerly a surgeon of note in Brooklyn, died at his residence at Huntington, Long Island, on Dec. 23. He was a native of New York City, and was born Oct. 3, 1817. From 1848 to 1888 he practised in Brooklyn, where he was visiting surgeon to the Brooklyn Hospital. During the civil war he served as a surgeon in the army.

HORACE C. TAYLOR, M.D. Dr. Horace Clifton Taylor of Brocton, Chautauqua County, N. Y., died on Dec. 21, at the age of ninety years. He served eleven years as county superintendent of the poor, and was well known as a writer on the care of the dependent classes.

PROFESSOR FRANCES E. WHITE, for many years professor of physiology at the Woman's Medical College of Pennsylvania, died in Jamaica Plain, Mass., Dec. 29. She had devoted herself during her life to the scientific side of medicine and was well known as a leading woman physician.

JOSIAH LITTLE HALE, M.D., M.M.S.S., died in Brookline, Dec. 21, 1903.

WILLIAM JOSIUA WEEKS, M.D., M.M.S.S., died in Malden, Dec. 23, 1903.

BOOKS AND PAMPHLETS RECEIVED.

A Reference Handbook of the Medical Sciences, embracing the entire range of Scientific and Practical Medicine and Allied Science. By various writers. A new edition, completely revised and rewritten. Edited by Albert H. Buck, M.D. Vol. VII. Illustrated. New York: William Wood & Co. 1904.

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The New England journal
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